UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	05/09/2017	9648132	357831.00022	5812

78905 7590 04/19/2017

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Mark Stephen KNIGHT, London, UNITED KINGDOM;
OMNIFONE LIMITED, London, UNITED KINGDOM;
Michael Ian LAMB, London, UNITED KINGDOM;
Robert John LEWIS, London, UNITED KINGDOM;
Stephen William POCOCK, Egham, UNITED KINGDOM;
Philip Anthony SANT, London, UNITED KINGDOM;
Mark Peter SULLIVAN, Birmingham, UNITED KINGDOM;
Christopher John EVANS, London, UNITED KINGDOM;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

TRILLER EXHIBIT 1006-001

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

78905 7590 12/30/2016

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022	5812

TITLE OF INVENTION: METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	03/30/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
HOLMES, ANGELA R	2497	726-026000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Saul Ewing LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: OMNIFONE LIMITED

(B) RESIDENCE: (CITY and STATE OR COUNTRY): London, UNITED KINGDOM

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

☐ A check is enclosed.

☒ Payment by credit card. ~~Form PTO-2038 is attached.~~

☒ The director is hereby authorized to charge ~~the required fee(s),~~ any deficiency, or credits any overpayment, to Deposit Account Number 504364 ~~(enclose an extra copy of this form).~~

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Mark D. Simpson/ Date 30 March 2017

Typed or printed name Mark D. Simpson Registration No. 32942

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRILLER EXHIBIT 1006-002

Electronic Patent Application Fee Transmittal

Application Number:	15042243
Filing Date:	12-Feb-2016
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Filer:	Mark D. Simpson/Lynn White
Attorney Docket Number:	357831.00022

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**960**

Electronic Acknowledgement Receipt

EFS ID:	28781540
Application Number:	15042243
International Application Number:	
Confirmation Number:	5812
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Customer Number:	78905
Filer:	Mark D. Simpson/Lynn White
Filer Authorized By:	Mark D. Simpson
Attorney Docket Number:	357831.00022
Receipt Date:	30-MAR-2017
Filing Date:	12-FEB-2016
Time Stamp:	10:17:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$960
RAM confirmation Number	033017INTEFSW10185800
Deposit Account	504364
Authorized User	Mark Simpson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	15042243_FeesTransmittal_a.pdf	105670 14bbc2155d67b293d7f026c6c882a6a821f35236	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31004 535019e49bf14f4b20200c0d5033a4c8fd360180	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	136674		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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NOTICE OF ALLOWANCE AND FEE(S) DUE

78905 7590 12/30/2016
Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

EXAMINER	
HOLMES, ANGELA R	
ART UNIT	PAPER NUMBER
2497	

DATE MAILED: 12/30/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022	5812

TITLE OF INVENTION: METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	03/30/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

TRILLER EXHIBIT 1006-007

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

78905 7590 12/30/2016

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022	5812

TITLE OF INVENTION: METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	03/30/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
HOLMES, ANGELA R	2497	726-026000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRILLER EXHIBIT 1006-008

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022	5812

78905 7590 12/30/2016

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

EXAMINER	
HOLMES, ANGELA R	

ART UNIT	PAPER NUMBER
2497	

DATE MAILED: 12/30/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

TRILLER EXHIBIT 1006-009

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/042,243	Applicant(s) KNIGHT ET AL.	
	Examiner ANGELA HOLMES	Art Unit 2497	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *10/25/16*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-33*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☒ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☒ Certified copies of the priority documents have been received in Application No. *12/299,505* .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ANGELA HOLMES/ Examiner, Art Unit 2497	/HADI ARMOUCHE/ Supervisory Patent Examiner, Art Unit 2497

TRILLER EXHIBIT 1006-0011

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

2. This communication is in response to the application 15/042243 filed on 10/25/16.

Terminal Disclaimer

3. The terminal disclaimer filed on 11/30/16 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject matter

4. Claims 1-33 are allowed.

5. This communication warrants No Examiner's Reason for Allowance, applicant's reply make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule 37 CFR 1.104(e). Specifically, the substance of applicant's arguments filed on 10/25/16 are persuasive, as such the reasons for allowance are in all probability evident from the record and no statement is deemed necessary (see MPEP 1302.14).

6. Any comments considered necessary by applicant must be submitted no later than payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA HOLMES whose telephone number is (571)270-3357. The examiner can normally be reached on 9am -5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hadi Armouche can be reached on 571-270-3618. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. H./
Examiner, Art Unit 2497

/HADI ARMOUCHE/
Supervisory Patent Examiner, Art Unit 2497

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	Art Unit
	ANGELA HOLMES	2497

CPC- SEARCHED		
Symbol	Date	Examiner
h04l67/306, h04l51/32, h04l67/16, h04l67/325, h04w12/08	4/15/2016	ah
h04l67/306, h04l51/32, h04l67/16, h04l67/325, h04w12/08	12/5/2016	ah

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
726	26	4/15/2016	ah
726	26	12/5/2016	ah

SEARCH NOTES		
Search Notes	Date	Examiner
EAST class limited w/text search (see search history)	4/15/2016	ah
EAST inventor and assignee search (see search history)	4/15/2016	ah
EAST text search (see search history)	4/15/2016	ah
EAST class limited w/text search (see search history)	12/5/2016	ah
EAST inventor and assignee search (see search history)	12/5/2016	ah
EAST text search (see search history)	12/5/2016	ah

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	GENERAL INTERFERENCE AND SEARCH OF CLAIMS (USPGPUB,UPAT)	12/5/2016	ah

/ANGELA HOLMES/ Examiner.Art Unit 2497	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	**Art Unit**
	ANGELA HOLMES	2497

CPC						
Symbol					**Type**	**Version**
H04L		67	/	306	F	2013-01-01
G06Q		10	/	10	I	2013-01-01
G06Q		30	/	06	I	2013-01-01
H04L		2463	/	101	A	2013-01-01
H04M		1	/	72558	A	2013-01-01
H04M		3	/	4872	I	2013-01-01
H04M		2203	/	358	A	2013-01-01
H04W		12	/	08	I	2013-01-01
H04L		67	/	06	A	2013-01-01
H04L		67	/	325	I	2013-01-01
H04L		67	/	04	I	2013-01-01
H04L		69	/	14	I	2013-01-01
H04L		67	/	32	I	2013-01-01
H04L		51	/	32	I	2013-01-01
H04L		67	/	16	I	2013-01-01
G06F		17	/	30749	I	2013-01-01
G06F		17	/	30752	I	2013-01-01
G06F		17	/	30766	I	2013-01-01
G06F		17	/	30772	I	2013-01-01
G06F		17	/	30775	I	2013-01-01
G06F		21	/	10	I	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

/ANGELA HOLMES/ Examiner.Art Unit 2497	12/5/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	33	
/HADI ARMOUCHE/ Supervisory Patent Examiner.Art Unit 2497	12/06/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	85

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	**Art Unit**
	ANGELA HOLMES	2497

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
726	26	G	0	6	F	21 / 10 (2013.01.01)						

CROSS REFERENCE(S)						CLAIMED					NON-CLAIMED				
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)														

/ANGELA HOLMES/ Examiner.Art Unit 2497	12/5/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	33	
/HADI ARMOUCHE/ Supervisory Patent Examiner.Art Unit 2497	12/06/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	85

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	**Art Unit**
	ANGELA HOLMES	2497

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	17	17	33	33										
2	2	18	18												
3	3	19	19												
4	4	20	20												
5	5	21	21												
6	6	22	22												
7	7	23	23												
8	8	24	24												
9	9	25	25												
10	10	26	26												
11	11	27	27												
12	12	28	28												
13	13	29	29												
14	14	30	30												
15	15	31	31												
16	16	32	32												

/ANGELA HOLMES/ Examiner.Art Unit 2497	12/5/16	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	33	
/HADI ARMOUCHE/ Supervisory Patent Examiner.Art Unit 2497	12/06/2016	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	85

TRILLER EXHIBIT 1006-0017

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 5812

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/042,243	02/12/2016 RULE	726	2497	357831.00022

APPLICANTS

OMNIFONE LIMITED, London, UNITED KINGDOM;

INVENTORS

Mark Stephen KNIGHT, London, UNITED KINGDOM;
Michael Ian LAMB, London, UNITED KINGDOM;
Robert John LEWIS, London, UNITED KINGDOM;
Stephen William POCOCK, Egham, UNITED KINGDOM;
Philip Anthony SANT, London, UNITED KINGDOM;
Mark Peter SULLIVAN, Birmingham, UNITED KINGDOM;
Christopher John EVANS, London, UNITED KINGDOM;

**** CONTINUING DATA ***************************

This application is a CON of 13/959,079 08/05/2013 PAT 9294430
which is a CON of 12/299,505 05/20/2009 PAT 8510847
which is a 371 of PCT/GB2007/001675 05/08/2007

**** FOREIGN APPLICATIONS ***************************

UNITED KINGDOM 0608936 05/05/2006
UNITED KINGDOM 0608935 05/05/2006
UNITED KINGDOM 0608934 05/05/2006
UNITED KINGDOM 0608933 05/05/2006
UNITED KINGDOM 0608932 05/05/2006
UNITED KINGDOM 0702596 02/09/2007

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

03/02/2016

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /ANGELA R HOLMES/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		UNITED KINGDOM	73	33	4

ADDRESS

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186
UNITED STATES

TITLE

METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

		☐ All Fees
		☐ 1.16 Fees (Filing)

BIB (Rev. 05/07).

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	"15042243"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 14:45
L2	12792	(726/26).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:14
L3	139676	(h04w12/08 h04l67/06 h04l67/306 g06f21/10 h04l67/04).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:17
L4	14	(omnifone near limited).as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:18
L5	244	((mark near stephen near knight) (michael near ian near lamb)(robert near john near lewis)(stephen near william near pocock)(philip near anthony near sant)(mark near peter near sullivan)(christopher near john near evans)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:19
L6	313815	portable and wireless and remote	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:21
L7	6369	portable and wireless and remote adj server and user adj accounts	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:22
L8	6189	portable and wireless and remote adj	US-PGPUB;	OR	ON	2016/12/05

TRILLER EXHIBIT 1006-0019

		server and user adj accounts and software	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:22
L9	482	portable and wireless and remote adj server and user adj accounts and software and drm	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:23
L10	457	portable and wireless and remote adj server and user adj accounts and software and drm and messages	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:23
L11	8	portable and wireless and remote adj server and user adj accounts and software and drm and messages and multitasking	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:24
L12	8	portable and wireless and remote adj server and user adj accounts and software and drm and messages and multitasking and media	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:24
L13	8	portable and wireless and remote adj server and user adj accounts and software and drm and messages and multitasking and media and music	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:25
L14	8	portable and wireless and remote adj server and user adj accounts and software and drm and messages and multitasking and media and music	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:25
L15	1321	l2 and l6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L16	63	l2 and l7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	2016/12/05 15:27

TRILLER EXHIBIT 1006-0020

			IBM_TDB			
L17	63	l2 and l8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L18	7	l2 and l9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L19	6	l2 and l10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L20	11424	l3 and l6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L21	625	l3 and l7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L22	609	l3 and l8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:27
L23	71	l3 and l9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L24	65	l3 and l10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L25	2	l3 and l11	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2016/12/05 15:28

TRILLER EXHIBIT 1006-0021

			JPO; DERWENT; IBM_TDB			
L26	7	l4 and l6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L27	2	l4 and l7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L28	2	l4 and l8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L29	2	l4 and l9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L30	2	l4 and l10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L31	1	l4 and l11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L32	1	l4 and l12	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:28
L33	24	l5 and l6	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:29
L34	3	l5 and l7	US-PGPUB; USPAT;	OR	ON	2016/12/05 15:29

TRILLER EXHIBIT 1006-0022

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L35	3	l5 and l8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:29
L36	3	l5 and l9	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:29
L37	3	l5 and l10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:29
L38	2	l5 and l11	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/12/05 15:29

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L39	0	(portable near wireless near remote near server near user near accounts).clm.	USPAT	OR	ON	2016/12/05 15:30
L41	0	(portable near wireless near remote near server near user near accounts near software near drm near messages).clm.	USPAT	OR	ON	2016/12/05 15:31

12/5/2016 3:31:46 PM
C:\Users\aholmes\Documents\EAST\Workspaces\100216.wsp

TRILLER EXHIBIT 1006-0023

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	Art Unit
	ANGELA HOLMES	2497

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/15/2016	12/05/2016							
1	1	✓	=							
2	2	✓	=							
3	3	✓	=							
4	4	✓	=							
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6	6	✓	=							
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30	30	✓	=							
31	31	✓	=							
32	32	✓	=							
33	33	✓	=							

TRILLER EXHIBIT 1006-0024

Doc Code: DIST.E.FILE **Document Description: Electronic Terminal Disclaimer - Filed**	PTO/SB/25 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION**
Application Number	15042243
Filing Date	12-Feb-2016
First Named Inventor	Mark KNIGHT
Attorney Docket Number	357831.00022
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action

☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
OMNIFONE LIMITED	100%

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

13959079 filed on 08/05/2013

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

◉ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

○	I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicant claims the following fee status:

○ Small Entity

○ Micro Entity

◉ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

◉ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 32942

○ A sole inventor

○ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

○ A joint inventor; all of whom are signing this request

Signature	/Mark D. Simpson/
Name	Mark D. Simpson

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	15042243
Filing Date:	12-Feb-2016
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Filer:	Mark D. Simpson/Lynn White
Attorney Docket Number:	357831.00022

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**160**

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Application No.: 15042243

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Applicant/Patent under Reexamination: KNIGHT

Electronic Terminal Disclaimer filed on November 30, 2016

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

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U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	27654462
Application Number:	15042243
International Application Number:	
Confirmation Number:	5812
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Customer Number:	78905
Filer:	Mark D. Simpson/Lynn White
Filer Authorized By:	Mark D. Simpson
Attorney Docket Number:	357831.00022
Receipt Date:	30-NOV-2016
Filing Date:	12-FEB-2016
Time Stamp:	16:12:00
Application Type:	Utility under 35 USC 111(a)

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Submitted with Payment	yes
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Payment was successfully received in RAM	$160
RAM confirmation Number	120116INTEFSW16115801
Deposit Account	504364
Authorized User	Mark Simpson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	34159 421b04c9b7df5e684a282d98ebfc07ec8762794b	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30769 65244fd5ccaadbe69fb202d3577cc60ca60584e2	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	64928		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PATENT **Docket No. 357831.00022**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS:	**Mark Stephen KNIGHT et al.**	Confirmation No. **5812**
APPLICATION NO.	**15/042,243**	
FILED:	**February 12, 2016**	Examiner: **A. Holmes**
CASE NO.	**357831.00022**	Group Art Unit: **2497**

TITLE: **METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE**

FILED ELECTRONICALLY ON October 25, 2016

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY AND AMENDMENT UNDER 37 C.F.R. §1.111
TO EXAMINER'S ACTION MAILED APRIL 25, 2016

Sir:

This is in response to the Office Action mailed April 25, 2016, having a period for response set to expire on July 25, 2016. A Petition extending the period for response for three months, to October 25, 2016, is included herein. The extension fee is being paid by credit card. The following amendments and remarks are respectfully submitted.

Amendments to the claims begin on page 2 of this paper; Remarks begin on page 10 of this paper.

TRILLER EXHIBIT 1006-0032

In the Claims

1. (Original) A portable wireless computing device comprising a hardware processor programmed with a software application embodied on a non-transitory storage medium, that enables an end-user to interact with other users in which (a) the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user; and (b) the software application allows the end-user to, over the wireless connection, view profiles created by other users of a service; and (c) the software application allows the end-user to, over the wireless connection, interact with other users of the service; and (d) the software application allows the end-user to, over the wireless connection, send and receive messages to and from other users of the service; and (e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services.

2. (Original) The device of Claim 1 wherein the software application uses a multitasking architecture to balance the computational demands of network access; and the computational demands of a user interface of the software application.

3. (Original) The device of Claim 2, wherein the software application uses the multitasking architecture to balance the computational demands of one or both of: a DRM program; media operations.

TRILLER EXHIBIT 1006-0033

4. (Original) The device of Claim 1 wherein (i) the user is able to view the profiles of other users, including text provided by those other users and (ii) when viewing the profile of another user, B, the first user, A, is able to view that information on B's profile which B has, whether implicitly or explicitly, made visible to user A.

5. (Original) The device of Claim 1 wherein a request to link profiles on the service can be responded to by accepting that request, rejecting that request or blocking all further messages from the originating user.

6. (Original) The device of Claim 1 wherein the software application is a music application and uses track meta-data that is formed as a separate meta-data layer and defines attributes of tracks, the meta-data being external to a music track to make sharing and browsing of track information possible without needing to distribute the related music track files.

7. (Original) The device of Claim 1 wherein a user is required to register, over a wireless connection, a unique username, handle or identifier with the service in order to access the service.

8. (Original) The device of Claim 1 wherein a user's profile includes one or more of a username; a profile image, whether provided by the user or by the service; one or more additional images; some text provided by the user any additional text and/or metadata defined by the service.

TRILLER EXHIBIT 1006-0034

9. (Original) The device of Claim 1 wherein user interactions include sending information over a wireless connection to other users of the service or receiving information from other users of the service.

10. (Original) The device of Claim 9 wherein information shared over a wireless connection with other users comprises one or more of: whether or not the user is currently logged into the service; messages; requests to link his account with one or more other designated users the list of profiles to which the user has linked his profile; the media content which the user is and/or has been listening to, watching or reading; recommendations of, or related to, media content; playlists of media content; the user's favourite media content; the user's ratings of one or more items; digital media content files or any other files; any other information deemed suitable for sharing with other users.

11. (Original) The device of Claim 10 wherein media content comprises one or more of: music, books, movies, television shows, websites, radio, artists, albums, composers, directors, actors or any other video, audio and/or text content or any other media content, whether stored digitally or otherwise.

12. (Original) The device of Claim 1 wherein the user can control whether or not his profile is visible to other users of the service.

TRILLER EXHIBIT 1006-0035

13. (Original) The device of Claim 1 wherein the user can control which information from his profile is visible to other users of the service.

14. (Original) The device of Claim 1 wherein the user is able over a wireless connection, to search and/or browse the service for other users, media content or any other information.

15. (Original) The device of Claim 1 wherein the user can provide ratings for media content, other users of the service or for any other items.

16. (Original) The device of Claim 15 wherein the user's ratings consist of one or more of whether the user likes the item, whether the user dislikes the item, how the user rates the item on a given scale or any other applicable explicit rating mechanism.

17. (Original) The device of Claim 1 wherein messages, whether from other users or from the service itself, are shown as notification messages.

18. (Original) The device of Claim 1 wherein messages, whether from other users or from the service itself, are stored on a remote server such that when the user is online the user can collect those messages which were delivered into the user's "inbox" while the user was not connected to the service.

TRILLER EXHIBIT 1006-0036

19. (Original) The device of Claim 1 wherein messages, whether from other users or from the service itself, are able to have associated attached items which the user can access on the same basis as that message.

20. (Original) The device of Claim 19, wherein the attached items consist of one or more of a digital image file, a digital audio file, a digital video file, a text file, an executable file, a recommendation of media content, a web site identifier, Universal Resource Identifier (URL) or address, a request from another user to link user accounts or an acknowledgement of such a request or any other digital file.

21. (Original) The device of Claim 1 wherein messages or other shared information may be filtered to remove or obfuscate terms deemed to be potentially offensive.

22. (Original) The device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of people, media content or any other items which the user might like, based on the user's viewing, listening and/or purchasing history, on the viewing, listening and/or purchasing history of any other users or on any other criteria.

23. (Original) The device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of other users the user might wish to interact with based on shared media content preferences, shared linked friends or on any other criteria.

TRILLER EXHIBIT 1006-0037

24. (Original) The device of Claim 1 wherein the service provides over a wireless connection, information to the user comprising one or more of news stories, media content, editorially maintained playlists of media content, personalized news, recommendations of media content or any other information.

25. (Original) The device of Claim 1 wherein the software application resides wholly on the device or wholly on the remote server or some combination of the two.

26. (Original) The device of Claim 1 wherein the software application communicates with the remote server wirelessly via one or more of CSD, GPRS, 2G, 2.5G, 3G, WAP, SMS, Bluetooth, Infrared, Wi-Fi, WiMAX, the Global Mobile Network or via any other wireless communications technology.

27. (Original) The device of Claim 1 wherein the software application uses a multithreaded architecture to balance the computational demands of network access; and the computational demands of one or more of: a user interface of the software application; a DRM program; media operations.

28. (Original) The device of Claim 1 where the service is a social network service.

29. (Original) The device of Claim 28 where the software application displays to the end-user the number of friends linked with that end-user.

TRILLER EXHIBIT 1006-0038

30. (Original) The device of Claim 1, the device being a mobile telephone.

31. (Currently amended) Software application embodied on a non-~~transient~~ transitory storage medium, wherein the software application is executable on a portable wireless computing device, wherein the software application enables an end-user to interact with other users and (a) in which the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user; and (b) the software application allows the end-user to, over the wireless connection, view profiles created by other users of a service; and (c) the software application allows the end-user to, over the wireless connection, interact with other users of the service; and (d) the software application allows the end-user to, over the wireless connection, send and receive messages to and from other users of the service; and (e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services.

32. (Original) Method of enabling an end-user of a portable wireless computing device programmed with a software application embodied on a non-transitory storage medium, to interact over a wireless connection, with other users of other devices, the portable wireless computing device in communication with a remote server over a wireless connection, the method comprising the steps of:

(i) the software application allowing the end-user to, over the wireless connection, create one or more user accounts with associated profiles on the remote server;

TRILLER EXHIBIT 1006-0039

(ii) the software application allowing the end-user to, over the wireless connection, display on the device profiles created by other users of a service,

(iii) the software application allowing the end-user to communicate interactions over the wireless connection, between the user and other users of the service;

(iv) the software application allowing the end-user to send and receive messages over the wireless connection, to and from the user and other users of the service;

(v) the software application allowing the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services.

33. (Original) A server, including a program embodied on a non-transitory storage medium, the server configured and programmed to communicate with a portable wireless computing device comprising a hardware processor programmed with a software application embodied on a non-transitory storage medium, that enables an end-user to interact with other users, in which (a) the server is configured and programmed to create a user account with an associated profile for that end-user, in response to receiving a request from the portable wireless computing device over a wireless connection, (b) the server is configured and programmed to provide profile information for other users of a service, over the wireless connection, in response to receiving a request from the portable wireless computing device to view profiles created by other users of the service; (c) the server is configured and programmed to provide interaction between the end-user and other users of the service, over the wireless connection; and (d) the server is configured and programmed to receive and to send messages from and to the end-user, respectively, over the wireless connection, and

TRILLER EXHIBIT 1006-0040

respectively to send and to receive those messages to and from other users of the service; and (e) the server is configured and programmed to allow the end-user to, over the wireless connection, link his or her user account on the server to user accounts on the server of other users of the same service or of other services.

TRILLER EXHIBIT 1006-0041

REMARKS

Petition for Extension of Time Under 37 CFR 1.136(a)

It is hereby requested that the term to respond to the Examiner's Action of April 25, 2016 be extended three months, from July 25, 2016, to October 25, 2016.

The extension fee is being paid by credit card. The Commissioner is hereby authorized to charge any additional fees associated with this communication to Deposit Account No. 50-4364.

In the Office Action, the Office indicated that claims 1 through 33 are pending in the application and the Office rejected all of the claims.

Claim Amendments

Independent Claim 31 has been amended to provide improved claim language.

The Double Patenting Rejection

On page 3 of the Office Action, the Examiner has rejected claims 1-33 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-24 and 26-31 of U.S. Application No. 13/959,079 (now U.S. Patent No. 9,294,430). Applicant will file a Terminal Disclaimer to overcome this rejection at an appropriate time upon an indication of allowable subject matter.

Rejection of under 35 U.S.C. §103

On page 4 of the Office Action, claims 1, 4-5, 7-20, 22-24, 26 and 28-33 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application

TRILLER EXHIBIT 1006-0042

Publication No. 2006/0008256 to Khedouri in view of U.S. Patent Application Publication No. 2007/0214141 to Sittig. On page 14 of the Office Action, the Examiner has rejected claims 2-3, 25 and 27 under 35 U.S.C. §103(a) as being unpatentable over Khedouri in view of Sitting, and further in view of U.S. Patent NO. 8,229,856 to Reddick. On page 17 of the Office Action, the Examiner has rejected claim 21 under 35 U.S.C. §103(a) as being unpatentable over Khedouri in view of Sitting, and in view of U.S. Patent Application Publication No. 2003/0105822 to Gusler.

A *Prima Facie* Case of Obviousness Has Not Been Established

KSR (*KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d 1385 (2007)) requires that the Office provide "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." Further, the Office must "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." In addition, the Office must make "explicit" this rationale of "the apparent reason to combine the known elements in the fashion claimed," including a detailed explanation of "the effects of demands known to the design community or present in the marketplace" and "the background knowledge possessed by a person having ordinary skill in the art."

The words of a Claim describe and point out the invention by a series of limiting words or phrases – limitations (*Corning Glass Works v. Sumitomo Elec. USA Inc.*, 868 F.2d 1251, 9 USPQ2d 1962 (Fed. Cir. 1989)).

TRILLER EXHIBIT 1006-0043

Claim 1 includes the limitation "a software application embodied on a non-transitory storage medium, that enables an end-user to interact with other users in which (a) the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user". On page 4 of the Office Action, the Examiner cites Khedouri para. [0137] against this limitation of Claim 1, but Khedouri para. [0137] fails to disclose an associated profile. Khedouri para. [0137] discloses credit card information, but credit card information is not an associated profile. Therefore Khedouri teaches away from this limitation of Claim 1, because where Khedouri teaches creating a user account, the user account does not include an associated profile.

A device software application is disclosed in Khedouri at:

> "This is accomplished by equipping each player device with server software (e.g., such as HTTP: server software, such as that available from Microsoft for PocketPC devices)." para. [0069]

However, Khedouri fails to disclose that the application of para. [0069] allows an end-user to "create on a remote server one or more user accounts with associated profiles for that end-user", in agreement with the statement of the Examiner on page 6 of the Examination Report dated 21 May 2015 for US application number 13/959,079.

Sittig also fails to disclose the Claim 1 limitation "(a) the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user".

Although Sittig para. [0023] discloses profile information,

> "The website can display various types of data about the users 102 to one another, such as the social timeline, profile information, or relationships a particular user, such as the user 102A, has with other users, such as the user 102B and the user 102N." Sittig para. [0023]

TRILLER EXHIBIT 1006-0044

Sittig fails to disclose that the software application of the portable wireless computing device allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user.

Sittig teaches away from limitation (a) of Claim 1, because for example Sittig discloses:

> "[0018] According to exemplary embodiments, a user 102, such as the user 102A, identifies one or more other members associated with the social network engine 106, such as the user 102B and the user 102N, with which the user 102A wants to build a relationship or establish or alter the details of an existing relationship. Using the social network engine 106, the user 102A enters the details about the relationship. The social network engine 106 then sends data comprising the details from the user 102A to the other users (i.e., user 102B and user 102N). The user 102B and the user 102N may then provide input in response to the data. The response may, for example, modify the data." Sittig, para. [0018]

Therefore because Sittig para. [0018] teaches that the social network engine is used to enter details, Sittig teaches that the core functionality of the social network resides in the social network engine 106, with which users are in communication, which teaches away from the software application of the portable wireless computing device allowing the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user, as required by limitation (a) of Claim 1.

Accordingly, limitation (a) of Claim 1 is not obvious over Khedouri and Sittig.

Consistency in claim interpretation is important (Schenck, A.G. v. Nortron Corp., 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983)). Therefore the term "the software application" must be interpreted consistently throughout Claim 1.

Khedouri fails to disclose that the application of para. [0069] meets the Claim 1 limitation "(e) the software application allows the end-user to, over the wireless connection,

TRILLER EXHIBIT 1006-0045

link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services". Khedouri para. [0083] includes

> "FIG. 6 depicts a peer-to-peer communication. In this Figure, communication is established between two portable devices 601 and 602 for the purpose of exchanging content." para. [0083]

Hence Khedouri para. [0083] discloses linking two devices, but not linking two accounts on the remote server, because a device and an account on the remote server are not the same thing. Because Khedouri para. [0083] discloses linking two devices, Khedouri therefore teaches away from linking two accounts.

Regarding the Claim 1 limitation "(e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services", Sittig is silent about user accounts. Although, as the Examiner points out on pages 5 to 6 of the Office Action, Sittig discloses a relationship type identifier which allows a user to select and/or identify the relationship the user has with other users, this disclosure does not disclose the linking of accounts. Instead, because Sittig is silent about user accounts, Sittig therefore teaches away from linking of accounts, because in the absence of a disclosure of user accounts, Sittig is merely teaching about collecting information about relationships between users.

Accordingly, Claim 1 is not obvious over Khedouri and Sittig because each of limitations (a) and (e) of Claim 1 are not obvious over Khedouri and Sittig.

The skilled person would not have combined Khedouri and Sittig because Sittig lacks any disclosure of any key functionality on a portable wireless computing device. Instead, the key functionality in Sittig is disclosed to be in the social network engine (eg. Sittig para.

TRILLER EXHIBIT 1006-0046

[0018]), which is not disclosed or suggested to be on a portable wireless computing device. Accordingly, for this further reason, Claim 1 is not obvious over Khedouri and Sittig.

The dependent Claims are not obvious, at least by virtue of their dependence on Claim 1.

Independent Claims 31 to 33 are also not obvious, at least by virtue of their similarity to Claim 1.

Accordingly, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1-5 and 7-33 under 35 USC §103.

Conclusion

The present invention is not taught or suggested by the prior art. Accordingly, the Examiner is respectfully requested to reconsider and withdraw the rejection of the claims. An early Notice of Allowance is earnestly solicited.

The Commissioner is hereby authorized to charge any fee deficiencies associated with this communication to applicant's Deposit Account No. 50-4364.

Respectfully submitted

October 25, 2016
Date

/Mark D. Simpson/
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TRILLER EXHIBIT 1006-0047

Electronic Patent Application Fee Transmittal

Application Number:	15042243
Filing Date:	12-Feb-2016
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Filer:	Mark D. Simpson/Lynn White
Attorney Docket Number:	357831.00022

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	1253	1	1400	1400
Miscellaneous:				
		Total in USD ($)		**1400**

Electronic Acknowledgement Receipt

EFS ID:	27311210
Application Number:	15042243
International Application Number:	
Confirmation Number:	5812
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Customer Number:	78905
Filer:	Mark D. Simpson/Lynn White
Filer Authorized By:	Mark D. Simpson
Attorney Docket Number:	357831.00022
Receipt Date:	25-OCT-2016
Filing Date:	12-FEB-2016
Time Stamp:	11:42:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1400
RAM confirmation Number	102516INTEFSW11433900
Deposit Account	504364
Authorized User	Mark Simpson
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 1.17 (Patent application and reexamination processing fees)	

37 CFR 1.19 (Document supply fees)

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		15042243_Reply_to_OA_of_25_Apr_2016.pdf	212508 ab689701b003b956327246a5f33b3afd886c15e7	yes	16

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	9
	Applicant Arguments/Remarks Made in an Amendment	10	16

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	31020 dcbc0dd7b25fdefd48a1bef3ca568cb4989b7ee6	no	2

Warnings:

Information:

Total Files Size (in bytes):	243528

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/042,243	Filing Date 02/12/2016	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/25/2016	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 33	Minus	** 33	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/BRENDA J. DENNY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022

CONFIRMATION NO. 5812

PUBLICATION NOTICE

78905
Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

Title:METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

Publication No.US-2016-0182677-A1
Publication Date:06/23/2016

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

TRILLER EXHIBIT 1006-0054

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022	5812

78905 7590 04/25/2016

Saul Ewing LLP (Philadelphia)
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1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

EXAMINER	
HOLMES, ANGELA R	

ART UNIT	PAPER NUMBER
2497	

NOTIFICATION DATE	DELIVERY MODE
04/25/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@saul.com

TRILLER EXHIBIT 1006-0055

Office Action Summary	Application No. 15/042,243	Applicant(s) KNIGHT ET AL.	
	Examiner ANGELA HOLMES	Art Unit 2497	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/12/16*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *1-33* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-33* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *2/12/16,3/7/16* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *2/12/16*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

TRILLER EXHIBIT 1006-0056

DETAILED ACTION

1. The present application is being examined under the pre-AIA first to invent provisions.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit http://www.uspto.gov/forms/. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

3. **Claims 1-33 are rejected on the ground of nonstatutory obviousness-type double patenting** as being unpatentable over claims 1-24 and 26-31 respectively, of U.S. Application 13959079. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are broader in scope than the claims of the U.S. Application 13959079. Therefore, claims 1-33 of the instant application are anticipated by claims 1-24 and 26-31 of U.S. Application 13959079.

Claim Rejections - 35 USC § 103

4. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

5. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1, 4-5, 7-20, 22-24, 26, and 28-33 are rejected under pre-AIA 35 U.S.C. 103(a)** as being unpatentable over Khedouri (2006/0008256) in view of Sittig (US 2007/0214141). Khedouri and Sittig are cited in the IDS filed 2/12/16.

As per claims 1, 31-33, Khedouri discloses a portable wireless computing device comprising a hardware processor programmed with a software application embodied on a non-transitory storage medium that enables an end-user to interact with other users in which

(a) the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user service (*Khedouri, Para. 0137, The user provides credit card information and then receives a 6 character "Activation Code" he enters on the device. The Code is then used with a series of hidden computations to create a secure "deviceID" that is used to identify the device to the user account on an ongoing basis. Each Activation Code is unique and created by the dedicated server's back-end system)*; and

(b) the software application allows the end-user to, over the wireless connection, view profiles created by other users of a service (*Khedouri, Para. 0088, Users can develop "public" digital profiles including their photo, first name,*

favorite music and hobbies, etc. and enable other users in range to browse and search this information at will); and

Khedouri does not explicitly disclose; however, Sittig discloses (c) the software application allows the end-user to, over the wireless connection, interact with other users of the service (*Sittig, Para. 0036, The user action area allows the users to select one or more actions to perform in association with a particular user, such as the user, about which the biographical data is being viewed. For example, the users can choose to send the users an email or other message via the "send message" function, to utilize a "poke her!" function to be directed to a pop-up or similar screen, confirming that the user wishes to "poke" a displayed user);* and

(d) the software application allows the end-user to, over the wireless connection, send and receive messages to and from other users of the service (*Sittig, Para. 0036, The user action area allows the users to select one or more actions to perform in association with a particular user, such as the user, about which the biographical data is being viewed. For example, the users can choose to send the users an email or other message via the "send message" function, to utilize a "poke her!" function to be directed to a pop-up or similar screen, confirming that the user wishes to "poke" a displayed user)*; and

(e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services (*Sittig, Para. 0046-0047, A relationship type identifier may be displayed for allowing a user*

to select and/or identify the relationship the user has with other users. A relationship details identifier allows the users to further specify the nature of the relationship.).

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Sittig with the system and method of Khedouri given the benefit of providing a system and method for generating a social timeline of people to network with one another by joining social clubs, attending social events, meeting friends through other friends, and so forth.

As per claim 4, Khedouri discloses the device of Claim 1 wherein (i) the user is able to view the profiles of other users, including text provided by those other users (*Khedouri, Para. 0088, Users can develop "public" digital profiles including their photo, first name, favorite music and hobbies, etc. and enable other users in range to browse and search this information at will)* and

(ii) when viewing the profile of another user, B, the first user, A, is able to view that information on B's profile which B has, whether implicitly or explicitly, made visible to user A (*Khedouri, Para. 0113-0114, User A can see a selection from user B if user B decides to "beam" a file to user A*).

As per claim 5, Khedouri does not explicitly disclose; however, Sittig discloses the device of Claim 1 wherein a request to link profiles on the service can be responded to by accepting that request, rejecting that request or blocking all further messages from the originating user (*Sittig, Para. 0054, a confirmation request may be sent to the users in response to completion of the relationship*

editor page. The social relationship editor module can send a communication, for example, to the user that the user selected the user as a person the user may know or with whom the user wishes to establish a relationship.).

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Sittig with the system and method of Khedouri given the benefit of providing a system and method for generating a social timeline of people to network with one another by joining social clubs, attending social events, meeting friends through other friends, and so forth.

As per claim 7, Khedouri discloses the device of Claim 1 wherein a user is required to register, over a wireless connection, a unique username, handle or identifier with the service in order to access the service (*Khedouri, Para. 0137, A user must register before they can make any purchase transaction. Two methods of registration can be employed. The first is by a web/telephone. The user provides credit card information and then receives a 6 character "Activation Code" he enters on the device. The Code is then used with a series of hidden computations to create a secure "deviceID" that is used to identify the device to the user account on an ongoing basis. Each Activation Code is unique and created by the dedicated server's back-end system).*

As per claim 8, Khedouri discloses the device of Claim 1 wherein a user's profile includes one or more of a username; a profile image, whether provided by the user or by the service; one or more additional images; some text provided by the user any additional text and/or metadata defined by the service (*Khedouri,*

Para. 0137, The user provides credit card information and then receives a 6 character "Activation Code" he enters on the device. The Code is then used with a series of hidden computations to create a secure "deviceID" that is used to identify the device to the user account on an ongoing basis. Each Activation Code is unique and created by the dedicated server's back-end system).

As per claim 9, Khedouri discloses the device of Claim 1 wherein user interactions include sending information over a wireless connection to other users of the service or receiving information from other users of the service (*Khedouri, Para. 0060, Users preferably will also be able to send messages, recommendations of playlists and pieces of content to other users by asking the network to send an e-mail to that person on the user's behalf).*

As per claim 10, Khedouri discloses the device of Claim 9 wherein information shared over a wireless connection with other users comprises one or more of:

whether or not the user is currently logged into the service;

messages (*Khedouri, Para. 0060, Users preferably will also be able to send messages, recommendations of playlists and pieces of content to other users by asking the network to send an e-mail to that person on the user's behalf)*;

requests to link his account with one or more other designated users the list of profiles to which the user has linked his profile;

the media content which the user is and/or has been listening to, watching or reading;

recommendations of, or related to, media content;

playlists of media content (*Khedouri, Para. 0085, playlist*);

the user's favorite media content (*Khedouri, Para. 0088, Users can develop "public" digital profiles including their photo, first name, favorite music and hobbies, etc. and enable other users in range to browse and search this information at will)*;

the user's ratings of one or more items (*Khedouri, Para. 0095, ranking music*);

digital media content files or any other files (*Khedouri, Para. 0019, audio/video*);

any other information deemed suitable for sharing with other users (*Khedouri, Para. 0088, Users can develop "public" digital profiles including their photo, first name, favorite music and hobbies, etc. and enable other users in range to browse and search this information at will).*

As per claim 11, Khedouri discloses the device of Claim 10 wherein media content comprises one or more of:

music, books, movies, television shows, websites, radio, artists, albums, composers, directors, actors or any other video, audio and/or text content or any other media content, whether stored digitally or otherwise (*Khedouri, Para. 0019, audio/video*).

As per claim 12, Khedouri discloses the device of Claim 1 wherein the user can control whether or not his profile is visible to other users of the service

(*Khedouri, Para. 0073, Users preferably have the option to turn privacy on or off in order to disable other users from seeing their audio and/or video files and from obtaining copies from the player device.)*.

As per claim 13, Khedouri discloses the device of Claim 1 wherein the user can control which information from his profile is visible to other users of the service (*Khedouri, Para. 0073, Users preferably have the option to turn privacy on or off in order to disable other users from seeing their audio and/or video files and from obtaining copies from the player device.)*.

As per claim 14, Khedouri discloses the device of Claim 1 wherein the user is able over a wireless connection, to search and/or browse the service for other users, media content or any other information (*Khedouri, Para. 0083, peer to peer communication over HTTP connection*).

As per claim 15, Khedouri discloses the device of Claim 1 wherein the user can provide ratings for media content, other users of the service or for any other items (*Khedouri, Para. 0095, ranking music*).

As per claim 16, Khedouri discloses the device of Claim 15 wherein the user's ratings consist of one or more of whether the user likes the item, whether the user dislikes the item, how the user rates the item on a given scale or any other applicable explicit rating mechanism (*Khedouri, Para. 0095, A user can rank a selection from 0-5, which ranking can be relayed to the network for aggregation and averaging purposes for display and ranking to users searching for new*

selections. It can also be used by the user for personal ranking and music prioritization and sorting.).

As per claim 17, Khedouri discloses the device of Claim 1 wherein messages, whether from other users or from the service itself, are shown as notification messages (*Khedouri, Para. 0060, Users preferably will also be able to send messages, recommendations of playlists and pieces of content to other users by asking the network to send an e-mail to that person on the user's behalf)*.

As per claim 18, Khedouri discloses the device of Claim 1 wherein messages, whether from other users or from the service itself, are stored on a remote server such that when the user is online the user can collect those messages which were delivered into the user's "inbox" while the user was not connected to the service (*Khedouri, Para. 0141, The dedicated server generates and sends messages to any or all devices (to the "Inbox" on the device, or to various specified locations throughout the user interface, such as the popup box for purchases)…These messages and changes are stored on the device and remain there until any further updates that may change them)*.

As per claim 19, Khedouri discloses the device of Claim 1 wherein messages, whether from other users or from the service itself, are able to have associated attached items which the user can access on the same basis as that message (*Khedouri, Para. 0060, Users preferably will also be able to send messages, recommendations of playlists and pieces of content to other users by asking the network to send an e-mail to that person on the user's behalf)*.

As per claim 20, Khedouri discloses the device of Claim 19, wherein the attached items consist of one or more of a digital image file, a digital audio file, a digital video file, a text file, an executable file, a recommendation of media content, a web site identifier, Universal Resource Identifier (URL) or address, a request from another user to link user accounts or an acknowledgement of such a request or any other digital file (*Khedouri, Para. 0076, users can record audio and/or video on the player device, creating a compressed digital media file, users can, in effect, send "media e-mails", "media IMs" and other recordings to one another through a direct device-to-device or indirect device-to-network-to-device connection.).*

As per claim 22, Khedouri discloses the device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of people, media content or any other items which the user might like, based on the user's viewing, listening and/or purchasing history, on the viewing, listening and/or purchasing history of any other users or on any other criteria (*Khedouri, Para. 0083, peer to peer communication over HTTP connection; Para. 0095, A user can rank a selection from 0-5, which ranking can be relayed to the network for aggregation and averaging purposes for display and ranking to users searching for new selections. It can also be used by the user for personal ranking and music prioritization and sorting).*

As per claim 23, Khedouri discloses the device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of other users the user might wish to interact with based on shared media content

preferences, shared linked friends or on any other criteria (*Khedouri, Para. 0095, A user can rank a selection from 0-5, which ranking can be relayed to the network for aggregation and averaging purposes for display and ranking to users searching for new selections. It can also be used by the user for personal ranking and music prioritization and sorting.)*.

As per claim 24, Khedouri discloses the device of Claim 1 wherein the service provides over a wireless connection, information to the user comprising one or more of news stories, media content, editorially maintained playlists of media content (*Khedouri, Para. 0085, playlist*), personalized news, recommendations of media content or any other information.

As per claim 26, Khedouri discloses the device of Claim 1 wherein the software application communicates with the remote server wirelessly via one or more of CSD, GPRS, 2G, 2.5G, 3G, WAP, SMS, Bluetooth, Infrared, Wi-Fi, WiMAX, the Global Mobile Network or via any other wireless communications technology (*Khedouri, Para. 0041, Wi-Fi*).

As per claim 28, Khedouri discloses the device of Claim 1 where the service is a social network service (*Khedouri, Para. 0060, allowing users to share their content over the network*).

As per claim 29, Khedouri does not explicitly disclose; however, Sittig discloses the device of Claim 28 where the software application displays to the end-user the number of friends linked with that end-user (*Sittig, Para. 0032-0033, friends list*).

Therefore, it is obvious to one ordinary skilled in the art to incorporate the teachings of Sittig with the system and method of Khedouri given the benefit of providing a social forum for networking and meeting new people.

As per claim 30, Khedouri does not explicitly disclose; however, Sittig discloses the device of Claim 1, the device being a mobile telephone (*Sittig, Para. 0017, cellular telephone*).

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Sittig with the system and method of Khedouri given the benefit of facilitating communications between the vast numbers of individuals and various social networking websites.

7. **Claims 2-3, 25 and 27 are rejected under pre-AIA 35 U.S.C. 103(a)** as being unpatentable over Khedouri (2006/0008256) in view of Sittig (US 2007/0214141) in view of Reddick (US 8229856). Khedouri, Sittig, and Reddick are cited in the IDS filed 2/12/16.

As per claim 2, Khedouri and Sittig do not explicitly disclose; however, Reddick discloses the device of Claim 1 wherein the software application uses a multitasking architecture to balance the computational demands of network access (*Reddick, Col.3, lines 36-41, The wireless communication device includes a processing unit and a memory unit for storing music recordings. The device further includes communications software and hardware, including a browser, for connecting the device over an air interface to an on-line music content distribution site or sites.); and*

the computational demands of a user interface of the software application (*Reddick, Col. 5, lines 23-26, The wireless devices include a user interface including display screen and buttons or other devices by which a user interacts with the device to select music for downloading and for playing the music.).*

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Reddick with the system and method of Khedouri and Sittig given the benefit distributing music recordings to wireless communications devices, such as cellular telephones.

As per claim 3, Khedouri and Sittig do not explicitly disclose; however, Reddick discloses the device of Claim 2, wherein the software application uses the multitasking architecture to balance the computational demands of one or both of:

a DRM program;

media operations (*Reddick, Col. 3, lines 41-47, The device further includes a music application executable by the processing unit implementing a music subscription service, wherein the subscription service allows the device to download up to N music recordings for storage on the memory unit onto the device from the on-line music content distribution site or sites, where N is an integer greater than one.).*

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Reddick with the system and method of Khedouri and Sittig given the

benefit distributing music recordings to wireless communications devices, such as cellular telephones.

As per claim 25, Khedouri and Sittig do not explicitly disclose; however, Reddick discloses the device of Claim 1 wherein the software application resides wholly on the device or wholly on the remote server or some combination of the two (*Reddick, Col. 3, lines 41-47, The device further includes a music application executable by the processing unit implementing a music subscription service, wherein the subscription service allows the device to download up to N music recordings for storage on the memory unit onto the device from the on-line music content distribution site or sites, where N is an integer greater than one.).*

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Reddick with the system and method of Khedouri and Sittig given the benefit distributing music recordings to wireless communications devices, such as cellular telephones.

As per claim 27, Khedouri and Sittig do not explicitly disclose; however, Reddick discloses the device of Claim 1 wherein the software application uses a multithreaded architecture to balance the computational demands of network access (*Reddick, Col.3, lines 36-41, The wireless communication device includes a processing unit and a memory unit for storing music recordings. The device further includes communications software and hardware, including a browser, for connecting the device over an air interface to an on-line music content distribution site or sites.)*; and

the computational demands of one or more of:

a user interface of the software application (*Reddick, Col. 5, lines 23-26, The wireless devices include a user interface including display screen and buttons or other devices by which a user interacts with the device to select music for downloading and for playing the music.)*;

a DRM program;

media operations (*Reddick, Col. 3, lines 41-47, The device further includes a music application executable by the processing unit implementing a music subscription service, wherein the subscription service allows the device to download up to N music recordings for storage on the memory unit onto the device from the on-line music content distribution site or sites, where N is an integer greater than one.)*.

Therefore it is obvious to one ordinary skilled in the art to incorporate the teachings of Reddick with the system and method of Khedouri and Sittig given the benefit distributing music recordings to wireless communications devices, such as cellular telephones.

8. **Claim 21 is rejected under pre-AIA 35 U.S.C. 103(a)** as being unpatentable over Khedouri (US 2006/0008256) in view of Sittig (US 2007/0214141) and in view of Gusler (US 20030105822). Khedouri, Sittig, and Gusler are cited in the IDS filed 2/12/16.

As per claim 21, Khedouri and Sittig do not disclose; however, Gusler discloses the device of Claim 1 wherein messages or other shared information

may be filtered to remove or obfuscate terms deemed to be potentially offensive (*Gusler, Para. 0073, filtering messages of inappropriate or "red flag" words or phrases*).

Therefore, it is obvious to one ordinary skilled in the art to incorporate the teachings of Gusler with the system and method of Khedouri and Sittig given the benefit of analyzing content in an instant messaging transcript to maintain integrity of the message.

Allowable Subject Matter

9. Claim 6 would be allowable if rewritten to overcome the rejection(s) under DP set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Examiner contacted applicant's representative, Mark Simpson (Reg. No. 32,942) on April 5th, 2016, to advised applicant that incorporating claim 6 into the independent claims and also filing an e-Terminal Disclaimer will put this case in condition for allowance. The applicant has denied the proposed amendment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA HOLMES whose telephone number is (571)270-3357. The examiner can normally be reached on 9am -5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hadi Armouche can be reached on 571-270-3618. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ANGELA HOLMES/
Examiner, Art Unit 2497

/HADI ARMOUCHE/
Supervisory Patent Examiner, Art Unit 2497

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BIB DATA SHEET

CONFIRMATION NO. 5812

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
15/042,243	02/12/2016 RULE	726	2497	357831.00022

APPLICANTS

OMNIFONE LIMITED, London, UNITED KINGDOM;

INVENTORS

Mark Stephen KNIGHT, London, UNITED KINGDOM;
Michael Ian LAMB, London, UNITED KINGDOM;
Robert John LEWIS, London, UNITED KINGDOM;
Stephen William POCOCK, Egham, UNITED KINGDOM;
Philip Anthony SANT, London, UNITED KINGDOM;
Mark Peter SULLIVAN, Birmingham, UNITED KINGDOM;
Christopher John EVANS, London, UNITED KINGDOM;

**** CONTINUING DATA ***************************

This application is a CON of 13/959,079 08/05/2013 PAT 9294430
which is a CON of 12/299,505 05/20/2009 PAT 8510847
which is a 371 of PCT/GB2007/001675 05/08/2007

**** FOREIGN APPLICATIONS ***************************

UNITED KINGDOM 0608936 05/05/2006
UNITED KINGDOM 0608935 05/05/2006
UNITED KINGDOM 0608934 05/05/2006
UNITED KINGDOM 0608933 05/05/2006
UNITED KINGDOM 0608932 05/05/2006
UNITED KINGDOM 0702596 02/09/2007

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

03/02/2016

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☑ Yes ☐ No Verified and Acknowledged /ANGELA R HOLMES/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		UNITED KINGDOM	73	33	4

ADDRESS

Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186
UNITED STATES

TITLE

METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

		☐ All Fees
		☐ 1.16 Fees (Filing)

BIB (Rev. 05/07).

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8229856	B1	2012-07-24	Reddick	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050251603	A1	2005-11-10	Ishii et al.	
	2	20020049679	A1	2002-04-25	Russell et al.	
	3	20030231661	A1	2003-12-18	DePietro et al.	
	4	20060041830	A1	2006-02-23	Bohn	
	5	20030105589	A1	2003-06-05	Liu et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R.H/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(**Not for submission under 37 CFR 1.99)**

Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

	6	20030105822	A1	2003-06-05	Gusler et al.	
	7	20060008256	A1	2006-01-12	Khedouri et al.	
	8	20070214141	A1	2007-09-13	Sittig et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2000112858	JP	A	2000-04-21	NEC Corp	(Abstract only in English)	☓
	2	2003168020	JP	A	2003-06-13	Tanaka Shunichi	(Abstract only in English)	☒
	3	2003208375	JP	A	2003-07-25	Sony Corp.	(Abstract only in English)	☒
	4	2003255958	JP	A	2003-09-10	Toshiba Corp.	(Abstract only in English)	☒
	5	2003316367	JP	A	2003-11-07	Sharp KK	(Abstract only in English)	☒
	6	2005108274	JP	A	2005-04-21	Sony Corp.	(Abstract only in English)	☒

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /A.R.H/

Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

	7	2005191912	JP	A	2005-07-14	NEC Corp.	(Abstract only in English)	☒
	8	2005284574	JP	A	2005-10-13	Clarion Co Ltd.	(Abstract only in English)	☒
	9	2005315643	JP	A	2005-11-10	Sony Corp.	(Abstract only in English)	☒
	10	51768	RU	U1	2006-02-27			☐
	11	TWI240886	TW	B	2005-10-01	Sony Corp.	(Abstract only in English)	☒
	12	01/33382	WO	A1	2001-05-10	Alta Vista Company		☐
	13	1 624 446	EP	A1	2006-08-02	Sony Corp.		☐

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NON-PATENT LITERATURE DOCUMENTS [Remove]

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Howorth, A., "Napster Launches Digital Music Service in Germany," (online) Napster, Los Angeles, USA (Dec. 8, 2005), http://investor.napster.com/releasedetail.cfm?ReleaseID=181439	
	2	Search Report, dated 10/22/2007, issued in priority International Application No. PCT/GB2007/001675	

EFS Web 2.1.17

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**	
Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

	3	International Preliminary Report on Patentability and Written Opinion, dated November 11, 2008, issued in priority International Application No. PCT/GB2007/001675	

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EXAMINER SIGNATURE

Examiner Signature	/ANGELA R HOLMES/	Date Considered	04/15/2016

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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See attached certification statement.

Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Mark D. Simpson/	Date (YYYY-MM-DD)	2016-02-12
Name/Print	Mark D. Simpson	Registration Number	32942

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	Art Unit
	ANGELA HOLMES	2497

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	04/15/2016								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
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	31	✓								
	32	✓								
	33	✓								

TRILLER EXHIBIT 1006-0082

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	15042243	KNIGHT ET AL.
	Examiner	Art Unit
	ANGELA HOLMES	2497

CPC- SEARCHED		
Symbol	Date	Examiner
h04l67/306, h04l51/32, h04l67/16, h04l67/325, h04w12/08	4/15/2016	ah

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
726	26	4/15/2016	ah

SEARCH NOTES		
Search Notes	Date	Examiner
EAST class limited w/text search (see search history)	4/15/2016	ah
EAST inventor and assignee search (see search history)	4/15/2016	ah
EAST text search (see search history)	4/15/2016	ah

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

/ANGELA HOLMES/ Examiner.Art Unit 2497	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	232	((mark near stephen near knight) (michael near ian near lamb)(robert near john near lewis)(stephen near william near pocock)(philip near anthony near sant)(mark near peter near sullivan)(christopher near john near evans)).inv.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 11:53
L2	14	(omnifone near limited).as.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 11:54
L3	12532	(726/26).ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 11:54
L4	81764	(h04l67/306 h04l51/32 h04l67/16 h04l67/325 h04w12/08).cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 11:55
L5	21	("20020049679" | "20030105589" | "20030105822" | "20030231661" | "20050251603" | "20060008256" | "20060041830" | "20070214141" | "8229856").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:03
L6	1518	portable and wireless with subscription and profiles	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:05
L7	1358	portable and wireless with subscription and profiles and messag$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:05
L8	6	l1 and portable and wireless with	US-PGPUB;	OR	ON	2016/04/15

TRILLER EXHIBIT 1006-0084

		subscription and profiles and messag$3	USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			12:13
L9	7	l2 and portable and wireless with subscription and profiles and messag$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:28
L10	5	l3 and portable and wireless with subscription and profiles and messag$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:28
L11	146	l4 and portable and wireless with subscription and profiles and messag$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:28
L12	116	l4 and portable and wireless with subscription and profiles and messag$3 and creat$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:29
L13	10	l4 and portable and wireless with subscription and profiles and messag$3 and creat$3 near account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:29
L14	1	l5 and portable and wireless with subscription and profiles and messag$3 and creat$3 near account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:51
L15	391	portable and wireless with subscription and profiles and remote near server	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:52
L16	353	portable and wireless with subscription and profiles and remote near server and send and receive	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	ON	2016/04/15 12:53

TRILLER EXHIBIT 1006-0085

			IBM_TDB			
L17	333	portable and wireless with subscription and profiles and remote near server and send and receive and interact$3	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:53
L18	268	portable and wireless with subscription and profiles and remote near server and send and receive and interact$3 and account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:53
L19	689	portable and (wireless mobile) with subscription and profiles and remote near server and send and receive and interact$3 and account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:53
L20	909	(portable wireless mobile) with subscription and profiles and remote near server and send and receive and interact$3 and account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:54
L21	39	(portable wireless mobile) with subscription near account and profiles and remote near server and send and receive and interact$3 and account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:54
L22	9	"60756122"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 12:57
L23	111	(portable wireless mobile) with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:08
L24	107	(portable wireless mobile) with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and transfer$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:09
L25	63	(portable wireless mobile) with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and	US-PGPUB; USPAT; USOCR; FPRS; EPO;	OR	ON	2016/04/15 13:10

TRILLER EXHIBIT 1006-0086

		transfer$4 near (data media images videos pictures music)	JPO; DERWENT; IBM_TDB			
L26	95	(portable wireless mobile) with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and transfer$4 with (data media images videos pictures music)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:10
L27	0	wireless near connection with (portable wireless mobile) with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and transfer$4 with (data media images videos pictures music)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:11
L28	0	wireless near connection with (portable wireless mobile) near device with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and transfer$4 with (data media images videos pictures music)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:11
L29	7	wireless near connection and (portable wireless mobile) near device with subscri$5 near account and profiles and remote near server and send and receive and interact$3 and account and transfer$4 with (data media images videos pictures music)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2016/04/15 13:11

EAST Search History (Interference)

< This search history is empty>

4/ 15/ 2016 1:13:12 PM
C:\ Users\ aholmes\ Documents\ EAST\ Workspaces\ 120815.wsp

TRILLER EXHIBIT 1006-0087

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/042,243	02/12/2016	3715	3860	357831.00022	33	4

CONFIRMATION NO. 5812

UPDATED FILING RECEIPT

78905
Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

Date Mailed: 03/15/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Mark Stephen KNIGHT, London, UNITED KINGDOM;
Michael Ian LAMB, London, UNITED KINGDOM;
Robert John LEWIS, London, UNITED KINGDOM;
Stephen William POCOCK, Egham, UNITED KINGDOM;
Philip Anthony SANT, London, UNITED KINGDOM;
Mark Peter SULLIVAN, Birmingham, UNITED KINGDOM;
Christopher John EVANS, London, UNITED KINGDOM;

Applicant(s)

OMNIFONE LIMITED, London, UNITED KINGDOM;

Power of Attorney: The patent practitioners associated with Customer Number 78905

Domestic Priority data as claimed by applicant

This application is a CON of 13/959,079 08/05/2013 PAT 9294430
which is a CON of 12/299,505 05/20/2009 PAT 8510847
which is a 371 of PCT/GB2007/001675 05/08/2007

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
UNITED KINGDOM 0608936 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608935 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608934 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608933 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608932 05/05/2006 No Access Code Provided
UNITED KINGDOM 0702596 02/09/2007 No Access Code Provided

TRILLER EXHIBIT 1006-0088

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/02/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/042,243**

Projected Publication Date: 06/23/2016

Non-Publication Request: No

Early Publication Request: No

Title

METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

Preliminary Class

434

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

TRILLER EXHIBIT 1006-0089

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

TRILLER EXHIBIT 1006-0090

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

TRILLER EXHIBIT 1006-0091

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/042,243

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	33 minus 20 =	* 13			OR	x 80 =	1040
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	* 1				x 420 =	420
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						800
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	3860

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS	M. KNIGHT et al.	Art Unit 3715
US APPLICATION NO.	15/042,243	Confirmation No. 5812
FILING DATE	February 12, 2016	
TITLE	METHOD OF ENABLING DIGITAL MUSIC CONTENTTO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

FILED ELECTRONICALLY ON March 7, 2016

Mail Stop MISSING PARTS
COMMISSIONER OF PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS, MAILED MARCH 4, 2016

Dear Sir:

This is in response to the Notice to File Corrected Application Papers, mailed March 4, 2016, having a period for response set to expire on May 4, 2016.

In accordance with the Notice, applicant submits herewith two (2) sheets of replacement drawings, containing Figures 15 and 16 and Figures 36 and 37. No new matter has been added by this submission.

TRILLER EXHIBIT 1006-0093

The Commissioner is authorized to charge any required fees to Deposit Account No. 50-4364.

Respectfully submitted,

Date: March 7, 2016 By /Mark D. Simpson/

Mark D. Simpson, Esq.
Reg. No. 32,942

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TRILLER EXHIBIT 1006-0094

a

	Track1	Track2	Track3	Track4	Track5	Number of Correlations
Track1		12	0	23	78	3
Track2	12		27	0	0	2
Track3	0	27		5	0	2
Track4	23	0	5		10	3
Track5	78	0	15	10		3
Number of Correlations	3	2	3	3	2	

Represents the number of customers who have fully listened to Track1 and Track2 at least twice

Represents the total number of correlations for Track3 (i.e. non-zero cells)

Figure 16

Personalised Menu Item	Recommendations Contained
Cool members	
You might like	A list of 10 Buzz Members who are deemed similar to this member. This list is generated using this member's rating and listening habits.
Featured Members	A list of Buzz members that have been editorially pushed for promotion, and personalised for the Playlists / Artists / Albums / Tracks and Genres the customer listens to.
Buzz Playlists	
You might like	A list of 10 shared playlists belonging to the Buzz members in the You might like members list.
Featured playlists	A list of Buzz playlists that have been editorially pushed for promotion, and personalised for the Playlists / Artists / Albums / Tracks and Genres the customer listens to.

Figure 15

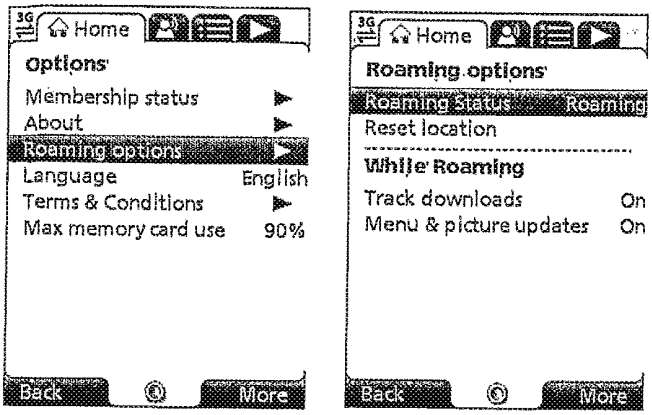

Figure 36

Option	Description
Roaming Status	The phone's current roaming status. This will show *Home* if the user is not roaming and will show *Roaming* if the user is roaming.
Track Downloads	The user can set this option *On* to download tracks (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent the downloading tracks when roaming or *Ask* to cause the following prompts.
Menu & picture updates	The user can set this option *On* to update menu items and pictures (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent menu and picture updates when roaming or *Ask* to cause the following prompts.

Figure 37

Electronic Acknowledgement Receipt

EFS ID:	25119862
Application Number:	15042243
International Application Number:	
Confirmation Number:	5812
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Customer Number:	78905
Filer:	Mark D. Simpson/Lynn White
Filer Authorized By:	Mark D. Simpson
Attorney Docket Number:	357831.00022
Receipt Date:	07-MAR-2016
Filing Date:	12-FEB-2016
Time Stamp:	13:48:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	15042243_Reply_to_Corrected_Papers.pdf	128016 11c8b6e24896f1d2dc0d3a0bf6c29d10256be64f	no	2

Warnings:	
Information:	

2	Drawings-only black and white line drawings	ReplacementFigs-A.pdf	2067780 cd8fc5f6f64fc23013b93c9e11b5403671f44bf9	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	2195796

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/042,243	02/12/2016	Mark Stephen KNIGHT	357831.00022

CONFIRMATION NO. 5812

78905
Saul Ewing LLP (Philadelphia)
Attn: Patent Docket Clerk
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2186

FORMALITIES LETTER

OC000000081166718

Date Mailed: 03/04/2016

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
  - The drawings must be reasonably free from erasures and must be free from alterations, overwriting, interlineations, folds, and copy marks. See Figure(s) 16, 37.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

TRILLER EXHIBIT 1006-0099

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice". https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/erimando/

TRILLER EXHIBIT 1006-00100

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 15/042,243

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
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MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	3860

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
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	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)	OR	RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
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UNITED STATES PATENT AND TRADEMARK OFFICE

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15/042,243	02/12/2016	3715	3860	357831.00022	33	4

CONFIRMATION NO. 5812

FILING RECEIPT

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Philadelphia, PA 19102-2186

OC000000081188717

Date Mailed: 03/04/2016

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Philip Anthony SANT, London, UNITED KINGDOM;
Mark Peter SULLIVAN, Birmingham, UNITED KINGDOM;
Christopher John EVANS, London, UNITED KINGDOM;

Applicant(s)

OMNIFONE LIMITED, London, UNITED KINGDOM;

Power of Attorney: The patent practitioners associated with Customer Number 78905

Domestic Priority data as claimed by applicant

This application is a CON of 13/959,079 08/05/2013 PAT 9294430
which is a CON of 12/299,505 05/20/2009 PAT 8510847
which is a 371 of PCT/GB2007/001675 05/08/2007

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
UNITED KINGDOM 0608936 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608935 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608934 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608933 05/05/2006 No Access Code Provided
UNITED KINGDOM 0608932 05/05/2006 No Access Code Provided
UNITED KINGDOM 0702596 02/09/2007 No Access Code Provided

TRILLER EXHIBIT 1006-00102

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/02/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/042,243**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

Non-Publication Request: No

Early Publication Request: No

Title

METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

Preliminary Class

434

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

TRILLER EXHIBIT 1006-00103

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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TRILLER EXHIBIT 1006-00104

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TRILLER EXHIBIT 1006-00105

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 78905

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

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OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

OMNIFONE LTD.

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	28 JULY 2014
Name	P.A. SANT		
Title	DIRECTOR		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

TRILLER EXHIBIT 1006-00106

PATENT **Docket No. 357831.00022**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS:	**Mark Stephen KNIGHT et al.**	Confirmation No.
APPLICATION NO.	**To be Assigned**	
FILED:	**Herewith**	Examiner:
CASE NO.	**357831.00022**	Group Art Unit:
TITLE:	**METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE**	

FILED ELECTRONICALLY ON February 12, 2016

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUBMISSION OF INFORMATION DISCLOSURE
STATEMENT UNDER 37 CFR §§1.97 AND 1.98

Sir:

Submitted herewith for the above-identified application is an Information Disclosure Statement ("IDS") under 37 CFR §§1.97 and 1.98. Applicant has not provided copies of the foreign patents/applications or the non-patent literature references cited in the accompanying IDS, since copies of these publications were provided to the Patent Office with IDS's filed on November 4, 2008; December 1, 2008; and October 2, 2012 in grandparent Application No. 12/299,505. The present application is a continuation of U.S. Application No. 13/959,079, which is a continuation of Application No. 12/299,505. The Commissioner is hereby authorized to charge any fees associated with this communication to applicant's Deposit Account No. 50-4364.

Respectfully submitted

February 12, 2016
Date

/Mark D. Simpson/
Mark D. Simpson, Esquire
Registration No. 32,942

SAUL EWING LLP
Centre Square West
1500 Market Street, 38th Floor
Philadelphia, PA 19102-2189
Telephone: 215 972 7880
Email: MSimpson@saul.com

1831241.1 2/12/16

TRILLER EXHIBIT 1006-00107

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Mark Stephen KNIGHT
Art Unit	
Examiner Name	
Attorney Docket Number	357831.00022

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8229856	B1	2012-07-24	Reddick	

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U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050251603	A1	2005-11-10	Ishii et al.	
	2	20020049679	A1	2002-04-25	Russell et al.	
	3	20030231661	A1	2003-12-18	DePietro et al.	
	4	20060041830	A1	2006-02-23	Bohn	
	5	20030105589	A1	2003-06-05	Liu et al.	

TRILLER EXHIBIT 1006-00108

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Mark Stephen KNIGHT
	Art Unit	
	Examiner Name	
	Attorney Docket Number	357831.00022

	6	20030105822	A1	2003-06-05	Gusler et al.	
	7	20060008256	A1	2006-01-12	Khedouri et al.	
	8	20070214141	A1	2007-09-13	Sittig et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	2000112858	JP	A	2000-04-21	NEC Corp	(Abstract only in English)	☓
	2	2003168020	JP	A	2003-06-13	Tanaka Shunichi	(Abstract only in English)	☒
	3	2003208375	JP	A	2003-07-25	Sony Corp.	(Abstract only in English)	☒
	4	2003255958	JP	A	2003-09-10	Toshiba Corp.	(Abstract only in English)	☒
	5	2003316367	JP	A	2003-11-07	Sharp KK	(Abstract only in English)	☒
	6	2005108274	JP	A	2005-04-21	Sony Corp.	(Abstract only in English)	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Mark Stephen KNIGHT
	Art Unit	
	Examiner Name	
	Attorney Docket Number	357831.00022

	7	2005191912	JP	A	2005-07-14	NEC Corp.	(Abstract only in English)	☒
	8	2005284574	JP	A	2005-10-13	Clarion Co Ltd.	(Abstract only in English)	☒
	9	2005315643	JP	A	2005-11-10	Sony Corp.	(Abstract only in English)	☒
	10	51768	RU	U1	2006-02-27			☐
	11	TWI240886	TW	B	2005-10-01	Sony Corp.	(Abstract only in English)	☒
	12	01/33382	WO	A1	2001-05-10	Alta Vista Company		☐
	13	1 624 446	EP	A1	2006-08-02	Sony Corp.		☐

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Howorth, A., "Napster Launches Digital Music Service in Germany," (online) Napster, Los Angeles, USA (Dec. 8, 2005), http://investor.napster.com/releasedetail.cfm?ReleaseID=181439	
	2	Search Report, dated 10/22/2007, issued in priority International Application No. PCT/GB2007/001675	

TRILLER EXHIBIT 1006-00110

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Mark Stephen KNIGHT
	Art Unit	
	Examiner Name	
	Attorney Docket Number	357831.00022

	3	International Preliminary Report on Patentability and Written Opinion, dated November 11, 2008, issued in priority International Application No. PCT/GB2007/001675	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

TRILLER EXHIBIT 1006-00111

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Mark Stephen KNIGHT
	Art Unit	
	Examiner Name	
	Attorney Docket Number	357831.00022

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ None

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Mark D. Simpson/	Date (YYYY-MM-DD)	2016-02-12
Name/Print	Mark D. Simpson	Registration Number	32942

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

TRILLER EXHIBIT 1006-00112

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

TRILLER EXHIBIT 1006-00113

COPY

Doc Code: Oath
Document Description: Oath or declaration filed

PTO/AIA/08 (08-12)
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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted After Initial Filing (surcharge (37 CFR 1.16(f)) required)

Attorney Docket Number	357831.00017
First Named Inventor	Mark Stephen KNIGHT
COMPLETE IF KNOWN	
Application Number	13959079
Filing Date	2013-08-05
Art Unit	
Examiner Name	

A METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

(Title of the Invention)

As a below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application,

OR

☒ United States Application Number or PCT International application number 13/959,079 filed on 05 August 2013.

The above-identified application was made or authorized to be made by me.

I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Authorization To Permit Access To Application by Participating Office

☐ If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 81 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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TRILLER EXHIBIT 1006-00114

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DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☒ The address associated with Customer Number: 78905 OR ☐ Correspondence address below

Name

Address

City | State | Zip

Country | Telephone | Email

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LEGAL NAME OF SOLE OR FIRST INVENTOR:

(e.g., Given Name (first and middle (if any)) and Family Name or Surname)

Mark Stephen KNIGHT

Inventor's Signature: [signature] Date (Optional): 20/11/12

Residence: City: London | State: | Country: GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City: London | State: | Zip: W6 7BJ | Country: GB

☒ Additional inventors are being named on the 2 supplemental sheet(s) PTO/AIA/08 attached hereto

TRILLER EXHIBIT 1006-00115

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SUPPLEMENTAL SHEET FOR DECLARATION	ADDITIONAL INVENTOR(S) Supplemental Sheet (for PTO/AIA/08.08) Page 3 of 4

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Michael Ian LAMB

Inventor's Signature: [signature] Date (Optional): 10/12/2013

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Robert John LEWIS

Inventor's Signature: Date (Optional):

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Stephen William POCOCK

Inventor's Signature: [signature] Date (Optional): 15/12/2013

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7 BJ	GB

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SUPPLEMENTAL SHEET FOR DECLARATION | **ADDITIONAL INVENTOR(S)** Supplemental Sheet (for PTO/AIA/08.08) Page 4 of 4

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Phillip Anthony SANT

Inventor's Signature | Date (Optional)

Residence: City: London | State | Country: GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City: London | State | Zip: W6 7BJ | Country: GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Mark Peter SULLIVAN

Inventor's Signature | Date (Optional)

Residence: City: London | State | Country: GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City: London | State | Zip: W6 7BJ | Country: GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Christopher John EVANS

Inventor's Signature | Date (Optional): 20/11/14

Residence: City: London | State | Country: GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City: London | State | Zip: W6 7BJ | Country: GB

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Doc Code: Oath

Document Description: Oath or declaration filed

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DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted With Initial Filing OR ☒ Declaration Submitted After Initial Filing (surcharge (37 CFR 1.16(f)) required)

Attorney Docket Number	357831.00017
First Named Inventor	Mark Stephen KNIGHT
COMPLETE IF KNOWN	
Application Number	13959079
Filing Date	2013-08-05
Art Unit	
Examiner Name	

A METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

(Title of the Invention)

As a below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application,

OR

☒ United States Application Number or PCT International application number 13/959,079 filed on 05 August 2013

The above-identified application was made or authorized to be made by me.

I believe I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

Authorization To Permit Access To Application by Participating Office

☐ If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization to Permit Access to Application by Participating Offices.

This collection of information is required by 37 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☒ The address associated with Customer Number: 78905 OR ☐ Correspondence address below

Name

Address

City | State | Zip

Country | Telephone | Email

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LEGAL NAME OF SOLE OR FIRST INVENTOR:

(E.g., Given Name (first and middle (if any)) and Family Name or Surname)

Mark Stephen KNIGHT

Inventor's Signature | Date (Optional)

Residence: City: London | State | Country: GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City: London | State | Zip: W6 7BJ | Country: GB

☒ Additional inventors are being named on the 2 supplemental sheet(s) PTO/AIA/08 attached hereto

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SUPPLEMENTAL SHEET FOR DECLARATION	ADDITIONAL INVENTOR(S) Supplemental Sheet (for PTO/AIA/08.00) Page 3 of 4

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Michael Ian LAMB

Inventor's Signature	Date (Optional)
[signature]	22/1/2014

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Robert John LEWIS

Inventor's Signature	Date (Optional)
[signature]	17/12/2013

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Stephen William POCOCK

Inventor's Signature	Date (Optional)

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7 BJ	GB

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[illegible]

SUPPLEMENTAL SHEET FOR DECLARATION	ADDITIONAL INVENTOR(S) Supplemental Sheet (for PTO/AIA/96,[illegible]) Page 4 of 4

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Philip Anthony SANT

Inventor's Signature	Date (Optional)

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Mark Peter SULLIVAN

Inventor's Signature	Date (Optional)
M Sullivan	

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

Legal Name of Additional Joint Inventor, if any:
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)
Christopher John EVANS

Inventor's Signature	Date (Optional)

Residence: City	State	Country
London		GB

Mailing Address: c/o Omnifone Limited, The Old School, 50 Brook Green

City	State	Zip	Country
London		W6 7BJ	GB

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. This information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 21 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Filer:	Mark D. Simpson/Lynn White
Attorney Docket Number:	357831.00022

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Utility Appl Size fee per 50 sheets >100	1081	2	400	800
Claims:				
Claims in Excess of 20	1202	13	80	1040
Independent claims in excess of 3	1201	1	420	420

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**3860**

Electronic Acknowledgement Receipt

EFS ID:	24898291
Application Number:	15042243
International Application Number:	
Confirmation Number:	5812
Title of Invention:	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE
First Named Inventor/Applicant Name:	Mark Stephen KNIGHT
Customer Number:	78905
Filer:	Mark D. Simpson/Lynn White
Filer Authorized By:	Mark D. Simpson
Attorney Docket Number:	357831.00022
Receipt Date:	12-FEB-2016
Filing Date:	
Time Stamp:	10:46:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$3860
RAM confirmation Number	7880
Deposit Account	504364
Authorized User	SIMPSON, MARK D.
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 CFR 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 CFR 1.17 (Patent application and reexamination processing fees)	

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	ADS.pdf	1823964 84b053ff780c3ed93e2f98bd68d347b5bfe9a945	no	11
Warnings:					
Information:					
2		Continuation_as_filed.pdf	1668915 c9a604e42927616d353aca098631a06b986bad03	yes	178

Multipart Description/PDF files in .zip description

Document Description	Start	End
Specification	1	169
Claims	170	177
Abstract	178	178

Warnings:					
Information:					
3	Drawings-only black and white line drawings	Figs.pdf	1895194 b83e51017d57b914aba2888b018a7d93c3ac75a0	no	73
Warnings:					
Information:					
4	Power of Attorney	ExecutedPOA.pdf	1499684 873cc291538d0d335e54a57a9d8288c0157748fa	no	1
Warnings:					
Information:					
5	Transmittal Letter	Transmittal_of_IDS.pdf	116949 2c7798d73cac5077085237391b82155137f362bc	no	1
Warnings:					
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6	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	613136 053db79648f860c587142f2d96fab04026d1c630	no	6

Warnings:					
Information:					
7	Oath or Declaration filed	Decsfromparent.pdf	773930 439513ce06a1f0e23f97c97df9c420dc997169a5	no	8
Warnings:					
Information:					
8	Fee Worksheet (SB06)	fee-info.pdf	40252 644eae421a09d79a92e7511d516dba0c1f5867d5	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	8432024	

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Mark	Stephen	KNIGHT	

Residence Information (Select One) US Residency ● Non US Residency Active US Military Service

City	London	Country of Residence i	GB

Mailing Address of Inventor:

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Address 2	Hammersmith
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State/Province	
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Country i	GB

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Michael	Ian	LAMB	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	London	Country of Residence i	GB

Mailing Address of Inventor:

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City	London
State/Province	
Postal Code	SW12 9NW
Country i	GB

Inventor 3 Remove

Legal Name

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Prefix	Given Name	Middle Name	Family Name	Suffix
	Robert	John	LEWIS	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	London	Country of Residence i	GB

Mailing Address of Inventor:

Address 1	22 Powis Terrace		
Address 2			
City	London	State/Province	
Postal Code	W11 1JH	Country i	GB

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Stephen	William	POCOCK	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	Egham	Country of Residence i	GB

Mailing Address of Inventor:

Address 1	23 Strode Street		
Address 2			
City	Egham	State/Province	
Postal Code	TW20 9BT	Country i	GB

Inventor 5 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	PHilip	Anthony	SANT	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	London	Country of Residence i	GB

Mailing Address of Inventor:

Address 1	Vine House, Vicarage Road		
Address 2			
City	London	State/Province	
Postal Code	SW14 8RS	Country i	GB

TRILLER EXHIBIT 1006-00128

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Inventor 6 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Mark	Peter	SULLIVAN	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	Birmingham	Country of Residence [i]	GB

Mailing Address of Inventor:

Address 1	62 Melton Road		
Address 2			
City	Birmingham	**State/Province**	
Postal Code	B14 7ES	**Country** [i]	GB

Inventor 7 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Christopher	John	EVANS	

Residence Information (Select One) US Residency ◉ Non US Residency Active US Military Service

City	London	Country of Residence [i]	GB

Mailing Address of Inventor:

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Postal Code	SW19 1ET	**Country** [i]	GB

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	78905		
Email Address	patents@saul.com	Add Email	Remove Email

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Application Information:

Title of the Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE		
Attorney Docket Number	357831.00022	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	73	**Suggested Figure for Publication (if any)**	71

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	78905		

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status		Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	13959079	2013-08-05

Prior Application Status	Patented	Remove

Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13959079	Continuation of	12299505	2009-05-20	8510847	2013-08-13

Prior Application Status	Expired	Remove

Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
12299505	a 371 of international	PCT/GB2007/001675	2007-05-08

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
0608936	GB	2006-05-05	

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
0608935	GB	2006-05-05	

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
0608934	GB	2006-05-05	

TRILLER EXHIBIT 1006-00131

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)	Remove
0608933	GB	2006-05-05		
0608932	GB	2006-05-05		
0702596	GB	2007-02-09		

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	OMNIFONE LIMITED		
Mailing Address Information For Applicant:			
Address 1	Units 2 and 3		
Address 2	50 Brook Green		
City	London	**State/Province**	
Country	GB	Postal Code	W6 7BJ
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Mark D. Simpson/			Date (YYYY-MM-DD)	2016-02-12
First Name	Mark D.	Last Name	Simpson	Registration Number	32942

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	357831.00022
	Application Number	
Title of Invention	METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE	

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

TRILLER EXHIBIT 1006-00136

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

TRILLER EXHIBIT 1006-00137

A METHOD OF ENABLING DIGITAL MUSIC CONTENT TO BE DOWNLOADED TO AND USED ON A PORTABLE WIRELESS COMPUTING DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. Application No. 13/959,079, filed August 5, 2013, which is a continuation of U.S. Application No. 12/299,505, filed May 20, 2009, which claims the priority of PCT/GB2007/001675, filed on May 8, 2007, which claims priority to GB 0608936, filed May 5, 2006, GB 0608935, filed May 5, 2006, GB 0608934, filed May 5, 2006, GB 0608933, filed May 5, 2006, GB 0608932, filed May 5, 2006, and GB 0702596, filed February 9, 2007, the entire contents of which are hereby incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a method of enabling digital music content to be downloaded to and used on a portable wireless computing device. The term 'portable wireless computing device' used in this patent specification should be expansively construed to cover any kind of portable device with two way wireless communication capabilities and includes without limitation radio telephones, mobile telephones, smart phones, communicators, personal computers, computers and application specific devices. It includes devices able to communicate in any manner over any kind of network, such as GSM or UMTS, CDMA and WCDMA mobile radio, Bluetooth, IrDA etc.

2. Description of the Prior Art

The past few years have seen enormous changes in the way music is distributed and consumed. The traditional method, where the consumer buys a physical product in a shop and listens to it at home, has declined, and total worldwide revenue for the music industry has dropped from a little under $40bn in 2000 to $31bn in 2005. Meanwhile there has been an enormous upsurge in the distribution of digital music over the internet, initially in the form of illegal file sharing, but latterly more and more as paid for downloads. Portable

TRILLER EXHIBIT 1006-00138

digital audio players (DAPs), exemplified by the Apple iPod™, have had a dramatic effect on the global music marketplace. Just five years after the introduction of the first portable digital audio player, digital music sales global have already grown to well over $5bn in 2005.

To reverse these trends, the music labels are now turning their attentions to pursuing the mobile market, where music is sold via mobile phones (or other kinds of portable wireless device) and distributed over the cellular wireless network. The potential value is already clear from the explosive growth of the ringtone market, and both the music labels and mobile network operators MNOs believe that mobile full-track music could provide more revenue, better security and improved pricing compared to digital music on a PC.

The mobile phone has some distinct advantages over the iPod and other DAPs. As well as playing music, mobile phones are connected to an increasingly fast, secure wireless network where users can locate and share music on the move and pay for content using the MNO's inbuilt and convenient billing facilities. Increasing innovation from the mobile handset manufacturers is helping to move the market forward.

There are still significant challenges ahead, however. The reliance on mobile internet technology WAP (Wireless Application Protocol) as the primary means of selling full music content is limiting. The technology is unfriendly, slow and cumbersome for users. Indeed, the world's largest mobile phone group, Vodafone Global, has avoided selling full music downloads on anything but top-of-the-range 3G phones because of the end-user difficulties associated with WAP. Many other operators have been forced to take a similar approach. This has limited the take-up of full music download services - only a small minority of mobile phone subscribers can use or have access to 3G. In the relatively mature 2005 UK market, less than half a million of Vodafone's 14.4 million customers have 3G - a market penetration of around 3%. Many other operators have no or only very limited 3G penetration.

MNOs are also concerned about the poor music play experience available, even on current top-of-the-range 3G handsets. Even when devices are marketed as top-of-the-range music

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phones they generally fail to deliver a user experience akin to a run-of-the-mill MP3 player.

Two alternatives to WAP based acquisition of full music content are currently favoured:

- Streamed services, which offer users a personalised radio service streamed to their handset.
- Music shop applications, running locally on a mobile telephone, and which offer users the ability to purchase music tracks and albums directly from the mobile telephone

Streaming radio solutions are however a niche marketplace. The requirement for a constant data connection and the lack of full user control of what a user listens to means the consumer proposition and appeal is limited. Streaming solutions also suffer limited handset reach and a requirement for high speed (usually 3G) data connection. Operators implementing such services must also plan and invest for a significant network burden - all music tracks must be redownloaded every time they are played.

Music shop applications offer a more compelling user proposition but also suffer limited handset reach, with a focus on 3G and niche Symbian handsets. The user experience on such devices is also limited currently with competitor products offering only limiter pay per track services and with limited functionality that fails to approach the richness of a high quality DAP. This limited functionality, combined with relatively small music catalogues, has severely limited the appeal of these solutions to date.

SUMMARY OF THE PRESENT INVENTION

The present invention provides a mature, reliable and convenient solution which will enable users to easily acquire, listen to and manage music on portable wireless computing devices.

An implementation is called MusicStation™. MusicStation provides a method of enabling digital music content to be downloaded to and used on a portable wireless computing device, the method comprising the steps of:

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(a) a software application running on the wireless device, the application having been automatically adapted to parameters associated with the wireless device without end-user input;

(b)the application enabling an end-user to browse and search music content on a remote server using a wireless network; to download music content from that remote server using the wireless network and to playback and manage that downloaded music content;

(c)the application including a digital rights management system that enables unlimited legal downloads of different music tracks to the device and also enables any of those tracks stored on the device to be played so long as a subscription service has not terminated.

This invention has the promise of being genuinely transformative of the way people acquire and listen to digital music. It brings together, for the first time, a number of technologies which operate synergistically to provide a total solution that is significantly greater than the sum of its parts. For example, because the application can be automatically adapted to parameters associated with the wireless computing device without end-user input, it becomes feasible to automatically provision very large numbers of portable wireless devices with the application (either prior to sale, or to allow users to download and install the application –e.g. by simply giving a remote server the correct portable wireless device make and model number). The installed base of mobile telephones, for example, could therefore readily run into the tens, if not hundreds of millions – far larger than any DAP. The application also enables an end-user to browse and search music content on a remote server using a wireless network; to download music content from that remote server using the wireless network and to playback and manage that downloaded music content: hence, not only will the installed base greatly exceed any DAP solution, the functionality will be better than any DAP because it will be possible to search and acquire new music directly from the device over the wireless network (this is a far more natural process than acquiring music via a web based on-line catalogue using a desktop machine and then synching a DAP with the desktop machine). Finally, the application includes a digital rights management system that enables unlimited legal downloads of different music tracks to the device and also enables any of those tracks stored on the device to be played so long as a subscription service has not terminated. This allows users to explore new music far more effectively than before and, with rapidly decreasing memory costs, to store thousands of music tracks on even mid-

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range devices. Music companies will be willing to make entire catalogues of music available because of the robust DRM model, the huge installed user base and the ease of exploring and acquiring new music. This creates a positive feedback, with more and better content attracting more users, in turn attracting more content.

MusicStation has a number of key advantages over its competitors:

• A comprehensive and intuitive user experience that wraps all music functions;

• Compatibility with a wider range of handsets than any competitor, as a result of the Device Adaptive Architecture (DAA – see below for more details), which ensures the software application runs on almost all music-capable handsets (irrespective of model or manufacturer) and looks and operates in a practically identical fashion on all of them.

MusicStation maximises the benefits of the mobile phone. Unlike DAPs, where music can only be acquired in the home, MusicStation users can discover and acquire new music anywhere;

• MusicStation does not need a PC, broadband, iTunes or a credit card to work.

• MusicStation supports innovative new models like AYCE (all-you-can-eat – i.e. unlimited downloads) and user community features such as making friends and sharing playlists.

The MusicStation Product

MusicStation is designed to be the key enabling technology that will enable the mass-adoption of the mobile phone as the successor to the unconnected Digital Audio Player (DAP). To ensure success, the design and development team have focused on the following key requirements in order to deliver a next generation mass-market music product:

• **A User Experience that Beats the Best DAP**

The traditional native player on mobile phones has been second rate when compared to the best DAPs. MusicStation provides an interface that is as complete as any market-leading DAP but which is also optimised for the benefits of a connected device.

• **Maximising the Benefits of Connectivity**

The mobile phone is an "Almost Always Connected" (AAC) device, so a handset-based

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music product can enable music purchasing directly when on the move, not just when it is physically attached to an internet-connected PC.

• **Ensuring No Reliance on a PC**

An integrated handset product should not require the user to own a broadband-connected PC at all. This is particularly key in developing markets where mobile phone users do not generally have access to such technology, nor indeed a credit card. Where users do have access to a PC they should be able to access music and playlists whether they are at their desk or on on-the-move - but there should be no reliance on personal computer, broadband or credit card technology.

• **Enabling Direct Billing**

A mobile music application should be able to leverage on the billing relationship between the consumer and the MNO. By providing a much more convenient one-touch billing method for content purchase - irrespective of location - music sales can be truly maximised, especially compared with an at-desk, web-based credit card application, with a cumbersome registration process which also requires a difficult synchronisation requirement with the portable device.

• **Enabling Wire-free Listening**

An on-handset music application must be able to use the Bluetooth functionality available in many mobile handsets to allow music to be played and shared with other Bluetooth enabled devices such as wireless headphones, in-car stereos and hi-fi systems.

• **Taking Advantage of 24x7 Availability**

The mobile phone is the electronic device most likely to be present with a user 24/7, giving a far wider opportunity for consumer interaction, be that listening, purchasing or the managing of music. It is therefore important that a music application is designed to be attractive and easy to use, even to subscribers who stumble across it accidentally whilst exploring handset functionality for the first time.

• **Giving Users Community Features**

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As an Almost Always Connected (AAC) device, the mobile phone can deliver community interaction features on-the move, the key to enabling improved consumer music discovery through shared playlists and playlist charts generated by users. This is a key advantage over the unconnected DAP.

• **Making the most of a Fortuitous Handset Roadmap**

The vast majority of handsets will be music capable by Q1 2007 - even if they are not actively promoted or branded as a music phone by the MNO or manufacturer. To maximise revenue potential, any music application should be available for every music-capable handset, be it 2.5G or 3G, whatever the manufacturer, enabling MNOs to consider full download music as a mass market opportunity for the first time.

MusicStation has been designed around these key requirements. The end result genuinely able to turn the vast majority of music-capable handsets into "Super-DAPs". Critically, MusicStation gives all the performance and user experience quality of a DAP (in terms of music playing and management), whilst also offering all the browse, search, acquire, playlist and celebrity playlist features of leading PC based on-line music stores. On top it offers music users tribal community features, which can improve their music discovery process - and personalised news and views (neither of which are available on any DAP).

Other key features include:

• A single user intuitive interface which wraps all music play/playlist management/content acquisition/news/community functionality;

• Availability of all functions available during music playback (news acquisition, searching/browsing, etc);

• Intelligent Parallel Downloading technology, allowing for intelligent caching of favourite content;

• Inbuilt network awareness (Features and interface intelligently adapt depending on level of network connectivity available - 3G/2.5G/0G);

• Direct billing integration (enabling extremely convenient one-touch billing without the requirement for a credit card or account) - billing infrastructure for the subscription service

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is part of the billing infrastructure provided by a network operator that controls the wireless network;

• Industry standard music file protection by DRM. The DRM also enables the purchase of a music track such that the track can still be played if the subscription service is terminated.

Being a connected application, unlike DAPs, MusicStation is able to offer an All-You-Can-Eat (AYCE) weekly or daily subscription package directly from the handset for the first time. There is much evidence that the average music revenue per AYCE subscriber is substantially higher than that from a traditional PPT (pay per track) user. To date most AYCE implementations have been desktop-based subscriptions rather than being sold on a connected mobile device.

Device Adaptive Architecture (DAA)

One of the biggest problems for mobile applications to date has been the difficulty of porting applications onto new handsets and delivering applications that work across multiple handset manufacturers and models. Resolving this challenge is one of the most important technical difficulties that MusicStation addresses. Device Adaptive Architecture (DAA) is the solution.

In essence, DAA enables MusicStation to be deployed on more mobile phones than any competitor. It is also enables MusicStation to ported to new handsets in hours rather than weeks or months – with the creation of a manufacturer and handset model specific version of the application in each case.

Until DAA, all mobile applications - be they music-specific or more generalised - suffered limited handset reach. Typical obstructions included:

• Manufacturer variations in handset design/memory capabilities;
• OS and firmware release and related bugs;
• Screen size, pixel number, colour depth, keypad control and softkey variations;
• Physical size;
• Media file and format support (e.g. audio, picture, video, animation);
• Java version and platform implementation differentials;

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- Handset-specific security models;
- Connection handling and capabilities;
- Failure to adhere to published specifications;
- Computing horsepower and other computational resources.
- Memory
- Network capabilities and handling of the device, including one or more of CSD, GPRS, 2G, 2.5G, 3G, WAP, SMS, Bluetooth, Infrared, Wi-Fi, WiMAX.

In essence, features vary wildly by handset and by manufacture rand also network operator - and many handsets may suffer bugs in their implementation. Device Adaptive Architecture (DAA) resolves these issues and enables the product to be ported automatically to the vast majority of all music-capable 2.5G and 3G handsets in record time. DAA captures parameters associated with these various features and allows an application to be automatically custom built for a specific handset/network operator combination without end-user input. Further details on DAA may be found in WO 2006/061595, the contents of which are incorporated by reference.

It is also critically important to note that MusicStation's reference platform is Java. A few competitive products have been built on the easy-to-address Symbian platform. Whilst it is relatively easy to build applications for this platform, it does not offer the opportunity for a mass-market music proposition. Less than 10% of handsets globally have Symbian on board and many of those are business-focused handsets. Java is the most widely adopted mobile platform and critical to handset reach. It is available on almost all medium and high end handsets. The combination of Java and DAA technology means MusicStation can be delivered to more consumers than any other technology - and critically act, look and feel almost identical irrespective of manufacturer or model. MusicStation will be available in Java, Symbian, Windows Mobile, Linux and BREW.

Other features include the following:

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- the application present a graphical user interface in which shows multiple user-selectable tabs, each tab being associated with a core function of the application.
  - each tab is visible at any time the application is running
  - one tab is associated with a home function that provides access to all available content and to a search function
  - one tab, if selected, gives details of the track that is currently playing
  - one tab, if selected, provides access to community and news features.
  - one tab, if selected, displays the current queue of tracks for listening and/or downloading.

- the application present a graphical user interface in which multiple screens show a 'more' menu item that is context sensitive and, if selected, provides access to further functions relevant to a currently selected item and/or the currently displayed screen.
- the application is controlled using a multi-tasking context sensitive joystick; the specific function of the joystick is shown by an on-screen icon above it. The operation of the joystick is replicated by numeric keys in the keypad, e.g. the numeric key 5 is up; 0 is down; 7 is left and 9 is right.
- the application provides a context appropriate acquire function in which a function equivalent to 'Get New Artist' is at the same level in the menu as 'Artist'. A function equivalent to Get New Track is on the same level in the menu as the menu listing of tracks for an artist.
- the application enables one device to act as a master playback device such that other wirelessly connected portable wireless devices playback the same music track, in time synchronisation. The wireless connection can be a short range wireless connection, such as Bluetooth.
- the application provides a dedicated 'play' numeric key which always toggles back to the play screen, which shows the track currently being played.
- the application provides variable timeouts, with different screens have different timeouts – e.g. a search screen never snaps back but a news screen snaps back after 20 seconds, compared with a standard navigation screen, that might snap back after 7 seconds.

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- the application displays targeted news filtered according to the end-user's playback habits.
- the application tracks, and feeds back to a remote server, detailed end-user listening data. The data includes how long tracks have been listened to, what tracks are skipped through and when. The data can be locally cached on the device and then sent back to the server as a piggyback over a communication that happens anyway. The device will pre-emptively send the data back without waiting for the communication expected to happen anyway, only if the user has not downloaded for more than a set time. This data can be used to enrich a music suggestion engine that provides music track suggestions for display on the device.
- the application displays shared playlists.
- the application displays playlist charts generated by users
- all functions of the application are available during music playback.
- the functions available during playback include news acquisition, as well as music track search, browse, and acquire.

Another aspect is a portable wireless computing device that enables digital music content to be downloaded and used, the device including:

(a) a software application running on the wireless device, the application having been automatically adapted to parameters associated with the wireless device without end-user input; and in which:

(b)the application enables an end-user to browse and search music content on a remote server using a wireless network; to download music content from that remote server using the wireless network and to playback and manage that downloaded music content; and

(c)the application including a digital rights management system that enables unlimited legal downloads of different music tracks to the device and also enables any of those tracks stored on the device to be played so long as a subscription service has not terminated.

A third aspect is a software application that enables digital music content to be downloaded and used on a portable wireless computing device;

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(a) the application running on the wireless device, the application having been automatically adapted to parameters associated with the wireless device without end-user input; and in which:

(b)the application enables an end-user to browse and search music content on a remote server using a wireless network; to download music content from that remote server using the wireless network and to playback and manage that downloaded music content; and

(c)the application including a digital rights management system that enables unlimited legal downloads of different music tracks to the device and also enables any of those tracks stored on the device to be played so long as a subscription service has not terminated.

A final aspect is a music track that has been downloaded using the software application defined by the third aspect.

Definitions

Mobile Telephone: A type of telephone which is connected to the telephone network via wireless technology through the air rather than through a physical wire or other physical connection or form of cable.

Mobile Phone, Phone, Mobile, Mobile Handset or Handset: A type of Mobile Telephone.

Mobile Network: A network which provides wireless connectivity for Mobile Telephones so that they can operate and provide functions such as making telephone calls or accessing network-resident data or services.

Mobile Network Operator (MNO): A company or organisation which operates a Mobile Network and the subscribers or users who use Mobile Telephones on that network.

Global Mobile Network or Mobile Phone Network: The sum of all Mobile Networks operated by Mobile Network Operators in the world.

Wireless Network: A network which provides wireless connectivity to client computing devices. Such a network includes Wi-Fi, WiMAX and the Global Mobile Network.

Server: A networked computing device which exists to provide networked application services, features and functions such as information supply, database search and transactions to one or more client computing devices which make connection to it and make requests for

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services from it. There are generally many clients to each server and each client is usually of a smaller size and of smaller computing capability than the server.

Services: The networked computing services, features and functions which are typically provided by a Server to one or more network connected client computing devices. Services include information supply, database search and transactions. Such services are architecturally practical to deploy centrally in the network and typically impractical to deploy on a client computer due to the client's size and power.

Client: A computing device connected to a network delivering the features and functions of a network-centric application to the user or consumer of the application. The Client typically connects to a Server and requests Services.

Network Application: A type of application or service that is network-centric, in that it is delivered by a combination of software running on a Client performing the function of the application's interface to the end user or consumer, supported and complemented by Services provided by software on a Server which are accessed by the Client over a network.

Wireless Computing Device: A type of Client which connects to the network via a Wireless Network. Such devices include Mobile Telephones, Personal Digital Assistants (PDAs), Games Consoles (e.g. Sony PSP) or other wirelessly network connected client computing devices. The type of the Wireless Computing Device is further defined by it's Manufacturer, Make, Version, Operating System, Firmware Version.

Wireless Device or Wireless Client: A type of Wireless Computing Device.

Software Application: The Client software application which is to be delivered over-the-air to, or pre-installed on, the Wireless Computing Device.

Software Components: Individual units of software which form the components of the Software Application which is being customised for the Wireless Computer Device and part of the Device Adaptive Architecture (DAA) software library.

Mobile Content: Digital files and data representing electronic products used by, consumed, played, viewed or rendered on Mobile Phones. Examples include ringtones/ring tunes, wallpapers/pictures, screensavers/animations, realtones/truetones, full music downloads, video, SMS & MMS alerts, mobile games, and many other current and emerging Mobile Phone consumable entertainment and information products.

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Metadata: Individual items of data or collections of data, potentially hierarchically related, which describe the attributes or behaviour of Wireless Computing Devices, Wireless Networks, Software Components, Network Applications or Mobile Content.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a Scheduler class diagram.

Figure 2 is Client Schedules a task.

Figure 3 is UI thread adds a task to the queue.

Figure 4 is an example of a binary heap.

Figure 5 is Binary heap stored in an array.

Figure 6 is State diagram for a Task.

Figure 7 is cache upper and lower limits for each type of data objects.

Figure 8 is Data objects used to configure exceptions.

Figure 9 is Device specific exception.

Figure 10 is Screen Captures – Get new… option.

Figure 11 is Personalised Menu Item and Recommendations Contained.

Figure 12 is Screen capture – rating an item.

Figure 13 is Screen capture – News.

Figure 14 is Screen capture – Buzz member recommendations.

Figure 15 is Personalised Menu Item and Recommendations Contained for Cool Members and Buzz Playlists.

Figure 16 is a matrix of correlations between tracks.

Figure 17 is a Weightings Matrix.

Figure 18 is a set of normalized weightings lying between 0 and 1.

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Figure 19 is an Associated Artists Matrix, which is a matrix of correlations representing how strongly associated pairs of Artists are in the system, based on ratings, and customer plays.

Figure 20 is an Associated Customers Matrix, which is a matrix of correlations representing how strongly associated pairs of Customers are in the system, based on ratings, and customer plays.

Figure 21 is part of a Table of Associations Matrix property, Inputs to Recommendation and Results Mechanism.

Figure 22 is part of a Table of Associations Matrix property, Inputs to Recommendation and Results Mechanism.

Figure 23 is part of a Table of Associations Matrix property, Inputs to Recommendation and Results Mechanism.

Figure 24 is part of a Table of Associations Matrix property, Inputs to Recommendation and Results Mechanism.

Figure 25 is part of a Table of Associations Matrix property, Inputs to Recommendation and Results Mechanism.

Figure 26 is Calculating the implicit rating value.

Figure 27 is Properties of a message.

Figure 28 is Properties of an image.

Figure 29 is Properties of the client version.

Figure 30 is Translated messages.

Figure 31 is Device Message properties.

Figure 32 is Device Message / Help Message properties.

Figure 33 is Service Messages.

Figure 34 is Service and Device Specific Messages.

Figure 35 is Client Build message.

Figure 36 is Screen capture- Roaming options.

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Figure 37 is configurations of the Roaming behaviour for MusicStation.

Figure 38 is Screen capture - Roaming Warnings.

Figure 39 is Screen capture - Roaming Warnings – Ask prompt.

Figure 40 is Screen capture - Roaming Warning – Ask prompt.

Figure 41 is Screen capture – Roaming Options set to On.

Figure 42 is Screen capture – Roaming Options set to Off.

Figure 43 is shows the title, content and result of the responses.

Figure 44 is Request / response flow between client and server.

Figure 45 is Server sending a request to the client.

Figure 46 is details of [major].[minor].[micro], Variant name and Platform identifier.

Figure 47 is details of error data.

Figure 48 is an example of the client sending error data to the server.

Figure 49 is an example of the client sending error data and a photo to the server.

Figure 50 is an example of the server sending a Jpeg photo with a single parameter.

Figure 51 is status codes.

Figure 52 shows the server sending the news1.data file.

Figure 53 shows the server sending the news2.data and news3.data files.

Figure 54 is the server response which indicates which range of data has been sent

Figure 55 is the server sending a Sent line that the client had not sent a corresponding Get line in the request.

Figure 56 shows that Artist data object which contains a collection of Releases. In turn, a Release contains a collection of Tracks.

Figure 57 shows that an alternative method is to store each collection of objects in its own file. So in our 'My Artists' example the list of Artists is stored in a file (userartists.data) but the list of albums for each artist is not. The list of albums is stored in a separate artist file,

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one for each artist (e.g. artist.123.data). Each album is then stored in its own file (release.4567.data) that contains the tracks.

Figure 58 shows how object groups can use the same data object without having to duplicate the data.

Figure 59 shows that one can store the artist name as well as the id in the 'My Artists' data file.

Figure 60 is Client sets object and gets all modified objects.

Figure 61 is Client requests object and gets all modified objects.

Figure 62 is Client sends objects modified in offline mode.

Figure 63 is object change log.

Figure 64 is customer object.

Figure 65 is customer object change log.

Figure 66 is a ChangeLogRecord object.

Figure 67 is an object_change_log table.

Figure 68 is a customer_object_change_log table.

Figure 69 is a Logger which contains a LogRecord for each client log.

Figure 70 is the customer_logger table.

Figure 71 is DRM Overview.

Figure 72 is Service Registration Request Parameters.

Figure 73 is MNO Added Metadata.

Figure 74 is Service Registration Response Parameters.

Figure 75 is MusiStation RI Registration Request Parameters.

Figure 76 is RI Registration Response Parameters.

Figure 77 is MusicStation RO Acquisition Request Parameters.

Figure 78 is MusicStation RO Acquisition Response Parameters.

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Figure 79 is Content Acquisition Request Parameters.

Figures 80 – 164 are screen shots of the MusicStation implementation.

Figure 165 is a system overview.

DETAILED DESCRIPTION

ARCHITECTURE

1.1.Multi-threading

A key aspect of the player is that it performs multiple threads simultaneously. There are 3 main threads:

- User Interface (UI) thread
- Animation thread
- Scheduler thread

There is also an HTTP connection thread which actually downloads data and loads it into a buffer while the Scheduler thread reads from this so as not to be blocked by the connection.

Typically the UI thread will respond immediately to the user navigating to a new screen by displaying that screen and scheduling a task to load the data behind the screen, either from the local file system or remotely over an HTTP connection.

The load task is added to the task queue. The queue is ordered by task priority, task type and scheduled execution time. Most tasks are scheduled for immediate execution, in which case the execution time is set to the time the task was added to the queue. Some tasks are scheduled with a small delay; for example playing a track is scheduled with a one second delay to allow quickly skipping through the tracks on a playlist.

When a new task is added to the task queue we compare its priority to the currently executing task (if there is one). If its priority is higher then the current task, we attempt to

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cancel the current task. Only tasks that take an excessive time to complete can be cancelled. This is to avoid tasks hogging the execution thread whist other higher priority tasks are waiting. An excessive amount of time is longer than a few seconds. The cancelled task is then rescheduled. The execution time is set to the time the task was originally added to the queue.

1.1.1.Scheduler

The Scheduler is a facility for threads to schedule tasks for immediate or future execution in a background thread. Tasks may be scheduled for one-time execution, or for repeated execution at regular intervals.

The Scheduler object has a single background thread that is used to execute all of the scheduler's tasks sequentially. If a scheduler task takes excessive time to complete, it "hogs" the timer's task execution thread. This can, in turn, delay the execution of subsequent tasks, which may "bunch up". Any task that may take longer than a few seconds to execute must implement interrupt().

The interrupt() method is called when a task with a higher priority is added to the task queue and will be called on the currently executing task by the thread adding the task. The run() method called by the scheduler thread must throw an InterruptedException at the earliest opportunity. The Scheduler will catch this exception and then reschedule the interrupted task for execution based on its priority and the time it was originally added to the queue. The newly added task is then picked up and executed.

This class is thread-safe: multiple threads can share a single Scheduler object without the need for external synchronization. See Figure 1: Scheduler class diagram and Figure 2: Client Schedules a task.

1.1.1.1. TaskQueue

This class represents a scheduler's task queue: a priority queue of Tasks, ordered on priority, taskType and executionTime.

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The task priorities are based on the CLDC Thread priorities. As such there are 3 priorities defined:

- *MAX_PRIORITY* is the maximum priority that a task can have.
- *NORM_PRIORITY* is the default priority that is assigned to a task.
- *MIN_PRIORITY* is the minimum priority that a task can have.

Tasks with the same priority are further subdivided by taskType. For example, this allows us schedule the data for a screen before the images. This could be achieved by using different priorities however it is likely we'll want to lower the priority of a task (e.g. the user navigates to a different screen) without changing the type. By separating the concepts of priority and taskType the design is more flexible and I think easier to understand. Initially the 3 types ordered by importance are:

- *DATA* is used for tasks that request object data files.
- *AUDIO* is used for tasks that request audio files.
- *IMAGE* is used for tasks that request image files.

The executionTime ensures that tasks with the same priority and taskType are executed in the order that they are added to the queue. See Figure 3: UI thread adds a task to the queue.

Internally the queue is stored as a binary heap so the cost to schedule a task is log n, where n is the number of concurrently scheduled tasks. A large number (thousands) of scheduled tasks should present no problem. There is no cost for retrieving the next scheduled task, which is always at the root. See Figure 4: An example of a binary heap.

We always add an element to the bottom of the heap and then call the fixUp() method to find its place in the heap. The fixUp() method compares the added element with its parent and swaps them if they are not in the correct order.

An array is used to store the heap and because the heap is always complete (there are never any gaps in the tree) it can be stored compactly. No space is required for pointers; instead,

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for each index i, element a[i] is the parent of two children a[2i+1] and a[2i+2]. See Figure 5. Binary heap stored in an array.

1.1.1.2. Task

A task can be scheduled for one-time or repeated execution. A task can be in one of 3 states:

- *SCHEDULED*: This task is scheduled for execution. If it is a non-repeating task, it has not yet been executed.
- *EXECUTED*: This non-repeating task has already executed (or is currently executing) and has not been cancelled.
- *CANCELLED*: This task has been cancelled (with a call to Task.cancel).

See Figure 6: State diagram for a Task.

The MusicStation client uses a single Scheduler to schedule all file connections, either from the local file system or remotely over an HTTP connection. The scheduler uses a single thread so all file connections are handled serially. A Task must ensure that it only has an open connection when it is in the executed state. As only one task is ever in the executed state we can guarantee that we only ever have one connection open. Also, any task that supports the interrupt() method must be able to resume without storing any state information about the file it was writing to. This is important because another task may have modified the file since the task was interrupted.

1.1.2.Use Cases

1.1.2.1. User opens Playlists

The user opens the application and immediately opens the Playlists menu. The Playlists menu display the “My Playlists” PlaylistSet filtered using the two filters “My Private Playlists” and “My Public Playlists”.

When the screen is displayed a LoadTask is added to the TaskQueue to load “My Playlists”. The LoadTask.taskType is DATA and the LoadTask.priority is MAX_PRIORITY.

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When the LoadTask is added to the TaskQueue, the scheduler thread, which is waiting on the queue, is notified. It takes the task from the queue and executes it by calling the Task.run() method. The task checks to see if the "My Playlists" object data file exists on the file system. In this case it doesn't so an HttpConnection is opened and the file is read over the stream. The file is read into a buffer (65k) and each time the buffer is filled it is written to the memory card and used to populate part or all of the data object (note very few data files will be larger than the buffer).

As the PlaylistSet data object is populated with Playlists, these Playlists contain image references. As each image reference is read, an ImageLoadTask is created and added to the TaskQueue. The ImageLoadTask.taskType is IMAGE and the ImageLoadTask.priority is MAX_PRIORITY.

Once "My Playlists" has finished loading, the scheduler takes the first ImageLoadTask from the queue. Because the image doesn't exist on the local file system it is loaded over HTTP. This continues until all images have been loaded.

1.1.2.2. User opens Playlists and immediately selects New Playlists

The user opens the application and then opens the Playlists menu. Before "My Playlists" have loaded the user selects "Get New Playlists".

As above a LoadTask is immediately added to the TaskQueue to load "My Playlists" when the user opens Playlists. The LoadTask.taskType is DATA and the LoadTask.priority is MAX_PRIORITY.

Before the LoadTask has finished the user selects "Get New Playlists". This immediately calls TaskQueue.changePriority() to downgrade all MAX_PRIORITY tasks to NORM_PRIORITY because we are changing screens. Any outstanding tasks for the last screen need to have a lower priority than tasks for the new screen.

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A LoadTask is then added to the TaskQueue to load "New Playlists". The LoadTask.taskType is DATA and the LoadTask.priority is MAX_PRIORITY. Adding the new task causes interrupt() to be called on the "My Playlists" LoadTask. As data objects are typically small (less than 4k) interrupts are ignored. However because the "My Playlists" LoadTask has had its priority lowered to NORM_PRIORITY any ImageLoadTasks it creates are also created with NORM_PRIORITY.

Once the "My Playlists" LoadTask has finished loading, the scheduler takes the "New Playlists" LoadTask from the queue and executes it. Once "New Playlists" has loaded the images for the "My Playlists" screen load in the background.

1.1.2.3. User starts Playlist

The user selects a Playlist from "My Playlists" and chooses the Play option.

All of the Tracks in the Playlist are added to the play queue. A StartTask is added to the TaskQueue for the first track. The StartTask.taskType is AUDIO and the StartTask.priority is MAX_PRIORITY. We then add a FetchTask to the TaskQueue for each Track. The FetchTask.taskType is AUDIO and the FetchTask.priority is MIN_PRIORITY. Note, a FetchTask is added for each Track including the first track. This is because the StartTask could be cancelled by the user selecting Next before the task has finished. A FetchTask will first check to see if a file exists and has been fully downloaded before making an HttpConnection.

When the StartTask has finished (and the track begins to play) a PrefetchTask is added for the second track. The PrefetchTask.taskType is AUDIO and the PrefetchTask.priority is MAX_PRIORITY. Depending on the connection rate the second track should have prefetched before the first track finished. In which case the first and second FetchTasks are discarded (the files already exist) and the third tracks FetchTask begins to load.

1.1.2.4. User starts Playlist and opens Inbox

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The user selects a Playlist from "My Playlists" and chooses the Play option. Halfway through downloading the first track the user opens the Inbox tab.

As above, a StartTask is added for the first track and FetchTasks added for each track. When the user opens the Inbox a LoadTask is created for the ""Inbox" StorySet. The LoadTask.taskType is DATA and the LoadTask.priority is MAX_PRIORITY.

The priority of the StartTask is changed from MAX_PRORITY to NORM_PRIORITY and the "Inbox" LoadTask is added to the TaskQueue. The interrupt() method is called on the StartTask which causes the StartTask.run() method to throw an InterruptedException the next time read() returns (when the 65k buffer is filled). The scheduler catches the InterruptedException and the StartTask is rescheduled to run after the "Inbox" LoadTask.

The "Inbox" LoadTask is executed and it creates ImageLoadTasks for each story. These are created with MAX_PRIORITY and will all be executed before the StartTask is resumed. Once the images are loaded the StartTask resumes by first checking if the file exists and how much has already been read. The task will then request the remainder of the audio file. Once the file has been downloaded the track will play and a PrefetchTask will be added for the next track.

1.1.3.Background downloading

1.1.4.Dynamic playlist management

1.2.Intelligent memory management

MusicStation intelligently manages the memory available on each handset and / or memory card.

- Before downloading an object MusicStation will ensure that there is enough memory available for the object.
- If there is not enough room, MusicStation will perform a series of checks before deleting an object.

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•MusicStation will delete the object with the oldest last modified date, ensuring that the objects that are deleted are those files that are not in heavy use or not in use at all.

1.2.1.Downloadable Objects

There are three types of downloadable objects within MusicStation. These include:

•**Data** – any data that needs to be updated such as menu items, charts, text within news articles etc.

•**Image** – any images within MusicStation. These include the images on the Artist and Album profiles and the images associated with a news article.

•

•**Audio** – the audio files.

Caches

Using the Max memory card use option on the Options menu a user can define the maximum percentage of the memory card that MusicStation will use for storage. This setting determines the allocated memory for MusicStation. The allocated memory is then divided into caches for each type of data object.

A cache exists for each of the downloadable objects. Each cache has an upper and lower limit:

•An **upper limit** is the maximum amount of memory a cache can utilise. It exists to ensure that a user does not exceed the allocated memory.

•A **lower limit** is the minimum amount of memory a cache can utilise. A lower limit exists to ensure that memory is consistently distributed between the different data objects.

The upper and lower limits are defined as a percentage of the allocated memory. The cache upper and lower limits for each type of data objects have been defined as shown in Figure 7.

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1.2.2.Downloading objects

Before an object is downloaded, MusicStation will run a series of checks to ensure that by the downloading the file that the lower and upper limits are not breached. MusicStation maintains a list of each type of object, which is sorted in order of last use. The object that was most recently used is at the top of the list and the object with the oldest last used date will be at the very bottom of the list.

If downloading of an object exceeds the upper limit of that object's cache, the following process will occur:

- **DELETE_WITHOUT_CHECK** – MusicStation will delete the data object, of the same type, that has the oldest "last used" date.

If there is no available memory to download the object, the following process will occur:

- **DELETE_WITH_CHECK** –

  DELETE_WITH_CHECK will locate the data object, of the same type, that has the oldest "last used" date and attempt to delete this object. The delete will proceed if it does not take the cache under the lower limit.

  If the delete takes the cache under the lower limit, DELETE_WITH_CHECK will locate the *audio* object with the oldest last "last used" date and delete the audio object.

  If DELETE_WITH_CHECK cannot delete an audio object, it will proceed with step 1. Locate the data object, of the same type, that has the oldest last "last used" date and delete this object.

1.3.Device specific media delivery

Each piece of content is "tagged" with the container, format, bitrate and sample rate (e.g. m4a, acc+, 48kbps, 44.1kHz). The playback of content is tested on the device using a piece of base content (pink noise) encoded in all variants of container, format, bitrate, sample rate and mime type. The results of these tests are sent via the test client back to the server and stored. Each container, format, bitrate, sample rate and mime type has a preference when compared to the others stored on the server. When the client then makes a request for an

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additional piece of content the server returns either: A list of links to that piece content encoded in the variations of container, format, bitrate, sample rate and mime type that played back. This is done by matching the "tags" on the content that played back to the available "tags" on the additional piece of content. This list is ordered by preference. A link to that piece of content encoded in the top encoding preference. A audio playback quality test is performed on this auto-selected item to confirm that it is of acceptable quality. If it is not then the second preference would be examined, and so on down the list. The audio quality test makes use of audio software to analyse the output of the phone's headphone socket.

2. User experience features

2.1. Client exception handling

The MusicStation client is regularly downloading and updating files in the background whilst the customer is using the application. When an error occurs we may want to retry, inform the user or do nothing depending on the task that is being performed and the error that was thrown. This document describes how we will decide what action to take when an error occurs.

2.1.1. Exception Listener

There are 3 main threads that control the MusicStation client. The UI Thread handles all key presses, the Paint Thread handles all screen redraws and the Task Thread handles loading data. Exceptions can be thrown in any of these threads but they are always passed to the ExceptionListener exceptionThrown() method.

The ExceptionListener then decides how to handle the exception based on:

The Exception that was thrown
The Event that caused the Exception
The priority of the Event
The super class of the Exception

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These parameters are used to lookup the ExceptionConfig for this exception. The ExceptionConfig contains all of the information needed to decide how to handle the exception.

2.1.2. Exception Config

The ExceptionConfig is used to decide whether to automatically retry the event that caused the exception or whether to show an error message to the user.

The following objects are used to configure exceptions:

ExceptionConfig: Contains the default behaviour for this exception
ExceptionEvent: Overrides the default behaviour for a specific Event and priority
ExceptionLang: Contains the error messages in each language supported by the device

See Figure 8 Data objects used to configure exceptions.

Only exceptions that occur in the Task thread cause a retry. The following attributes are used to decide whether and how to retry the Task:

firstRetryInterval: We may want to initially retry the request quickly
firstRetryCount: The number of times to retry or 0 to not retry
secondRetryInterval: We may then want to back off and leave a longer period between retries
secondRetryCount: The number of times to retry or 0 to not retry
allowSessionRetry: If there is a server error or the file was not found we may want to disallow the same request to the server for this session.
deleteLocalFile: If the file is corrupted we may want to delete the local file and retry loading the file from the server.

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Any exception can display an error message to the user. The following attributes are used to decide whether and what to display to the user.

showAlert: If true, displays an error message to the user with one or more options
continueOption: Goes back to the last screen
retryOption: Retries the Task
upgradeOption: Installs a new version of the application
closeOption: Closes the application
openBrowserOption: Retries the request in the mobile's WAP browser
exceptionLangs: The error message in each supported language

For any exception, these values can be overridden for a particular event or we can fall back to the values defined for the exception's superclass.

2.1.3.Device Specific Exceptions

Some devices do not throw the expected exceptions. For example the Nokia N70 throws an IOException with message "-34" when the server does not respond rather than the more specific ConnectionNotFoundException. The DeviceExceptionConfig object allows us to specify mappings between device specific exceptions and the expected exceptions.

The following fields map a device specific exception to and expected exception:

exceptionClassName: The Exception thrown by the device
exceptionString: The result of the Exception.toString() method
exceptionId: The known Exception this maps to

See Figure 9 Device specific exception

2.1.4.Database Requirements

client_build

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event_type_set_idFKnumber(10)not NULL
exception_set_idFKnumber(10)not NULL

The event and exception sets are created at build time and the indexes are used at runtime to map events and exceptions sent between the client and server.

event_type
priorityvarchar(12)DEFAULT NORMAL, in (MIN, NORMAL, MAX)

The priority is used to determine which events are sent from the client to the server first. Both the priority and severity level can be updated on the client by the server.

event_type_set
idPKnumber(10)
automaticnumber(1)not NULL, default 0
countnumber(12)not NULL, default 0
guidvarchar(32)not NULL
namevarchar(96)not NULL
data_classification
created
inserted
modified

The set of events created for a client build. This set is used at runtime to map events sent by the client to event types in the database.

event_type_set_item
event_type_set_idPKnumber(10)not NULL
event_type_idPKnumber(10)not NULL
event_type_namevarchar(96)not NULL
event_type_indexnumber(10)not NULL, UNIQUE INDEX
data_classification

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created
inserted
modified

The index is the mapping between a client event and an event type on the server. The index will be defined as a constant in the EventType data object. All references to an event in the client code will use this constant.

exception_set
idPKnumber(10)
automaticnumber(1)not NULL, DEFAULT 0
countnumber(12)not NULL, DEFAULT 0
guidvarchar(32)not NULL
namevarchar(96)not NULL
data_classification
created
inserted
modified

The set of exceptions created for a client build. This set is used at runtime to map exceptions sent by the client to exceptions in the database.

exception_set_item
exception_set_id PKnumber(10)not NULL
exception_idPKnumber(10)not NULL
exception_namevarchar(96)not NULL
exception_indexnumber(10)not NULL, UNIQUE INDEX
data_classification
created
inserted
modified

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The index is the mapping between a client exception and an exception on the server. The index will be defined as a constant in the ExceptionConfig data object. All references to an event in the client code will use this constant.

exception
idPK number(10)not NULL
guidvarchar(32)not NULL
namevarchar(96)not NULL
event_type_idFKnumber(10)not NULL
class_namevarchar(128)not NULL
superclass_namevarchar(128)
first_retry_intervalnumber(10)
first_retry_countnumber(10)
second_retry_intervalnumber(10)
second_retry_countnumber(10)
allow_session_retrynumber(1)
delete_local_filenumber(1)
show_alertnumber(1)
continue_optionnumber(1)
retry_optionnumber(1)
upgrade_optionnumber(1)
close_optionnumber(1)
open_browser_optionnumber(1)
message_key_idFKnumber(1)
descriptionvarchar (256)
commentsvarchar (256)
data_classification
created
inserted
modified

Contains fields that control how an exception that is thrown on the client is handled. The exception configuration is included in the JAR at build time and can be updated at runtime on the client by the server.

exception_event
exception_idPKnumber(10)
caused_by_event_type_idPKnumber(10)
event_priorityPKnumber(10) in (ALL, MIN, NORMAL or MAX)
first_retry_intervalnumber(10)
first_retry_countnumber(10)
second_retry_intervalnumber(10)
second_retry_countnumber(10)
allow_session_retrynumber(1)
delete_local_filenumber(1)
show_alertnumber(1)
continue_optionnumber(1)
retry_optionnumber(1)
upgrade_optionnumber(1)
close_optionnumber(1)
open_browser_optionnumber(1)
message_key_idFKnumber(1)
event_indexnumber(10)
descriptionvarchar (256)
commentsvarchar (256)
data_classification
created
inserted
modified

Exception handling can be overridden for specific events and specific event priorities.

device_exception
device_idPKnumber(10)
exception_class_namePKvarchar(128)
exception_stringPKvarchar(256)
exception_idFKnumber(10)
automaticnumber(1)not NULL, DEFAULT 0
data_classification
created
inserted
modified

Maps device specific exceptions onto known exceptions. This table is populated by the detective during device commissioning.

2.2. Recommendations

This document describes the approach taken with making recommendations to customers from within the MusicStation application. Omnifone views the ability to make ever-changing, relevant and up-to-date recommendations as key to the strategy of creating loyalty towards the MusicStation application. Recommendations, properly implemented, encourage exploration and discovery that in turn lead to more purchases of new music. Additionally they allow us to optimise the MusicStation experience in the restricted mobile environment.

2.2.1. Recommendations within MusicStation

MusicStation contains several features designed at promoting personalised recommendations to the customer. These features are spread over the **Home**, **Inbox** and **Buzz** tabs and are described in detail in the following sections.

2.2.1.1. Recommendations on the Home tab

See Figure 10 Screen Captures – Get new… option

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Whenever a customer selects the **Get new playlists**, **Get new artists**, **Get new albums** or **Get new tracks** option from the **Home** tab, they are presented with a list of menu options, some of which are personalised suggesting recommendations to the customer based upon their recent listening habits.

The menu items that contain personalised recommendations are shown in Figure 11.

2.2.1.2. Information that influences music recommendations

Music recommendations for the **Home** tab are made based upon the interaction of two factors unique to the customer:

The **implicit** factor: This is based upon the listening habits of the customer (i.e. the type of music they listen to and the frequency with which they listen to it).

The **explicit** factor: How the customer actually rates music that they listen to.

Also counting towards the **implicit** factor will be any click-throughs on **Inbox** content that the customer has made (for more information please refer to section 2.2.1.4 - *Recommendations on the Buzz tab*)

See Figure 12 Screen capture – rating an item. In terms of the **explicit** factor Customers are pushed recommendations for music similar to other music that they have rated as **Love it**, and are not recommended any content that is defined as similar to music they have rated with **Hate it**.

2.2.1.3. Making music recommendations

These **implicit** and **explicit** factors for each customer are combined, and mixed with known relationships between Artists and other Artists, Tracks and other Tracks and so on. The outcome is a list of personalised recommendations to the customer.

Over time, as we collect information on which Artists, Albums, tracks and Playlists are popular (or not), these recommendations will become even more tightly geared to what the customer is most likely to find relevant. The system will automatically push to the customer

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the most popular Artist, Albums or Tracks that have direct relationships with the top Artists / Albums and Tracks that the customer listens to or purchases.

2.2.1.3.1. The importance of 'recency'

It is important that recommendations are only made based upon the customer's recent listening habits, and not their listening habits for all time. This ensures that the suggestions are the most relevant to the customer at the time of creation, and do not consist of a clouded swathe of very broad suggestions that are influenced by a customer that may have, say, very changeable and diverse tastes.

In terms of MusicStation, **recency** is defined by the **last N** Artists / Albums / Tracks or Playlists that the customer has listened to or purchased. The actual value of **N** is configurable based on observations, enabling fine-tuning over time of the recommendation process.

2.2.1.4. Recommendations on the Buzz tab

2.2.1.4.1. Recommendations through News

See Figure 13 Screen capture – News. All **News** content (news stories, events notifications, promotions for particular Artists etc.) is personalised to the customer based upon the same **implicit** and **explicit** factors described for the **Home** tab. Additionally, as described previously, where users click-through on **News** content, e.g. a promotion linking to an Artist homepage, this event is tracked, and is then used as a 'positive vote' for that Artist in the overall recommendation process.

2.2.1.4.2. Recommendations through Buzz members

See Figure 14 Screen capture – Buzz member recommendations.

The **Buzz** tab contains two main elements that contain recommendations directed at each individual customer. These are described in the table in Figure 15.

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Recommendations for members (i.e. MusicStation customers) are made by linking customers whose listening and rating history for music is similar (internally the system measure the 'affinity' of customers to all other customers, and select those with the highest level of affinity for the customer in case).

If a customer selects a recommended member then they are able to listen to, and rate, their Shared Playlists.

2.2.2. Supporting Logical Structures for Making Recommendations

We will have three main structures to support the making of these recommendations.

- Associated Tracks Matrix
- Associated Artists Matrix
- Associated Customers Matrix

We will discuss the physical infrastructure of systems in a later section. For the moment it is enough to consider that these structures will be frequently refreshed, every 24 hours.

2.2.2.1. Supporting Structure 1 – Associated Tracks Matrix

The Associated Tracks Matrix is a matrix of correlations representing how strongly associated pairs of Tracks are in the system, based on ratings, and customer plays.

2.2.2.1.1. Stage 1 - Produce counts of Track associations

For Tracks we will build a matrix like the one above, representing:

Counts of customers who have either/or fully played, or have rated as **Love It!**, the Tracks in the pair.

Important Notes and Rules

The matrix in Figure 16 only considers a universe of 5 Tracks. We are likely to be considering 500,000 for go-live.

In order to be included as a count in 1), the user in question must have listened fully (as defined by the licensing agreements) AT LEAST TWICE. The rationale behind this is that, if a customer listens to a Track more than once, then they probably like it. If they only listen to the Track once then they may only be exploring new music, but not be impressed enough to ever go back to it.

If a customer rates two Track pairs highly, and listens to both more that twice, then this will have the effect of adding 2 to the corresponding intercept in the matrix. This is the maximum influence that one user can ever have on a Track intercept pair.

A Track that has been rated as **Love It!**, but never played, still counts towards an association.

This matrix covers all Tracks, and all ratings and plays, across all services, within the global MusicStation offering. The same applies to the Artists Associations Matrix described further on.

You will note that half the matrix is duplicated across the diagonal. Therefore, in theory, only half of the matrix is needed.

2.2.2.1.2. Stage 2 – Weight the Track associations

We now need to take the matrix from Stage 1 and apply weightings and produce correlations that take account of the fact that some Tracks might just simply be popular to ALL customers (and hence are not necessarily highly correlated for individual associated pairs).

The formula that we apply to do this is known as a TF•IDF formula.

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A description of how the TF•IDF formula works, in the context of keywords belonging to a document or web search, is outlined here:

TF = Term Frequency

A measure of how often a term is found in a collection of documents. TF is combined with inverse document frequency (IDF) as a means of determining which documents are most relevant to a query. TF is sometimes also used to measure how often a word appears in a specific document.

IDF = inverse document frequency

A measure of how rare a term is in a collection, calculated by total collection size divided by the number of documents containing the term. Very common terms ("the", "and" etc.) will have a very low IDF and are therefore often excluded from search results. These low IDF words are commonly referred to as "stop words".

$$Weighting = frequency \times \log_2\left(\frac{1}{p(T_1)p(T_2)}\right)^3$$

Notes on this equation:

- The TF = *frequency* (or the intercept value in the Stage 1 matrix).
- The IDF is represented by the latter (*log*) part of the equation, and is a *base-2 logarithm*.
- $P(T_1)$ represents the overall probability of Track 1 appearing at least once in the different pairings in the matrix (i.e. it is simply how many times it occurs at least once in a pairing, divided by the total number of Tracks).
- The IDF is raised to the power of 3. This is not a fixed constant, but is something that can be experimented with in order to refine the recommendations. A well-

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known online music-recommender uses the value of 3 for this constant, and so we would be wise to follow their knowledge and lead.

As an example of the equation's use, if we wish to calculate a weighting for **Track 1** and **Track 2** from the Stage 1 matrix, then we would perform the following calculation

$$Weighting(T_1, T_2) = 12 \times \log_2 \left(\frac{1}{\frac{3}{4} \times \frac{2}{4}} \right)^3$$

This gives a weighting for **Track 1** and **Track 2** of **34.** We can now produce a new Weightings Matrix, shown in Figure 17, including the sum of all the weightings at the end of each row and column.

2.2.2.1.3. Stage 3 – Normalize the weightings

We now need to normalize the weightings. Essentially all this means is that we create a new matrix where every weighted correlation in the matrix is divided by the overall sum for the correlations in that row or column.

Using the example of **Track 1** and **Track 2** again, we would simply **divide 34 by 110.5**, providing a **normalised weighting of 0.31**.

The result of this is that we now have a set of normalized weightings lying between 0 and 1 as shown in Figure 18.

In the resulting table, the nearer the value is to 1, then the higher the correlation between the Tracks.

In the world of recommendations, the values in the table are now called **Pre-Computed Associations (PCAs)**, by virtue of the fact that they are correlations, at that they are

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reproduced on a regular basis (but generally not updated in an ongoing manner due to the amount of number crunching involved).

2.2.2.2. Supporting Structure 2 – Associated Artists Matrix

The Associated Artists Matrix is a matrix of correlations representing how strongly associated pairs of Artists are in the system, based on ratings, and customer plays, e.g. as shown in Figure 19.

The Associated Artists Matrix of PCAs will essentially be built in exactly the same way as that for Tracks.

The criteria for inclusion in the Artist Plays Matrix is that the customer must have fully played at least one track from that Artist at least twice. Again, the maximum influence a single customer can have on the matrix is a an additional value of 2 (in the instance where they have both rated a pair of Artists as **Love It!** And have fully listened to at least one Track from both Artists at least twice.

N.B. Ratings for Tracks or Albums by this Artist have no influence on the Associated Artists Matrix.

2.2.2.3. Supporting Structure 3 – Associated Customers Matrix

The Associated Customers Matrix is a matrix of correlations representing how strongly associated pairs of Customers are in the system, based on ratings, and customer plays. See e.g. Figure 20.

The Associated Customers Matrix of PCAs can be built as part of the same process for generating the Associated Artists matrix.

The criteria for inclusion in the Associated Customers Matrix is that the customer must have fully played at least one track from the same Artist* at least twice. Again, the maximum influence a single customer can have on the matrix is a an additional value of 2 (in the

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instance where they have both rated THE SAME pair of Artists as **Love It!,** and have fully listened to at least one Track from both Artists at least twice.

N.B. Choosing common Artists here is likely to be beneficial over choosing common Tracks since the implications for calculations and processing power will be lowered.

2.2.3. Making Recommendations

This section describes how the described structures are used to generate recommendations fro:

- "More like this" Track, Album or Artist
- Tracks "You might like"
- Albums "You might like"
- Artists "You might like"
- Playlists "You might like"
- "Recommended Members" as listed on the Buzz Cool Members screen
- Recommended Playlists as listed on the Buzz Cool Playlists screen – is this the same list as Playlists you might like?
- "Find in Playlists?"
- Inbox – editorial and promotional

All the functionality described runs at run-time on a per-request basis*, based upon the calculated PCAs.

See Figures 21, 22, 23, 24 and 25.

2.2.4. Generating Starred Ratings

This section explains how we generate the 5-star ratings for Artists/Albums/Tracks/Playlists.

2.2.4.1. Inputs to the rating system

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There will be two inputs to the star-ratings system - **explicit ratings** (i.e. **Love It!** and **Hate it!**), and **implicit ratings** (i.e. number of listens to Artists / Albums / Tracks, specifically the number of times a customer has **fully-listened** to that Artist / Album or Track, and **at least twice**).

It is recommended that, where possible, the ratings be mad up of a 50/50 split of **explicit** and **implicit** measures.*

* This will also have the advantage that customers cannot simply abusively rate stuff to get it to appear with a higher or lower star rating.

2.2.4.2. Calculating the 5-star rating for Artists/Albums/Tracks/Playlists

2.2.4.2.1. Calculating the explicit rating value

The explicit rating for an Artist/Album/Track/Playlist is simply based upon the proportions of customers who rated the Artist/Album/Track as **Love It!** against those who rated it as **Hate It!**. It is calculated as follows:

1) Take the number of customers who have rated the Artist/Album/Track/Playlist as **Love It!.**
2) Divide the value in (1) by the overall number of customers who have rated the Artist/Album/Track/Playlist (i.e. either as **Love It!** or **Hate It!**)
3) Multiply by 5 to provide a rating value out of 5.

For example, consider that for **Angels - Robbie Williams**, we have **45 Love It!** ratings and **18 Hate It!** ratings. The rating value is then:

$$Rating\_value = \left(\frac{45}{45+18}\right) \times 5 = 3.57$$

2.2.4.2.2. Adjusting the rating value to handle low number of ratings

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I order to avoid abuse, and to prevent lots of 0 or 5 star ratings appearing in the system in situations where only a few customers have rated an Artist/Album/Track/Playlist, we should always include two phantom ratings of **Love it!** and **HateIt!** in the calculation. Thus the final calculation becomes:

$$Rating\_value = \left(\frac{45+1}{(45+1)+(18+1)} \right) \times 5 = 3.53$$

2.2.4.2.3. Calculating the implicit rating value

For calculating the implicit rating value we need to create a baseline for comparison.

The most sensible baseline is one that represents the average number of plays per customer for all Artists/Albums/Tracks/Playlists that **have been fully played at least once by each individual customer** (i.e. it is not fair to include Artists/Albums/Tracks/Playlists that have never been listened to within the calculation). We can that take this baseline to represent a **2.5 rating** within the system, and adjust all other ratings up or down accordingly by normalising the distribution to around the **2.5 rating value**.

As an example, if the average* number of plays per customer for the Track: **Angels - Robbie Williams is 12.90**, and the average number of plays for all Tracks (that have had at leas one full play) per customer is **4.66**, with a standard deviation of 4.23, then we would do the following:

Average plays per customer for **Angels - Robbie Williams = 12.90**

Normalized plays (around a mean of 0) = (AV. PLAYS – OVERALL AV. PLAYS) / (STDEV)

Therefore, **normalized plays (around a mean of 0) = (12.90 – 4.66) / 4.23 = 1.95**

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Therefore, **normalized plays (around a mean of 2.5 stars) = 2.5 + 1.95 = 4.45**

(N.B. It is feasible that, in very extreme circumstances, this value could be < 0, or > 5. In this case we will cap the value at 0 or 5 accordingly)

The overall representation of how this works in a universe of 6 Tracks is represented in Figure 26.

* N.B. Use the MEAN average initially, but we should also experiment with the MEDIAN average since the latter will have the effect of removing the influence of individual customers who just play one Artist/Album/Track/Playlist in an obsessive manner (!)

2.2.4.2.4. Calculating the overall rating value

The overall 5-Star rating is calculated by simply taking the average of the implicit and explicit ratings, and rounding up to the nearest half star (round up since we want to be positive in what we present!).

Thus the overall rating for **Angels - Robbie Williams** = (3.53 + 4.45) / 2 = **3.99**

Therefore **Angels - Robbie Williams** receives a **4-star rating.**

2.2.4.3. Calculating ratings for Customers

The ratings for customers will be based upon a 50 / 50 average of:

1) The ratings and number of listens that a customer has had to their shared Playlists.
2) The number of friends the member has.

The former is calculated in a similar manner to that described in section 2.2.4.2, and likewise, for the implicit part, only considers Playlists that have been **listened to by other customers and at least twice.** Once we have the overall ratings for all the customer's

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playlists then we will simply take an average of all of them to produce a final rating (5 star or other more desirable representation).

The second part is calculated as the mean number of friends with respect to the average number of friends for the entire service data set, i.e:

Normalized friends (around a mean of 2.5) = 2.5 + (AV. PLAYS – OVERALL AV. PLAYS) / (STDEV)

2.3.Search function

This whitepaper describes the search interfaces, processes and results sets that make up the MusicStation music search. Due to the nature of the mobile working environment the search mechanism within MusicStation has been designed so that it is simple and intuitive to use, whilst at the same time being an extremely powerful feature. Emphasis is placed upon providing relevant and accurate results quickly to the MusicStation customer base.

At the same time as this, it should be remembered that much ongoing automated work is being done in the background to push relevant Artists, Albums, Tracks and Playlists to the customer under the **You might like**, **Recently Added** and **Featured Artists / Albums / Tracks / Playlists** menu options. The contents of these menu options are updated constantly and are based upon a customer's unique tastes and their purchasing and listening habits.

2.3.1. Search Interface

2.3.1.1. Basic Search

The basic search provides quick but powerful access to the MusicStation music database. The search is performed by the customer entering a **keyword** (or set of keywords) and then further refining their search by one of:

- Artist
- Album

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- Track

Additionally it is possible to further restrict the search to **non-classical** music only or **classical** music only, with the default being the selection previously used. Otherwise the system will search both.

2.3.1.2. Advanced Search

The Advanced Search screen allows for extensive and finer control to be employed over the search process. Using the **Advanced Search** screen it is possible to filter the result set by:

- Artist, Album or Track
- Genre
- Chart position (highest)
- Minimum customer rating
- Language
- Country

In addition it is possible to search the following fields for **classical music**:

- Work Title
- Album Title
- Composer
- Soloist/Performer
- Conductor
- Orchestra/Ensemble
- Record Label

2.3.2. General Principles to Support Searching in MusicStation

There are ten basic principles that have been adhered to in creating the MusicStation search. These principles are provided here with examples where appropriate.

2.3.2.1. No dependence on non-alphanumeric characters

Different customers will use non-alphanumeric characters in different ways. For example some may use a hyphen as a separator in an Artist title. Others may simply use a space. In the mobile environment entering non-alphanumeric characters can sometimes be tricky and is prone to error. Therefore, for the purposes of search, there is no dependency on non-alphanumeric characters, and by way of example, the following are all considered to be equivalent:

- **s club** 7
- **s-club-**7
- **sclub**7

2.3.2.2. No dependence on character case

This simply means that, for example, the following are considered equivalent

- **s club** 7
- **S CLUB** 7
- **S Club** 7

2.3.2.3. International variations of characters are treated as equivalent

Different customers will use non-English characters in different ways. For example a British person may search for:

- **Bjork**

..when what they really should be searching for is:

- **Björk**

In MusicStation such discrepancies do not matter since the search system matches international variation of English letters to their English alphabet equivalents (and vice versa).

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2.3.2.4. Numerics are treated as the same as their written equivalents (and vice versa)

In an Artist search a customer may enter, for example, "**50 Cent**" or "**Fifty Cent**". Both these cases are handled by the system.

2.3.2.5. Abbreviations and different ways of writing words do not matter

Internal mapping tables ensure that commonly used abbreviations and equivalent representations are understood. Thus the following keywords are all be considered by the system as equivalent:

- **Boys to Men**
- **Boys 2 Men**
- **Boys II Men**

In a similar vein "and" and "&" are considered to be equivalent.

2.3.2.6. There should be no dependence on correct positioning of "The"

We are not concerned about how "The" is used. For example the following keywords are all be seen as equivalent by the system and the correct result will be returned:

- **The Rolling Stones**
- **Rolling Stones, The**, or simply:
- **Rolling Stones**

2.3.2.7. Customers do not always enter the full set of keywords

Someone searching for "**Rage Against the Machine**" may simply enter "**Rage**" as a keyword and expect MusicStation to return a sensible set of results to choose from.

2.3.2.8. Customers do not always spell words correctly

Though we are primarily looking for an exact match we recognize that customers often mis-spell words. We use fuzzy-logic and phonetic matching techniques to suggest search Artists, Albums or Tracks to the customer when all else fails.

2.3.2.9. If they know what they want then take them there

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If a customer searches for "**rage against the machine**" and this results in 1 result being returned then they will be forwarded automatically to the "Rage Against the Machine" Artist Homepage. We will not present them with a result set containing a single Artist that they must then click on.

2.3.2.10. We will learn from use of the system and optimize it accordingly

There may be variations of Artist, Album or Track names that customers search for, that are quite different to the one stored in the database. Structures exist to ensure that when we see a new variation in a search keyword, we are able to match it to the intended Artist, Album or Track name, thus ensuring that all future searches using that variation are successful.

Similarly, when sorting the search results will make use of knowledge of the popularity of the results (as played by customers) ensuring that the most popular (and hence the most likely result for the intended search) are nearer the top. When this is occasionally not correct the customer may choose an alpha-sorted view instead.

2.3.3. The Search Process

The following is a description of the search process from the point where the customer enters their search keyword(s) for an Artist search.

N.B. The same principles below are also applicable to the Album or Track searches.

1) An exact match for the entered **search keyword(s)** is searched for, but based on the underlying principles outlined in Section 2.3.2 - *General Principles to Support Searching in MusicStation*.

2) We then search for instances of the **search keyword(s)** *within* the Artist **names**. For example, given the search keyword "BOB MARLEY", valid matches are:

   a) "**BOB MARLEY ***"

   b) "***** **BOB MARLEY ***", and:

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c) "*** BOB MARLEY**"

(where ***** is a 'wildcard' representing any sequence of characters)

Matches of type (a) are viewed as higher priority in the returned results list than those of type (b) and (c).

If (1) and (2) returns only 1 match then we go direct to Artist homepage (and the Album Homepage for Albums, and the Now Playing screen for Tracks).

Otherwise we list matches from 1), followed by matches from 2) ranked by popularity and then alphabetically.

If we have found matches from the above then we leave the search routine. Otherwise we move on to **approximate matching**:

We repeat steps 1) to 4), but this time by making use of phonetic and fuzzy-logic matching to find matches that sound similar to the keyword or are spelt slightly differently. Any matches that are returned from this process are preceded by the header: "**No exact matches found. Did you mean:**" so that it is clear to the customer that the search results are not precise matches. The result set is again ranked by popularity and then alphabetically.

2.3.4. Finding in results

In instances where the results list is large the customer may search for more specific items by using the 'Find' option on the 'More popup' menu to navigate through the list looking for a specific string. When the customer submits the first occurrence of it is found. The next result can be moved to quickly by use of the 'Next' option on the left-hand soft-key.

2.3.5. Refining the Search

It is possible to refine a search from the results set page using an option on the 'More popup' menu. What this means is that the user may search again (in either the Basic or Advanced Search) but with the search keyword box and all pre-selected filters maintained allowing for them to be quickly refined.

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2.3.6. Format of the Search-Results Set

When a search results in a search result-set being returned the count of elements in the set will be presented in the top right of the page.

The format of the actual results themselves is different dependent on whether the search was for an Artist, Album or Track. These formats are described in greater detail in this section.

2.3.6.1. Artist Search

The top **Artist Name** matches are returned, sorted by popularity of the Artist as measured by the system. These are followed by further matches of similar (but lower) popularity, sorted in alphabetical order.

2.3.6.2. Album Search

The Album search will return results in the following format:

Album Name – Artist Name (Year of Release)

Having the 'Year of Release' ensures that, for example, re-releases (which may contain bonus or updated tracks) can be easily distinguished from the original.

The top matches are returned sorted by popularity of the Album as measured by the system. These are followed by further matches of similar (but lower) popularity, sorted in alphabetical order.

2.3.6.3. Searching Tracks

The Track search will return results in the following format:

Track Name – Artist Name (Track Length)

Having the 'Track Length' (in **mm:ss**) ensures that Tracks having the same name (but of different length) can be distinguished. This can often occur with re-mixes on different Albums.

N.B. Having the Album Name here is deemed as unnecessary and undesirable due to the overall length of the string that would result in what is a tightly restricted environment. Also, if the same Track occurs on different albums, then it will only be returned once.

The top matches are returned sorted by popularity of the Track as measured by the system. These are followed by further matches of similar (but lower) popularity, sorted in alphabetical order.

2.3.7. Find in Playlists

At suitable points in the system, when a Track is being referenced, the customer can search for that Track within Playlists by using the 'More popup' option 'Find in playlists'. A list of Playlists shared by other MusicStation customers (or contained within other system-published Playlists) is returned, sorted by popularity.

2.4.Multi-language support

This document describes how we manage and use messages to build a client build for a specific device, service and client version.

2.4.1. Development

Each client version released by Development has a default set of messages used by the client. This message set is maintained during the development of a release by the developers. Each message in the message set is text or a label that appears somewhere in the client. See Figure 27 Properties of a message.

A message is added to the default message set by adding a record to message_set_item with the next available message_index. The message index is used in the source code to access messages in the message set. The index is defined as a constant in the Message object:

```
public static int OPEN_LABEL_INDEX = 104;
```


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This constant can then be used to get the message in the currently selected language:

```
openCommand.setLabel(messageSet.getMessage(OPEN_LABEL_INDEX));
```

This message set is set as the default message set for a client version.

Images that are packaged in the build are defined in the default image set. Images are selected from this set based on the image role. See Figure 28 Properties of an image.

The client version is released with the default message and image sets. See Figure 29 Properties of the client version.

2.4.2. Client Version Release

The following records are packaged with a client version release from development to the Build System:

- The default message set and message set items
- The messages and message keys used by the default message set
- The message langs in English and any other test languages
- The default image set and image set items
- The images used by the default image set

2.4.3. Message Translation

Translated messages can be loaded into the Build System at any time. A language is available for selection by the build user when each message in the default message set has a message lang for that language. See Figure 30 Translated messages.

When adding a message to a service message we enforce that a message lang record exists for all languages supported by the service. Similarly if a build user selects a device to use with that service we ensure that all device messages have a message lang for all languages supported by the service.

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Because a client build is built for multiple languages but we can only include one icon, logo and splash screen in the jar there's no need for translation of images. The images defined for a service are in the default language for that service.

2.4.4. Device Messages

A message set can be defined for a device. This allows us to override messages in the default message set for the selected device. See Figure 31 Device Message properties.

For example a help message may be specific to a particular device: see Figure 32 Device Message / Help Message properties.

At time of build, messages defined for the selected device override messages in the default message set that have the same message key.

2.4.5. Service Messages

Messages can also be defined for a service. These messages override the default and device message sets although in practice messages should be either device specific or service specific and not both. See Figure 33 Service Messages.

A service also has a default language and a set of service languages. These are set as the default language and supported languages for the client build however the build user is able to edit these before doing the build if the build needs a different default language or only a sub-set of the languages.

2.4.6. Service And Device Specific Message And Images

In some instances we want to specify that a message or an image is specific to a particular device and a particular service. For example we may want to use an service icon that has been manually resized on a set of devices. See Figure 34 Service and Device Specific Messages.

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2.4.7. Message Substitution

Any service or device property that can be referenced in the database is available for substitution into the default message set. For example to substitute the customer support phone number:

To get help please call ${service.company.companyAddress.customerSupportTelephone}

The default message set supports substitution and this is hidden from the build user. When they view the default message it will have the phone number already substituted in.

Device and service messages also support substitution. The tools that manage device and service messages should hide the syntax from the build user.

If a substituted value isn't defined for a device or service the build user is required to set the value before the build can proceed.

2.4.8. Client Build

The user has chosen the client version, device and service. The default message set for the version provides the base for the messages selected for the build. These messages are then overridden by the device and service messages sets respectively. These are then overridden by any messages specified in the service_device message set.

The selected languages for this build are then used to filter the message lang records for the supported languages.

A client build message is created for each message in each language and copied into the client build message table for this build. See Figure 35 Client Build message.

Taking a copy of the message at build time allows us to:

- Keep a record of any substitutions made

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- Update messages without having to duplicate locked messages

A client build image is created for each image in the default image set and then overridden with any images in the service image set. These are then overridden by any images specified in the service_device image set. These images are then resized and renamed and packaged in the jar.

Client build messages and images form part of the client build definition and are published to a Production Server when that client build is published to it.

2.4.9. Publishing Client Builds

For each client build the following message related tables are released to the Production System:

- Client_build: The record for this client build
- Client_build_message: The records for this client build
- Message: Each message referenced in client_build_message
- Message_key: The key for each message
- Message_lang: The message_lang for each message in each supported language.
- Client_build_image: The records for this client build
- Source image files: Each image file referenced in client_build_image

2.5. Roaming network selection

When the phone is "Roaming" a user will experience additional charges when using MusicStation. These charges will be applied when a user downloads tracks or when MusicStation updates menu items and images while the phone is roaming. A user can configure the Roaming behaviour for MusicStation.

2.5.1. Configuring Roaming Behaviour

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See Figure 36 Screen capture- Roaming options

Within MusicStation a user can configure the Roaming behaviour for MusicStation. See Figure 37.

If the Roaming behaviour for *Menu & picture updates* is set to *Ask* they will be shown a warning message which will ask them to approve / deny downloads, updates and additional charges while roaming for a given session. See Figure 38 Screen capture - Roaming Warnings

When the user attempts to download a track while Roaming and the Roaming behaviour for tracks is set to *Ask* they will be shown a warning message which will ask them to approve / deny downloads, updates and additional charges while roaming. This action, approval / denial, will configure the settings for the current session. See Figure 39 Screen capture - Roaming Warnings – Ask prompt

2.5.2. Roaming Warnings and Errors

Billable actions can be classify in two categories:

- **Track Downloads** – downloading of audio files.
- **Menu and picture updates** – updating of menus includes items such as Chart listings, You might like recommendations, Cool members and Buzz playlists. Updating of pictures such as a changed image on a Buzz profile or downloading new images for artist and album pforiles.

The follow process will occur for every connected billable action for each new session of MusicStation.

- The server should examine the response headers of all requests coming from the client.

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- When roaming is detected and the user selects a billable action then examine the roaming option set for that type of action on the Options menu.
- If that action is marked as **On** (allow) on the Roaming options menu then the action will be performed as normal.
- If that action is marked as **Off** (disallow) on the Roaming options menu then a popup will be displayed explainng that it is blocked.
- If that type of action is marked as **Ask** on the Roaming options then the first time in a session that an action of this type is selected then the Roaming Warming will be displayed. Subsequent actions will then be treated based on the answer that the user provided.

2.5.3. Roaming Warnings

2.5.3.1. Roaming Options set to Ask

When billable actions are set to Ask on the Roaming Optios menu the following Roaming Warning is displayed. The user will be prompted to select a setting for this type of billable action while roaming. See Figure 40 Screen capture - Roaming Warning – Ask prompt

- If the user selects **Don't Allow** then the all subsequent actions in this area will display the Roaming error for the rest of this session or until Reset Location is selected
- If the user selects **Allow** then all subsequent actions in this area will go ahead with no further prompts, for the rest of this session or until Reset Location is selected
- If the user selects Terms & Conditions a WAP page display terms and conditions for MusicStation use. Closing the WAP browser returns to MusicStation at the above prompt.

As soon as the user returns to their home network this warning would no longer be displayed.

2.5.3.2. Roaming Options set to On

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When billable actions are set to **On** on the Roaming Options menu the following Roaming Warning is displayed the first time a user performs a billable action in a roaming session. The user may have set the roaming preferences some time in the past and forgotten that they had allowed these chargeable actions. See Figure 41 Screen capture – Roaming Options set to On.

The user is warned that they will be charged for either track downloads or menu and picture updates. Track downloads and / or menu and picture updates will proceed. These options can be changed on the Roaming options menu.

2.5.3.3. Roaming Options set to Off

When billable actions are set to **Off** on the Roaming options menu the following Roaming Warning is displayed the first time a user performs a billable action in a roaming session. See Figure 42 Screen capture – Roaming Options set to Off

The user is warned that Track downloads and / or menu and picture updates will not proceed. These options can be changed on the Roaming options menu.

2.5.4. Detecting Roaming

The following process describes how MusicStation detects that a phone is roaming:

- Every HTTP request from the MusicStation client to our server goes through the MNO's gateway
- They have configured the gateway to add certain information to the header. For example:

X-WSB-Identity:$(MSISDN); X-TELENOR-SGSN:$(RADIUS:SGSN-IP-Address);X-bearer:$(BEARER_TYPE)

- The second field here is the IP address of the SGSN. It is the IP address of the gateway which the handset is communicating through.

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- We compare this IP address with a list of IP addresses of the gateways on the MNO network.
- If the IP address is not on this list then this means that the handset is roaming

The server makes this evaluation by looking up the IP address in the list and if it decides it is roaming it then it pushes that status back to the client which will then run through the rules and user prompts described in *2.5.2. Roaming Warnings and Errors*.

3. Community features

In addition to an end user's ability to interact with the server in an individual capacity the client and server also provide certain community functionality whereby users can interact with one another. Each user has the ability to create an individual profile, send 'friend' requests to other users and thereafter send their playlists or recommendations by artist, album or individual tracks to confirmed 'friends'.

3.1. Registration

The first step in participating in the community features is the requirement for a user to register a unique profile within the community environment (also known as Buzz)

3.1.1. No member name defined

When the user attempts to access the community features but the user has not registered their Buzz user name then the Buzz home page displays an invitation for the user to register with Buzz. Member name is only mandatory field:

- customer_preference.nickname

In addition the user can optionally enter a catchphrase and/or select an image as their avatar:

- customer_preference.catchphrase
- customer_preference.avatar_image_id

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If member name is unique in this service, and passes the swear word filter then the Buzz home page shows the newly defined details for this member.

If member name is not unique in this service the client returns to the screen, replacing the user entered member name with the suggested member name for the user to either accept or modify.

When the user has provided a member name then the Buzz home page shows the previous details for this member and a count of the user's confirmed friends and the number of listens to their shared playlists:

- Customer_count.friend_count
- playlist_count.play_count

3.1.2. Member name defined

When the user has provided a member name then the Buzz home page shows details for this member.

- customer_preference.nickname
- customer_preference.avatar_image_id
- customer_preference.catchphrase
- customer_data.calculated_rating
- Customer_count.friend_count (count of customer_to_customer where customer_id = ${customerId} and customer_to_customer.friend_status = APPROVED)
- play_count_otherplaylist (sum of playlist_count.play_count where playlist.owning_customer_id = ${customerId})

Rating is computed from their popularity. The algortihm is included in 2.2 Recommendations.

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Menu options give access to shared playlists and ranked community members (3.4 Buzz Cool Members) who will be of interest to this member. They also give access to the user's own playlists and their friends (3.6.1 Buzz Friends).

3.2. Edit My Profile

An option exists via the context sensitive menu that allows the user to edit their profile, which is displayed on their Buzz profile screen and can be viewed by other members if appropriate options are set. It is displayed when the user selects an "Edit My Profile" option from the context sensitive menus within the Buzz Main screen. The user can edit their Member Name, their catchphrase, their image and viewing options:

- **Show Profile -** controls whether this member's profile is ever visible to other members. The default is Yes.
- **Show my top tracks -** controls whether this user's favourite artists are listed on their member profile screen. The default is Yes.

3.3. Shared Playlists

A menu option gives access to shared playlists which will be interesting to this user.

"You Might Like" playlists are other users' shared playlists which have been selected for this user by the Recommendation Engine. See 2.2 Recommendations.

For each shared playlist the client displays the Shared playlist name, the star rating and the member who created the playlist:

- playlist.name
- playlist.owning_customer_id
- customer_info.recommend_playlist_set_id
- playlist.image_set_id
- playlist_data.calculated_rating

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3.4. Buzz Cool Members

A menu option gives access to members who will be interesting to this member. "You Might Like" members are other members who are similar to this member. See 2.2 Recommendations for detail of how this list is created. Only members who have the "Show Profile" option set on their Edit My Profile screen and are not already confirmed friends of the user will be listed here with the following details:

- customer_preference.nickname
- customer_preference.avatar_image_id
- customer_info.recommend_customer_set_id
- customer_data.calculated_rating
- count of playlist where owning customer_id = ${recommendedCustomerId}

3.5. Another Member Profile

A user can view details of another member of the MusicStation service. When a member is opened from a list of members (e.g. from the 3.4 Cool Members screen) aspects of their profile are displayed. This screen can never be shown for a member who has not yet signed up to Buzz and set up at least their member name. The view includes a list of all of this member's playlists that they have shared. Opening one of these displays the playlist.

For each playlist the screen shows the rating and the number of times that a track from that playlist has been listened to with a qualifying play. If there are no shared playlists then the message "**This member has not yet shared any playlists**." is displayed in this section under the Shared Playlists heading.

In addition, a list of the other member's top tracks is displayed. This section (including the title) is only shown if the member being displayed on this screen has the "Show my top tracks" flag set on the 3.2 Edit My Profile screen. The list displays this member's top 5 tracks. This is the all time top 5 most played tracks by this member listed with most popular at the top. The user can select Play on any of these tracks. The fields included are:

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- customer_preference.nickname
- customer_preference.avatar_image_id
- customer_preference.catchphrase
- customer_data.calculated_rating
- play_count_otherplaylist (sum of playlist_count.play_count where playlist.owning_customer_id = ${customerId})
- Customer_count.friend_count (count of customer_to_customer where customer_id = ${customerId} and customer_to_customer.friend_status = APPROVED)
- playlist.name
- playlist_data.calculated_rating
- playlist_count.play_count
- playlist.image_set_id

3.6. Buzz Add as Friend

This screen is displayed when a user selects "**Add as Friend"** option from the context sensitive menu anywhere a member is selected. The user can send a message as part of their friend request.

When the Add as Friend option is selected against a member, and the member is not yet this user's friend a friend request screen is displayed with fields for the name of the member the friend request is going to and a text body where the member can enter some text which will be sent to the other member as an introduction as to who they are. Fields include:

- customer_preference.nickname
- customer_to_customer_request.body

3.6.1. My Friends

A "My Friends" menu option displays a list of this member's friends. If the user has no friends then this displays the message "Your list of friends will be shown here". In addition

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a list of this member's pending friends requests is dsiplayed. This title and list is not shown if there are no pending requests. Fields include:

- count of customer_to_customer where customer_id = ${customerId} and customer_to_customer.friend_status = APPROVED
- from customer_to_customer_request where friend_status = REQUESTED

3.6.2. Add Friend by Name

A user can select an "Add Friend by Name" menu option to add another user by their profile name. This option is only available if this user has done the Buzz registration and registered their member name. The user needs to enter the member name of the friend to send friend request to. Fields include:

- customer_preference.nickname
- customer_to_customer_request.body

When the member selects "send" and a member with that name is found (whether that member has their Show Profile option set or not) a
When the member selects "send" and no member of that name is found the user is notified and asked to re-enter the member name.
When the member selects "send" and that member is already this user's friend the user is again notified to this effect

3.6.3. Add Friend by Telephone Number

This screen is displayed when a user selects an "Add Friend by Number" option. The user needs to enter the phone number of the friend to send friend request to. We assume that they are entering without the country code and the default country code will be that of the country that the service is associated with. Fields include:

- customer_person.mobile_msisdn
- customer_to_customer_request.body

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When the member selects "send" and a member with that number is found (whether that member has their Show Profile option set or not) a
When the member selects "send" and no member of that number is found the user is notified and asked to re-enter the member name.
When the member selects "send" and that member is already this user's friend the user is again notified to this effect

3.7. Send Track or Playlist

This screen is displayed when a user selects a "Send to Friend" option on a track or playlist anywhere in the context sensitive menus. The user may select one or more friends to send the track or playlist to. The user must have their own member name set and at least one friend for the Send to Friend option to be enabled. Fields include:

- mail_attachment.track_id
- customer_preference.nickname
- customer_mail.customer_id
- mail.body

A list of this member's friends is displayed. The user clicks a friend to select and clicks again to deselect. Any number of friends may be selected. For each friend their rating, number of friends and number of listens are displayed.

On selecting send a confirmation message is displayed and the user is returned to their initial screen.

3.8. Send a Message

The client also has the capability od sending a message without the addition of content identification. The message screen displays the following fields:

customer_mail.customer_id

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customer_preference.nickname
mail.body

3.9. Who's Listening

This screen is displayed when a user selects a "Who's Listening" option from the More menu on a track, album, artist or playlist anywhere in the menus. The screen shows the last ten members registered with Buzz who played the item that this user selected Who's Listening option on. What is displayed depends on the type of objects the option was selected against as follows:

- Track – the last 10 members to play that track
- Album – the 10 members to play a track that is in that album
- Artist – the last 10 memebers to play a track by that artist
- Playlist – the last 10 members to play a track from that playlist.

The fields are:

- customer_track order by last_play_date
- customer_release order by last_play_date
- customer_artist order by last_play_date
- customer_playlist order by last_play_date

3.10. Inbox

Included in the community views is an "Inbox" that displays all messages to a user including messages and recommendations from other users.

3.10.1. Inbox Track Recommendation Message Arrived

When a member sends this user a track a message will appear in the Inbox with the following fields defined:

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- mail.kind = MESSAGE
- mail.from_customer_id
- mail.sent_date
- mail.kind = TRACK RECOMMENDATION
- mail.from_customer_id

If the user opens a message by selecting it then a message screen is displayed with the following fields:

- mail.from_customer_id
- customer_preference.avatar_image_id
- mail.sent_date
- mail_attachment.track_id

Recommended tracks. Albums, artists or playlist names appear highlighted in the message and as a user scrolls through the message each subsequent one is highlighted.

Clicking on a track name has the same behaviour as if the user had selected Add to Playing on a track in a track list. I.e. the track will be added to the end of the current playlist and a popup displayed notifying the user of this.

3.10.2. Inbox Playlist Recommendation Message Arrived

When a member sends this user a playlist a message will appear in the Inbox with:

mail.from_customer_id
mail.kind = PLAYLIST RECOMMENDATION
mail_attachment.playlist_id

If the user opens a message by selecting it then a message screen is displayed with the following fields:

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- mail.from_customer_id
- customer_preference.avatar_image_id
- mail.sent_date
- mail.body
- mail_attachment.playlist_id

3.10.3. Inbox Friend Request Message Arrived

When another member makes a friend request to this member then a message will appear in this member's inbox. When opened they have chance to approve or deny it. We do this within a popup since the user is being asked for interaction. The message heading displays:

- customer_to_customer_request.to_customer_id
- customer_to_customer_request.fiend_status = REQUESTED

Opening the message displays:

customer_to_customer_request.to_customer_id
customer_to_customer_request.body

Selecting continue displays a pop-up with the options:

- Approve – only displayed if Friend Request highlight (don't grey out since for vast majority of Inbox items this option is not relevant)
- Deny – only displayed if Friend Request highlight
- Block – only displayed if Friend Request highlight
- Report Abuse – only displayed if Friend Request highlight

The users response is stored in:

- customer_to_customer_request.response (APPROVED, DENIED, BLOCKED, ABUSED)

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3.10.4. Inbox Friend Request Response Arrived

When a member responds to a friend request from this user then that response will appear in this member's inbox. There are three possible responses that this member will see depending on whether the other member **accepted, denied** or **blocked** the friend request:

- customer_to_customer_request.friend_status

The table in Figure 43 shows the title, content and result of the responses.

3.10.5. Inbox Text Message Arrived

A text message is similarly displayed in the Inbox and the relevant fields are:

- mail.from_customer_id
- customer_preference.avatar_image_id
- mail.sent_date
- mail.body

3.11. General Message Alerts and Expiry

3.11.1. Message Alerts

When a message or messages arrive for a member then we display one of the small popups at the base of the screen. The popup will be displayed once for each group of messages that arrive, and can be displayed as soon as the server has passed those messages to the client. The next messages will be checked for and displayed 2 seconds after the client has snapped back to the Now Playing screen so as not to interrupt the user flow. If there is no Current Playlist then the popup is displayed 2 seconds after when the client would have snapped back if there had been a Current Playlist.

After one popup has been read and acknowledged then if any more messages arrive during this session then another popup will be displayed.

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Messages sent while this member was offline will therefore likely be displayed soon after they start the application.

3.11.2. Message Expiry

Read messages will be expired **1 day** after they have been read.
Unread messages will be expired **5 days** after the user has been alerted to their existence.
Unread messages will be expired **30 days** if the user has not been in the application and hence not been alerted to their existence.
Expired messages will be removed from the Inbox at a convenient time. It is not essential that the expiry periods are adhered to exactly. For example they might be removed from the Inbox at the start of the next session after their expiry. An additional field is therefore defined for the date mail is received:

- customer_mail.received_date

4. Graphic User Interface (GUI) features

Appendix 1 describes the GUI.

5. Communications architecture

5.1. mCom

5.1.1. Overview

MusicStation client applications are required to connect to the MusicStation server to download and upload various data. The protocol that MusicStation uses to connect to the server must be capable of being implemented on a variety of client technologies, e.g. Java,

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Symbian, and Windows Mobile. It must also solve the issues documented in the document "Connected MusicStation Issues and Requirements"

5.1.1.1. Protocol History

MyFone used HTTP to transfer data. This experience showed up several issues with the HTTP request and response having to pass through operator gateways. Operator gateways and various mobile phones regularly interfered with the HTTP headers, usually by failing to forward them. This is one of the key factors that led to the creation of this protocol.

To transfer several files in one response, this protocol took inspiration from MIME. An earlier revision of this document used MIME like boundaries to separate the different files in the response. This was changed to use the offset and length notation in the header. This allows a client to quickly access the data objects. Only the header needs to be parsed, and not the body contents. (see section 3.2.7)

Previously status codes used a binary representation to allow them to be extensible whilst still being understood by older clients. This has been simplified to use integer values that can be easily understood by humans as well as by the client. The server sending the most appropriate status code to the client addresses the issue of introducing new status codes. The server will only ever send status codes that the connected client version understands.

It was previously not possible to uniquely identify acknowledgments if the same file had been requested several times in a session, or if the acknowledgement was sent in a different session to the session that the data file was sent in. The acknowledgement id principle used in Sent and Put lines solves this issue.

5.1.1.2. Protocol Overview

The client must initiate all communication because of the way in which mobile phones connect to the internet. As the mobile phone does not have a static IP address, and because it will usually connect via a mobile operator gateway there is no way for the server to initiate the communication. MIDP2.0 handsets could use the Push Registry functionality to send an SMS to the application requesting that the client makes a request to the server, but this functionality may not be available on all target handsets and client platforms, so therefore the MusicStation protocol should be based upon the client initiating the communication.

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The protocol must be able to run over HTTP and TCP/IP socket connections. These are the two most commonly available connections made available to us by the client platforms.

The protocol will assume a reliable transport layer. The protocol will not need to be able to re-request individual packets of a particular response. Therefore UDP socket connections will not be a supported transport mechanism. To support an unreliable transport layer would require a lot of extra functionality in the MusicStation protocol and TCP is available on all clients that have UDP.

The protocol must be able to support the client transferring data to the server as well as the client making requests for data from the server. This is required so that error data, logging data, usage data, playlist information and user related data can be transferred from the clients to the server.

As the MusicStation is a request / response protocol it is modelled closely on HTTP, borrowing several of HTTPs features.

The MusicStation protocol is text based using the ASCII character set only, this is so that it can be implemented on many different client platforms without any of the encoding issues associated with binary data.

The diagram below shows the request/response flow between the client and the server. This is an example of a simple request from the client being fulfilled by the server. All client/server communication happens in this same basic way. See Figure 44 Request / response flow between client and server

The next diagram shows how the server sends a request to the client. As the client/server communication must always be triggered by a client request, the only way for the server to make a request from the client is for the server to piggyback the request on a response it sends to the client. See Figure 45 Server sending a request to the client.

Note that in normal operation the server will always respond to a client request, even if there is no data in the response. The response may include just a status code (see 'The Server "Response" protocol' section).

Robot clients and requests exceeding a requests per minute threshold are not normal operation, and the server has no obligation to respond to these requests. Real clients that do not receive a server response are expected to retry the request after a reasonable time.

Like HTTP the MusicStation Protocol uses a header to hold the meta-data about the body of the message, which contains the actual data being transferred. This document describes the protocol, which is concerned with just these headers. The body of the message can differ for the various client implementations. Like HTTP the header and body are separated by an empty line.

5.1.2. The Client Request protocol

5.1.2.1. Header

5.1.2.1.1. The protocol identifier

The first part of any request will be the protocol identifier. This is so that the server receiving this request can validate that the data it has received is indeed from a client. The protocol identifier should be short so that it does not put an overhead on the request. The protocol identifier used by MusicStation is:

MSTP

This stands for MusicStation Transfer Protocol.

5.1.2.1.2. The protocol version number

Along with the protocol identifier is the protocol version number. This protocol identifier is entirely separate from the client version number, the server version number and the data objects used by the client version number.

There can be many different versions of the client application that will all use the same protocol version number.

The protocol version number will be in the form major.minor

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The minor number should be increased for incremental changes to the protocol, and the major number should be increased with significant changes to the protocol. Initial development versions of the protocol will have a major number of 0. This will be incremented to 1 on the first production release of the protocol.

The server software should always be able to handle every released version of the protocol so that it is backwardly compatible with all older client versions.

The protocol version number will be on the same line as the protocol identifier, and separated from the protocol identifier by a forward slash.

MSTP/0.1

This line indicates that this is version 0.1 of the MusicStation protocol.

5.1.2.1.3. The request identifier

Each request sent by a MusicStation client will include an identifier. This identifier must be unique to this request in the current session. There is no requirement for the request identifier to be globally unique. This request identifier can be any string up to 32 characters long.

This could be implemented as an integer starting at 1 and being incremented for every request made by the client.

This request identifier is required so that the server can identify duplicate requests from clients. MyFone experience has shown that mobile phone client requests can sometimes be very unreliable. This means that the client must be able to automatically retry a request if it has not received a response within a reasonable amount of time.

When the client has not received a response, this could be because the request never got as far as the server, or it could be because the server's response got lost in the operator gateway on it's way back to the client.

By including the request identifier it is straightforward for the server to identify duplicate

requests.

The client must send the same request identifier for any re-tried requests.

The request identifier can come at any point underneath the request identifier and request version number.

MSTP/0.1
RequestId: 123456

This identifies a request by this client. If the client retries this request, the request id in the retry must by 123456.

5.1.2.1.4. Client name and version number

Every request must include the client name and version number. This information can then be used on the server to perform a look up of the abilities of this client. This means that new abilities can be added at any time to the client without having to change the information given in the protocol.

For example, if a client identifies itself as the MIDP version 0.4.6 client, then the server knows which format it need to return the data objects in. The server also knows what music encoding is supported by this client. And the server knows that this client does not support encrypted music files.

MSTP/0.1
RequestId: 123457
Client: MusicStation 0.4.6 MIDP Nokia/N70

This identifies the client as the Java client version 0.4.6 running on a Nokia N70 handset. The server can then look up which abilities this client has.

The format of this string:

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"MusicStation" [major].[minor].[micro] "Variant name" "Platform identifier"

See Figure 46 for details.

5.1.2.1.5. User's globally unique identifier

Every request must include the user's globally unique identifier. The one exception to this is the initial registration request. If a request does not include the user's globally unique identifier, then the server will respond with notification that the client is required to register.

This globally unique identifier allows the server to lookup various information about the user.

The client should not construct the globally unique identifier. The identifier will be created by the server during the registration process, and then assigned to the client. The client must then include this identifier in every subsequent request.

MSTP/0.1
RequestId: 123458
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ

This identifies the user with the Globally Unique Identifer AB12YZ. The server can use this information to look up user details such as preferred language, territory, operator and branding.

5.1.2.2. Data requests

5.1.2.2.1. Basic data request

Most of the requests from the client will be a request for data from the client. For example the client may request the latest news from the server.

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MSTP/0.1
RequestId: 123459
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Get: inbox.data

This is an example of a request for the inbox.data data object file.

5.1.2.2.2. Data request with path information

Data requests may also have path information associated with them. This uses a syntax similar to HTTP URLs. A / (forward slash) character is used as a directory separator.

MSTP/0.1
RequestId: 123459
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Get: games/namethattune/question.data

This is an example of a request for the question.data data object file which has the path games/namethattune.

5.1.2.2.3. Data request with query

Data requests may optionally include parameters that the server will use to construct the data object to be returned to the client. This request data is included by using HTTP query string syntax.

MSTP/0.1
RequestId: 123460
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ

Get: advncedSearch.data?type=artist&query=artist%20name&country=uk&language=en

This is an example of a request for the advanced search results. The requested resource has a ? (question mark) character to separate the name of the requested resource from the parameters for this resource. The parameters are name/value pairs. Each name/value pair is delimited by a & (ampersand) character, and the name and value part are separated by an = (equal sign).

The values have been URL encoded, so that the space character in the search term "artist name" has been replaced by the URL encoded version %20.

5.1.2.2.4. Data request with multiple requests

The client may request multiple resources from the server at the same time. To do this, the client sends several GET lines, one for each resource requested.

MSTP/0.1
RequestId: 123461
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Get: inbox.data
Get: charts.data

This is an example of a request for the inbox.data file and a request for a charts.data file. A situation like this may occur when the client is making a request for a resource it requires immediately (in this example inbox.data), and is also required to update a resource in the background (in this example charts.data).

The GET lines should be ordered in the priority that the client would like the receive the resources in the server response.

Occasionally the client may have a partial response cached, and require only some of the data returned from the server. In cases like this, the client may want to make a request for only a certain part of the data.

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The client can do this by using the range parameters on a GET line. The range parameters are separated from the requested resource name by a ; (semi colon) character.

If there is more than one range parameter then the range parameters are separated by a ; (semi colon) character.

The range parameters are from and to. Both of these should be followed by an = (equal sign) character, and then an integer number of bytes.

5.1.2.2.5. Partial data request

Below is an example of a partial request for the inbox.data file. The client is requesting all of the inbox.data file from the 34th byte onwards.

MSTP/0.1
RequestId: 123462
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Get: inbox.data; from=34

Below is an example of a partial request for the inbox.data file. The client is requesting all of the inbox.data file from the 128th byte up until the 256th byte.

MSTP/0.1
RequestId: 123463
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Get: charts.data; from=128; to=256

When making a range request, the client should not expect the returned data to be of the range asked for. The server response will include the details of the range returned, and the client should use the range information in the server response, and not the range information in it's own request for further processing. This is because the server may have a reason for

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returning a different range of data. For example if the data has changed since the client last requested it.

5.1.2.3. Sending data to server

On occasions the client may need to send data to the server. For example, to send error information to the server. The client can do this by using the put line.

A Put line has several parts. Each part is separated by a ; (semi colon).

Put: error.data; ackId=1; offset=0; length=160; type="application/octet-stream"

where: see Figure 47 for details of error data.

This is an example of the client sending error data to the server. See Figure 48.

The block of zeros and ones signifies the body of the message. This is the binary data that is being transferred by this protocol. The format of this data is outside the scope of this protocol because the format will differ depending on the client implementation technology.

The data in the body starts at position 0, and has a length of 160 bytes. The offset and length values in the Put line reflect this information.

The content type in the Put line tells the server how to interpret this data.

5.1.2.3.1. Send data with multiple puts

The client may be required to send multiple resources to the server at the same time. In a similar way to using multiple Get lines, the client may send multiple Put lines.

See Figure 49 for an example of the client sending error data and a photo to the server.

In the body of the request, the error data is shown in bolder text to the photo data. The length and offset positions in the request tell the server the offset into this data, and the length of the data.

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5.1.2.3.2. Send data with parameters

In a similar way to the Get line, the Put line also supports parameters on a Put.

The syntax for this is the same as the Get line syntax, which is modelled on the HTTP query string syntax.

In Figure 50 is an example of the server sending a Jpeg photo with a single parameter (name = "Fave Tracks").

Note, although the Put line is very similar to the Get line, the Put line does not support the range values From and To. A failed Put will require a full resend of the data. The client will know whether the Put has failed because it will not receive an acknowledgment receipt from the server (see 'The server "Response" protocol' section)

5.1.2.3.3. Client acknowledgements

So that the server can always have perfect knowledge of what data exists on each client, the client is required to acknowledge the receipt of every piece of data sent to it by the server. This is done by sending one Ack line for each data file successfully received and stored.

The Ack line parameter is the ackID assigned by the server when it sends the file.

MSTP/0.1
RequestId: 123466
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Ack: 2006061911030001CHARTS

This request shows the client acknowledging that it has successfully received and stored the data file which had an assigned acknowledgment id of 2006061911030001CHARTS.

The client must only acknowledge fully received files. It must never acknowledge partially received files. If a client partially receives a file, it should make a Get range request for the rest of the data. Once all of the data has been received and stored, the client can then send

the acknowledgement for this data.

5.1.2.3.4. Client acknowledgment with multiple acks

A request may include multiple acknowledgement lines.

MSTP/0.1
RequestId: 123466
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Ack: 2006061911030001CHARTS
Ack: 2006061911030001INBOX

This request shows the client acknowledging that it has successfully received and stored the data files with acknowledgement ids of 2006061911030001CHARTS and 2006061911030001INBOX.

5.1.2.3.5. Not acknowledged notification

If the client does not successfully receive and store a data file it has requested, it should send a Not Acknowledged notification to the server.

MSTP/0.1
RequestId: 123466
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Nak: 2006061911030001CHARTS

This request shows the client telling the server that there was a problem with the receiving or storing of the data file with acknowledgement id 2006061911030001CHARTS. The server will now know that this file does not exist on the client.

Usually when the client sends a Nak, it is very likely to have some accompanying error data that explains the reason for the Nak. If the server receives a Nak, and no error data, it may

TRILLER EXHIBIT 1006-00221

want to ask the client to send the log file details. If the client persistently sends Naks to the server, the server may want to increase the logging level on the client to help identify the cause.

5.1.2.4. Session identifier

Each request the client sends to the server should include a session identifier. The client should not remember this session identifier between restarts. On the first request after starting up, the client should not include a session identifier. The server will respond by sending back a new session identifier. The client should then include this identifier in every subsequent request until the user closes the client.

MSTP/0.1
RequestId: 123467
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
SessionId: FJSKNBKSKSDKFLSH
Get: inbox.data

This request shows the client has previously been assigned a session identifier of FJSKNBKSKSDKFLSH.

For more details on how the client gets this session identifier see the 'Server "Response" protocol' section.

5.1.3. The Server Response protocol

5.1.3.1. Header

5.1.3.1.1. The protocol identifier

The protocol identifier used in the server response should be identical to the client request protocol identifier. Clients should check this identifier so that they know the response if in the MusicStation Protocol format.

The protocol identifier used by MusicStation is:

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MSTP

5.1.3.1.2. The protocol version number

The server can support many different versions of the protocol at the same time. The server should always respond with the same protocol version number as the client used in the request. This is because this is the only protocol version number the server can be sure that the client supports.

Along with the protocol identifier, the client should check the protocol version number in the response to so that they know the protocol version being used is a version that they understand.

MSTP/0.1

This is an example of the server sending the MusicStation Transfer Protocol identifier and using protocol version number 0.1.

5.1.3.1.3. Response Status Codes

With each response the server will send a status code. The status codes are shown in Figure 51.

The status codes are always 4 digits. This is to allow enough codes to allow for future expansion. 3 digit codes have not been used to avoid confusion with HTTP status codes.

The status codes are extensible, new codes can be added at any time. The server will make sure that clients are only ever sent status codes that the client understands.

The status codes are grouped into 2 sections. Codes starting with the digit 1 (i.e. 1000 – 1999) are to be used for codes relating to a successful operation. Codes starting with the digit 2 (i.e. 4000 – 5999) are to be used for a failed operation.

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Within the failure range of codes, there are two further groups. Codes starting with the digits 4 (i.e. 4000 – 4999) are to be used for failure when the client is at fault. Codes starting with the digitis 5 (i.e. 5000 – 5999) are to be used for failure when the server is at fault.

This example below shows a successful response from the server.

MSTP/0.1
StatusCode: 1000

5.1.3.1.4. The response identifier

So that the client can verify that the response it receives is in response to the request it made, each response from the server will echo the client's request identifier.

MSTP/0.1
StatusCode: 1000
ResponseId: 234567

This example shows the server response to the client request with a request id of 234567.

5.1.3.2. Setting the session identifier

The first request from the client each time it is started up will not contain a session identifier. The server should respond to this request with a newly assigned session identifier.

MSTP/0.1
StatusCode: 1000
ResponseId: 234568
SetSessionId: FJSKNBKSKSDKFLSR

This response shows the server setting the session id to FJSKNBKSKSDKFLSR.

If the client receives any response with a SetSessionId line, then the client must start using

the new session id immediately. There may be cases where the server assigns a new session id to a client that already has a session id. For example this could happen when the session has timed-out on the server.

5.1.3.3. Sending data

Most responses from the server are likely to include at least one data object file. Theses data files are sent in the body of the response.

For each Get line sent in the request by the client, the server should return a Sent line.

The server must generate an acknowledgement id that it sends along with the data. This is so that when the server receives an Ack line, it knows which data is being acknowledged. It is the servers responsibility to generate these acknowledgement ids in a way that uniquely identifies the data file sent.

The Sent line must include the byte offset position into the body of data where the client can find the data, it must also include the length of the data and the content type of the data. Byte offset and length are used in the MusicStation protocol because they make for relatively straightforward processing. This has been used in preference to a boundary parameter as used in multipart MIME.

This response in Figure 52 shows the server sending the news1.data file.

5.1.3.3.1. Sending multiple data files in a response

The server may also send multiple data files in a single response. This is done with multiple Sent lines in the same way as the client sends resources to the server with multiple Put lines.

The response in Figure 53 shows the server sending the news2.data and news3.data files.

In the body of the response the data is shown in bold text. The client knows which body data is for which data file because of the offset and length parameters on the Sent line.

5.1.3.3.2. Partial data request

If a client request was for a certain range of data, and the server sends only this range of data, then the server response must indicate which range of data has been sent. See Figure

TRILLER EXHIBIT 1006-00225

54.

This response shows that the data returned at is the data from byte 160 to the end. There are 40 bytes of this data, and they are positioned at 0 bytes into the body of the data (i.e. the start of the body).

Note that the offset value is an index into the body of the data and is not to do with the range values.

The range to value may be used in a Sent line to show that the data in the response does not go to the end of the data file.

The client should always read the response headers and use these to process the data rather than the client sent request headers. This is because the range requested might not be the range returned if the server has a reason to return the full data file.

5.1.3.3.3. Push data to the client

The server may also send Sent lines for data it wants to push to the client. This is done by the server sending a Sent line that the client had not sent a corresponding Get line in the request. See Figure 55.

This response shows the server sending the news1.data and the command.data file. Any pushed data should always follow the requested data in the response body.

5.1.3.4. Acknowledgements

5.1.3.4.1. Acknowledging received data

When the client sends data to the server (for example error data), the server must acknowledge the receipt of this data so that the client knows the server has successfully received this data.

MSTP/0.1
StatusCode: 1000

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ResponseId: 234569
Ack: 3

This response shows the server acknowledging the receipt of the data file which the client sent in a Put line and the client assigned a acknowledgment id of 3.

5.1.3.4.2. Sending a not acknowledged notification

Equally the server can negatively acknowledge the receipt of the data if there has been an issue receiving or storing the data. This will allow the client to resend the data.

MSTP/0.1
StatusCode: 1000
ResponseId: 234569
Nak: 4

This response shows the server acknowledging the failed receipt of the data file which the client assigned an acknowledgement id of 4.

5.1.3.4.3. Acknowledment requests

If the server has sent data to the client, and then in the next request with a different request id from the client the server did not receive an acknowledgement for that data, then the server can ask the client to acknowledge whether it has received the data or not.

This is done by the server sending anAckRequired line in the response.

MSTP/0.1
StatusCode: 1000
ResponseId: 234574
AckRequired: 20060619111230NEWS2

This is an example of the server asking the client to acknowledge the data file that was

TRILLER EXHIBIT 1006-00227

previously sent with an acknowledgement id of 20060619111230NEWS2.

Note that the server is not required to ask for acknowledgements of data files, the client should send the automatically. The AckRequired line is used when the connection is less than perfect and a previously sent acknowledgement from the client has not reached the server for some reason.

5.1.4. Connection levels

Clients will have varying levels of connection speed, reliability, bandwidth and latency.

Each client data object request will have a predefined priority level associated with it.

The client will dynamically change it's connectivity level threshold based upon the available bandwidth and the number of successful connections.

The priority levels are

- **IMMEDIATE** – The client must send this request immediately, and not queue this request. This should be used for requesting data objects that are required to show the screen requested by the user.
- **SOON** – This client may send this request immediately if the network speed / bandwidth is available. This information is useful to the server in deciding what data objects to push to the client.
- **WHENEVER** – The client does not need to need to send this information to the server in any time critical period. The server needs to be informed of this information, but the data can be sent along with the next request.

The client can calculate its bandwidth based upon the time it takes to transfer a large amount of data. This is probably best done when transferring an audio file.

The client can calculate its connectivity threshold based upon the bandwidth and the number of successful connections, and the number of connections that are interrupted to send a higher priority request.

Clients with a good connectivity will have a connectivity threshold that allows all messages of priority SOON or above to be sent immediately.

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Client with a poor connectivity will have a connectivity threshold of that only allows IMMEDIATE messages to be sent immediately.

5.1.5. Command data objects

In MusicStation MIDP 0.4.6 the only data objects that exist are content data objects. A new type of data object is required in the connected MusicStation version. These are required so that the server can request or send various data to the client. These data objects are sent by the MusicStation Transfer Protocol, but are not part of the MusicStation Transfer Protocol. They are not part of the protocol because different command objects will be used for different client implementations, but the same transfer protocol will be used for all implementations.

5.1.5.1. Server command data objects

In addition to content data objects and image files the server needs to be able to send the following commands to the client

- Please send total file space size to the server.
- Please send remaining file space size to the server.
- Please send log file to the server.
- Please send errors to the server.
- Please change client logging level.
- Set property.
- Get property.
- Please delete a file.
- Please send details of what files you have.
- Please send bandwidth details.
- Please change connection level.
- Please request data file.
- Please request audio file.

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- Registration data.

Items are likely to be added to this list as new functionality is added to the client and server.

It's worth noting that the server will frequently be more aware of the client's connection details than the client is. For example a MIDP client on a Nokia N80 has no way of knowing whether the HTTP connection is via an operator gateway, or whether it's via a Wireless LAN. The server will know whether the client connection is via an operator gateway because the connection will be coming from a known operator IP address range.

5.1.5.2. Client command data objects

The client needs to be able to send the following data to the server

- Playlist data.
- Image files.
- Total file space.
- Available file space.
- Log file data.
- Current logging level.
- Error info.
- Info on which files have been deleted to free up space for other files.
- Current bandwidth level.
- Data file used.
- Screen shown.
- Property value.
- Current client time.
- Registration data.

5.1.5.3. Timings

The server will be recording the time that various client events have occurred.

Clients should report times to the server in the number of seconds since midnight GMT on 1st January 1970.

For Example, in MIDP1.0, this can be obtained by:

Calendar.getInstance(TimeZone.getTimeZone("GMT")).getTime().getTime()

The MIDP specification says that the GMT timezone must be supported, but if for some reason it is not supported, then the handset can simply use

(new Date()).getTime() to get the client time.

Each client stores timing data using it's own time settings. When this data is transferred to the server, the server can then convert and store these event timings in it's own format.

The server will do this by comparing the clients local time, with it's own time. The delta between client reported times and server times can then be calculated.

The current client time command object must contain the time that the data is sent to the server so that the server calculated time is as accurate as possible.

5.2. Client data synchronisation

5.2.1. Introduction

Most screens in MusicStation are populated by data. This data is transferred from the server and stored locally in files on the client. When data on the server changes the files on the client need to be updated to reflect those changes. Also, the user is able to create and modify files on the client, for example adding tracks to a playlist. These changes need to be reliable communicated back to the server.

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The user can also make changes to data through MusicMate. These changes may conflict with changes made on the device. The client and server need to be able to synchronize their data and the server will handle any conflict resolution.

5.2.2. Data Objects

Data Objects are the basic unit of object that is passed between the server and client and client and server. They encapsulate the representation of some entity that is displayed within the client interface (such as an artist, album, etc) or data and needs to be sent back to the server (like a user-defined playlist). They are passed between the server and client and are stored securely on the phone. Data objects can be delivered to the client by the server at anytime that it needs to update something on the client.

The data objects are able to write themselves to a file and these are used to transfer data between the client and server. The file header contains the data object version used to write the file. The latest versions of the data objects are able to read and write files in all supported versions. The version is passed to each read and write method and this allows us to switch what gets read or written based on the version.

Using this method the server is able to write data object files for older versions of the client. The target version is set in the file header and then each write method ensures that the output is in the format for that version.

The server is also able to read files written by an older client using the same method. When the file is read into the data object the read method uses the version to switch what attributes are read from the file.

Data objects contain the data used to populate screens in MusicStation. They use methods that allow them to write and read themselves to and from a file or stream. They are used to transfer data between the client and server and to load and store data locally in files on the memory card.

5.2.2.1. Data Object Groups

A data object can contain a collection of other data objects, for example an Artist data object contains a collection of Releases. In turn, a Release contains a collection of Tracks. See Figure 56.

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Data object can also store lists of objects, for example ArtistGroup stores a list of Artists. The 'My Artists' screen uses an ArtistGroup data object to display all artists owned by the user. Because Artist contains Releases and a Release contains Tracks, Artist and Release are also data object groups.

5.2.2.2. Data Object Views

A data object view provides a sorted and filtered view of a data object group. All screens in MusicStation that are populated by data are backed by one or more views. Any changes to a data object group are propagated to the view, which is responsible for updating the screen to reflect these changes.

This allows us to display a screen immediately before a data object is loaded. As the data object is loaded in the background these changes result in updates to the screen, for example the list of Artists on the 'My Artists' screen grows as each Artist is loaded.

5.2.3. Data Object Files

Each data object group is stored locally in a file. For example, the 'My Artists' ArtistGroup is stored in its own file. If the user owns 100 artists, each with an average of 2 albums• containing 10 tracks this data object soon becomes very large. When this ArtistGroup object is written it will create a large file and when it is read back from the file it will take a while to populate.

An alternative method is to store each collection of objects in its own file. So in our 'My Artists' example the list of Artists is stored in a file (userartists.data) but the list of albums for each artist is not. The list of albums is stored in a separate artist file, one for each artist (e.g. artist.123.data). Each album is then stored in its own file (release.4567.data) that contains the tracks. See Figure 57.

Because each data object is stored in its own file, object groups can use the same data object without having to duplicate the data. For example 'Snow Patrol' are in the 'My Artists' group and the 'Popular Artists' group. If the user buys 'Chasing Cars' from the 'Eyes Open' album we only have to update the 'Eyes Open' album data file. When the user navigates to

• The user doesn't have to own both albums but both albums exist in the artist data object

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'Popular Artists' then 'Snow Patrol' the screen will show that the user has bought 'Chasing Cars'. See Figure 58.

However this approach presents its own set of issues. Because the 'My Artists' data file only contains a list of artist ids, we need to open each artist file and read the name of each artist to populate the 'My Artists' screen. There are several major problems with this approach. Firstly, we need every artist file stored locally so any missing files need to be downloaded from the server. Without these files we are unable to display the artist names. Secondly, it's relatively expensive to open a new file connection for each artist in the list so this approach will be slow.

To avoid this we can store the artist name as well as the id in the 'My Artists' data file. This means we can build the 'My Artists' list quickly. However we are then introducing redundancy because the name is now stored in both the artist group data file and the artist data file. See Figure 59

We also may want to sort or filter the list on another property. For example 'Search Results' show user owned artists at the top of the list. To do this we need the owner property as well as the name to display the list. This is more redundant data that we are adding to the group data file.

Because an object can be stored in many groups we need to be aware of this redundancy and make sure that either the client or the server takes responsibility for the updates. In general the server will be responsible for these updates and they will be transferred to the client in response to a client request. Whenever it is possible for these changes to occur when the client is offline, the client will take responsibility for propagating these changes. In these cases, the client will update the local files whether online or offline. For example when a customer modifies a playlist image, any playlist groups that contain that playlist must be updated.

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5.2.4. Data Object Transfer

Data objects are transferred between the client and the server using the Connected MusicStation Protocol. It is expected that most communication with the client will be over HTTP therefore the client will be responsible for making the initial request.

5.2.4.1. Client Request

The client won't always know where objects are duplicated on the memory card. For example the 'Popular Artists' group was pushed to the client however the client has never opened 'Popular Artists' and is unaware that when the user buys 'Chasing Cars' by 'Snow Patrol' that the 'Popular Artists' data file needs to be updated to reflect this. However the server does have this knowledge because it built the 'Popular Artists' data file and sent this file to the client.

For this reason the server is responsible for updating files on the client when records on the server are modified. When the customer purchases 'Chasing Cars' the server will calculate which data files on the client contain 'Chasing Cars' and therefore need to be updated. The server will then either push these updated objects with the purchase response or send commands to the client to update these files when it can. It is preferable that the response contains all data objects that have been modified as a result of the request. See Figure 60: Client sets object and gets all modified objects.

5.2.4.2. Data Object Push

When records are updated on the server whilst the client is offline and these changes need to be propagated to the client the server will push these to the client on the next request. For example, if the customer purchases 'Chasing Cars' from MusicMate, when the client next connects to the server any objects that need to be updated will be pushed to the client. See Figure 61 Client requests object and gets all modified objects.

5.2.4.3. Offline Mode

When the client is offline, the customer is prevented from performing most actions that can modify data. For example, they are not able to buy a track.

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However, they should be able to create, edit and share playlists. The client needs to maintain a list of files that have been edited on the client but have not been sent to the server. When the client is next connected it must send these files to the server. All changes made by the client are sent to the server when the client next connects. The server will then return any modified files to the client. See Figure 62 Client sends objects modified in offline mode.

5.2.5. Change Log

The server maintains a list of objects that have been sent to the client. When one or more of these objects are modified on the server, the modified objects must be delivered to the client as soon as possible. Similarly the client maintains a list of objects that have been created or modified on the client and need to be updated on the server.

The object_change_log table is where changes that don't need to be sent immediately are stored. This is for general system wide changes such as adding a new artist. This table also handles merging changes made from several databases. These changes are communicated when a user session is next created.

Customer specific changes occur in customer_object_change_log. These changes are communicated to the client immediately.

5.2.5.1. Server Objects

The changes to objects on the server are stored in the object_change_log table. Whenever a record is inserted, updated or deleted that may affect one or more object data files one or more records are inserted into this table. This table also allows for changes to made in a separate database, for example on a staging server, and then when the changes are imported the object_change_log is also imported. See Figure 63 object change log.

The list of data objects that exist on the client are stored on the server in the customer_object table. Whenever a session is created for the client we query the customer_object and the object_change_log tables to determine which objects have changed for this customer. It is possible that this query could return several change records for a single object. In this case we only need to consider the last change record. The objects that have changed need to be returned to the client. See Figure 64 customer object.

Objects that need to be returned to the client are inserted into the customer_object_change_log table. Records may also be inserted into this table when changes occur for objects that affect only one customer. For example when the customer purchases a track and we need to update object data files that reference that track. See Figure 65 customer object change log.

Whenever we receive a request from a client we'd like to return all modified objects in the response. In some situations (where bandwidth is limited or the objects are large) we may send a command to the client to request the modified objects later. In situations where many objects need to be returned to the client, the priority field is used to determine which objects are sent first.

To get the list of modified objects for a client we select from the customer_object_change_log table where acknowledgement_date is null.

At first glance it appears that the object_modified_date would be duplicated for each object_guid and could be separated into another table. However for performance reasons object data files on the client contain data from more than one table and an object may need updating on one client and not on another. For example, artist lists contain ownership information for each artist so that they can be sorted with user owned artists at the top. When a customer buys a track by an artist only that customer's artist list has been modified and needs to be updated.

One or more of the following methods could be used to update the object_change_log and customer_object_change_log tables:

- *Database trigger* on a table could populate the object_change_log table when data was added, updated or deleted.
- *Batch process* populates the object_change_log table for example on an import of new content data.
- *Entity Listeners or callback methods* are used on EJB persist, update and remove events.

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In most cases callback methods are the most appropriate however for large inserts, for example a data load, it may be more efficient to use another method.

5.2.5.2. Client Objects

The client must also keep a log of changes that need to be sent to the server. The client maintains this list in RMS. Each change is stored in a ChangeLogRecord object. See Figure 66.

The *objectGUID* will be the same GUID used to identify the object on the server unless the client has added this object. In which case the client will assign a temporary GUID that will be used until the server updates the object with its new server generated GUID.

Whenever the client connects to the server it will send all of the objects in the change log. The server should respond with an acknowledgement for each object. When the client receives an acknowledgement it will then delete the corresponding ChangeLogRecord.

5.2.6. Conflict Resolution

When conflicts occur because the same object has been modified on the client and server the server is responsible for resolving the conflict. The server communicates the resolution to the client by sending it the updated object.

We'll attempt to minimize the number of situations where conflicts can occur by making the server responsible for most updates. Only in a few cases will the client be able to modify objects and send the changes to the server.

In the prototype the client modifications are limited to:

1. Create playlist
2. Edit playlist
3. Delete playlist
4. Edit customer profile (catchprase, icon)
5. Rate track

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When designing the conflict resolution strategy we need to bear in mind the following types of conflict:

- ***Update conflicts*** occur when the update to a record conflicts with another update.
- ***Uniqueness conflicts*** occur when the update to record violates a uniqueness constraint with a conflicting record.
- ***Delete conflicts*** occur when a record is updated that has also been deleted.

5.2.7. Use Cases

Whenever an object is updated or deleted the object_change_log or customer_object_change_log tables must be updated to reflect this change. Because object data files on the client contain redundant data it's likely that a change will affect more than one object.

5.2.7.1. Server Changes

5.2.7.1.1. Artist releases a new album

The artist 'Snow Patrol' releases the album 'Eyes Open'. Every client that contains the artist data file for 'Snow Patrol' needs to be updated.

First we insert change records for 'Snow Patrol' and 'Eyes Open' into the object_change_log table. See Figure 67.

When a customer who has the 'Snow Patrol' artist file connects to the server and a session is created the customer_data_object table is joined with the object_change_log table to find any objects that have been modified for this customer.

```
SELECT FROM customer_object, object_change_log
WHERE customer_object.object_guid = object_change_log.object_guid AND
customer_object.deleted_date IS NOT NULL AND
customer_object.object_modified_date < object_change_log.object_modified_date;
```

This query returns the 'Snow Patrol' object_change_log record. This record is inserted into

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the customer_object_change_log table. See Figure 68.

The customer_object.modified_date field is also updated to '18/07/2006 13:16:33'.

The 'Snow Patrol' data file is then sent to the client and the customer_object_change_log.acknowledgement_id field is set. When the client acknowledges the file then the customer_object_change_log .acknowledgement_date field is set.

5.2.7.1.2. Artist is removed

The artist 'Cliff Richard' is removed from MusicStation. Every client that has stored the 'Cliff Richard' data file or has a list that contains 'Cliff Richard' needs to be updated.

The object_change_log table is updated and a deleted record is inserted for the following objects:

Artist
Artist.getAlbums()
Artist.getLists()
Artist.getAlbums().getLists()
Artist.getPlaylists()

5.2.7.1.3. Customer shares a playlist

The customer decides to create and share a new playlist 'Sunday Stroll'. The client sends the new playlist to the server. Any changes are sent on the next request to the server. As you are browsing tracks to add to the playlist it is likely you are communicating with the server, and each time the changes will be sent.

When the Playlist object is created the object_change_log table is updated and a record is inserted into customer_object_change_log for every client that has the customer's data object file.

5.2.7.1.4. Customer changes l Customer shares a playlist

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The customer decides to create and share a new playlist 'Sunday Stroll'. The client sends the new playlist to the server. Any changes are sent on the next request to the server. As you are browsing tracks to add to the playlist it is likely you are communicating with the server, and each time the changes will be sent.

When the Playlist object is created the object_change_log table is updated and a record is inserted into customer_object_change_log for every client that has the customer's data object file.

5.2.7.1.5. Custome Customer shares a playlist

The customer decides to create and share a new playlist 'Sunday Stroll'. The client sends the new playlist to the server. Any changes are sent on the next request to the server. As you are browsing tracks to add to the playlist it is likely you are communicating with the server, and each time the changes will be sent.

When the Playlist object is created the object_change_log table is updated and a record is inserted into customer_object_change_log for every client that has the customer's data object file.

5.2.7.1.6. Customer changes language

The customer selects a different language. We'd like all files that contain language specific data to be updated.

Both the messages property file and editor captions need to be updated to reflect this change. Only playlists display editor captions on the client and so for any playlist on the client that has an editor caption a record is inserted into customer_object_change_log.

5.2.7.1.7. Customer adds track to playlist whilst server deletes track

A user adds a track T to a playlist whilst offline. Meanwhile the server deletes track T.

When T is deleted a record is inserted into object_change_log. When the client sends the updated playlist we'll compare the changes with the records in object_change_log and delete the track from the playlist and send it back. The customer won't be informed of this, the

track will just disappear.

5.2.7.1.8. Customer adds track to playlist whilst server renames track

A user adds a track T to a playlist whilst offline. Meanwhile the server renames track T.

When T is renamed a record is inserted into object_change_log. When the client sends the updated playlist we'll compare the changes with the records in object_change_log and rename the track on the playlist and send it back.

5.2.8. Device Memory Management

The device is able to communicate to the server how much memory there is left for storage. The server will use this information to decide if any files should be deleted from the client when delivering updates.

The object_last_used field in the customer_object table stores the date the client last used a particular object. This field is populated from log data sent from the client to the server. The server uses this data to determine which files should be deleted. The server may also use other methods to predict which files should be deleted, for example a story no longer exists in any list.

The client also maintains a list of last used files and is able to delete these itself before it runs out of memory. This list is stored in RMS and references files by relative path and filename. The path and filenames will be short because we intend to remove any meaning from the names. This acts as a safety valve in case there's a problem with the deletion logic on the server.

5.3. Incomplete downloads

5.4. Client logging

We need to log user actions, events and exceptions on the client and send them to the server in order to:

- Debug information during testing
- Provide information for customer support

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- Collect usage data for reports and recommendations

5.4.1. Logger

The Logger object is used to control logging on the client. It is a DataObjectSet and can be synchronized with the server using MSTP.

Logger contains the following attributes:

- Level: The level at which logs are stored, events at a lower level are discarded
  - DEBUG: Events that are useful to debug the application
  - INFO: Informational messages that highlight the progress of the application
  - WARN: Indicates that there's a potential problem
  - ERROR: An error occurred but the application managed to continue
  - OFF: Nothing is logged
- Priority: Controls the frequency that logs are sent to the server
  - MIN: When the client next makes a request to the server or when maxSize is reached.
  - NORMAL: Every 5 minutes (or as MIN)
  - MAX: Every 30 seconds (or as MIN)

  This behaviour will be controlled by properties and can be tuned
- MaxSize: The maximum number of records to store on the client
- TimeOffset: The time difference between the server and client
- LogRecords: The logs themselves

The Logger contains a LogRecord for each client log. The LogRecord conatins the following attributes:

- Message: Readable description of what happened
- Level: The level of this log
- Date: The server time calculated using the client time and timeOffset
- SessionId: The server sessionId when this event occurred (if any)

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- EventTypeGuid: The identifier in the event_type table for this event (if any)
- Parameters: The parameters that are pertintent for this event

See Figure 69.

5.4.2. Client Debugging

Whilst the client is in testing we need to allow the testers to easily view the client logs so that they can understand what was going on when the error occurred and can include these in Mantis bug reports.

The client will log the following:

- Tasks including all parameters required to run the task
- Commands including all parameters required to run the command
- Exceptions including all relevant information

Each LogRecord will be logged as an incident and can be viewed by the tester using the Incident Monitor's web interface. Because each record is logged using the server time the incidents can be ordered by date to give a list of client and server actions in the sequence that they occurred.

5.4.3. Customer Support

When the customer contacts customer support we need to push the Logger object from the client to the server so that customer support can see the last LogRecords generated by the client. The client needs to initiate the push, which it may not do for a while if the log priority is set to MIN. Therefore we need a method for commanding the client to post the Logger object.

We need to log enough information to recreate the user's situation. This information will be stored in the LogRecord.parameters Hashtable. If the eventTypeGuid attribute is set a record will be inserted into the customer_event table and the parameters inserted into customer_event_val. We will use a queue to insert into customer_event and

customer_event_val so that event logging doesn't delay the response to the client. The exception is when the customer_logger.priority is set to MAX. In this case we want to see events as they happen and these records will be inserted directly into the database.

5.4.4. Usage Data

Client usage data is populated using triggers on the event table. So for example when we receive an event for the customer plays a track the customer_track.play_count is incremented.

5.4.5. Database Requirements

Customer support needs to be able to control the logging generated by the client and the frequency that it's sent to the server. This is controlled using the customer_logger table. See Figure 70.

Whenever this table is changed a record is inserted into customer_object_log so that the updated Logger object can be pushed to the client.

6. DRM

6.1. Introduction

MusicStation is a mobile phone based software application which allows users to discover, manage and listen to music on their phone on the move using the mobile network. Omnifone takes MusicStation to market primarily in partnership with Mobile Network Operators (MNOs) whilst working closely with the music industry to ensure the widest and best range of music is available to MusicStation users. Such vast libraries of digital music media are extremely valuable and need to be protected from theft and abuse whilst enabling valid paying users seamless access. Digital Rights Management (DRM) provides a method to control and facilitate the legitimate distribution and use of digital media.

The primary handset technology platform for MusicStation is Java 2 Platform Micro Edition (J2ME). This platform was chosen because it provides the widest mobile phone handset

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reach. This document describes the methods used by Omnifone's J2ME MusicStation handset application and associated network services to distribute protected content and securely issue the rights to use that content.

MusicStation's DRM is an implementation of the Open Mobile Alliance (OMA) DRM v2 specification. This specification has been widely adopted by both the mobile & music industries as their preferred method of protecting content for mobile devices. Whilst OMA DRM v1 has been widely adopted by handset vendors, at the time of writing, there are very few handsets which support OMA DRM v2. For this reason the OMA DRM v2 implementation discussed in this document is that which Omnifone has built into the MusicStation handset application and the associated MusicStation network services.

6.1.1. DRM Overview

Before content is delivered, it is packaged to protect it from unauthorised access. A Content Server (CS) delivers DRM Content, and a Rights Issuer (RI) generates and delivers associated Rights Objects. The Content Server and Rights Issuer embody roles in the system. Depending on deployment they may be provided by the same or different actors, and implemented by the same or different network nodes. For example, pre-packaged protected content can be distributed across multiple Content Servers for efficient delivery of content. See Figure 71 DRM Overview.

A Rights Object governs how DRM Content may be used. It is a document specifying permissions and constraints associated with a piece of DRM Content. DRM Content cannot be used without an associated Rights Object, and may only be used according to the permissions and constraints specified in a Rights Object.

Like all OMA v2 systems, MusicStation DRM makes a logical separation of DRM Content from Rights Objects, known as "separate delivery". DRM Content and Rights Objects may be requested separately or together, and they may be delivered separately or at the same time. For example, a user can select a piece of content, pay for it, and receive DRM Content and a Rights Object in the same transaction. Later, if the Rights Object expires, the user can go back and acquire a new Rights Object, without having to download the DRM Content again.

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Rights Objects associated with DRM Content have to be enforced at the point of consumption. The DRM Agent, inside of the MusicStation handset application, embodies a trusted component of the application, responsible for enforcing permissions and constraints for DRM Content on the device, controlling access to DRM Content on the device, and so on.

A Rights Object is cryptographically bound to a specific DRM Agent, so only that DRM Agent can access it. DRM Content can only be accessed with a valid Rights Object, and so can be freely distributed. This enables, for example, "super-distribution", as users can freely pass DRM Content between them. To access DRM Content on the new device, a new Rights Object has to be requested and delivered to a DRM Agent on that device.

6.1.1.1. Protection of Content Objects

The DRM Content Format (DCF) is a secure content package for DRM Content, with its own MIME content type. In addition to the encrypted content it contains additional information, such as content description (original content type, vendor, version, etc.), Rights Issuer URI (a location where a Rights Object may be obtained), and so on. This additional information is not encrypted and may be presented to the user before a Rights Object is retrieved. Only the media content (e.g. music file) is encrypted in the DCF file.

The Content Encryption Key (CEK) needed to unlock DRM Content inside a DCF is contained within the associated Rights Object. Thus it is not possible to access DRM Content without a Rights Object. DRM Content can only be used as specified in a Rights Object. MusicStation DRM includes a mechanism allowing a DRM Agent to verify the integrity of a DCF, protecting against modification of the content by some unauthorised entity.

6.1.1.2. Protection of Rights Objects

A Rights Object is protected using a Rights Encryption Key (REK). The REK is used to encrypt sensitive parts of the Rights Object, such as the Content Encryption Key. During delivery, the REK is cryptographically bound to the target DRM Agent. In this way only the target DRM Agent can access the Rights Object, and thus the CEK. Rights Objects are therefore inherently safe.

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6.2. MusicStation on the Handset

Irrespective of which provisioning method was used, the MusicStation application ends up being resident on the user's mobile phone handset. Each MusicStation handset application installation is a tailored build of software potentially unique to each different phone model and handset firmware version. The software builds are created and managed by Omnifone's patented Device Adaptive Architecture (DAA) and delivered to the correct handset using Omnifone's sophisticated application provisioning software described below.

6.2.1. MusicStation Provisioning

Working with the MNO there are two ways that the MusicStation mobile handset application is "provisioned" onto the phone, both of which are dealt with in detail in this chapter. The preferred method for distributing the MusicStation application to a handset is to preload (preinstall) the application on the device before it reaches the end-user. Experience of delivering this type of application has shown that discovery by end-users can be as high as 93% when preloaded in the most desirable manner with a hard-key (music button) on the phone which starts the service. Similar experience in OTA provisioning of this type of application by MNOs has shown success rates (i.e. ratio of successfully connected users to requestors) to be an order of magnitude lower than when the application is preloaded.

6.2.1.1. Application Preload (Preinstall)

Typically this type of device customisation is done by the handset vendor at the request of the MNO and performed before the handset leaves the vendor's premises. It can also be performed by handset distributors, such as Mobiltron, who have customisation capabilities in the supply-chain or perform the same in cells at the warehousing facilities of the MNO.

Wherever this preload is performed it is supported by Omnifone's Preload Provisioning tool, the Preloader. The Preloader is a network-connected desktop application used by staff at the preloading facility. Access to the Preloader is controlled by a Software License, a userid & password and filtered by a list of authorised IP addresses. Access to the Preloader can be revoked at any time either by user, Software License or by organisation.

The Preloader provides an authorised party with access to the latest and most appropriate

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MusicStation client software builds. Omnifone can control which software builds any Preloader has access to by vendor and model. The Preloader enables the easy location, download and local storage of the correct MusicStation client software build for integration into the handset customisation tools and processes of the installing party.

In-built into the Preloader is a notification system which can alert installers to the fact that new software builds are available for download.

6.2.1.2. Over-The-Air Delivery (OTA)

Due to an open OTA API, Omnifone supports a number of touch points and mechanisms by which a user might acquire MusicStation OTA. These include, but are not limited to:

- (MNO) WAP portal request.
- SMS text in request.
- Web based request.
- IVR acquisition.
- Web services link.
- Deep MNO network integration such as when SIM is first seen on network.

Irrespective of request mechanism, the MusicStation application is delivered by offering the end-user a WAP download page either directly inside a WAP portal they are already surfing or via WAP push if the application was requested via another method.

6.2.1.3. Application Reinstall

The MusicStation application contains the ability to force a full reinstall of the application if so instructed to do so by the Server. In this instance the MusicStation application is re-downloaded using OTA WAP download. If the application reinstall is mandated by the Server the old version of the application will not run.

6.2.2. MusicStation Handset Application Embedded Metadata

Inside each MusicStation handset application is a set of information and metadata automatically inserted and used for a variety of purposes as described here.

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6.2.2.1. Handset Vendor, Model, Version and Firmware Revision

Every MusicStation handset application is built for a specific handset vendor, model, version and firmware revision combination. Metadata identifying this combination is embedded in every MusicStation application build. As such the Server knows exactly what type of handset configuration each MusicStation application is running on. This is the case even if the Server has never communicated with this particular MusicStation application before.

6.2.2.2. Software License

Every MusicStation handset application is built specifically for a particular MusicStation Service. To affect this every MusicStation handset application has a "Software License" embedded inside it. The Software License is a 512 bit random number which, when presented to the Server, is used to relate this application instance to a particular MusicStation Service. Each Service is either locked or unlocked, only unlocked Services are usable by end-users.

6.2.2.3. MusicStation Root CA Certificate

Each MusicStation application has the MusicStation Root CA Certificate embedded within the application. This certificate, described in much more detail in later sections of this document, is used to sign and validate messages sent between the MusicStation handset application and the Server.

6.2.3. Application Permissions & Signing

J2ME implements a security model which means that certain functions that you would normally expect a software application to have access to (e.g. accessing memory/file systems, or accessing the network) are actually restricted. Clearly an application like MusicStation makes extensive use of such features and as such needs access to these common but security protected features of a handset.

In order to provide the MusicStation application with access to these restricted functions, the application is "signed". The signature and resulting PKI certificate of the signer is stored in the JAD file of the application. When the MusicStation application is run, this signature is examined and the certificate is validated to one of the protected domain root certificates

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already on the handset for these purposes. If the application is correctly signed the restricted features become available.

The root certificates already on the phone are generally either root certificates from the phone manufacturer, mobile network or certificate authority such as Verisign.

6.2.4. DRM Pertaining to the MusicStation Application Itself

There are a number of ways in which hackers attempt to break DRM systems. One of these ways is to reverse engineer the software code which implements the DRM. It is for this reason that the MusicStation handset application is always installed using the DRM resident on the phone to protect the software from being removed.

Although advanced DRMs such as OMA v2 are not present on many handsets, OMA v1, which supports the required "forward-lock" content control mechanism, is present on the majority of handsets. Forward-lock does as it suggests, it disables the forwarding or transferring of the content item, in this context the MusicStation handset application, from the phone. Whether MusicStation is preloaded or OTA installed, it is installed as an OMA v1 forward-lock protected file.

To further secure OTA deliveries of the MusicStation application, only OTA requests for application downloads confirmed to issue from the MNO network gateways are supported. This ensures that the application code is only ever downloaded over a particular MNO's mobile Internet to a phone rather than being issued from the general Internet. This is implemented by confirming that the source or routing IP addresses found in the network communications headers and metadata are those gateways stored in the Service database and known to be those of the MNO.

6.2.5. Preloading Music

Music content can be preloaded on to a phone at the same time as the application is installed. This content is either free for promotion and might not be DRM'd, or it is for purchase and subject to the same DRM as would have been applied if the music were downloaded OTA via MusicStation. Preloaded content enables MusicStation to come out of the box playing.

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6.3. Using MusicStation For The First Time

Before a MusicStation application can be used by its owner it must first connect to the MusicStation Server so that it can be registered with the appropriate MusicStation Service and issued with a Client Certificate (and an associated Client Private Key) so that it may access the DRM protected music content which it downloads. In order to be issued with Rights Objects (containing the access rules and the keys to access the DRM protected content) the MusicStation application must also register with the Rights Issuer, this two-step registration process is described in this chapter.

6.3.1. MusicStation Service Registration

The first time MusicStation starts it knows that it needs to connect to the MusicStation Server in order to register with a Service and be equipped with a Client Certificate and the Client Private Key so that it may access DRM protected content. In order for the registration to occur the Server needs to be able to uniquely identify the device. The "2-pass" MusicStation Service Registration Protocol is the protocol by which this is achieved. This protocol includes identification of the device and the subscriber followed by the secure transfer of the Client Certificate and the associated Client Private Key from the MusicStation Server (the Certificate Authority) back to the Device. As it is imperative that only this MusicStation Device can access the Client Private Key, the registration protocol uses HTTPS secure communications.

6.3.1.1. Service Registration Request

The MusicStation application attempts to access the handset's IMEI, Bluetooth Address, IMSI and the subscriber's MSISDN so that it might provide information to the Server to uniquely identify the Device and the user. The request parameters sent to the Server are described in the table in Figure 72: Service Registration Request Parameters. † One of IMEI, Bluetooth Address or IMSI must be supplied to identify the device or SIM card at the server.

6.3.1.2. MNO Added Metadata

As communications from the MusicStation handset application to the MusicStation Server are routed through the networking equipment of the MNO the following subscriber and

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potentially also handset identifiers are added to the HTTP request headers. This information is extracted from these headers and used by the MusicStation Server for added identification purposes. See Figure 73. † One of MSISDN or Party ID must be supplied to identify the subscriber at the server.

6.3.1.3. Service Registration Process

When the MusicStation Server receives a Service Registration Request message these steps are followed.

6.3.1.3.1. Registration from MNO Home Network?

When the Server receives a registration request it checks that the mobile data network that the MusicStation handset application is currently being used on is the MNO's home network. This is done using a set of database stored records of the IP addresses of the MNO's home network gateways and Internet traffic routing equipment.

The normal setting is to only allow Device registrations on the MNO's home network or on other specific networks such as that of a third-party MNO with whom there is a roaming agreement.

6.3.1.3.2. Customer Credentials Verification

Upon receipt of a request to register a new MusicStation handset application with a MusicStation Service the server will perform the following tests:

- Confirm that the Software License is for a valid and active MusicStation Service.
- Confirm that the subscriber has been identified, e.g. by MSISDN or Party ID.
- Confirm that the MSISDN or Party ID is a customer of this MNO (if the API exists at the MNO).
- Optionally confirm that the device has been identified, e.g. by IMEI or Bluetooth ID.

Once these credentials have been confirmed, the server moves on to the PKI stage below.

6.3.1.3.3. MusicStation & Public Key Infrastructure (PKI)

After a MusicStation Service Registration is successfully completed the Device will need to

register with the Rights Issuer so that it may request Rights Objects and in turn access DRM content. The Rights Issuer, however, only registers Devices which it can positively identify. This identification is facilitated by the MusicStation Server acting as a PKI Certificate Authority (CA) and generating a public key certificate, the Client Certificate, for each registered MusicStation handset application and thus attesting to the authenticity and identity of each Device. The MusicStation Rights Issuer trusts the CA, it has a copy of the MusicStation Root CA Certificate so that it can confirm that the Client Certificate presented to it by a MusicStation handset application was actually issued by the CA.

Public Key Infrastructure (PKI) is the arrangement used which provides for trusted third-party vetting of, and vouching for, user identities, or in this context MusicStation handset application identities. It allows the binding of public keys to users. This is usually carried out by software at a central location, in this case the MusicStation Server, together with other coordinated software at distributed locations, i.e. the MusicStation handset applications.

PKI arrangements enable users (MusicStation applications, MusicStation Servers, MusicStation Rights Issuers, etc) to be authenticated, and to use the information in PKI certificates (i.e. each other's public keys) to encrypt and decrypt messages traveling between parties in the system. In general, a PKI consists of client software (MusicStation handset application), server software (MusicStation Server) such as a Certificate Authority and operational procedures. A user may digitally sign messages using his private key, and another user can check that signature (using the public key contained in that user's certificate issued by a CA within the PKI). This enables two (or more) communicating parties to establish confidentiality, message integrity and user authentication without having to exchange any secret information in advance.

The authenticity of the CA's signature, and whether the CA can be trusted, can be determined by examining its certificate. This chain must however end somewhere, and it does so at the MusicStation CA Root Certificate, so called as it is at the root of a tree. Root certificates are implicitly trusted (they are sometimes called the Trust Anchor) and are included with many software applications such as web browsers, or in this case the MusicStation Rights Issuer and the MusicStation handset application.

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6.3.1.3.4. Client Certificate & Client Private Key Generation

The first step in issuing a new Client Certificate is to generate a new public and private key pair for the MusicStation handset application which is registering. This implementation of PKI uses the RSA 1024 bit public key algorithm.

Once the key pair has been generated the public key is used by the MusicStation CA to build, then issue the Client Certificate. The Client Certificate states that the CA attests that the public key contained in the Client Certificate belongs to the MusicStation handset application noted in the certificate. A CA's obligation is to verify an applicant's credentials, so that users (relying parties, such as the MusicStation Rights Issuer) can trust the information in the CA's certificates. The idea is that if the user trusts the CA and can verify the CA's signature, then they can also verify that a certain public key does indeed belong to whomever is identified in the Client Certificate.

The Client Private Key is not stored on the MusicStation Server, only the Client Public Key so that the server can create messages that only this device can open.

The X.509 standard is used for all MusicStation certificates. X.509 is an ITU-T standard for public key infrastructure (PKI). X.509 specifies, amongst other things, standard formats for public key certificates and a certification path validation algorithm.

6.3.1.3.5. Client GUID

The Client GUID is a unique number (Globally Unique ID) which is generated every time a new MusicStation handset application is registered with the Server. The Client GUID is returned to the MusicStation handset application whereupon it is stored and returned on all subsequent communications and requests to the MusicStation Server or the MusicStation RI.

6.3.1.4. Service Registration Response

The Service Registration Response message is sent from the CA to the Device in response to a MusicStation Service Registration Request message. It carries the protected Client Certificate and Client Private Key over HTTPS. See Figure 74: Service Registration Response Parameters. † Only mandatory if Status = “Success”.

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6.3.1.5. Post Service Registration Process

After the results are returned for a successful Service Registration the MusicStation handset application performs the following tasks.

6.3.1.6. Client Certificate Storage

The Client Certificate for the device is stored in the application's record management system (RMS) memory store. RMS in J2ME provides a mechanism through which applications can persistently store data and retrieve it later. In a record-oriented approach, J2ME RMS comprises multiple record stores.

6.3.1.6.1. Client GUID Storage

The Client GUID is encrypted, scrambled and stored in the application's RMS. This is used in all future requests to the MusicStation Server and MusicStation RI.

6.3.1.6.2. Client Private Key Storage

The MusicStation handset application uses the J2ME private RMS feature. This means that only the MusicStation application which created the RMS record store has access to it.

MusicStation, however, goes further to ensure the security of the Client Private Key. The MusicStation handset application only stores the Client Private Key after encrypting it as an extra security measure in the unlikely event that RMS becomes compromised. More over the application further obfuscates the Client Private Key using certain techniques prior to and during its storage in RMS.

6.3.2. Rights Issuer Registration

Immediately after the Device acquires its Client Certificate it will attempt to register with the Rights Issuer (RI). A device must be registered with a MusicStation Service before it can register and obtain Rights Objects from the RI. Successful completion of the RI registration process allows the Device to acquire a Domain Key (DK). The DK is a 128-bit AES symmetric key used to protect the Rights Encryption Keys (REKs) of the Rights Objects delivered to the Device.

The RI Registration Protocol is a complete security information exchange and handshake between the Device and the RI. The RI Registration Response message is sent from the

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Rights Issuer to the Device in response to a RI Registration Request message. This message completes the Registration protocol, and if successful, enables the Device to establish a RI Context for this RI. The RI Context consists of information that was negotiated with the Rights Issuer, during the 2-pass RI Registration Protocol. This RI Context is necessary for a Device to successfully acquire Rights Objects.

6.3.2.1. DRM Domains

A Domain is a set of one to many Devices that possess a common Domain Key distributed by a Rights Issuer. Devices in the same Domain can all access the same Domain Rights Objects (RO) and potentially then the music protected by those ROs.

In MusicStation the DRM Domains are network-centric. The RI defines the Domains, manages the Domain Keys, and controls which and how many Devices are included and excluded from the Domain. Typically each MusicStation handset application has its own DK and only one MusicStation Device is in each Domain.

6.3.2.2. RI Registration Request

The RI Registration Request message is sent from the Device to the Rights Issuer to initiate the 2-pass RI Registration Protocol. See Figure 75 MusiStation RI Registration Request Parameters.

6.3.2.3. RI Registration Response

The RI Registration Response message is sent from the Rights Issuer to the Device in response to a RI Registration Request message. When the registration is successful it results in a Domain Key being delivered to the MusicStation handset application. This DK is encrypted using the Client Public Key found in the Client Certificate sent to the RI in the request. This way the DK can be securely transferred to the Device as only the Device has access to its Client Private Key which is needed to decrypt and access the DK. See Figure 76: RI Registration Response Parameters. † Only mandatory if Status = "Success".

6.3.2.4. Post RI Registration Process

After a successful RI Registration Response is received, MusicStation encrypts and

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obfuscates the returned Domain Key and stores it in the application's private RMS. The DK is subsequently used by MusicStation to access DK encrypted Rights Encryption Keys (REKs) in order to access sensitive parts of Rights Objects (ROs).

6.4. Listening to Music

In order to listen to music a MusicStation Device needs both the music file, stored as DRM protected content in the DRM Content Format (DCF), and the RO containing the Content Encryption Key (CEK) to unlock the DRM.

It is possible that at any one time neither the DCF nor the corresponding RO is on the Device. ROs contain URLs for the DCF and DCFs contain the URLs for the RO such that if you have one you can acquire the other. If neither are on the Device then the track listing shown in the MusicStation application also contains the URLs for both the RO and the DCF, so oftentimes both files are requested simultaneously after a track has been located in a search or whilst browsing.

6.4.1. Rights Object Acquisition

The 2-pass RO Acquisition Protocol is the protocol by which the Device acquires Rights Objects. This protocol includes mutual authentication of the Device & RI, integrity-protected request and delivery of ROs, and the secure transfer of cryptographic keying material necessary to process the RO.

6.4.1.1. RO Acquisition Request

The RO Acquisition Request message is sent from the Device to the RI to request Rights Objects. This message is the first message of the 2-pass RO Acquisition Protocol. See Figure 77: MusicStation RO Acquisition Request Parameters.

6.4.1.2. RO Acquisition Response

The RO Acquisition Response message is sent from the RI to the Device in response to a RO Acquisition Request message. It carries the ROs containing the protected Content Encryption Key (CEK) for the music DCF in question. See Figure 78 MusicStation RO Acquisition Response Parameters. † Only mandatory if Status = "Success".

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6.4.1.3. Client Certificate Revocation

Once per Device session the RI checks with the CA that the Device's Client Certificate is still valid. The CA maintains a certificate revocation list (CRL), a list of Client Certificates that have been revoked and should not be relied upon. Whenever a certificate is used it must be checked against this list to check the revocation status. The certificate will be revoked if the CA has improperly issued a certificate, the private key has been compromised, the user has violated the CA's usage policy or the MusicStation administrator has denied access to this Device for any reason.

6.4.2. Content Download

This section descibes how music content is prepared, protected and downloaded to MusicStation Devices from the MusicStation Content Server.

6.4.2.1. Content Preparation

Before music content is made available for download from the MusicStation Content Server (CS) it is protected from unauthorised access by encryption. Encrypting a music file creates a new file known as a DRM Content Format (DCF).

In MusicStation music content encryption is performed using a 128-bit RC4 symmetric Content Encryption Key (CEK). Every DCF has a different 128-bit RC4 CEK. Thus if there are 1,000,000 tracks in the music library and each track is available in 10 distinct file formats (to cater for different phone flavours and music capabilities/codecs) there are 10,000,000 distinct CEKs, one per physical file. This means that even if the CEK to one DCF is compromised, no other DCF is compromised as a result.

6.4.2.2. Content Acquisition Request

Since every DCF is inherently secure, DCFs can be transported using insecure transport protocols. For this reason MusicStation Devices request music content using HTTP. See Figure 79 Content Acquisition Request Parameters.

6.4.2.3. Content Acquisition Response

The response from the MusicStation Content Server is typically the binary stream of the DCF file requested over HTTP. This is predominantly the entire file but sometimes the file

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transfer can be interrupted by broken mobile network coverage. In these situations the MusicStation handset application makes a subsequent Content Acquisition Request but this time, using the Range parameter, it only requests the part of the DCF that it does not already have.

As the DCF byte stream arrives at the Device the MusicStation application progressively writes the file to the handset's file system. Both internal and external (removal media) memory is utilised. When MusicStation's allocation of combined internal & external memory is full, MusicStation removes the track which has not been played for the longest period of time. This is repeated until there is enough space available for the newly requested track.

All music content is stored in the original DCF protected format in which it was downloaded. In order to access the music inside any DCF, the corresponding RO is required so that the CEK may be accessed.

6.4.3. Playing Music Content

In order to play music through the MusicStation application the music track DCF and the corresponding RO are required to be on the phone. First the RO is examined to see if the user has the right to play the music. If so the CEK is extracted from the RO and used to decrypt the DCF to access the music track which is then played via the phone's media player.

6.4.3.1. Evaluating the Rights Expression Language (REL)

Once a request is made to play a track, for which the relevant RO & DCF exist on the phone, the Rights Expression Language contained in the RO is parsed by the MusicStation DRM Agent. The REL defines the ways in which the content in the DCF associated with this RO can be consumed and used by the user. The rights expressed by the REL can be very rich, examples include:

- Content is free for unlimited playback.
- Content can be played once then must be bought.
- Content can be played free for one week then must be bought.

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- Content can be played free for one month but not more than 5 times.
- Content can be played an unlimited number of times if purchased.
- Content can be played an unlimited number of times if user is currently inside a valid AYCE subscription period.

6.4.3.2. Decrypting the Content

If the DRM Agent determines from the REL that the user is able to play the music then the 128-bit AES REK is used to gain access to the encrypted CEK for the associated DCF. The 128-bit RC4 CEK is then used to decrypt the DCF to access the original music track. This decrypted track is either stored in non-permanent handset memory for the duration of the track playback or it is progressively delivered in as a decrypted stream to the handset media player depending on the behaviour of the particular phone. Decrypted music tracks are never stored permanently on the handset.

6.5. All-You-Can-Eat Services

Due to MusicStation's sophisticated DRM implementation it is possible to support advanced content access models such as All-You-Can-Eat (AYCE). This allows users who are within a valid subscription period to have unlimited access to download any track and play each track as often as they like.

6.5.1. Subscription Periods

MusicStation supports a wide range of subscription periods such as daily, weekly, monthly or any other period required. A subscription period starts when the MusicStation Server communicates with the MNO billing system and successfully charges the user's telephone bill with the appropriate charge for the subscription period.

The MusicStation Server maintains the state of the user's subscription period by recording the date/time of the successful charge made to the user's bill (prepay or postpay) and the length of the subscription period for which the user was charged. This information is shared with the DRM Agent on the MusicStation handset application and thus the Device knows if the user has a valid subscription or not.

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6.5.2. Subscription Expiry

The preferred method for implementing AYCE subscriptions is the rolling subscription method. In this model the MusicStation Server automatically purchases a new subscription when the current subscription period runs out. The user does have the option to cancel a subscription and this causes the automatic re-subscription to be suspended. If the user tries to access content (whether on the Device or not) after the end of the last valid subscription period the user is asked if they want to restart their subscription. If so the rolling subscription starts again.

Where the subscription model is not a rolling subscription, the user needs to confirm that they wish to subscribe for another AYCE period each time the current period lapses.

6.5.3. Parent Rights Object

A Rights Object may inherit permissions from another Rights Object. This mechanism is used, for example, to specify rights for content acquired as part of an AYCE subscription. The RO that inherits permissions is referred to as a Child Rights Object (C-RO). The Rights Object that contains the permissions that are inherited is referred to as a Parent Rights Object (P-RO).

The Client Devices verify that the same Rights Issuer issued the C-RO and its related P-RO and they both belong to the same Domain before the associated content is made available to the user. The P-RO does not reference any DRM Content directly.

6.5.4. DRM Time

The DRM Agent on the phone ideally has permanent access to an accurate date/time unchangeable by the user (a DRM time). This is not the case with mobile phones so MusicStation has to use various methods to ensure that a reliable DRM time is available to the DRM Agent so that fair access can be given to users performing legitimate changes to their phone date/time whilst resisting those users who may try to fool the system and gain illegitimate access within a subscription service.

Whilst phones may legitimately have their date/time changed at any point (e.g. first time it has been set, changing time zone or daylight saving) the MusicStation Server always maintains a reliable date/time. So whilst there is a network connection the DRM Agent can

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always access a reliable date/time datum.

Because the MusicStation Server date/time is potentially different from the Device's local date/time the DRM Agent uses timers relative to the local date/time rather than absolute date/times. However it also monitors the local date/time relative to where it knows the local date/time should be based on the timers it keeps. This allows subscriptions to expire without network connections and also identification of local phone date/time changes. Whenever a network connection occurs all the timers and actual date/time knowledge is reset.

Issues potentially occur when users attempt to fool the system by setting their date/time to some time in the past. These issues are successfully countered using the following logic:

- When the MusicStation handset application starts, it compares the local date/time with the last application close date/time. If the application open date/time is before the last application close date/time then the difference between these two date/times is subtracted from the relative timer.
- The net result is that the longest a determined user can use MusicStation for whilst they have no network connection is an aggregate application usage time equaling the length of time of the paid-for subscription period (e.g. one week). In order to do this they need to note down the time every time they close MusicStation and reset their phone date/time to that time just before and every time they start MusicStation. Clearly the limited reward does not appear to be worth the effort.
- The date/time is checked once a minute whilst the application is running to protect against a user changing the date/time whilst the application is open. If the current date/time is before the last date/time then the difference between these two date/times is subtracted from the relative timer.

If a user legitimately changes their local date/time to a date/time in the future and the Device can connect to the Server expiry times are re-synced with the Server. If a connection is not available:

- If the future time is still within the valid subscription period then the tracks will play.
- If the future time is greater than the license expiry time then, outside of a system configurable threshold, tracks will not play until the Device connects to the Server. It

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is not possible to distinguish between the user putting their clock forward (whilst MusicStation is not running) and the user not using MusicStation for a long period of time. A reconnection to the server via the data network is required to reactivate the user or renew the subscription.

6.5.5. AYCE Accounting

Accounting for AYCE systems requires an absolute count of every play of every track by every end-user. Track consumption information is therefore required to be transferred back to the Server where all qualifying plays by all MusicStation Devices in a particular Service are aggregated together. These aggregated play counts are used to determine what the royalty payments are to each rights owner whose music has been played in the accounting period. Tracks which are played for less than a preview threshold period, such as 30 seconds, are considered to be free previews and are not included in the royalty payments calculations.

So that MusicStation does not cause unnecessary network traffic, play counts are buffered on the Device until a natural network connection is required by the application. This buffering extends also to 0G (flights and tunnels etc) where play counts can be buffered for extended periods of time and sent to the server when a connection is finally made.

6.5.6. Blended Models

MusicStation provides for a blended commercial model where users who are in AYCE may still make outright purchases of tracks. If the subscription period ends without renewal, those tracks that the user has purchased may still be accessed.

6.6. Appendix A: Key Management

This is a description of the cryptographic way in which the Rights Issuer issues a Domain Key (DK) to a Device using the public key known only to the DRM Agent in the MusicStation handset application on the Device. Also described is the way that the RI protects the CEK in the RO by using a REK which it delivers to the Device having first been encrypted using the KD previously delivered to the Device.

6.6.1. Distributing K_D under a Device Public Key

This section applies when provisioning a Device with a Domain Key, K_D.

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K_D is the symmetric key-wrapping key used when protecting K_{REK} ("Rights Object Encryption Key") issued to a Domain D. K_D is a 128-bit long AES key generated randomly by the sender and shall be unique for each Domain D. K_{REK} is the wrapping key for the content-encryption key K_{CEK} in Rights Objects.

The asymmetric encryption scheme RSA shall be used to securely transmit K_D to a recipient Device using the Device's RSA Client Public Key.

C = RSA.ENCRYPT(ClientPubKey, K_D)

After receiving C, the Device decrypts C using its Client Private Key:

K_D = RSA.DECRYPT(ClientPrivKey, C)

6.6.2. Distributing K_{REK} under a Domain Key K_D

This section applies when protecting a Rights Object for a Domain.

The key-wrapping scheme AES-WRAP shall be used. The RI encrypts K_{REK} using K_D:

C = AES-WRAP(K_D, K_{REK})

After receiving C, the Device decrypts C using K_D:

K_{REK} = AES-UNWRAP(K_D, C)

Appendix 1: Screen Flows

7. Introduction

This appendix provides a description of the screens and user interface of the MusicStation client. It includes a full feature list and, for each feature, a description of the user experience and appropriate screenshots.

The features are broken down into the main functional groups of the application, which generally follow the application's menu structure.

7. Screen Layout and User Interaction

7.1. Registration

See Figure 80. When MusicStation is started for the first time the user will see a message while the client is registered with the server and the user is provided with a unique identifier or GUID.

7.2. Joining MusicStation

See Figure 81. When a user first attempts to use any of the chargeable features of MusicStation for the first time they are asked to Join with a optional free trial period. They are then asked to confirm and given an option to view the Terms and Conditions via a wap link. Thereafter subscription is confirmed and they are required to select continue on confirmation. A user that has successfully subscribed is known as a MusicStation member.

7.3. Tabs and Menus

See Figure 82. The user interface is separated into four tabs. Each tab is focused on a particular core function of MusicStation.

- **Home** – provides the user access to all the content available in MusicStation including Charts and to all the core functions such as Search, Options, etc. It also

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highlights content the user has downloaded (i.e both "store" and "library").

- **Buzz** – provides access to the community features and music news.
- **Lineup** – displays the current queue of tracks for download and listening.
- **Playing** – displays details of the track that is currently being played.

The *Home* tab and *Buzz* tab consist of multiple screens arranged in a hierarchical menu structure.

7.4. Menu and Tab Navigation

The user uses the joystick to navigate through the tabs and menus of the application. See Figure 83.

7.5. The More Menu

7.5.1. Accessing Functions

See Figure 84. Every screen includes a *More* menu on the handset's right hand soft key which provides access to functions relevant to both the currently selected item and to the screen as a whole. Options that are not currently available are greyed out on this menu and cannot be selected.

The *More* menu can be closed again by selecting *Cancel* with the right hand soft key.

7.5.2. Context Sensitive Options

The options available in the *More* menu are context-sensitive to the currently highlighted item. This table lists the common *More* menu options and a description of the action the selected *More* menu option performs. See Figure 85 and 86.

Please see Appendix 2: Context Sensitive Menus for a detailed listing of the More menu options available for each MusicStation option.

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7.6. Back

See Figure 87. A screen navigation history is maintained. At any time the user may press the left hand soft key to go back to the previous screen in any given tab. On handsets such as those from Sony Ericsson, if the handset has a hard Back key then that can also be used to go back through the screen history.

7.7. Music Playback

See Figure 88. Various keys are predefined and associated with music playback functions so that the user can control playback from any screen in the application without having to return to the *Playing* tab. For example, the **[5]** key pauses and resumes the music playback wherever the user is within the user interface. See Figure 89.

7.8. Help

See Figures 90 and 91. The user may view the keypad help by pressing the **[1]** key. This screen displays the actions performed by pressing any numbered key on the handset regardless of the user's location in MusicStation.

7.9. Keypad Lock

See Figures 92 and 93. The keypad is locked by the user pressing and holding the **[*]** key. To unlock the keypad the user presses and holds the **[*]** again. Music will continue playing while the joystick is locked but no menu options or other music playback control keys will be accessible to prevent accidental use.

7.10. Minimising

See Figures 94 and 95. The application may also be minimised by pressing and holding the

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[#] key. To stop the music the user must re-open MusicStation.

7.11. Exiting

See Figure 96. When the user selects *Close* from the *More* menu then if music is playing they will be asked whether they want music to continue playing.

- **Exit and keep music playing -** MusicStation will be minimised and moved into the background on the handset. The user can then continue to use the handset's functions whilst listening to music. The user can return to MusicStation at any time.
- **Exit and stop music -** In this case MusicStation will stop music playback and exit completely. The user would need to restart MusicStation to use it subsequently.

8. Basic Concepts

8.1. Lineup

The third tab or Lineup is a key concept to a user's understanding of MusicStation. It provides a permanent view of the user's current selection of music. Any music the user selects for playing (and by default downloading if not yet on the handset) is added to the Lineup. A user can select any album, playlist or individual track and add it to the Lineup. Any track that is yet to complete downloading is greyed out and the percentage downloaded is displayed alongside. See *section 12* for more information. See Figure 97.

8.2. Playlists

There are several types of playlist within the MusicStation user interface.

Playlist	**Description**
Private Playlist	A playlist defined by the current user for their convenience.
Shared Playlist	A playlist created by a user and then shared with the community.

	Any user can listen, view and rate this playlist.
Editorial playlist	A playlist created by the content team related to a particular service. For example, playlists created to highlight a group or story of note at the moment.
Automatically Generated Playlist	Playlists which have been automatically generated by MusicStation. These may be personalised to the user. E.g. You Might Like and Top Artists.

8.3. Rating

See Figure 98. MusicStation provides community features including providing recommendations for its users. To allow users to be involved in this process many different items within the MusicStation interface can be rated. The following items can be rated:

- Tracks
- Albums
- Artists
- Playlists
- Other Members

A user rates an item by selecting it in the interface and then selecting the *Rate* option from the *More* menu. The user has three ratings to choose from for each item:

- I love it
- Neutral
- I hate it

These ratings are collected from all users and are used by MusicStation to generate star-ratings for those items. These stars can be seen at various places throughout the interface

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and give the user base a view on the relative popularity of each item. The user ratings are also used to generate recommendations and charts, such as the *Top Playlists* list (*Get New Playlists* screen).

8.4. Screen Updates

MusicStation includes a component called the Intelligent Background Downloader. This component is responsible for downloading all music and data to the handset. It runs in the background and delivers music for playback, and content for all the dynamic menus. Because it runs in the background it can deliver updated content to any screen without interfering with the user's enjoyment of MusicStation.

For example, news articles listed on the *Inbox* tab might be updated while the user is listening to music so that when the user next switches to the *Buzz* tab the latest articles will be there ready and waiting for the user.

9. Top-level Menus

The user interface is separated into four tabs. Each tab is focused on a particular core function of MusicStation.

- **Home** – provides the user access to all the content available in MusicStation and to all the core functions such as Charts, Search, etc.
- **Buzz** – provides access to the community features and music news.
- **Lineup** – displays the current queue of tracks queue for listening.
- **Playing** – displays details of the track that is currently being played.

The *Home* tab and *Buzz* tab consist of multiple screens arranged in a hierarchical menu structure. The following tables provide a list of the options in the top-level menus of the Home tab and Buzz tab and a cross reference to the section of this document in which they are described in more detail. See Figures 99 and 100.

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The *Lineup* and *Playing* tabs do not have any menus. They are a single fixed view relating to current music. The *Lineup* displays a permanent view of the user's current selection of music for downloading and playing. The *Playing* tab just displays the current track.

10. Home

10.1. Playlists

See Figure 101. The *Playlists* screen gives the user access to playlists. The user can view and manage their Private and Shared Playlists. The user can also use the *Get New Playlists* options to view and download playlists provided by the editorial/content team or by other users.

10.1.1. My Private Playlists

Private playlists are those which the user has created but not shared with the MusicStation community. Private playlists are listed underneath the *My Private Playlists* heading. The user can decide to make any of these playlists public by selecting a private playlist and then selecting the *Share* option from the *More* menu.

10.1.2. My Shared Playlists

See Figure 102. Shared Playlists are those playlists which the user has shared with the MusicStation community. Shared playlists are listed underneath the *My Shared Playlists* heading. The user can decide to make any of these playlists private again by selecting a shared playlist and then selecting the *Make Private* option from the *More* menu.

10.1.3. Get New Playlists

See Figure 103. The *Get new playlists* option provides access to Editorial Playlists, Automatically Generated Playlists, and Shared Playlists from other users. The user can view, play and rate any of these playlists. See Figure 104.

The lists on these screens are updated nightly or weekly by MusicStation.

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Menu item	Description
Top Playlists	A list of the most popular Shared Playlists within MusicStation. These are the playlists with the highest star-rating.
You Might Like	A list of recommended playlists generated using the user's listening habits and rating activity.
Featured Playlists	Playlists formed around some topic such as the season, a special event, an artist new release, etc
Celebrity Playlists	Playlists created by or inspired by celebrities.

10.1.4. Create playlist

See Figure 105. Using the *Create playlist* option, the user can create private or shared playlists. The user provides a playlist name and selects an image for the playlist from a library of images. Once created, the user can add tracks to the playlist using the *Add to Playlist* options found throughout the interface. A user can also create a new playlist after selecting *Add to Playlist.*

10.2. Delete playlist

The user may delete any of their private or shared playlists by highlighting the playlist and selecting *Delete* from the *More* menu.

10.2.1. View Playlist

See Figure 106. The user can view the tracks within a playlist. The user will also see the image associated with the playlist, the playlist's total playtime and the number of tracks in the playlist. If the playlist is a Shared Playlist then its star-rating will also be shown.

At the bottom of each playlist is an **ALL TRACKS** option that a user can select to add all the tracks in the playlist to a Lineup.

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10.2.2. Rate playlist

The user can rate Shared Playlists. The ratings provided by all users and collectively used to generate *Top playlists* and *You might like…* lists which are then fed back to the users on their *Get New Playlists* screen. See section 8.3.

10.3. Artists

See Figure 107. The *Albums* screen gives the user access to all albums available in the MusicStation catalogue. The user can view Artists from which they have downloaded tracks in the past. The user can use the *Get new artists* option to view and listen to artists of general or personal interest to this user.

10.3.1. My Top Artists

In the *My Top Artists* section of the *Artists* screen, the user can view a selective list of their artists from which they have downloaded tracks. The list will be composed of artists that the user has downloaded tracks for. This provides the user with easy access to their favourite artists. It is generally all the artists they have downloaded tracks for but is limited (phone dependent) to ensure it does not get overly long.

10.3.2. Get new artists

See Figure 108. The *Get new artists* option provides access to lists of Artists that have been generated by MusicStation, either automatically, using user listening habits and feedback or editorially. These are based on two main categories: popular artists e.g. Top artists, Top Pop, Top Rock etc and recommended artists e.g. You might like.

The lists on these screens are updated nightly or weekly by MusicStation.

Menu item	Description
Top Artists	A listing of the most popular Artists across all users within MusicStation.
You Might Like	A list of recommended Artists generated utilising the user's listening

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	habits and rating activity.
Top [*Genre*]	A list of the most popular artists in MusicStation broken down by genre. The list of options will include the top 5 most popular genres in MusicStation.

See Figure 109.

10.3.3. Artist Profile - View Artist

See Figure 110. The user can view the artist profile including an image, the artist's MusicStation star-rating, the number of downloaded tracks, a list of the downloaded tracks and the total playtime of these downloaded tracks. From this screen the user can view and play all tracks or albums available for this artist.

10.3.4. Artist Profile - Get new tracks

See Figure 111. The user can view the list of all available tracks for the selected artist. From this screen the user can play and rate tracks.

10.3.5. Artist Profile - Get new albums

See Figure 112. The user can view the list of all available albums for the selected artist. From this screen the user can view, play and rate tracks from the album.

10.3.6. Rate artist

The user may rate any artist using the *Rate* option from the *More* menu. See section 8.3.

10.4. Albums

See Figure 113. The *Albums* screen gives the user access to all albums available in the MusicStation catalogue. The user can view Albums from which they have downloaded tracks in the past. The user can use the *Get new albums* option to view and listen to albums of general or personal interest to this user.

10.4.1. My Top Albums

In the *My Top Albums* section of the *Albums* screen, the user can view a selective list of

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their albums from which they have downloaded tracks. The list will be composed of albums that the user downloads from and listens to frequently. This provides the user with easy access to downloaded tracks.

10.4.2. Get New Albums

See Figure 114. The *Get new albums* option provides access to lists of albums that have been generated by MusicStation, either automatically, using user listening habits and feedback or editorially. These are based on two main categories: popular albums e.g. Top artists, Top Pop, Top Rock etc and recommended albums e.g. You might like, Just released. The user can play or view any easily.

The lists on these screens will updated nightly or weekly by MusicStation.

Menu item	Description
Top Albums	A listing of the most popular Albums across all users within this service.
You might like	A list of recommended Albums calculated using the user's listening habits and rating activity.
Just released	A list of albums that have recently been released.
Top [*Genre*]	Gives access to the most popular Albums for this MusicStation service broken down by genre. The list of options will include the top 5 most popular genres for the service

See Figure 115.

10.4.3. Album home page

See Figure 116. The user can view the details of an album including the number of tracks on the album, the star-rating of the album and a track listing. The user can play individual tracks or all the tracks from the album. Using the *ALL TRACKS* option at the bottom of the

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Album home page, the user can select to play all tracks from the album.

10.4.4. Rate album

The user can rate any album within the user interface. See section 8.3.

10.5. Tracks

See Figure 117. The Tracks screen gives the user access to all tracks available from the MusicStation catalogue. The user can see a selective list of tracks, which they have downloaded in the past. The user can also use the *Get new tracks* option to view and listen to tracks of general or personal interest to this user.

10.5.1. My Top Tracks

In the *My Top Albums* section of the *Albums* screen, the user can view a selective list of their downloaded tracks. The list will be composed of tracks that the user listens to frequently. All tracks in this list can be listened to immediately. The user does not need network coverage to listen to any of these tracks.

10.5.2. Get New Tracks

See Figure 118. The *Get new tracks* option provides access to lists of tracks that have been generated by MusicStation, either automatically, using user listening habits and feedback or editorially. These are based on two main categories: popular tracks e.g. Top Tracks and recommended tracks e.g. You might like, Just released.

The lists on these screens will updated nightly or weekly by MusicStation.

Menu item	**Description**
Top tracks	A listing of the most popular tracks across all users within MusicStation.
You Might Like	A list of recommended tracks calculated using the user's listening habits and rating activity.
Just Released	A list of recently released tracks.

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10.5.3. Rate track

The user may rate any track. See section 8.3.

10.5.4. Add track to Playlist

The user may add any track to a playlist. During this process the user may select an existing playlist or create a new one. See section 10.1.4 Create playlist.

10.6. Charts

10.6.1. Charts listing

See Figure 119. The *Charts* screen provides a listing of charts generated from the listening and rating habits of the users of this service. A selection of charts is available including daily, weekly and monthly.

10.6.2. Chart details

See Figure 120. The user can view the details of a particular chart including its name, the chart's total playtime, the full sequential track/ /artist listing for the chart and play any track from the chart.

10.7. Search

See Figure 121.

10.7.1. Artist search

See Figure 122. The user may search for any artist within the MusicStation catalogue by entering search terms into the *Search* text box and selecting the *Artists* radio button on the *Search for* menu. The user may then view any artist profile returned by their search.

10.7.2. Track search

See Figure 123. The user may search for any track within the MusicStation catalogue by entering search terms into the *Search* text box and selecting the *Tracks* radio button on the *Search for* menu. The user may then play any track returned by their search.

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10.7.3. Album search

See Figure 124. The user may search for any album within the MusicStation catalogue by entering search terms into the *Search* text box and selecting the *Albums* radio button on the *Search for* menu. The user may then view or play any album profile returned by their search.

10.8. Play Top Track

See Figure 125. The *Play Top Track* option on the home menu adds a random track from the list of tracks already on the handset to the end of the *Lineup*. If the *Lineup* is empty then this track would start playing immediately. Network coverage is not required for this option as the tracks are already downloaded.

10.9. Options

See Figure 126. The *Options* screen provides the user with access to general information and options to control their MusicStation application.

10.9.1. Membership Status

See Figure 127. This option displays the status of the user's membership. It will show renewal details such as the date and time of the next renewal, the renewal fee and the frequency of the renewal. The user can also cancel their membership using the *Cancel Membership* option.

The following table describes the different stages in the membership process.

Membership	**Description**
Free access	Use of the application including any free preloaded content is unrestricted. Users can play free content and navigate around MusicStation.
Free trial access	When a user first attempts to perform a billable action they will be asked to join MusicStation and normally (depending on the service configuration) be granted a period of free use during which they will have unlimited

	free access. The user can use all features of MusicStation including music downloads and community. After the end of the free period the user will begin reoccurring charges at the normal rate.
Subscribed to unlimited downloads	The subscribing process involves the user accepting the terms and conditions of the service. Once these are accepted the user will have immediate access to all the music within MusicStation for the period that they remain subscribed.
Automatic subscription renewal	If the user takes no action then whilst subscribed the user's subscription will be automatically renewed as soon as their renewal date/time comes up. The user will not be informed of the renewal. If the user does not use MusicStation within a grace period of the renewal date then access to all music (including that already downloaded onto the handset) will be prevented until a successful renew occurs.
Unsubscribe from unlimited downloads	The user may choose to unsubscribe from the service at anytime by selecting the *Cancel Membership* option on the *Membership Status* screen. The user will remain subscribed until their next due renewal date/time at which point their music will no longer be accessible to them.

10.9.2. About

See Figure 128. This screen displays information about the version of MusicStation. It also displays the total number of tracks that the user has currently downloaded to their handset.

10.9.3. Roaming Options

See Figure 129. The user can configure the Roaming behaviour for MusicStation. When the phone is Roaming the user will experience additional charges when downloading tracks or when MusicStation updates menu items and images.

Option	Description
Roaming Status	The phone's current roaming status. This will show *Home* if the user is not roaming and will show *Roaming* if the user is roaming.
Track Downloads	The user can set this option *On* to download tracks (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent the downloading tracks when roaming or *Ask* to cause the following prompts.
Menu & picture updates	The user can set this option *On* to update menu items and pictures (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent menu and picture updates when roaming or *Ask* to cause the following prompts.

If the Roaming behaviour for *Menu & picture updates* is set to *Ask* they will be shown a warning message which will ask them to approve / deny downloads, updates and additional charges while roaming for a given session. See Figure 130.

When the user attempts to download a track while Roaming and the Roaming behaviour for tracks is set to *Ask* they will be shown a warning message which will ask them to approve / deny downloads, updates and additional charges while roaming. This action, approval / denial, will configure the settings for the current session. See Figure 131.

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10.9.4. Language Selection

On a service which has multiple languages defined the user can change the language for MusicStation. On changing the language the user will be prompted to restart MusicStation. Confirming the action closes MusicStation. See Figure 132.

10.9.5. Terms & Conditions

This screen displays a WAP link to the general and service-specific terms and conditions for this MusicStation service. See Figure 133.

10.9.6. Max memory card use

The user can select the maximum percentage of the memory card that MusicStation will use for storing music and data. The user can set a lower value to leave more room for other uses of the phone (e.g. photos).

11. Buzz

See Figure 134. The user may choose to create a *Buzz* profile. This allows them to take part in the full set of MusicStation community features. If the user does not have a Buzz profile then they are unable to communicate with other members.

From the *Buzz* screen users can view their profile, read news articles and access messages in their *Inbox*.

11.1. Join the Buzz

See Figure 135. When the user attempts to use a community feature that requires a Buzz profile then they are redirected to the *Join the Buzz* screen and are prompted for a member name they want to register under. They many enter a name and select an image, which will form their profile. The entered name must be unique.

If the Member name is not available then an alternative will be suggested which they may accept or modify.

The user may edit their profile at any time from the My Profile screen.

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They may optionally also choose an image and provide a short catchphrase. These items are displayed whenever other users view this member's profile.

11.2. Buzz Members

11.2.1. My Profile

See Figure 136. The My Profile screen gives the user access to all aspects of the MusicStation community along with their own personalised content. Before they have created a profile the user will be able to access the News items in the Buzz tab, and view Cool Members and Buzz playlists but will not be able to add friends or send recommendations.

Once they have registered this screen will show

- Member name
- Image
- Star-rating – indication of how other users have rated them.
- Listens - number of times other users have listened to one of this member's shared playlists.
- Number of Friends
- Catchphrase

From the My Profile screen they can view Cool Members, Buzz Playlists and a list of their Buzz Friends.

Menu item	Description
Cool members	Popular members, featured members and members that this user may relate to based on similar listening and rating habits.
Buzz playlists	Popular playlists, featured playlists, celebrity playlists and playlists

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	that this user may enjoy based on listening and rating habits.
My Friends	A list of users that that this user has added as a friend.

11.2.2. Edit my profile

At any time after registering as a Member the user may modify details of their member profile using the *Edit My Profile* option from the *More* menu. See Figure 137.

This allows the user to modify their catchphrase and change their image. It also allows them to specify whether they want their profile to be visible to other users, and if they want their *Top Tracks* to be listed on their profile screen.

11.2.3. Cool Members

See Figure 138. The *Cool Members* option on the My Profile screen gives the user access to various lists of Members.

Menu item	**Description**
Top Members	The most popular members in MusicStation.
You Might Like	A list of members that this user may relate to based on similar listening and rating habits.
Featured Members	A list of editorially selected members.

The user may click on any member in these lists to view that member's profile (section 11.2.4).

11.2.4. Buzz Playlists

See Figure 139. The *Buzz Playlists* option on the My Profile screen gives the user access to various playlists including Editorial Playlists, Automatically Generated Playlists, and Shared Playlists from other users. The user can view, play and rate any of these playlists.

See Figure 140. The lists on these screens are updated nightly or weekly by MusicStation.

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Menu item	Description
Top Playlists	A list of the most popular Shared Playlists within MusicStation. These are the most popular playlists based on star-rating and listens.
You Might Like	A list of recommended playlists generated using the user's listening habits and rating activity.
Featured Playlists	Editorially selected playlists formed around some topic such as the season, a special event, an artist new release, etc
Celebrity Playlists	Playlists created by or inspired by celebrities.

11.2.5. My Friends

See Figure 141. The *My Friends* option on the My Profile screen gives the user access to a list of the users they have added as a friend and any pending friend requests. See section 11.3 for more information on Friends.

11.2.6. View another member profile

See Figure 142. This screen displays the details of another Member. A member's profile can only be viewed by another user if that member has enabled the option which makes their profile visible on the *Edit My Profile* screen.

The Member Profile screen displays a member's:

- Member name
- Image
- Star-rating
- Listens (number of times other users have listened to one of this member's shared playlists)
- Number of Friends
- Catchphrase

- A list of their Shared Playlists
- My Top Tracks (This user's 5 top tracks)

From this screen a user may:

- View this member's shared playlists
- View this member's top 5 tracks and play them (This option will be shown only if the other member has enabled the option to *Show my top tracks* when configuring their member profile using the *Edit my profile* option. See section 11.2.2)
- Request to add this user as a Friend
- Rate this member

11.3. Friends

Buzz Members can recommend items to other Members to which they may also attach a message. However they are only allowed to do this with Members who they have added to their list of Friends. Users can add Friends by sending Friend Requests to other Buzz Members or confirming requests from other members.

A list of Friends may be viewed from their My Profile screen (see section 11.3.2).

All recommendations can be viewed in the *Inbox* on the *Buzz* tab. (see section 11.4)

11.3.1. Request to add a member as friend

See Figure 143. Anywhere a member is listed in the user interface a user may select the *Add as Friend* option from the *More* menu in order to send a request to that Member to become their Friend. The user may enter a message, which is sent along with the Friend Request. To send the message the user selects the *Send* option from the *More* menu. The friend request will be sent to the other member who then has the option of accepting or denying the request.

11.3.2. View list of my friends

See Figure 144. A user may view their list of friends at any time by going to their My

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Profile screen and selecting the *My friends* option.

11.3.3. View list of my pending friend requests

See Figure 145. A user may view the list of friend requests that they have sent but which have not yet been responded to under the *Pending friend requests* heading on the *My Friends* screen available from their My Profile screen (see section 11.3.2).

11.3.4. Request to add friend by name

See Figure 146. If the user knows the name of a member who they want to add as a friend, they may send a Friend Request to that Member by entering that name using the *Add friend by name* option, accessed from the *My Friends* menu option from their My Profile screen (see section 11.3.2).

11.3.5. Request to add friend by phone number

See Figure 147. If the user knows the mobile phone number of a member who they want to add as a friend, they may send a Friend Request to that member by entering that name using the *Add friend by phone no* option, accessed from the *My Friends* menu option from their My Profile screen (see section 11.3.2).

11.3.6. Send playlist recommendation to friend

Anywhere where a playlist is listed in MusicStation the user may use the *Send to Friend* option from the *More* menu to send a message to one or more Friends recommending it to them. The recommendation message arrives in that Friend's *Inbox* (section 11.4.3).

11.3.7. Send artist recommendation to friend

Anywhere where an artist is listed in MusicStation the user may use the *Send to Friend* option from the *More* menu to send a message to one or more Friends recommending it to them. The recommendation message arrives in that Friend's *Inbox* (section 11.4.4).

11.3.8. Send album recommendation to friend

Anywhere where an album is listed in MusicStation the user may use the *Send to Friend* option from the *More* menu to send a message to one or more Friends recommending it to them. The recommendation message arrives in that Friend's *Inbox* (section 11.4.5).

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11.3.9. Send track recommendation to friend

Anywhere where a track is listed in MusicStation the user may use the *Send to Friend* option from the *More* menu to send a message to one or more Friends recommending it to them. The recommendation message arrives in that Friend's *Inbox* (section 11.4.6). See Figure 148.

11.4. Inbox

The Inbox displays messages and recommendations which have arrived from the user's friends who are also users of this MusicStation service. See section 11.3 for an introduction to MusicStation's Friends functionality.

Messages are downloaded in the background by the Intelligent Background Downloader and appear on in the Inbox without any specific interaction from the user.

11.4.1. Inbound friend request message

See Figure 149. When another Member requests to add this user as a friend then a Friend Request will arrive in this user's *Inbox*. This user can respond to this request in one of four ways.

Selection	Action
Approve	This user is added to the other member's Friend list. The other member is added to this user's Friend list.
Deny	This user is not added to the other member's friend list. The other member is not added to this user's Friend list.
Block	This user is not added to the other member's friend list. The other member is not added to this user's Friend list. All future friend requests from the other member will be ignored.
Report abuse	This user is not added to the other member's friend list. The other member is not added to this user's Friend list. All future friend

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	requests from the other member will be ignored. An abuse notification will be raised with the MusicStation support team.

When this user responds, their response will be delivered to the other member's Inbox. These responses are described in section 11.4.2.

11.4.2. Response from friend request

See Figure 150. When this user sends a friend request to another member that member has the option to accept or deny the request. Their response is returned to this user and displayed in the *Inbox*. The three possible responses to a friend request are listed below.

Title shown in Inbox	Action
Friend Request Accepted	The other member has accepted the friend request. The other member is added to this user's friend list and this user is added to the other member's Friend list. They can now send each other tracks, playlists and messages.
Friend Request Denied	The other member has denied the friend request. No change to either member's friends lists. This user can resubmit their friend request.
Friend Request Blocked	The other member has blocked all friend requests from this user. This user will have all friend requests to this other member blocked automatically. The other member will never see requests from this member again.

11.4.3. Inbound playlist recommendation from friend

See Figure 151. When a friend sends a playlist recommendation to this user (section 11.3.6) then the recommendation message will appear in this user's *Inbox*. The user can open the message and click on the hyperlink in the message to view the playlist.

11.4.4. Inbound artist recommendation from friend

See Figure 152. When a friend sends an artist recommendation to this user (section 11.3.7) then the message will appear in this user's *Inbox*. The user can open the message and click on the hyperlink in the message to go straight to the artist profile screen.

11.4.5. Inbound album recommendation from friend

See Figure 153. When a friend sends an album recommendation to this user (section 11.3.8) then the message will appear in this user's *Inbox*. The user can open the message and click on the hyperlink in the message to go straight to the album screen. They may also click on the artist name to go straight to the artist profile screen.

11.4.6. Inbound track recommendation from friend

See Figure 154. When a friend sends a track recommendation to this user (section 11.3.9) the recommendation message will appear in this user's *Inbox*. The user can open the message and click on the hyperlink in the message to add the track to their *Lineup*.

11.5. News

11.5.1. List of editorial articles

The *News* section displays a constantly updating list of news articles. Typically six articles will be displayed broken down with two articles of international general interest, two stories of local general interest and two stories based on the listening and rating behaviour of this user. This breakdown can be configured for the demands of the particular service.

The list of articles is updated by the *Intelligent Background Downloader* during normal use of MusicStation. Articles are added to this list in the background and can be viewed immediately by the user when they next navigate to the *Buzz* tab.

11.5.2. View article

See Figure 155. To view the article the user selects the article from the list and clicks the joystick button or selects the *Open* option from the *More* menu. The article body text is displayed beneath a headline and relevant image.

11.5.3. Hyperlinks in an article

See Figure 156. Stories may contain hyperlinks to other screens within MusicStation. For

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example, an announcement of a new album release could include links to the relevant artist and album screens. Hyperlinks are displayed in blue in the article screens. The user may navigate straight to the album or artist by selecting the hyperlink and clicking the joystick button. As a user scrolls up and down in an article using up/down on the joystick the active hyperlink moves between successive hyperlinks.

12. Lineup

See Figure 157. The *Lineup* is a concept central to the MusicStation client. It is the current playlist of tracks a user has queued for listening. Songs on the playlists will be played in sequence. At any time, the contents of the Lineup can be viewed on the *Lineup* screen.

The current track is the track in the *Lineup* that is currently playing. The current track is highlighted with a small blue pointer on the left.

See Figure 158. When no tracks have been added to the Lineup the option *Play top track* is displayed. This option randomly adds and plays a Top track to the Lineup. The Top tracks have already been downloaded and will play immediately.

12.1. Track download status

See Figure 159. Tracks which have not yet been downloaded will be downloaded in the background. Tracks which are currently downloading or waiting to download are shown in a grey font. The progress of a downloading track is displayed as a percentage from 0-100%.

Tracks play in sequence from the *Lineup*. If a track is reached which has not yet finished downloading then playback will skip that track and go onto the next track which has been downloaded. Once that track has been downloaded then it will be available to play.

MusicStation intelligently manages the downloading of tracks in the background to optimise the user's experience and ensure that music playback is continuous and the user hears a continuous flow of music.

TRILLER EXHIBIT 1006-00291

Tracks download one at a time, although depending on how tracks have been added to the Lineup and whether the user interrupted downloads by exiting the application, there may be multiple tracks shown in a partially downloaded state.

While tracks are downloading the user is able to listen to already downloaded music and is free to navigate around the rest of the MusicStation user interface.

Partially downloaded tracks are saved when MusicStation exits and continue downloading later from where they left off.

12.2. Save as playlist

See Figure 160. The user can save the current Lineup to a playlist. To save the current Lineup as a playlist the user selects *Save as playlist* from the *More* menu. They can choose to save the current Lineup as a new playlist or add the tracks to an existing playlist. This saved playlist is saved on the handset and centrally.

12.3. Remove from Lineup

See Figure 161. The user can remove a track from the *Lineup*. To remove a track from the *Lineup* the user selects the track and then selects *Remove* from the *More* menu. If the user removes the *Current Track* then the next available track in the current playlist will be played.

12.4. Clear Lineup

See Figure 162. The user can clear the current *Lineup*, removing all tracks from it. To clear the *Lineup* the user selects *Clear* from the *More* menu. Music playback will stop.

12.5. Jump to track in current Lineup and play

The user can select another track to play from the current *Lineup*. To do this the user navigates to the track using the joystick. The user can start the track by pressing the joystick button or selecting *Play* from the *More* menu. MusicStation will start to play the selected track. Only downloaded tracks can be played.

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12.6. Adding music to the Lineup

The user navigates through MusicStation's music catalogue and can select tracks, albums, artists or playlists to add to the *Lineup*.

Any track can be added to the Lineup by selecting the track with the joystick. Any playlist, album or track can be added by selecting *Add to Lineup* from the *More* menu.

If the *Lineup* is empty then that item will start playing. If the Lineup already contains tracks then the added item will be queued at the end of the *Lineup*. The user can view the tracks which they have added by going to the *Lineup* tab.

Tracks, which have not been downloaded, are added to the *Lineup* before they are downloaded. MusicStation will intelligently manage download of items in the background allowing the user to enjoy a continuous flow of music.

Other options for adding items to the *Lineup* are provided on the *More* menu. These options such as *Play next*, *Play ASAP* or *Play now* are described in more detail below.

If a user adds a track to the Lineup that has to be downloaded and there are currently no other tracks in the Lineup then the user is prompted with an option to add a top track for immediate playback. See Figure 163.

12.6.1. Add to Lineup

When a user is browsing the MusicStation catalogue they can select *Add to Lineup* from the *More* menu to add a track, playlist, a track by a selected artist or album to the *Lineup*.

Item	Action
Playlist	The user can select any playlist in the interface and add all tracks from that playlist to the Lineup. The user may also add individual tracks from that playlist to the end of the Lineup.

Album	The user can select any album in the interface and add all tracks from that album to the Lineup. The user may also add individual tracks from that album to the end of the Lineup.
Artist	The user can select an individual track or album from a selected artist to the end of the Lineup.
Track	The user can select any track and add it to the end of the Lineup.

12.6.2. Play Next

When a user is browsing the MusicStation catalogue they can select *Play next* from the *More* menu to insert a track, playlist, a track by a selected artist or album into the *Lineup* after the track that is currently playing.

Item	**Action**
Playlist	The user can select any playlist and instruct MusicStation to insert it into the Lineup directly after the track that is currently playing. The playlist will then start playing once the current track has finished.
Album	The user can select any album and instruct MusicStation to insert it into the Lineup directly after the track that is currently playing. The playlist will then start playing once the current track has finished.
Artist	The user can select an individual track or album from a selected artist and instruct MusicStation to insert it into the Lineup directly after the track that is currently playing. The selected track will then start playing once the current track has finished.
Track	The user can select a track and instruct MusicStation to insert it into the Lineup directly after the track that is currently playing. The selected track will then start playing once the current track has finished.

12.6.3. Play Now

When a user is browsing the MusicStation catalogue they can select *Play now* from the *More* menu to insert a track which **has** been downloaded into the Lineup. The track which is currently playing will be interrupted and the selected track will start playing and replace the current track.

Item	Action
Track	The user can select any song, which has already been downloaded, and instruct MusicStation to insert it into the Lineup immediately. The track which is currently playing will be interrupted and the selected track will start playing and replace the current track.

12.6.4. Play ASAP

Play ASAP stands for Play As Soon As Possible. When a user is browsing the MusicStation catalogue they can select *Play ASAP* from the *More* menu to insert a track, playlist, a track by a selected artist or an album, which **has not** been downloaded into the Lineup. As soon as it is available the track, playlist, track by a selected artist or an album will replace the track that is currently playing.

When a user is browsing the MusicStation catalogue if the track, playlist, a track by a selected artist or album has not already been downloaded they will be able to select the Play ASAP option from the More menu.

Item	Action
Playlist	• The user can select any playlist and instruct MusicStation to play that playlist as soon as possible. The playlist will be inserted into the Lineup and will interrupt the track that is currently playing as soon as it is available. •If one or more tracks of that playlist have already been

	downloaded to the handset the current track would be interrupted and the playlist would start playing immediately. •If the playlist must first be downloaded then the first track would be downloaded and as soon as it had finished downloading it would replace the current track and start playing. The remaining tracks from the playlist will download in the background and be queued as they become available.
Album	• The user can select any album and instruct MusicStation to play that album as soon as possible. The album will be inserted into the Lineup and the first available track will interrupt the track that is currently playing as soon as it is possible. • If one or more tracks of that album have already been downloaded to the handset the current track would be interrupted and the playlist would start playing immediately. • If the album must first be downloaded then the first track would be downloaded and as soon as it had finished downloading it would interrupt the current track and start playing. The remaining tracks from the playlist will album in the background and be queued as they become available.
Artist	The user can select an individual track by a selected artist and instruct MusicStation to play that track as soon as possible. The selected track will be inserted into the Lineup and will interrupt the track that is currently playing as soon as it is available.
Track	The user can select any track and instruct MusicStation to play that track as soon as possible. The track will be inserted into the Lineup and will interrupt the track that is currently playing as soon as it is available.

13. Playing

See Figure 164.

13.1.1. Playing Screen

The *Playing* tab displays the details of the track that is currently playing.

Item	Description
Track Name	The name of the track currently playing.
Track Artist	The name of the artist for the track.
Track Album	The name of the album the track is from.
Album Image	An image showing the cover for the album the track is from.
Lineup position	The track's position within the Lineup.
Lineup count	The number of tracks in the current Lineup.
Current playtime	The current position of playback of the current track in minutes:seconds
Playtime	The total length of the current track in minutes:seconds.

13.1.2. Playing Actions

The user can perform the following actions on the *Playing* tab.

Action	
Play	Click the joystick button or press the **[5]** key.
Pause	Click the joystick button or press the **[5]** key.

Next Track	Press the **[6]** key.
Restart Track	Press the **[4]** key.
Previous Track	Press the **[4]** key twice.
Fast Forward	Press and hold the **[6]** key.
Rewind	Press and hold **[4]** key.
Add to Playlist	Select *Add to playlist* from the *More* menu.
Rate	Select *Rate* from the *More* menu.

APPENDIX 2: CONTEXT SENSITIVE MENUS

The following appendix details the options available on the More menu when viewing menus and objects in MusicStation.

Playlists	
Object	**More Options**
Playlist, Private	Open Add to Lineup Play next Play ASAP Send to Friend Delete Share Help Minimise Close
Playlist, Shared	Open Add to Lineup Play next Play ASAP Rate Send to Friend Delete Make Private Help Minimise Close

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Playlist, Buzz	Open Add to Lineup Play next Play ASAP Rate Send to Friend Help Minimise Close

Tracks	
Object	**More Options**
Track *...on a Shared Playlist* *...on an album* *...on an artist screen* *...on a chart* *...in search results* * *Track not downloaded* || *Track downloaded*	Add to Lineup Play next Play ASAP / Play now * Add to playlist Rate Send to Friend Artist Profile Details Help Minimise Close
Track *... on a Private Playlist*	Add to Lineup Play next Play ASAP / Play now *

* *Track not downloaded / Track downloaded*	Add to playlist Remove Rate Send to Friend Artist Profile Details Help Minimise Close
Track *... in My Top Tracks* * *Track not downloaded / Track downloaded*	Add to Lineup Play next Play ASAP / Play now * Add to playlist Delete Rate Send to Friend Artist Profile Details Help Minimise Close

Buzz	
Object	**More Options**
Buzz *... Buzz main screen*	Open Send / Receive

	Help Minimise Close
Inbox *... Buzz main screen*	Open Delete Send/Receive Help Minimise Close
Buzz Profile	Edit my profile Open Help Minimise Close
Buzz member *... in a list of members* *** will be greyed out if member is already a friend*	Open Add as Friend ** Help Minimise Close
Friend *... in a list of friends*	Open Remove Help Minimise Close
Playlist	Open

TRILLER EXHIBIT 1006-00302

...on a buzz member profile screen *** will be greyed out if member is already a friend*	Add to Lineup Play next Play ASAP Rate Send to Friend Add as Friend ** Help Minimise Close
Track *... on a buzz member profile screen* * *Track not downloaded / Track downloaded* ** *will be greyed out if member is already a friend*	Add to Lineup Play next Play ASAP / Play now * Add to playlist Rate Send to Friend Artist Profile Details Add as Friend ** Help Minimise Close

Lineup + Playing	
Object	**More Options**
Lineup	Play Top Track

... *no tracks*	Help Minimise Close
Lineup ... *tracks*	Play Rate Remove Clear Send to Friend Save as playlist Add to playlist Pause Help Minimise Close
Playing	Add to playlist Rate Help Minimise Close

Other	
Object	**More Options**
Artist ... *in a list of artists*	Open Rate Send to Friend Help

	Minimise Close
Album ... *in a list of albums*	Open Add to Lineup Play next Play ASAP Rate Send to Friend Help Minimise Close
Chart	Open Add to Lineup Play next Play ASAP Help Minimise Close
Search ... *do search*	OK Reset search Help Minimise Close

Generic	
Object	**More Options**
Generic Top Level menu item	Open

	Help Minimise Close
Generic Actionable menu item *e.g. Create playlist*	<<Do action>> *e.g. Create playlist* Help Minimise Close
Menu item (default)	Help Minimise Close

CLAIMS

1. A portable wireless computing device comprising a hardware processor programmed with a software application embodied on a non-transitory storage medium, that enables an end-user to interact with other users in which (a) the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user; and (b) the software application allows the end-user to, over the wireless connection, view profiles created by other users of a service; and (c) the software application allows the end-user to, over the wireless connection, interact with other users of the service; and (d) the software application allows the end-user to, over the wireless connection, send and receive messages to and from other users of the service; and (e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services.

2. The device of Claim 1 wherein the software application uses a multitasking architecture to balance the computational demands of network access; and the computational demands of a user interface of the software application.

3. The device of Claim 2, wherein the software application uses the multitasking architecture to balance the computational demands of one or both of: a DRM program; media operations.

4. The device of Claim 1 wherein (i) the user is able to view the profiles of other users, including text provided by those other users and (ii) when viewing the profile of

TRILLER EXHIBIT 1006-00307

another user, B, the first user, A, is able to view that information on B's profile which B has, whether implicitly or explicitly, made visible to user A.

5. The device of Claim 1 wherein a request to link profiles on the service can be responded to by accepting that request, rejecting that request or blocking all further messages from the originating user.

6. The device of Claim 1 wherein the software application is a music application and uses track meta-data that is formed as a separate meta-data layer and defines attributes of tracks, the meta-data being external to a music track to make sharing and browsing of track information possible without needing to distribute the related music track files.

7. The device of Claim 1 wherein a user is required to register, over a wireless connection, a unique username, handle or identifier with the service in order to access the service.

8. The device of Claim 1 wherein a user's profile includes one or more of a username; a profile image, whether provided by the user or by the service; one or more additional images; some text provided by the user any additional text and/or metadata defined by the service.

9. The device of Claim 1 wherein user interactions include sending information over a wireless connection to other users of the service or receiving information from other users of the service.

10. The device of Claim 9 wherein information shared over a wireless connection with other users comprises one or more of: whether or not the user is currently logged into the service; messages; requests to link his account with one or more other designated users the list of profiles to which the user has linked his profile; the media content which the user is and/or has been listening to, watching or reading; recommendations of, or related to, media content; playlists of media content; the user's favourite media content; the user's ratings of one or more items; digital media content files or any other files; any other information deemed suitable for sharing with other users.

11. The device of Claim 10 wherein media content comprises one or more of: music, books, movies, television shows, websites, radio, artists, albums, composers, directors, actors or any other video, audio and/or text content or any other media content, whether stored digitally or otherwise.

12. The device of Claim 1 wherein the user can control whether or not his profile is visible to other users of the service.

13. The device of Claim 1 wherein the user can control which information from his profile is visible to other users of the service.

TRILLER EXHIBIT 1006-00309

14. The device of Claim 1 wherein the user is able over a wireless connection, to search and/or browse the service for other users, media content or any other information.

15. The device of Claim 1 wherein the user can provide ratings for media content, other users of the service or for any other items.

16. The device of Claim 15 wherein the user's ratings consist of one or more of whether the user likes the item, whether the user dislikes the item, how the user rates the item on a given scale or any other applicable explicit rating mechanism.

17. The device of Claim 1 wherein messages, whether from other users or from the service itself, are shown as notification messages.

18. The device of Claim 1 wherein messages, whether from other users or from the service itself, are stored on a remote server such that when the user is online the user can collect those messages which were delivered into the user's "inbox" while the user was not connected to the service.

19. The device of Claim 1 wherein messages, whether from other users or from the service itself, are able to have associated attached items which the user can access on the same basis as that message.

20. The device of Claim 19, wherein the attached items consist of one or more of a digital image file, a digital audio file, a digital video file, a text file, an executable file, a

recommendation of media content, a web site identifier, Universal Resource Identifier (URL) or address, a request from another user to link user accounts or an acknowledgement of such a request or any other digital file.

21. The device of Claim 1 wherein messages or other shared information may be filtered to remove or obfuscate terms deemed to be potentially offensive.

22. The device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of people, media content or any other items which the user might like, based on the user's viewing, listening and/or purchasing history, on the viewing, listening and/or purchasing history of any other users or on any other criteria.

23. The device of Claim 1 wherein the service provides over a wireless connection, recommendations to the user of other users the user might wish to interact with based on shared media content preferences, shared linked friends or on any other criteria.

24. The device of Claim 1 wherein the service provides over a wireless connection, information to the user comprising one or more of news stories, media content, editorially maintained playlists of media content, personalized news, recommendations of media content or any other information.

25. The device of Claim 1 wherein the software application resides wholly on the device or wholly on the remote server or some combination of the two.

26. The device of Claim 1 wherein the software application communicates with the remote server wirelessly via one or more of CSD, GPRS, 2G, 2.5G, 3G, WAP, SMS, Bluetooth, Infrared, Wi-Fi, WiMAX, the Global Mobile Network or via any other wireless communications technology.

27. The device of Claim 1 wherein the software application uses a multithreaded architecture to balance the computational demands of network access; and the computational demands of one or more of: a user interface of the software application; a DRM program; media operations.

28. The device of Claim 1 where the service is a social network service.

29. The device of Claim 28 where the software application displays to the end-user the number of friends linked with that end-user.

30. The device of Claim 1, the device being a mobile telephone.

31. Software application embodied on a non-transient storage medium, wherein the software application is executable on a portable wireless computing device, wherein the software application enables an end-user to interact with other users and (a) in which the software application allows the end-user to, over a wireless connection, create on a remote server one or more user accounts with associated profiles for that end-user; and (b) the software application allows the end-user to, over the wireless connection, view profiles created by other users of a service; and (c) the software application allows the end-user to,

TRILLER EXHIBIT 1006-00312

over the wireless connection, interact with other users of the service; and (d) the software application allows the end-user to, over the wireless connection, send and receive messages to and from other users of the service; and (e) the software application allows the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services.

32. Method of enabling an end-user of a portable wireless computing device programmed with a software application embodied on a non-transitory storage medium, to interact over a wireless connection, with other users of other devices, the portable wireless computing device in communication with a remote server over a wireless connection, the method comprising the steps of:

(i) the software application allowing the end-user to, over the wireless connection, create one or more user accounts with associated profiles on the remote server;

(ii) the software application allowing the end-user to, over the wireless connection, display on the device profiles created by other users of a service,

(iii) the software application allowing the end-user to communicate interactions over the wireless connection, between the user and other users of the service;

(iv) the software application allowing the end-user to send and receive messages over the wireless connection, to and from the user and other users of the service;

(v) the software application allowing the end-user to, over the wireless connection, link his or her user account on the remote server to user accounts on the remote server of other users of the same service or of other services..

TRILLER EXHIBIT 1006-00313

33. A server, including a program embodied on a non-transitory storage medium, the server configured and programmed to communicate with a portable wireless computing device comprising a hardware processor programmed with a software application embodied on a non-transitory storage medium, that enables an end-user to interact with other users, in which (a) the server is configured and programmed to create a user account with an associated profile for that end-user, in response to receiving a request from the portable wireless computing device over a wireless connection, (b) the server is configured and programmed to provide profile information for other users of a service, over the wireless connection, in response to receiving a request from the portable wireless computing device to view profiles created by other users of the service; (c) the server is configured and programmed to provide interaction between the end-user and other users of the service, over the wireless connection; and (d) the server is configured and programmed to receive and to send messages from and to the end-user, respectively, over the wireless connection, and respectively to send and to receive those messages to and from other users of the service; and (e) the server is configured and programmed to allow the end-user to, over the wireless connection, link his or her user account on the server to user accounts on the server of other users of the same service or of other services.

Abstract

The invention enables digital music content to be downloaded to and used on a portable wireless computing device. An application running on the wireless device has been automatically adapted to parameters associated with the wireless device without end-user input (e.g. the application has been configured in dependence on the device OS and firmware, related bugs, screen size, pixel number, security models, connection handling, memory etc.. This application enables an end-user to browse and search music content on a remote server using a wireless network; to download music content from that remote server using the wireless network and to playback and manage that downloaded music content. The application also includes a digital rights management system that enables unlimited legal downloads of different music tracks to the device and also enables any of those tracks stored on the device to be played so long as a subscription service has not terminated.

TRILLER EXHIBIT 1006-00315

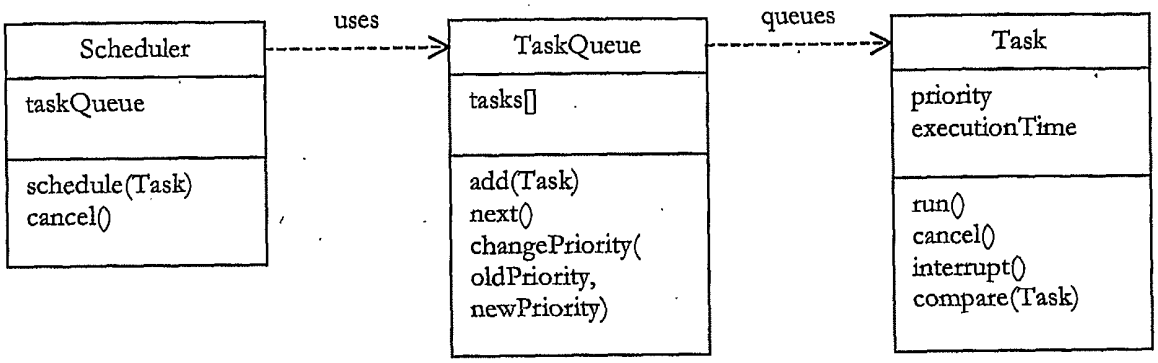


Figure 1

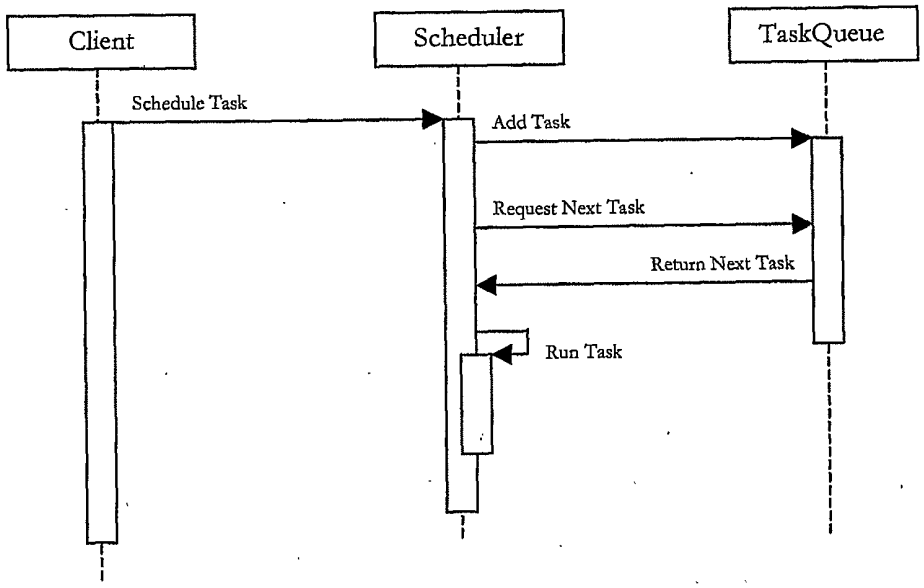


Figure 2

TRILLER EXHIBIT 1006-00316

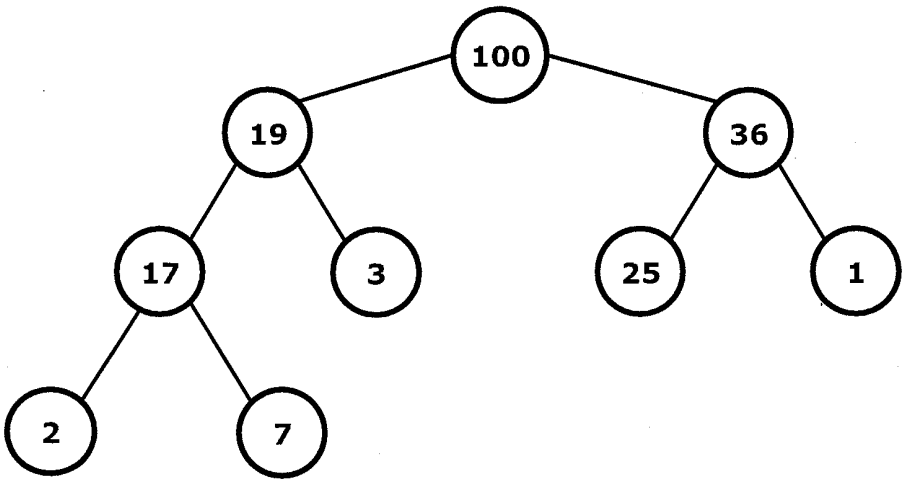


Figure 4

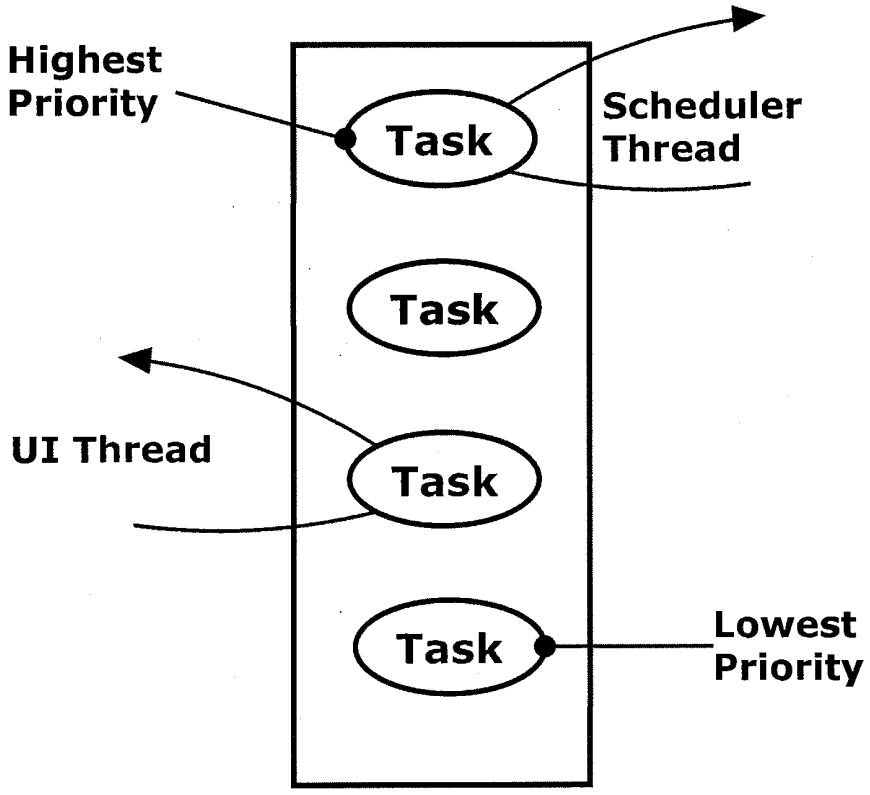


Figure 3

	Lower	*Upper*
Data	3.33%	6.67%
Image	3.33%	6.67%
Audio	10%	90%

Figure 7

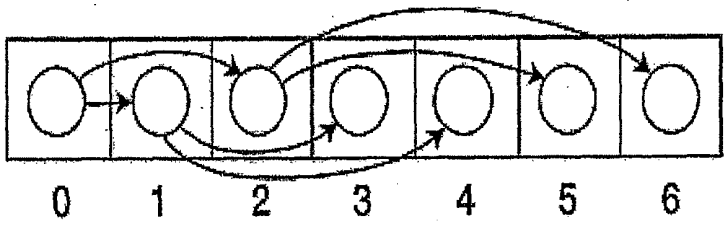


Figure 5

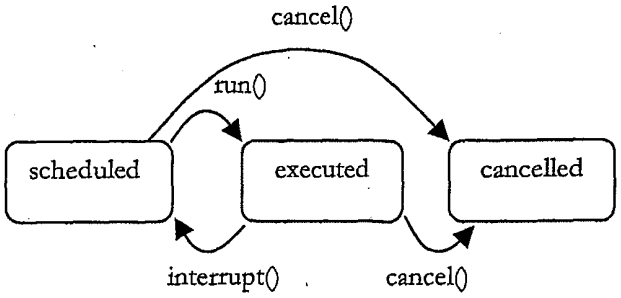


Figure 6

TRILLER EXHIBIT 1006-00318

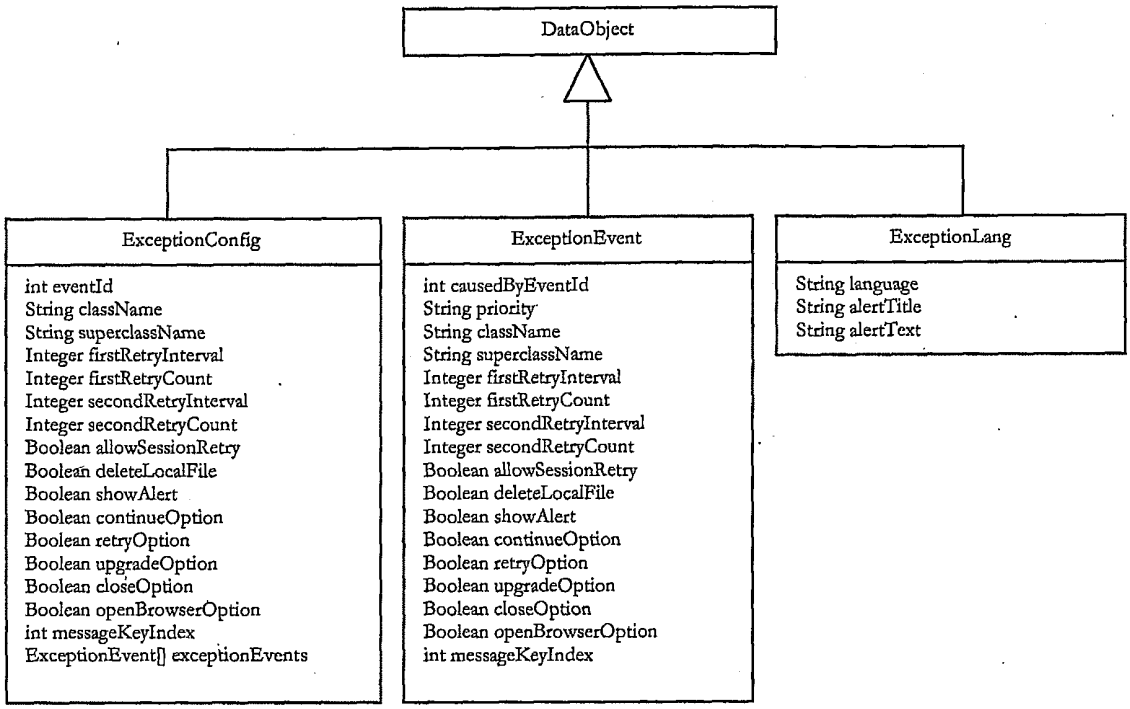


Figure 8

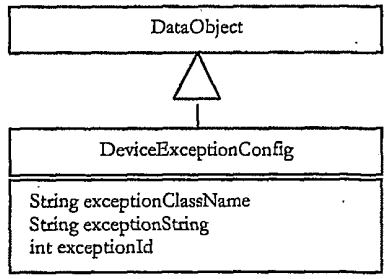


Figure 9

TRILLER EXHIBIT 1006-00319

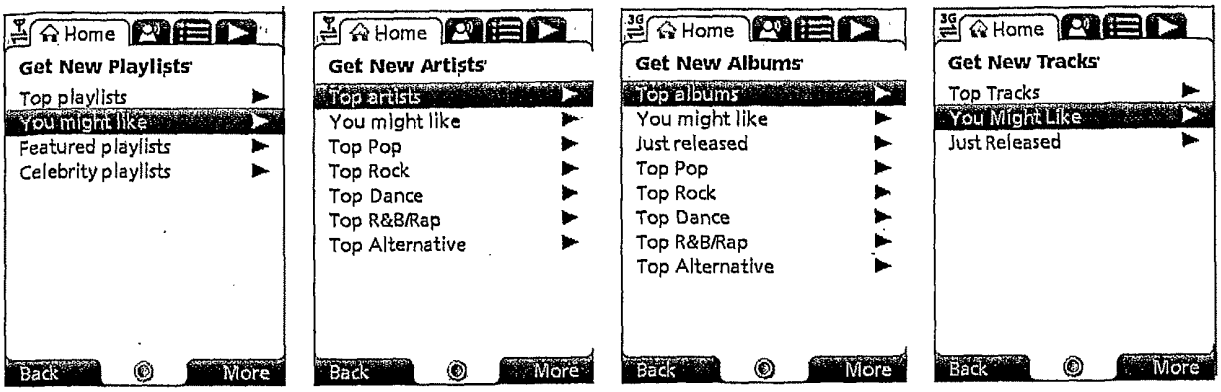


Figure 10

Personalised Menu Item	**Recommendations contained**
You Might Like	Playlists / Artists / Albums / Tracks recommended to the customer based on their recent listening habits, and taking into account any explicit music ratings that they have made.
Featured... *Playlists* *Artists* *Albums* *Tracks*	A list of Playlists / Artists / Albums / Tracks that have been editorially pushed for promotion, and personalized for the Playlists / Artists / Albums / Tracks and Genres the customer listens to.
Just Released	A list of back-catalogue Artists / Albums / Tracks that have been recently added to the system. Even those that are new to the system could potentially be old back catalogue releases. This list is based on the customer's recent listening and rating habits

Figure 11

TRILLER EXHIBIT 1006-00320

DRAWING
LEFT
BLANK

Figure 12

Figure 13

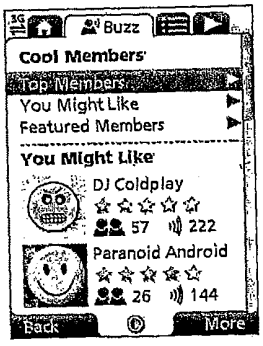


Figure 14

a

	Track1	Track2	Track3	Track4	Track5	Number of Correlations
Track1		12	0	23	78	3
Track2	12		27	0	0	2
Track3	0	27		5	0	2
Track4	23	0	5		10	3
Track5	78	0	15	10		3
Number of Correlations	3	2	3	3	2	

Represents the number of customers who have fully listened to Track1 and Track2 at least twice.

Represents the total number of correlations for Track3 (i.e. non-zero cells).

Figure 16

Personalised Menu Item	Recommendations Contained
Cool members	
You might like	A list of 10 Buzz Members who are deemed similar to this member. This list is generated using this member's rating and listening habits.
Featured Members	A list of Buzz members that have been editorially pushed for promotion, and personalised for the Playlists / Artists / Albums / Tracks and Genres the customer listens to.
Buzz Playlists	
You might like	A list of 10 shared playlists belonging to the Buzz members in the You might like members list.
Featured playlists	A list of Buzz playlists that have been editorially pushed for promotion, and personalised for the Playlists / Artists / Albums / Tracks and Genres the customer listens to.

Figure 15

TRILLER EXHIBIT 1006-00322

		a							
		Track1	Track2	Track3	Track4	Track5	Weighting Sum		
b	Track1		34.00	0.00	13.15	44.61	91.77		
	Track2	34.00		76.50	0.00	0.00	110.50		
	Track3	0.00	76.50		2.86	8.58	87.94		
	Track4	13.15	0.00	2.86		5.72	21.73		
	Track5	44.61	0.00	8.58	5.72		58.91		
	Weighting Sum	91.77	110.50	87.94	21.73	58.91			

Figure 17

		a						
		Track1	Track2	Track3	Track4	Track5	PCAs	
b	Track1		0.31	0.00	0.61	0.76		
	Track2	0.31		0.87	0.00	0.00		
	Track3	0.00	0.87		0.13	0.15		
	Track4	0.61	0.00	0.13		0.10		
	Track5	0.76	0.00	0.15	0.10			

Figure 18

a

b		Artist1	Artist2	Artist3	Artist4	Artist5
	Artist1		0.31	0.00	0.61	0.76
	Artist2	0.31		0.87	0.00	0.00
	Artist3	0.00	0.87		0.13	0.15
	Artist4	0.61	0.00	0.13		0.10
	Artist5	0.76	0.00	0.15	0.10	

Figure 19

a

b		Cust1	Cust2	Cust3	Cust4	Cust5
	Cust1		0.31	0.00	0.61	0.76
	Cust2	0.31		0.87	0.00	0.00
	Cust3	0.00	0.87		0.13	0.15
	Cust4	0.61	0.00	0.13		0.10
	Cust5	0.76	0.00	0.15	0.10	

Figure 20

TRILLER EXHIBIT 1006-00324

Associations Matrix based on	Inputs to recommendation	Results mechanism
"More like this" Track In the **More like this** scenarios, a seed Track, Album or Artist is selected by the customer. MusicStation then provides a sequence of Tracks, Albums or Artists based on the seed, which can optionally be used as a Playlist by the customer.		
Track Associations Matrix	The seed Track	Sequence of 10 distinct recommended Tracks in descending of order of closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Track. ▪ Tracks that are not available on the customer's service. ▪ Tracks that the customer already owns or has fully listened to. ▪ Tracks, or Tracks from Albums or Artists, that the customer has rated as **Hate it!** Returned Tracks should be from a variety of Artists. No more than 2 Tracks should be for the same Artist.
"More like this" Artist		
Artist Associations Matrix	The seed Artist.	Sequence of 10 distinct recommended Artists in descending of order of closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Artist ▪ Artists that are not available on the customer's service. ▪ Artists for which the customer has already fully listened to 50% of their catalogue. ▪ Artists that the customer has rated as **Hate it!**

Figure 21

TRILLER EXHIBIT 1006-00325

"More like this" Album		
Artist** Associations Matrix	The seed Artist of the Release.	Sequence of 10 distinct recommended Albums (Releases), based on a cross-section of the Albums produced by the Artists with the highest closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Album. ▪ Albums that are not available on the customer's service. ▪ Albums for which the customer has already fully listened to at least 50% of the Tracks. ▪ Albums that the customer has rated as **Hate it!**, and Albums from Artists that the customer has rated as **Hate it!** Returned Albums should be from a variety of Artists. No more than 2 Albums should be for the same Artist.
Tracks "You might like" Tracks, Albums, Artists, and Playlists that "You might like" is a sequence of 10 recommended Tracks, Albums, Artists, and Playlists that are based upon your recent listening habits. The list is available form the Artist/Album/Track/Playlist screens.		
Track Associations Matrix	10 distinct Tracks made up of: ▪ The most recent Tracks rated a **Love It!** (up to a maximum of 5) ▪ The most recent Tracks that have been fully-listened to at least twice, to make up the remaining Tracks. Excluded as inputs are Tracks the customer had flagged as **Hate It!** Regardless of how many times listened to.	Sequence of 10 distinct recommended Tracks in descending of order of closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Tracks. ▪ Tracks that are not available on the customer's service. ▪ Tracks that the customer already owns or has fully listened to. ▪ Tracks, or Tracks from Albums or Artists, that the customer has rated as **Hate it!** Additionally the system will seek to return the best correlated two new Tracks that are one-week old new releases in the system, replacing the least highly correlated Tracks in the 10 returned. Returned Tracks should be from a variety of Artists. No more than 2 Tracks should be for the same Artist.

Figure 22

TRILLER EXHIBIT 1006-00326

Artists "You might like"		
Artist Associations Matrix	10 distinct Artists made up of: ▪ The most recent Artists rated a **Love It!** (up to a maximum of 5) ▪ The most recent Artists for which Tracks have been fully-listened to at least twice, to make up the remaining Artists. Excluded as inputs are Artists the customer had flagged as **Hate It!** Regardless of how many times listened to.	Sequence of 10 distinct recommended Artists in descending of order of closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Artists. ▪ Artists that are not available on the customer's service. ▪ Artists for which the customer has already fully listened to 50% of their catalogue. ▪ Artists that the customer has rated as **Hate it!** Additionally the system will seek to return the best correlated two new Artists that are one-week old new releases in the system, replacing the least highly correlated Artists in the 10 returned.
Albums "You might like"		
Artist Associations Matrix	10 distinct Artists made up of: ▪ The most recent Artists rated a **Love It!** (up to a maximum of 5) ▪ The most recent Artists for which Tracks have been fully-listened to at least twice, to make up the remaining Artists. Excluded as inputs are Artists the customer had flagged as **Hate It!** Regardless of how many times listened to.	Sequence of 10 distinct recommended Albums in descending of order of closeness of fit (i.e. PCA correlation value). Filtered out of this returned list are: ▪ The seed Albums. ▪ Albums that are not available on the customer's service. ▪ Albums for which the customer has already fully listened to at least 50% of the Tracks. ▪ Albums that the customer has rated as **Hate it!**, and Albums from Artists that the customer has rated as **Hate it!** Additionally the system will seek to return the best correlated two Artists that are one-week old new releases in the system, replacing the least highly correlated Artists in the 10 returned. Returned Albums should be from a variety of Artists. No more than 2 Albums should be for the same Artist.

Figure 23

TRILLER EXHIBIT 1006-00327

<table>
<tr><td colspan="3">Albums "You might like"</td></tr>
<tr><td>Artist Associations Matrix</td><td>10 distinct Artists made up of:
The most recent Artists rated a Love It! (up to a maximum of 5)
The most recent Artists for which Tracks have been fully-listened to at least twice, to make up the remaining Artists.
Excluded as inputs are Artists the customer had flagged as Hate It! Regardless of how many times listened to.</td><td>Sequence of 10 distinct recommended Albums in descending of order of closeness of fit (i.e. PCA correlation value).

Filtered out of this returned list are:
The seed Albums.
Albums that are not available on the customer's service.
Albums for which the customer has already fully listened to at least 50% of the Tracks.
Albums that the customer has rated as Hate it!, and Albums from Artists that the customer has rated as Hate it!
Additionally the system will seek to return the best correlated two Artists that are one-week old new releases in the system, replacing the least highly correlated Artists in the 10 returned.

Returned Albums should be from a variety of Artists. No more than 2 Albums should be for the same Artist.</td></tr>
<tr><td colspan="3">"Recommended Members"
Recommended members are customers that are similar to the source customer based upon rating and listening habits. They are listed on the Cool Members screen on the Buzz tab.</td></tr>
<tr><td>Customer Associations Matrix</td><td>The current customer.</td><td>Sequence of 10 distinct recommended Customers in descending of order of closeness of fit for the customer's service.

Filtered out of this returned list are:
Customers who are already friends.
Customers who have been blocked.
Additionally the system will seek to return the best correlated two new Customers that are one-week old new releases in the system, replacing the least highly correlated Customers in the 10 returned.</td></tr>
</table>

Figure 24

TRILLER EXHIBIT 1006-00328

<table>
<tr><td colspan="3">Playlists "You might like"
Playlists "You might like" are Playlists that have been shared by other MusicStation customers within the same service. Accessed from the Playlists screen and also listed on the Buzz tab Cool Playlists screen.</td></tr>
<tr><td>Customers Associations Matrix</td><td>The current customer.</td><td>Sequence of 10 distinct recommended Playlists taken from the customers who are closest to the current customer, in descending of order of closeness of fit.

Filtered out of this returned list are:
▪ Playlists from customers who are already friends.
▪ Playlists from customers who have been blocked.
▪ Playlists that the customer has already listened to at least once.
▪ Playlists for which the customer has already fully listened to at least 50% of the Tracks.
▪ Playlists that the customer has in their library.
▪ Playlists that the customer has rated as Hate it!

Additionally the system will seek to return the best correlated two new Customers that are one-week old new releases in the system, replacing the least highly</td></tr>
<tr><td colspan="3">Inbox – editorial and promotional.
Inbox items are directed to the customer based on what they listen to. An extension of this would be to supply news on Artists that we THINK they may be interested in based upon our Artists correlations matrix.</td></tr>
<tr><td>Artist Associations Matrix</td><td>As per "Artists "You might like".</td><td>As per "Artists "You might like".</td></tr>
</table>

Figure 25

TRILLER EXHIBIT 1006-00329

	Average plays per customer	Normalized Plays (X - MEAN) / STDEV	Rating Value (2.5 + NORMALISED PLAYS)
Angels - Robbie Williams	12.90	1.95	4.45
Country House - Blur	4.60	-0.01	2.49
Life on Mars - David Bowie	3.30	-0.32	2.18
Yellow - Coldplay	1.23	-0.81	1.69
Bohemian Rhapsody - Queen	4.01	-0.15	2.35
I Luv Ya - Atomic Kitten	1.89	-0.65	1.85
Average overall plays per customer	4.66		
Standard Deviation	4.23		

Figure 26

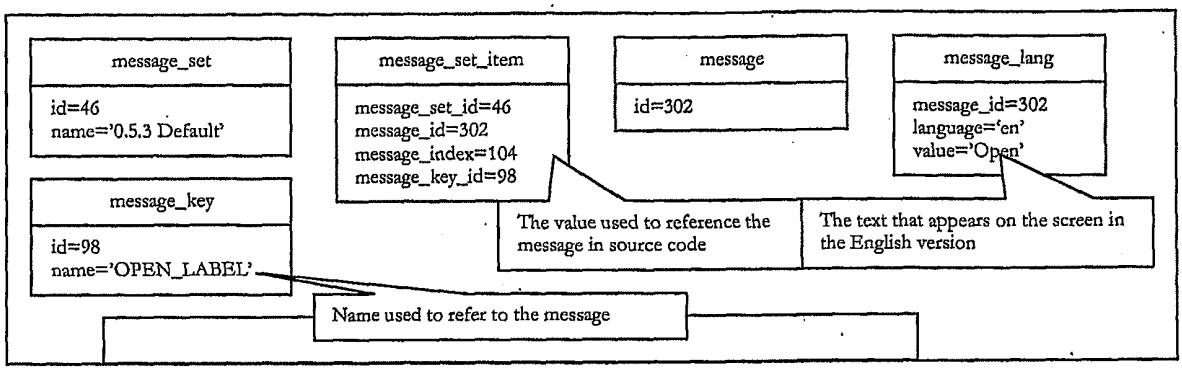


Figure 27

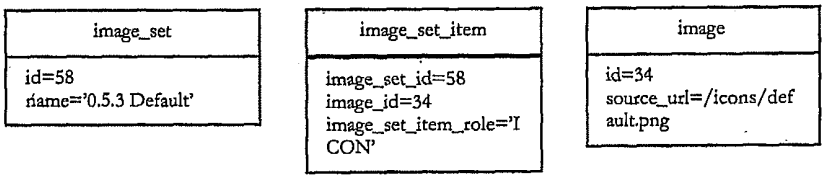


Figure 28

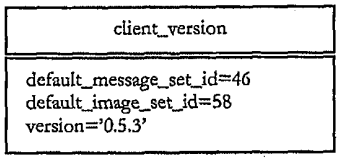


Figure 29

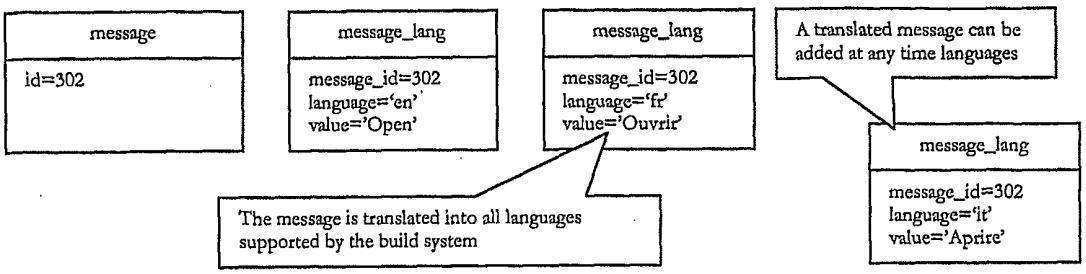


Figure 30

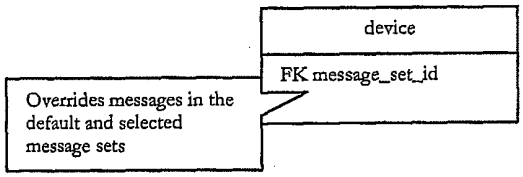


Figure 31

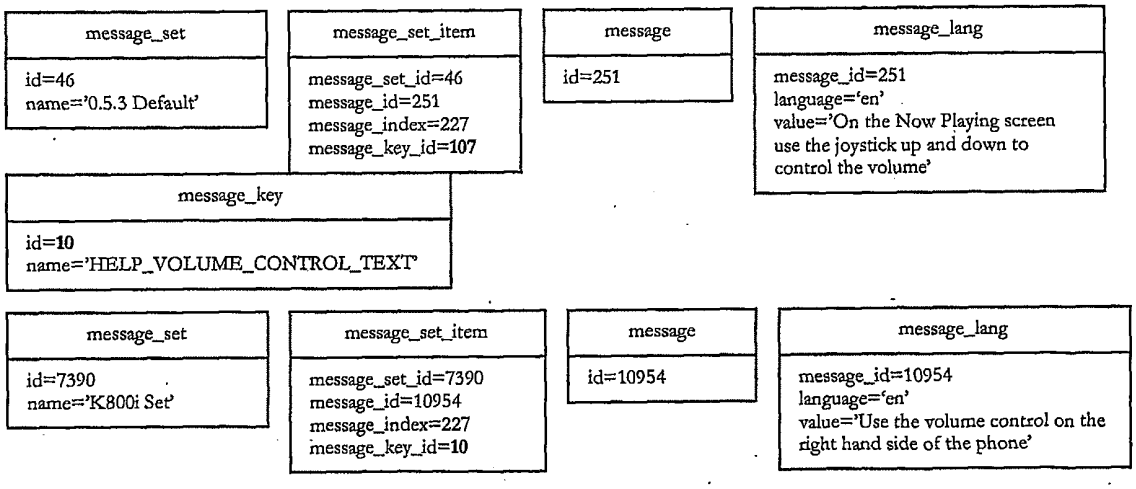


Figure 32

TRILLER EXHIBIT 1006-00332

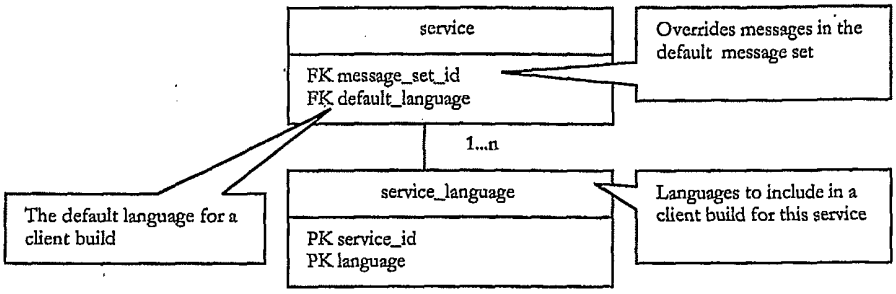


Figure 33

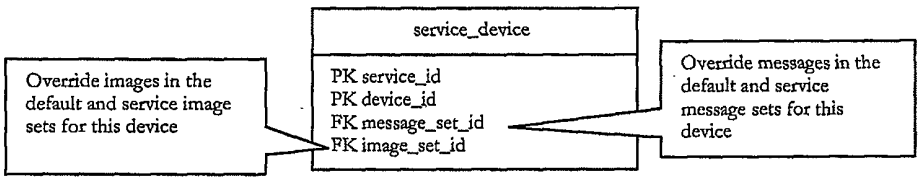


Figure 34

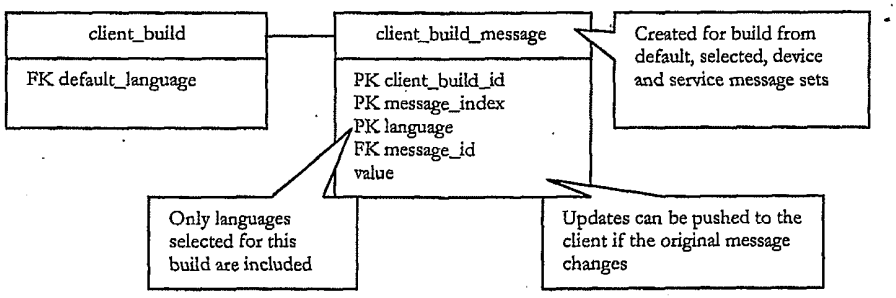


Figure 35

TRILLER EXHIBIT 1006-00333

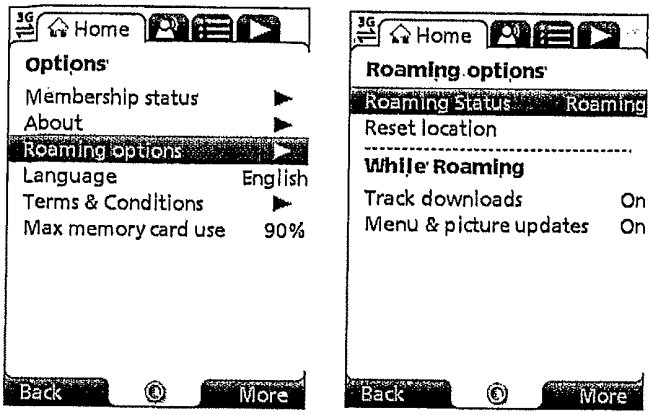


Figure 36

Option	Description
Roaming Status	The phone's current roaming status. This will show *Home* if the user is not roaming and will show *Roaming* if the user is roaming.
Track Downloads	The user can set this option *On* to download tracks (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent the downloading tracks when roaming or *Ask* to cause the following prompts.
Menu & picture updates	The user can set this option *On* to update menu items and pictures (with additional charges) when roaming without a prompt. The user set this option to *Off* to prevent menu and picture updates when roaming or *Ask* to cause the following prompts.

Figure 37

TRILLER EXHIBIT 1006-00334

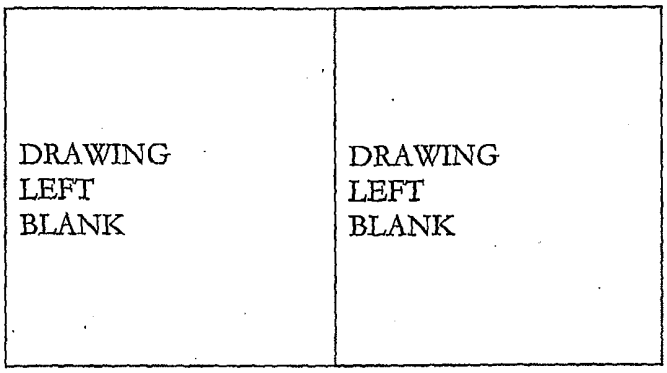


Figure 38

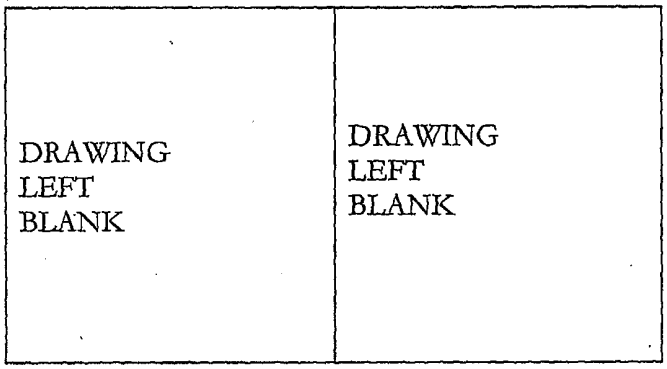


Figure 39

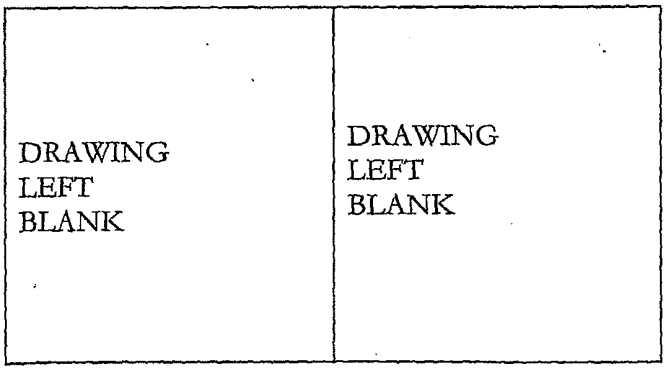


Figure 40

TRILLER EXHIBIT 1006-00335

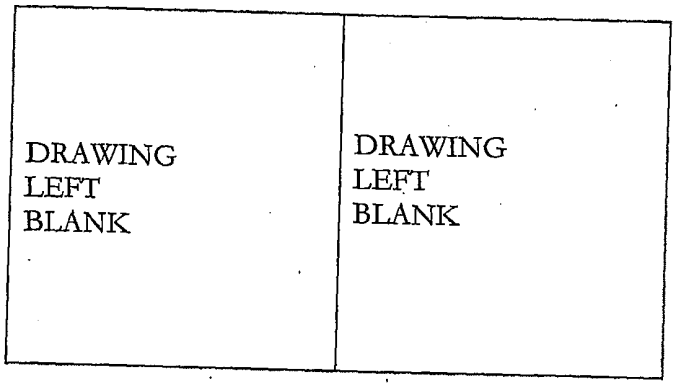


Figure 41

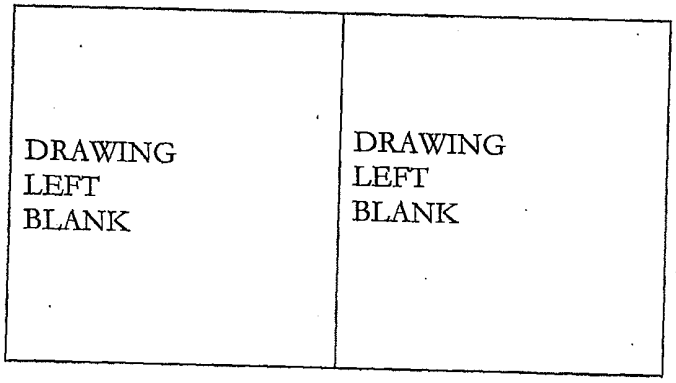


Figure 42

Message Title shown on Inbox screen	Message Content	Result
Friend Request Accepted *OtherMemberName*	*OtherMemberName* has approved your friend request. You can now both send each other tracks, playlists and messages.	OtherMemberName is added to this user's friends and this user is added to OtherMemberName's
Friend Request Denied *OtherMemberName*	*OtherMemberName* has denied your friend request.	No change to either member's friends lists. This member can resubmit their friend request.
Friend Requests Blocked *OtherMemberName*	*OtherMemberName* has blocked all friend requests from you.	This member will have all friend requests to this other member blocked automatically. The other member will never see requests from this member again.

Figure 43

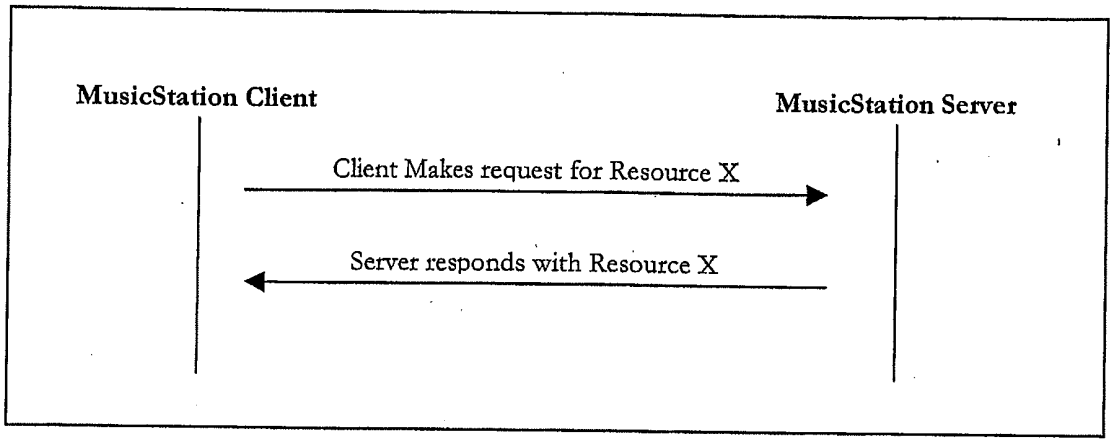


Figure 44

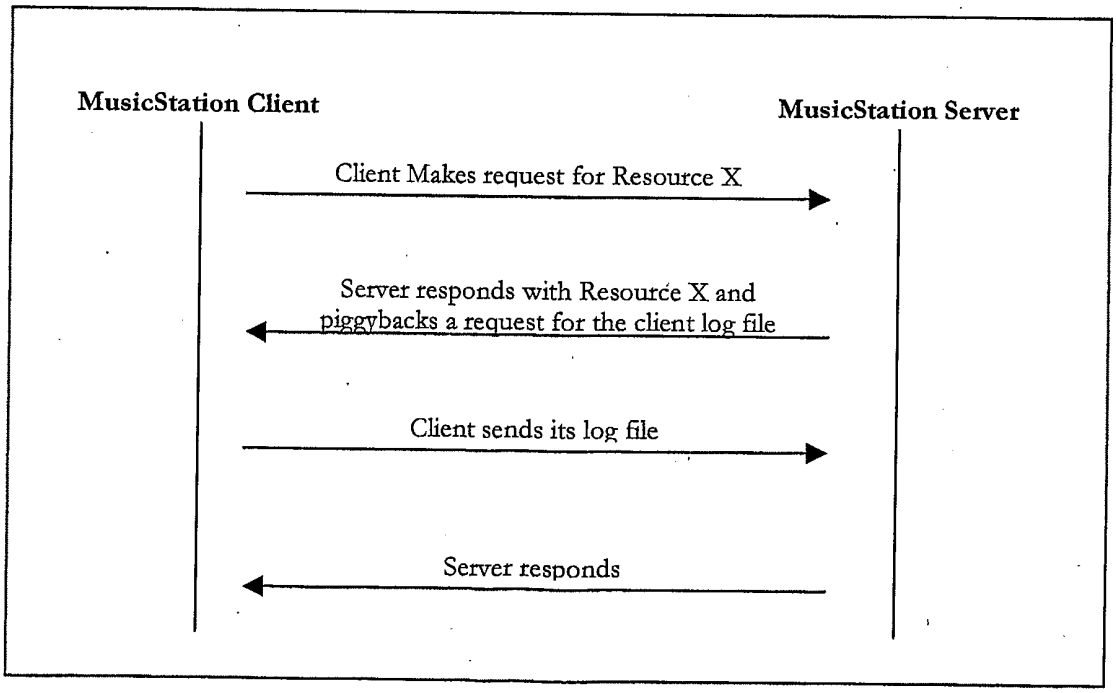


Figure 45

TRILLER EXHIBIT 1006-00338

[major].[minor].[micro]	Represents the version number in the format major version.minor version.micro version. For example 0.4.6.
Variant name	Then a variant name which will be defined for each variant. Currently this will be one of "MIDP", "Symbian", "WindowsMobile", "MusicMate".
Platform identifier	**The variant is followed by a space character, and then a platform identifier. The platform identifier is the device code from the db. This platform identifier will differ for each variant. This platform identifier may contain spaces, and will generally be used to perform a look up in the database for the properties of that device.**

Figure 46

error.data	is the name of the resource being sent to the server.
ackId=1	is an acknowledgment id. This is the id that will be echoed back to the client by the server in the acknowledgement line (see section 3.2.6). The client must generate this acknowledgement id in a way that it can uniquely identify which put data a received acknowledgement is for.
offset=0	The next part is an offset number of bytes. This offset is how many bytes into the body of the message that this data starts.
length=160	The next part is a length number of bytes. The length is how many bytes long the data in the body of the message is.
type="application/octet-stream"	The final part is the content type. This will almost always be the content type for our data objects. Therefore this may be redundant information, but it has been left in the protocol because images being transferred may not necessarily be wrapped in a data object.

Figure 47

TRILLER EXHIBIT 1006-00339

```
MSTP/0.1
RequestId: 123463
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Put: error.data; ackId=1; offset=0; length=160; type="application/octet-stream"

01001110001001001000100010111111000101010
10010100101111111110000011111000000001000
10000100100000010000111000111111000011111
01010101010101101010101101011101101101110
```

Figure 48

```
MSTP/0.1
RequestId: 123464
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Put: error.data; ackId=2; offset=0; length=160; type="application/octet-stream"
Put: photo.jpeg; ackId=3; offset=160; length=320; type="image/jpeg"

01001110001001001000100010111111000101010
10010100101111111110000011111000000001000
10000100100000010000111000111111000011111
01010101010101101010101101011101101101110
01000011100010101011011011011010000000010
10101101101101101000000011000011100001010
00111000101010110110110110100000111000001
00011100000111000001110000011100000011100
01101101101000011100000011011011010000011
01101101101000011100000011011011010000011
10000001101101101000011100000011011011101
11011010000111000000110110110100011011101
```

Figure 49

```
MSTP/0.1
RequestId: 123465
Client: MusicStation 0.4.6 MIDP Nokia/N70
UserGUID: AB12YZ
Put: photo.jpeg?name=Fave%20Tracks; ackId=4; offset=0; length=160; type="image/jpeg"

01001110001001001000100010111111000101010
10010100101111111110000011111000000001000
10000100100000010000111000111111000011111
01010101010101101010101101011101101101110
```

Figure 50

Success	1000
Success, client roaming	1100
Unauthorized	4010
Unauthorized IP Address	4011
Forbidden	4030
Internal Server Error	5000
Service Unavailable	5030
Unsupported Version	5050

Figure 51

```
MSTP/0.1
StatusCode: 1000
ResponseId: 234570
Sent: news1.data; ackId=20060619111100NEWS1; offset=0; length=160;
type="application/octet-stream"

01001110001001001000100010111111000101010
10010100101111111111000001111000000001000
10000100100000010000111000111110000011111
01010101010101101010101101011011010110110
```

Figure 52

TRILLER EXHIBIT 1006-00341

```
MSTP/0.1
StatusCode: 1000
ResponseId: 234571
Sent: news2.data; ackId=20060619111200NEWS2; offset=0; length=160;
type="application/octet-stream"
Sent: news3.data; ackId=20060619111200NEWS3; offset=160; length=160;
type="application/octet-stream"

01001110001001001000100010111111000101010
10010100101111111111000001111000000001000
10000100100000010000111000111111000011111
01010101010101101010101101011101101101110
01001110001001001000100010111111000101010
01010101010101101010101101011101101101110
10010100101111111111000001111000000001000
10000100100000010000111000111111000011111
```

Figure 53

```
MSTP/0.1
StatusCode: 1000
ResponseId: 234572
Sent: news1.data; ackId=20060619111200NEWS1; offset=0; from=160; length=40;
type="application/octet-stream"

01010101010101101010101101011101101101110
```

Figure 54

```
MSTP/0.1
StatusCode: 1000
ResponseId: 234573
Sent: news1.data; ackId=20060619111230NEWS1; offset=0; length=40;
type="application/octet-stream"
Sent: command.data; ackId=20060619111230NEWS2; offset=40; length=40;
type="application/octet-stream"

01010101010101101010101101011101101101110
01001110001001001000100010111111000101010
```

Figure 55

TRILLER EXHIBIT 1006-00342

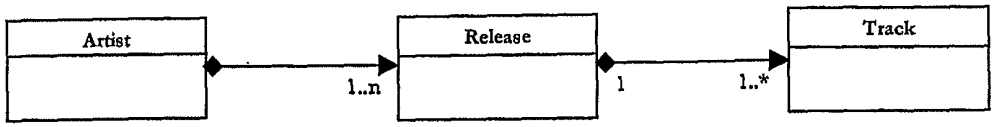


Figure 56

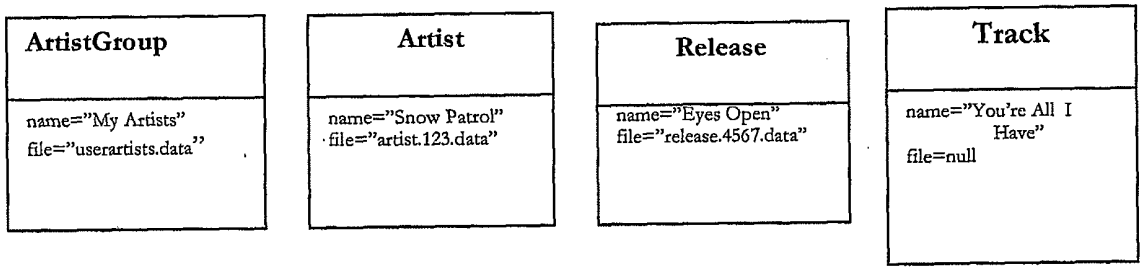


Figure 57

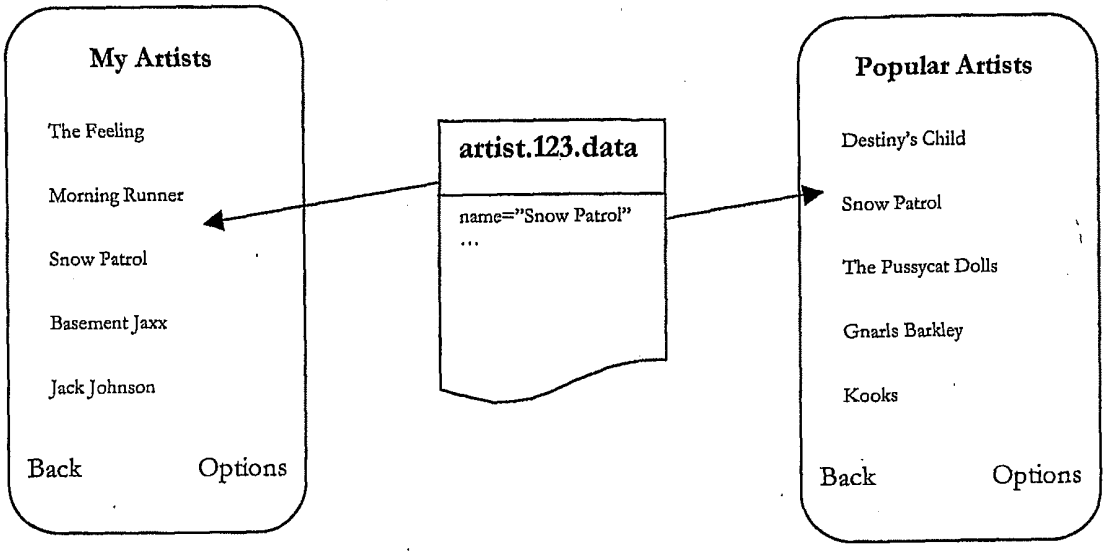


Figure 58

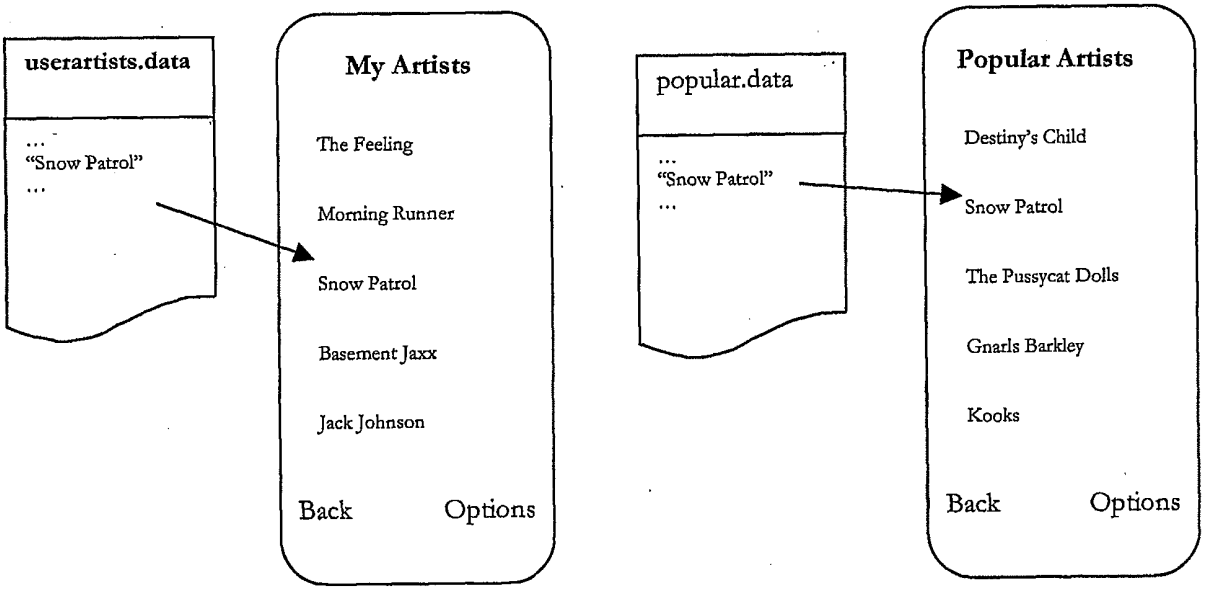


Figure 59

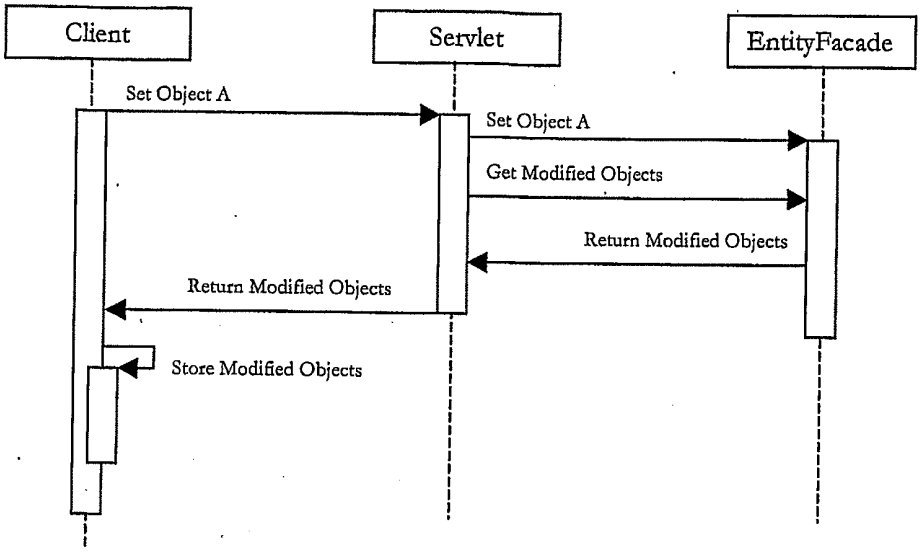

Client
Servlet
EntityFacade
Set Object A
Set Object A
Get Modified Objects
Return Modified Objects
Return Modified Objects
Store Modified Objects

Figure 60

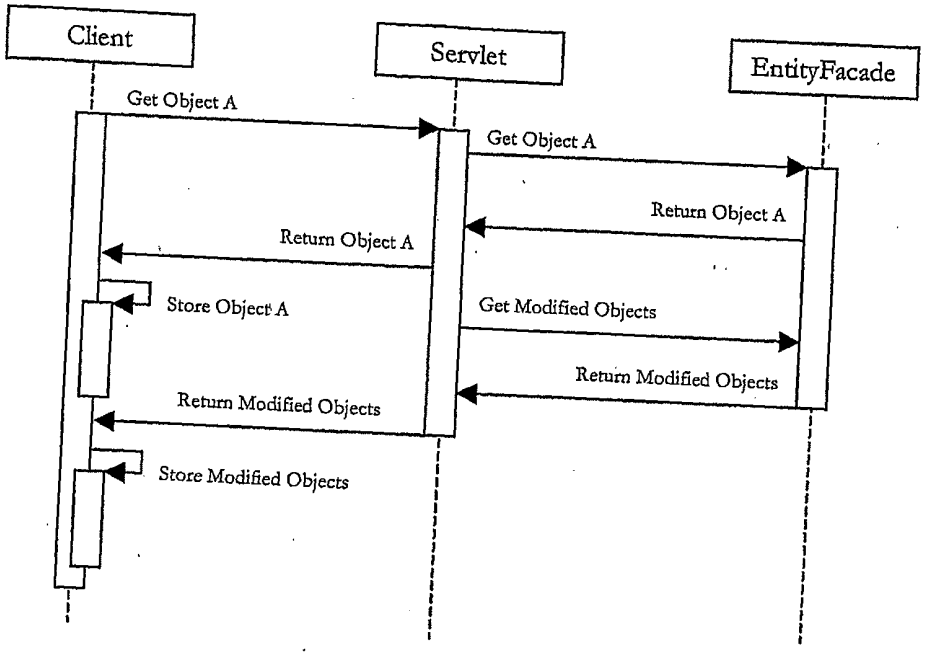

Client
Servlet
EntityFacade
Get Object A
Get Object A
Return Object A
Return Object A
Store Object A
Get Modified Objects
Return Modified Objects
Return Modified Objects
Store Modified Objects

Figure 61

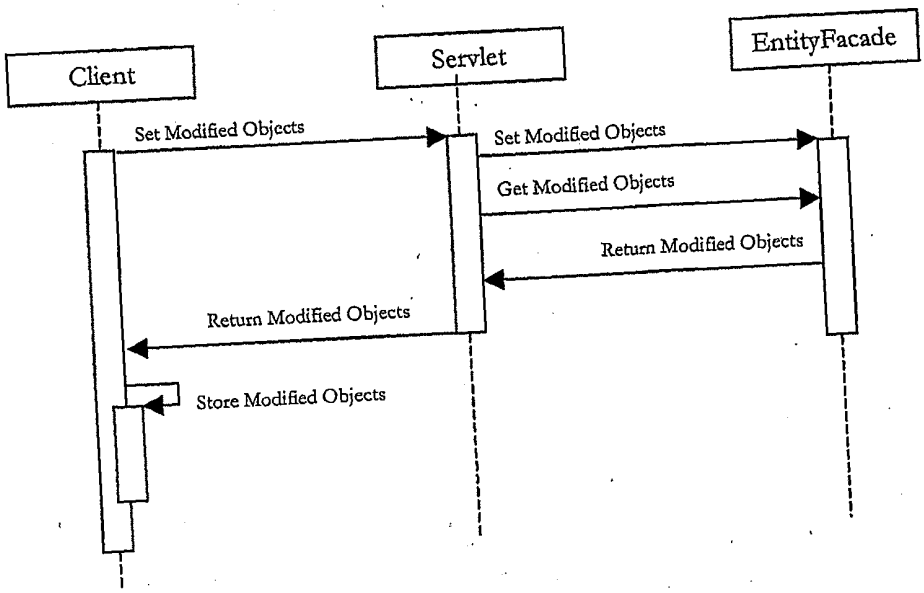

Client
Servlet
EntityFacade
Set Modified Objects
Set Modified Objects
Get Modified Objects
Return Modified Objects
Return Modified Objects
Store Modified Objects

Figure 62

object_change_log
object_guid
object_type
object_modified_date
object_modified_type (addition, replace, deletion)
priority

Figure 63

customer_object
customer_id
object_guid
object_type
object_created_date
object_modified_date
object_last_used_date
object_deleted_date

Figure 64

customer_object_change_log
customer_id
object_guid
object_type
object_modified_date
object_modified_type (addition, replace, deletion)
priority
acknowledgement_id
acknowledgement_date

Figure 65

TRILLER EXHIBIT 1006-00348

ChangeLogRecord
objectGUID
objectModifiedDate
objectModifiedType (ADDITION, REPLACE, DELETION)
acknowledgementId
acknowledgementDate

Figure 66

object_guid	object_modified_date	object_modified_type	priority
SnowPatrolXYZ	18/07/2006 13:16:33	REPLACE	3
EyesOpenXYZ	18/07/2006 13:16:33	ADDITION	3

Figure 67

customer_id	object_guid	object_modified_date	object_modified_type	priority
567	SnowPatrolXYZ	18/07/2006 13:16:33	REPLACE	3

Figure 68

TRILLER EXHIBIT 1006-00349

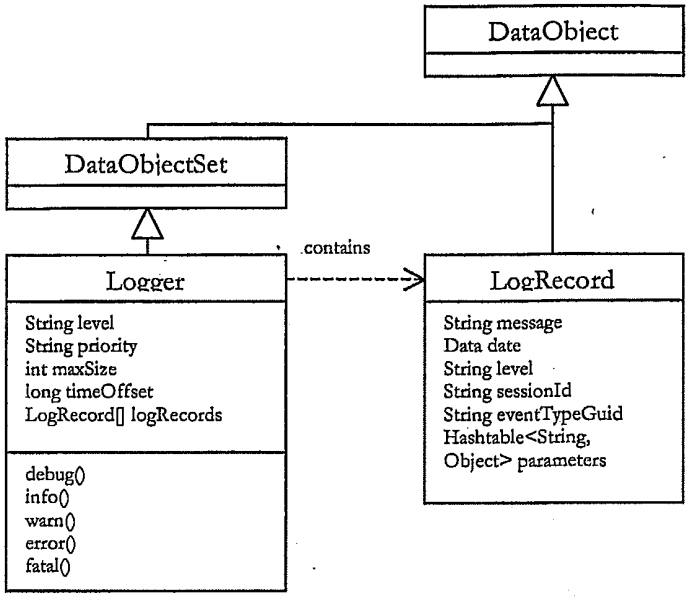


Figure 69

customer_logger	type	constraint	default	comments
customer_id	NUMBER(10)	Mandatory		Foreign key in customer
level	VARCHAR2(256)	Mandatory Allow values: DEBUG, INFO, WARN, ERROR, OFF	INFO	Level of logging output on client
priority	VARCHAR2(256)	Mandatory Allow values: MIN, NORMAL, MAX	NORMAL	Task priority for sending log records to the server
max_size	VARCHAR2(32)	Mandatory	100	Maximum number of log records stored on client

Figure 70

TRILLER EXHIBIT 1006-00350

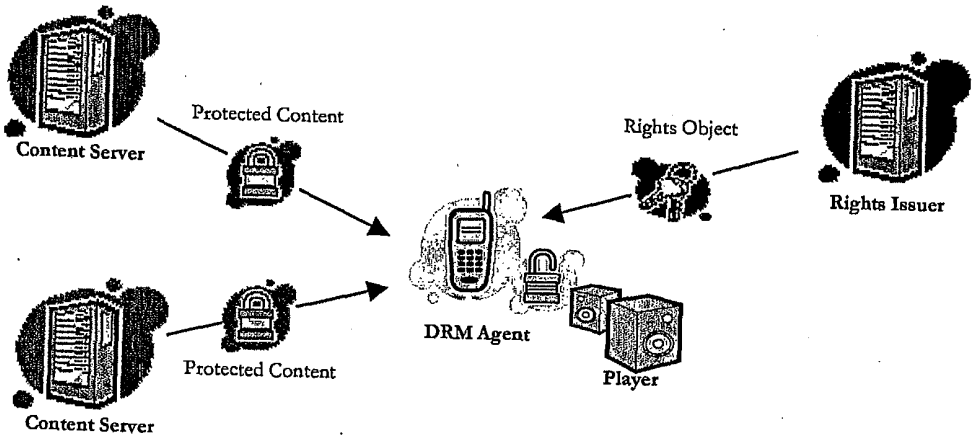

Content Server
Protected Content
Rights Object
Rights Issuer
DRM Agent
Player
Content Server
Protected Content

Figure 71

Parameter	Req'd?	Description
Version	Yes	A <major.minor> representation of the highest MusicStation protocol version supported by this device.
Software Licence	Yes	The 512 bit number installed on the device relating the application to a particular MusicStation Service.
Application GUID	Yes	The Application GUID is embedded in the MusicStation handset software at build time. It is a unique identifier of the specific build of the MusicStation application particular to the device's manufacturer, model, version and firmware revision level.
IMEI	No†	International Mobile Equipment Identity number, globally unique idenitifer of every mobile phone. Some handsets provide access to the IMEI from Java, where this is the case it is retrieved and sent to the Server as part of the MusicStation Service Registration Request.
Bluetooth Address	No†	The unique address used to identify a Bluetooth device and therefore a globally unique method of identifying the handset. The J2ME Bluetooth API (JSR-82) provides a method to obtain the Bluetooth Address. Where this is supported it is retrieved and sent to the Server as part of the MusicStation Service Registration Request.
IMSI	No†	International Mobile Subscriber Identity number, unique to every mobile phone user, stored in the SIM. The IMSI is available as a system property on some J2ME devices. Where this is supported it is retrieved and sent to the Server as part of the MusicStation Service Registration Request.
MSISDN	No	MSISDN is the full international number associated with a mobile phone starting with the country code. The MSISDN is available as a system property on some J2ME devices. Where this is supported it is retrieved and sent to the Server as part of the MusicStation Service Registration Request.

Figure 72

Metadata Item	Req'd?	Description
MSISDN	No†	As above.
Party ID	No†	Internal MNO unique identification for subscriber. Generally used if MSISDN is deemed too sensitive to place inside communications headers which go outside of the MNO network.
IMEI	No	As above.

Figure 73

TRILLER EXHIBIT 1006-00352

Parameter	Req'd?	Description
Status	Yes	Indicates if the MusicStation Registration Request resulted in a successful registration. Values include: • "Success"- registration was successful. • "Access Denied" – the device was not authorised. • "Malformed Request" - the CA failed to parse the Device's request, for example both IMEI and Bluetooth Address were missing from the request. • "UnsupportedVersion" - indicates that the device used a protocol version not supported by the CA.
Client GUID	Yes†	Uniquely identifies the device to the CA or RI and is sent by the device in every request to the MusicStation Server or RI.
Client Certificate	Yes†	The MusicStation handset application's public key certificate signed by the CA using the MusicStation Root CA Certificate.
Client Private Key	Yes†	The RSA 1024 bit private key used by the device to • Decrypt messages that have been encrypted using its public key. • Sign messages that can be validated using its public key.

Figure 74

Parameter	Req'd?	Description
Version	Yes	A <major.minor> representation of the highest MusicStation protocol version supported by this device.
Client GUID	Yes	Uniquely identifies the device to the RI and is sent by the device in every request to the RI.
Request Time	Yes	The current time as measured by the Device as the difference, measured in milliseconds, between the current time and midnight, January 1, 1970 UTC.
Client Certificate	Yes	The MusicStation handset application's public key certificate signed by the CA using the MusicStation Root CA Certificate.

Figure 75

TRILLER EXHIBIT 1006-00353

Parameter	Req'd?	Description
Status	Yes	Status indicates if the RI Registration Request was successful. To succeed the Software Licence must be unlocked. If the RI Registration Request was unsuccessful then one of the following error codes results: • "AccessDenied" - Device is not authorised to contact the RI. • "MalformedRequest" – RI failed to parse the Device's request. • "UnsupportedVersion" – Device used a protocol version not supported by the RI. • "InvalidCertificate" - RI could not verify the signature on the Client Certificate due to the certificate being invalid in some way. • "DomainFull" - no more Devices are allowed to join the Domain. • "DomainAccessDenied" – RI does not allow the Device access to the Domain, or the Client Certificate can not be authorised without more information.
Session ID	Yes†	The session identifier set up by the RI.
RI ID	Yes†	Identifies the RI to the Device. It may be possible for the Device to obtain rights from more than one RI. In this case the RI ID uniquely identifies each RI.
RI URL	Yes†	If the RI Registration Request message was successful then the RI URL parameter indicates the URL that should be stored in the RI Context. The Device uses this URL in later interactions with the RI to send requests for ROs. The RI URL is an absolute identifier. There can be more than one RI URL so that the Device can have a fail-over RO request capability.
Domain Info	Yes†	Carries the Domain Key (encrypted using the Device's 1024 bit RSA Client Public Key) as well as information about the maximum lifetime of the Domain. See Appendix A for more detail on DK encryption.

Figure 76

TRILLER EXHIBIT 1006-00354

Parameter	Req'd?	Description
Client GUID	Yes	Uniquely identifies the requesting Device to the RI, sent in every request to the RI.
Domain ID	Yes	Identifies the Domain for which the requested ROs shall be issued.
RI ID	Yes	Identifies the authorising RI.
Request Time	Yes	Measured by the Device as the difference, in milliseconds, between the current time and midnight, January 1, 1970 UTC.
RO Info	Yes	Identifies the requested Rights Object(s). The parameter consists of a (non-empty) set of Rights Object identifiers specifying which ROs are being requested.

Figure 77

Parameter	Req'd?	Description
Status	Yes	Status indicates if the RO Acquisition Request was successful. If the request was unsuccessful then one of the following error codes results: • "AccessDenied" - Device is not authorised to contact the RI, for example see Client Certificate Revocation below. • "MalformedRequest" - RI failed to parse the Device's request. • "UnsupportedVersion" - Device used a protocol version not supported by the RI. • "NotFound" - Requested object was not found. • "NotRegistered" - Device tried to contact an RI with which it was not previously registered. • "RightsExpired" - Requested rights are no longer available for this Device. This response code indicates to the device that it should not make further attempts to acquire these rights.
Client GUID	Yes†	Identifies the requesting Device. The value returned here must equal the Client GUID sent by the Device in the RO Acquisition Request message that triggered this response.
RI ID	Yes†	Identifies the RI. The value must equal the RI ID sent by the Device in the preceding RO Acquisition Request message.
Protected ROs	Yes†	The Rights Objects in which sensitive information (such as the CEK) is encrypted using the Rights Encryption Key (REK). The REK is encrypted using the customer's Domain Key.

Figure 78

TRILLER EXHIBIT 1006-00355

Parameter	Req'd?	Description
DCF File	Yes	Identifies the DCF (encrypted music file) requested for download.
Client GUID	Yes	Identifies the requesting Device.
Range	No	Used to request part of a file if it has already been partially downloaded.

Figure 79

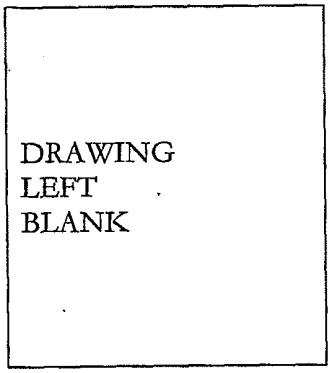


Figure 80

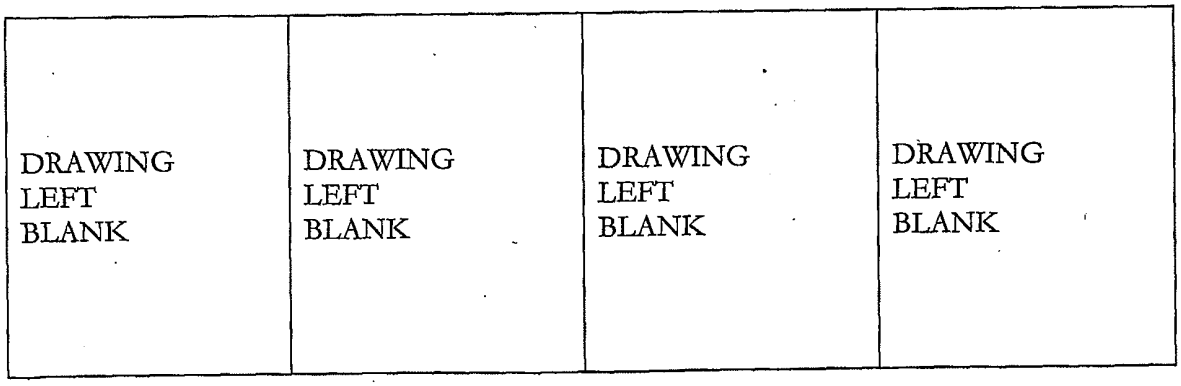


Figure 81

TRILLER EXHIBIT 1006-00356

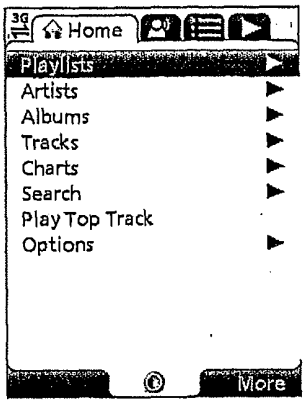


Figure 82

Joystick Action	Function
Joystick right	Switch to the next tab to the right
Joystick left	Switch to the next tab to the left
Joystick down/hold	Move to the next item on a list or menu/Fast move through menu
Joystick up/hold	Move to the previous item on a list or menu/Fast move through menu
Joystick press	Open the selected menu option or perform the default action on the selected item

Figure 83

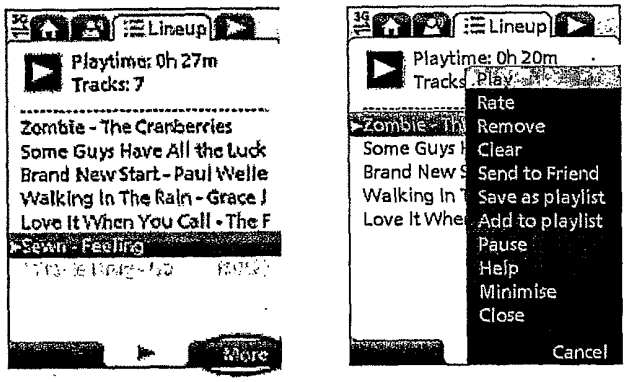


Figure 84

More option	Description
Add as Friend	Request to add a selected buzz user to your friends list.
Add to Lineup	Add an item to the end of your Lineup.
Add to Playlist	Add a track to a new or existing playlist.
Artist Profile	View information on the selected artist including star-rating, tracks that this user has downloaded from the artist and all tracks and albums from this artist.
Clear	Remove all tracks from the Lineup.
Close	Exit MusicStation.
Delete	Permanently delete an item. For example, delete a track from My Top Tracks or message from the user's Inbox.
Details	View information about a selected track or album.
Edit my profile	Edit a Buzz profile. This includes entering / editing a catchphrase, setting the profile image and configuring profile options.
Help	View context sensitive help for the selected screen.
Make Private	Make a shared playlist private. A private playlist is one that cannot be viewed by other Buzz members.
Minimise	Minimise MusicStation and place in the background (and if music is currently playing, continue playing music). The user can return to MusicStation rapidly.
Open	Open the selected item.

Figure 85

TRILLER EXHIBIT 1006-00358

Pause	Pause the current track.
Play	Play a track on the Lineup.
Play ASAP	Play the item as soon as it has been downloaded.
Play next	Play the item after the current track has finished.
Play now	Play the item immediately. This option is only available on downloaded tracks.
Play Top Track	Add a random track from the user's top tracks to the Lineup.
Rate	Score an item. An item can be marked I Love it! Neutral or I Hate it! This contributes to the calculation of Star-rating
Reset search	Clear the search criteria from the Search text box.
Remove	Remove an item. For example remove a track from a playlist, a friend from a user's friend list or a track from the Lineup.
Save as playlist	Save the current list of tracks on the Lineup as a playlist.
Send	Send a message to a Buzz member. For example a friend request to another buzz user or a recommendation message to a friend.
Send/Receive	Send any outgoing messages in the outbox and check the server for incoming messages.
Send to Friend	Send a recommendation to selected friend(s) on a user's friends list.
Share	Make a Private Playlist available to other Buzz users. A shared playlist can be viewed and listened to by other Buzz users.

Figure 86

Figure 87

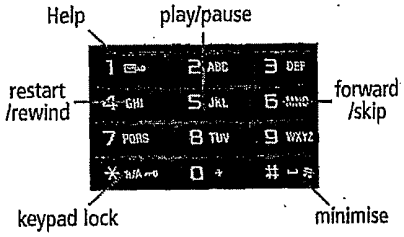


Figure 88

Key	Function
4 *Press*	Restart Current Track / Go to Previous track
4 *Press + Hold*	Rewind Current Track
5	Pause / Resume the Current Track
6 *Press*	Go to Next Track
6 *Press + Hold*	Fast Forward Current Track

Figure 89

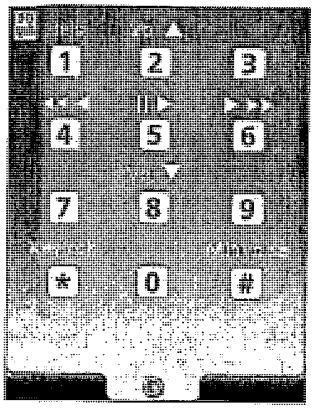


Figure 90

Key	Function
1 *Press*	Display the keypad help screen.

Figure 91

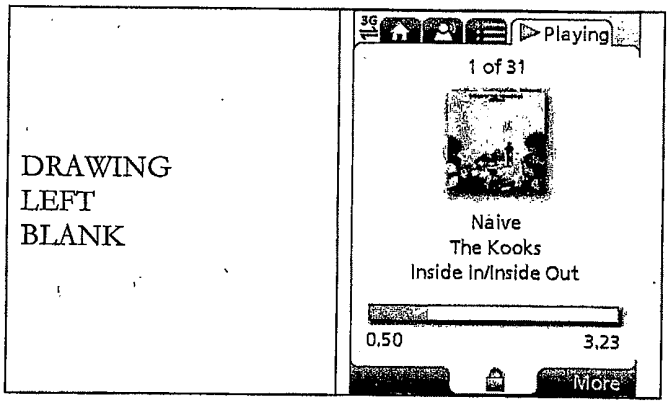


Figure 92

Key	Function
* *Press + Hold*	Lock / Unlock keypad

Figure 93

DRAWING LEFT BLANK

Figure 94

Key	Function
# Press + Hold	**Minimise MusicStation**

Figure 95

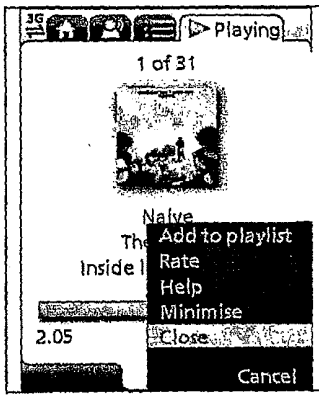
	DRAWING LEFT BLANK	**When the user selects Close from the More menu then if music is playing they will be asked whether they want**

Figure 96

TRILLER EXHIBIT 1006-00362

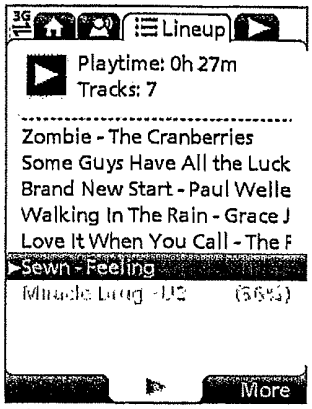


Figure 97

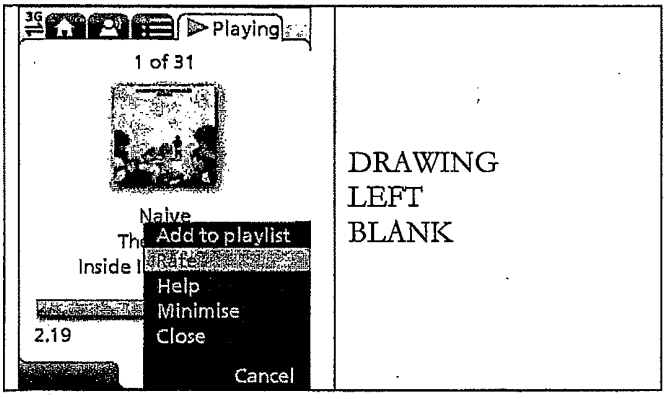


Figure 98

Home	
Menu Option	**Section**
Playlists	Error! Reference source not found.
Artists	**0**
Albums	Error! Reference source not found.
Tracks	Error! Reference source not found.
Charts	Error! Reference source not found.
Search	Error! Reference source not found.
Play Top Track	Error! Reference source not found.
Options	Error! Reference source not found.

Figure 99

Buzz	
Menu Option	**Section**
Buzz	Error! Reference source not found.
Inbox	Error! Reference source not found.
News	Error! Reference source not found.

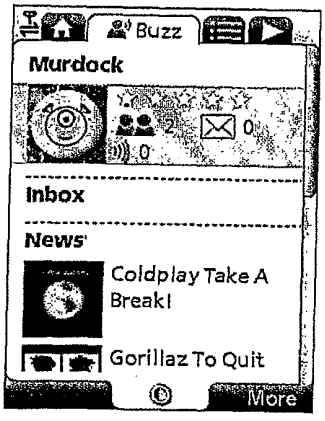


Figure 100

Figure 101

Figure 102

Figure 103

Figure 104

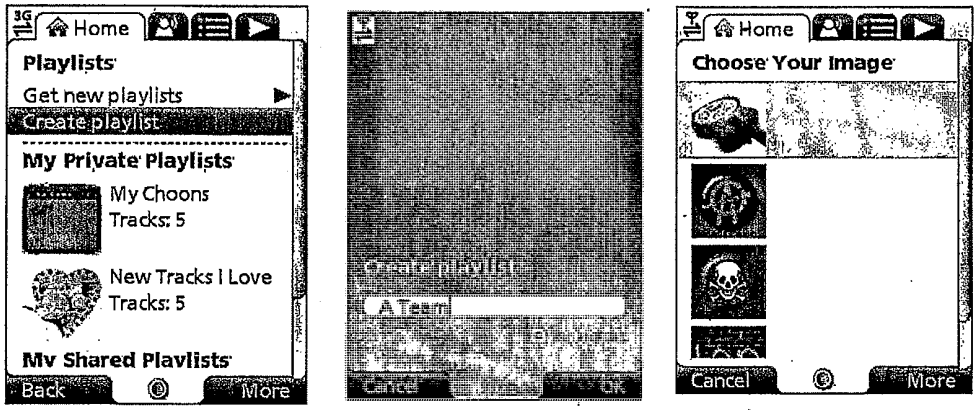


Figure 105

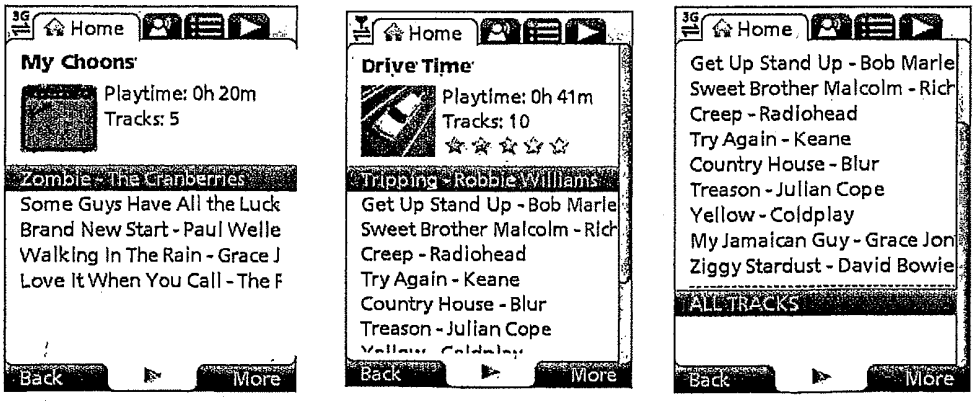


Figure 106

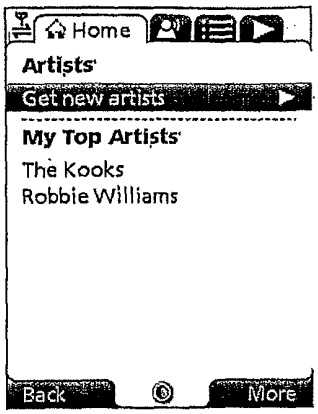


Figure 107

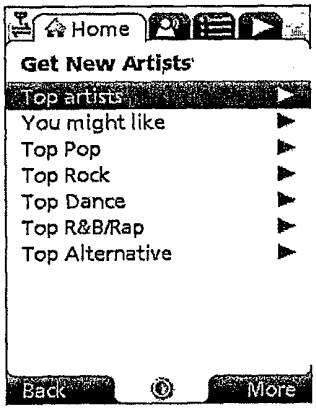


Figure 108

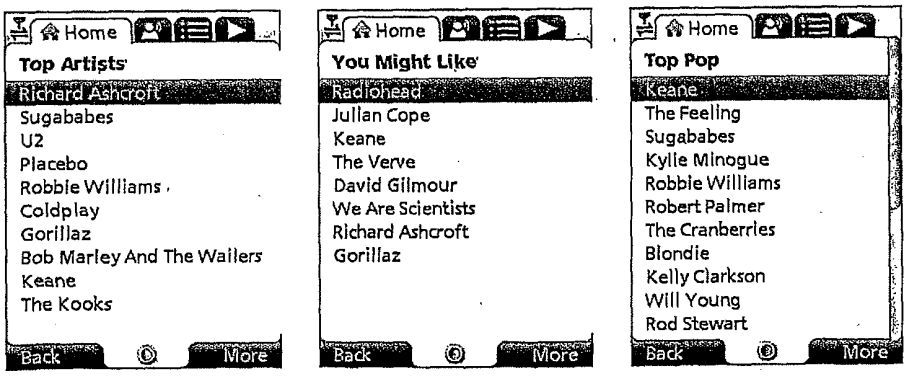


Figure 109

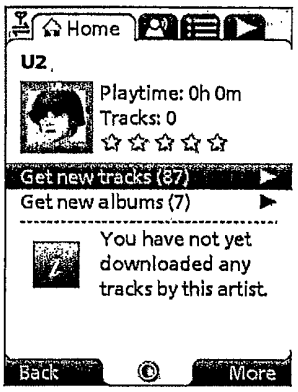


Figure 110

Figure 111

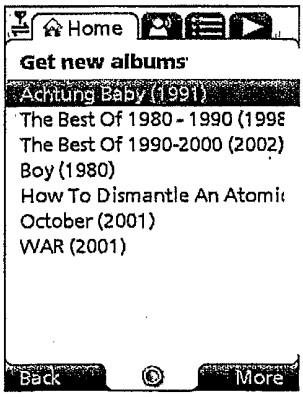


Figure 112

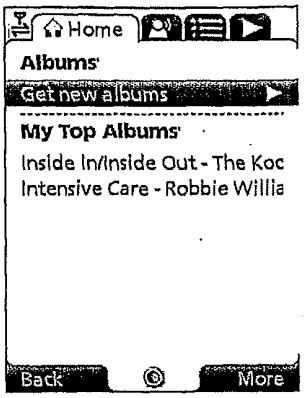


Figure 113

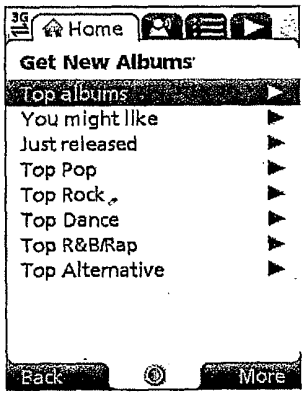


Figure 114

Figure 115

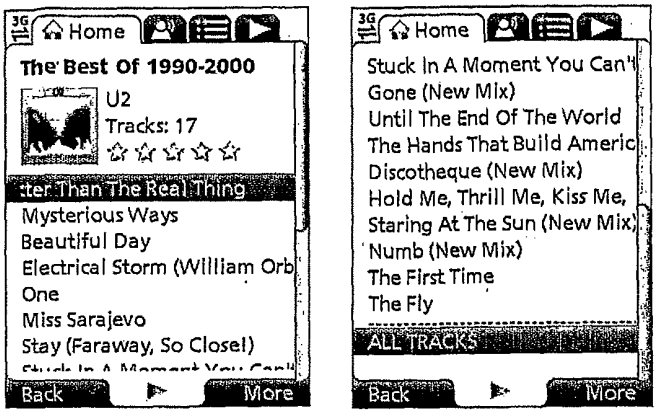


Figure 116

Figure 117

Figure 118

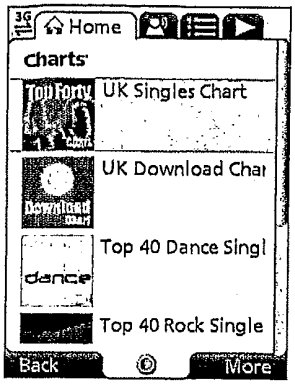


Figure 119

Figure 120

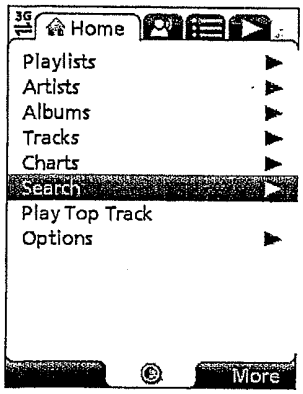


Figure 121

TRILLER EXHIBIT 1006-00371

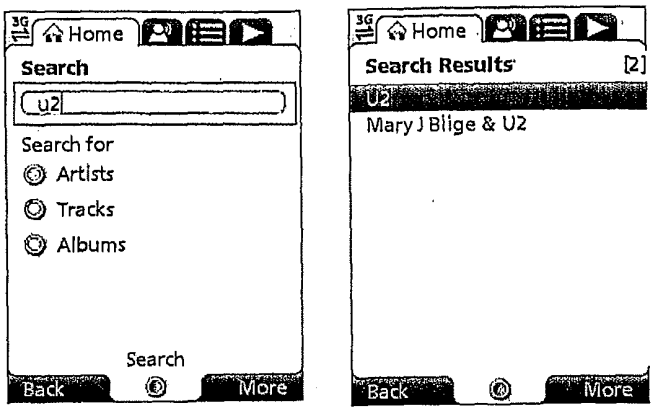
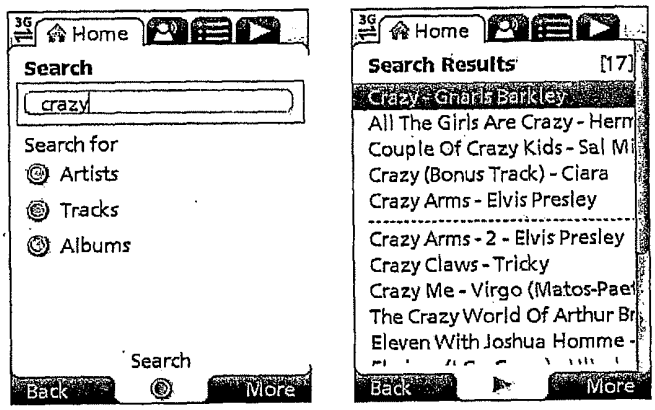


Figure 122



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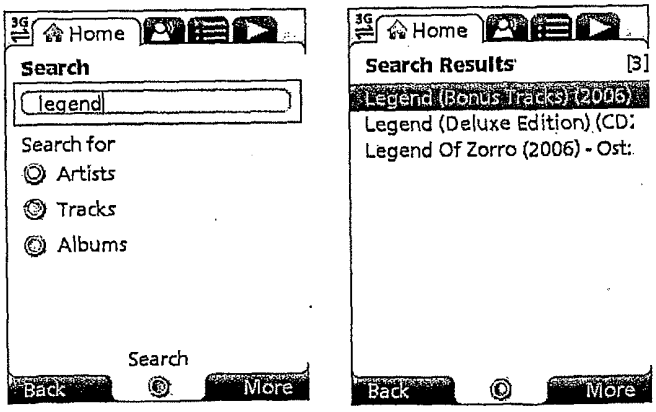

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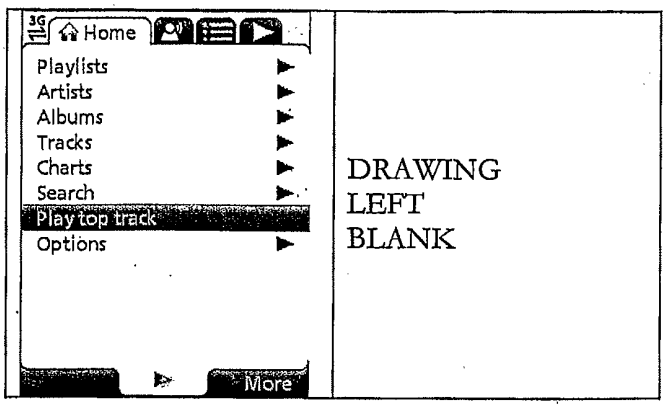

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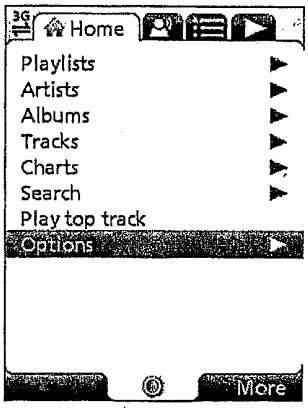

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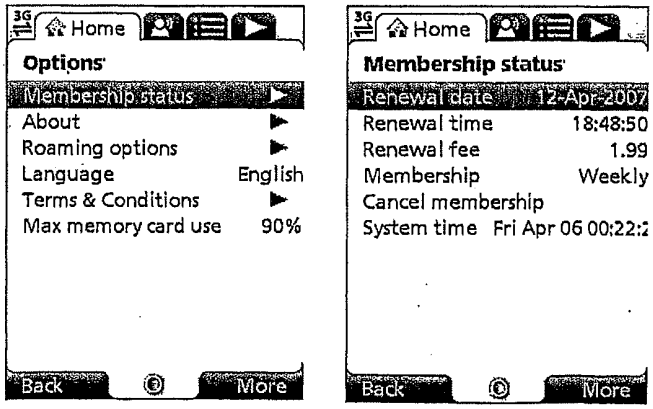

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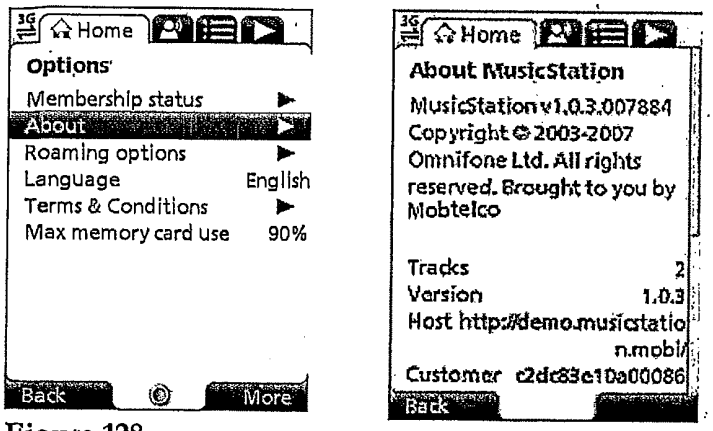

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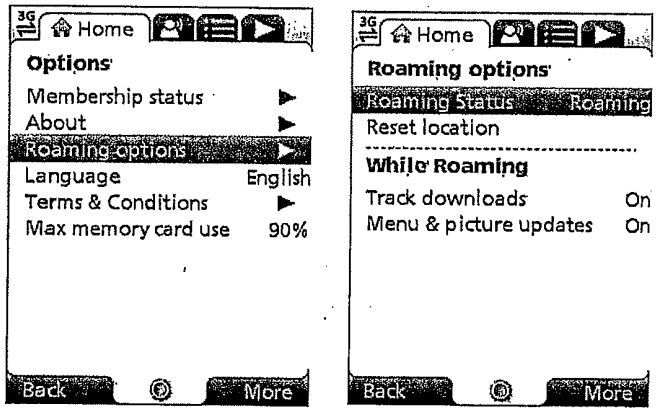

Figure 129

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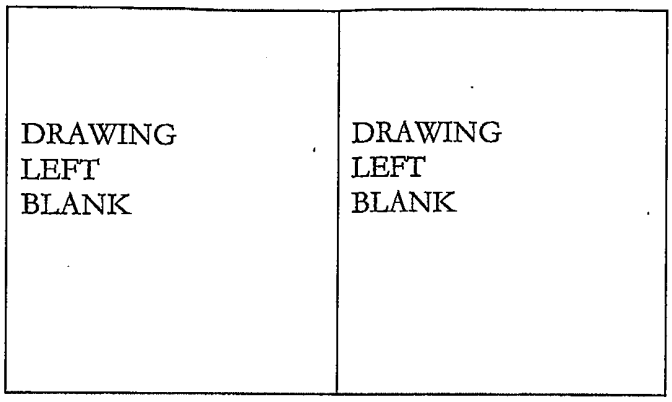

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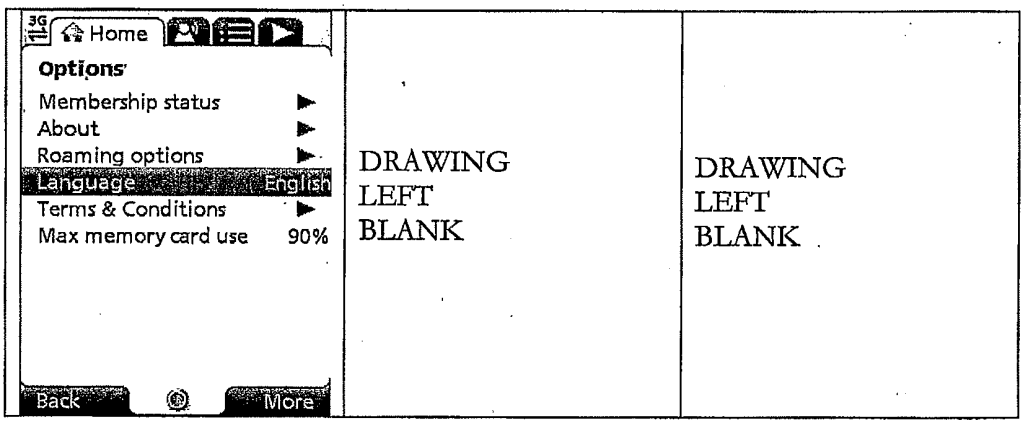

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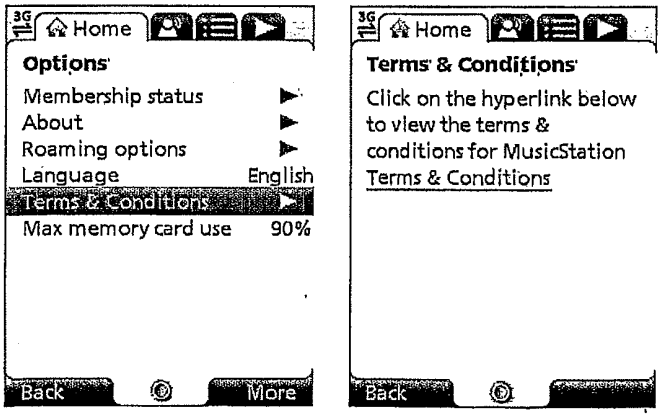

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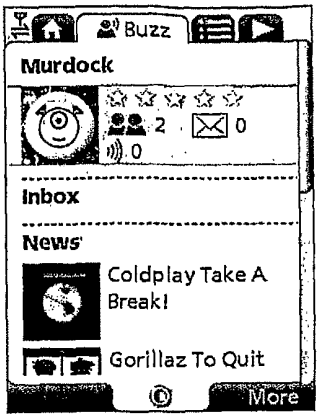

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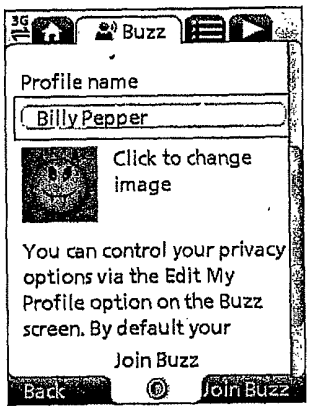

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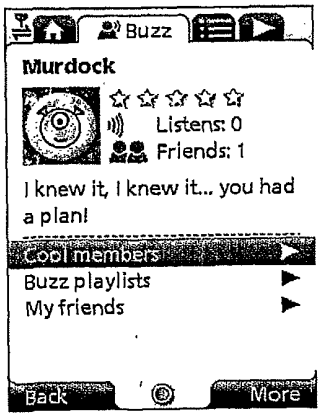

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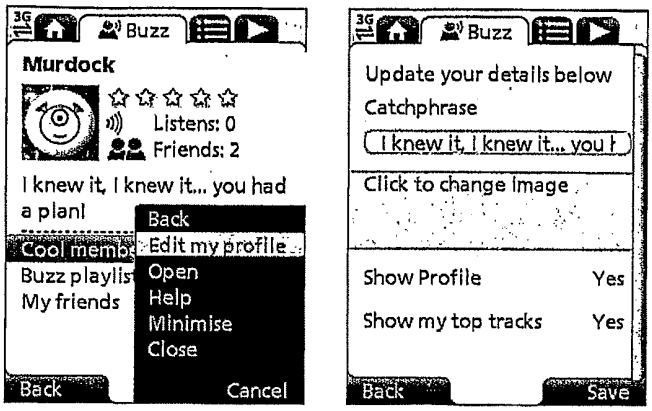

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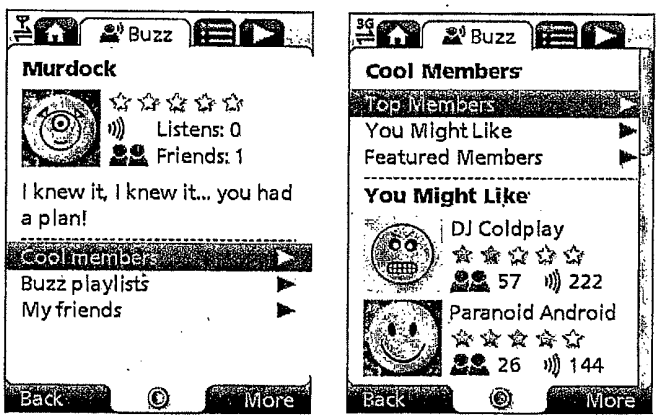

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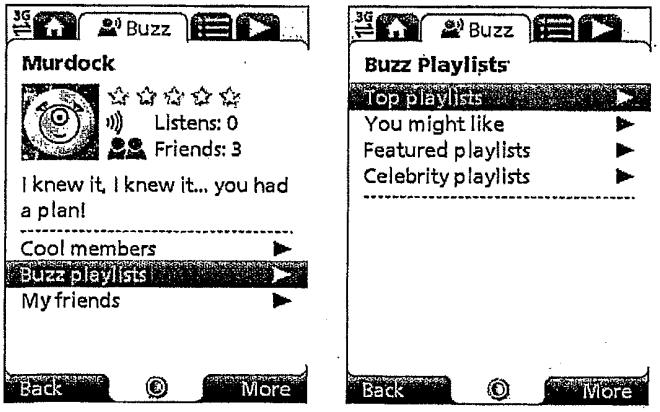

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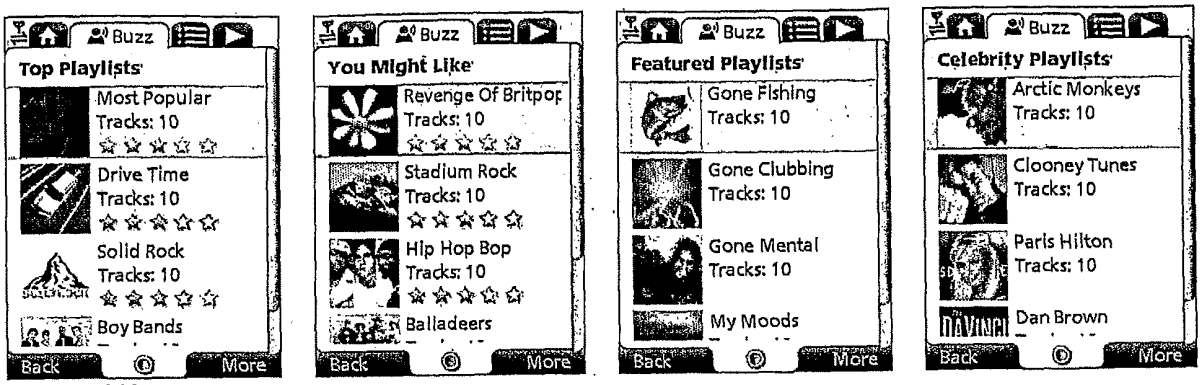

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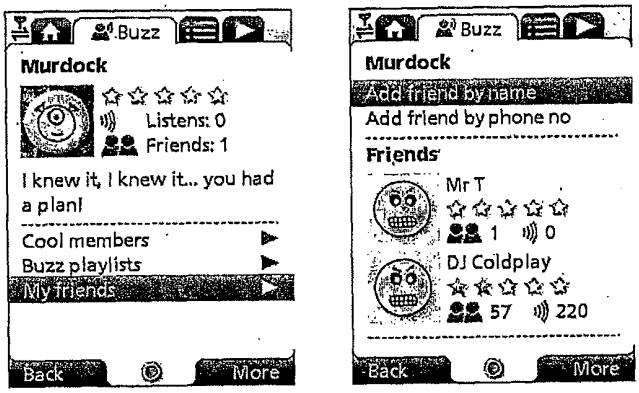
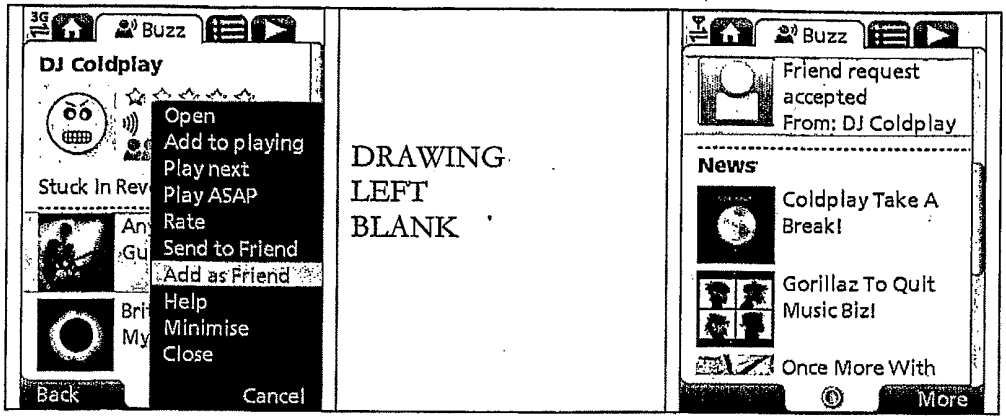


Figure 141

Figure 142



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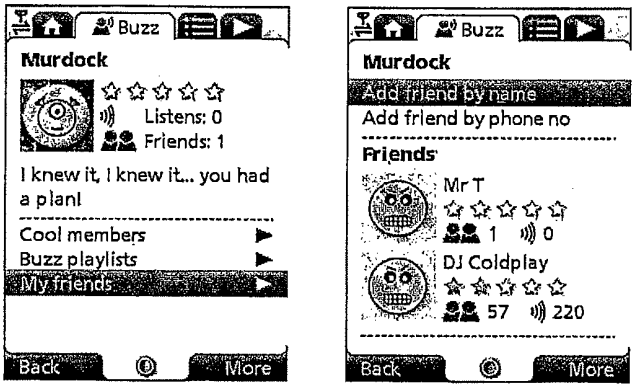

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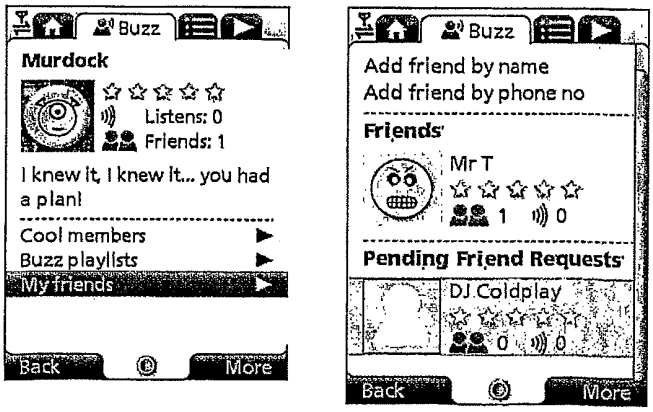

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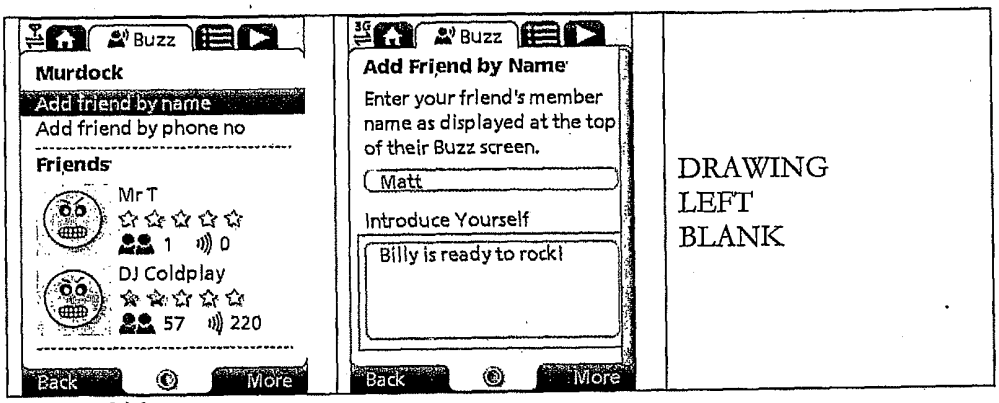

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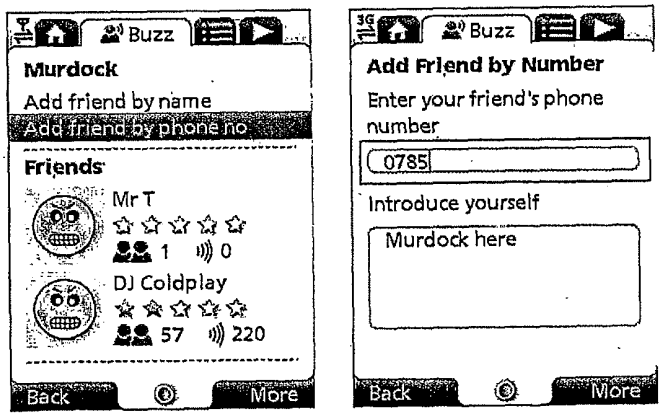

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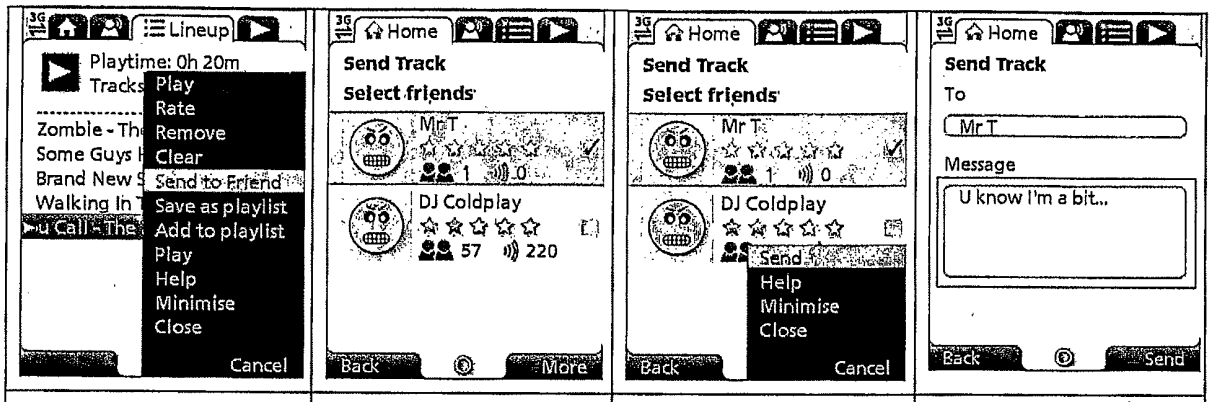

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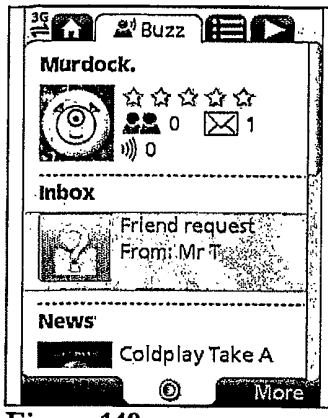

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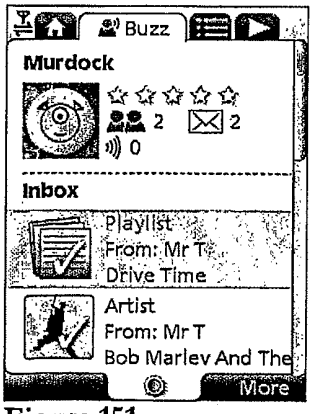
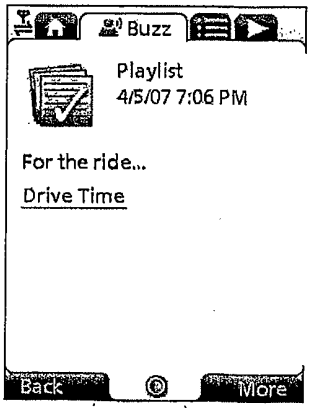
Figure 149

Figure 150





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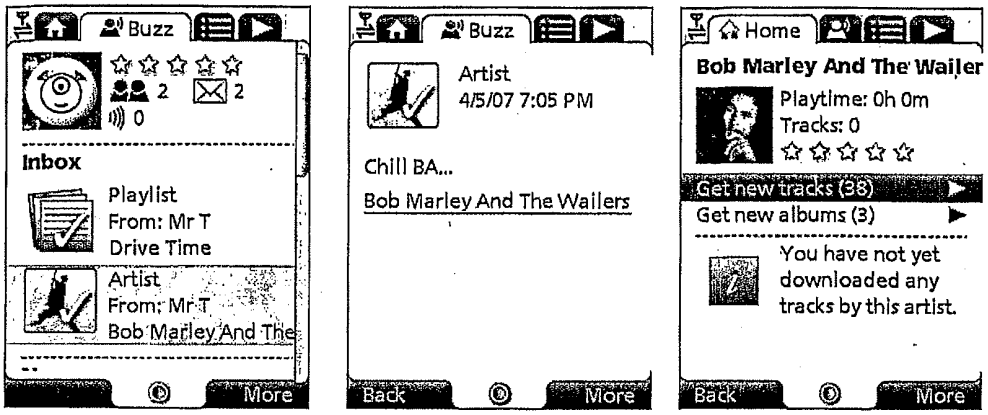

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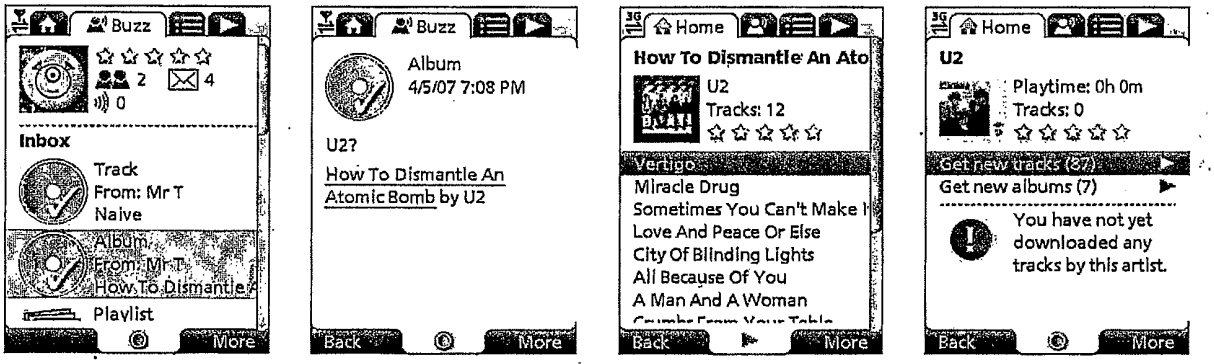

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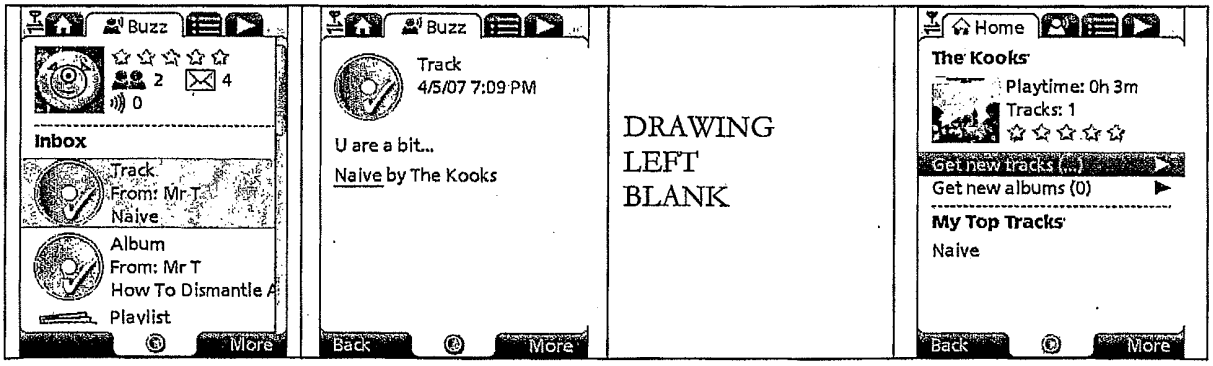

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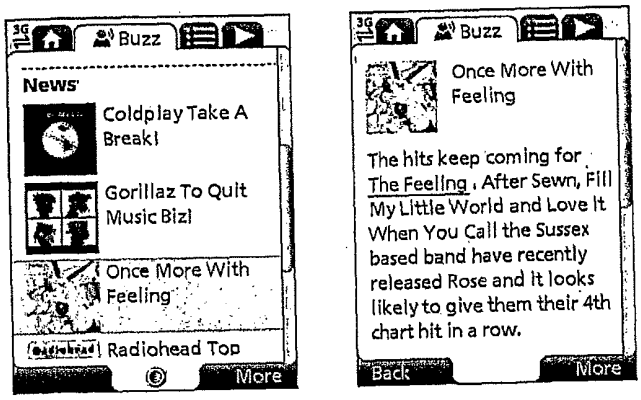

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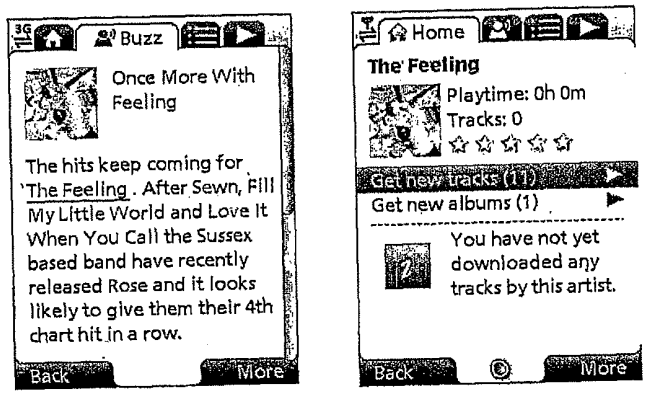

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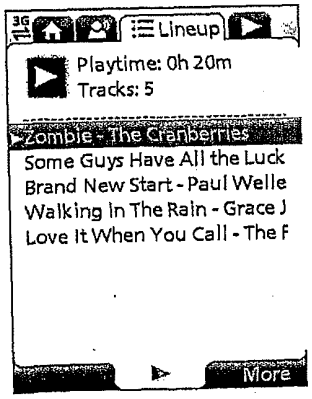

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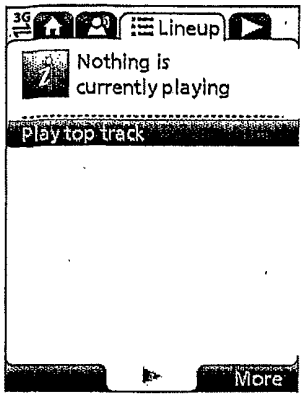

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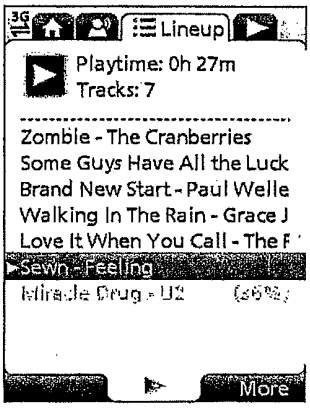
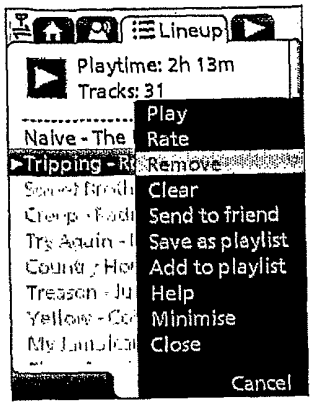


Figure 159

Figure 160



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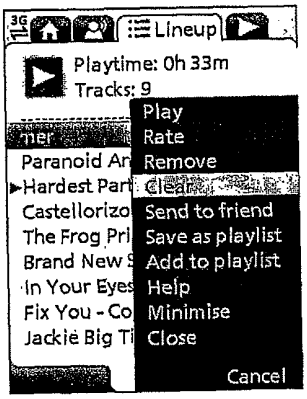

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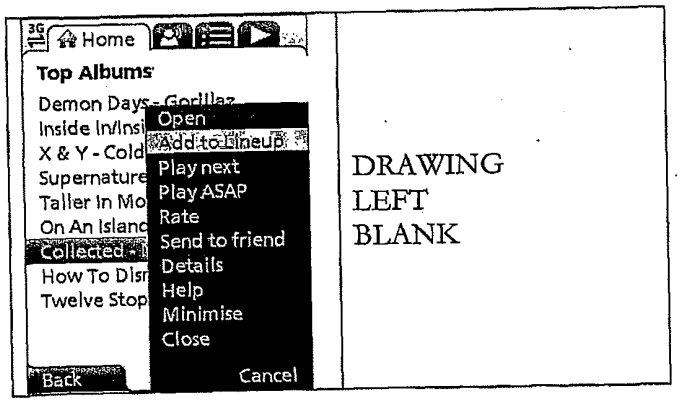

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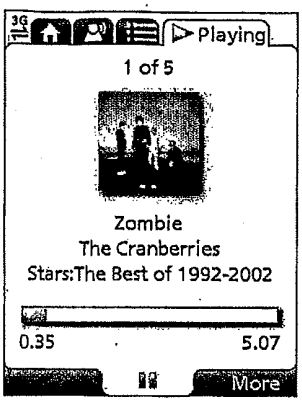
Playing
1 of 5
Zombie
The Cranberries
Stars:The Best of 1992-2002
0.35
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More

Figure 164

End-to-end solution

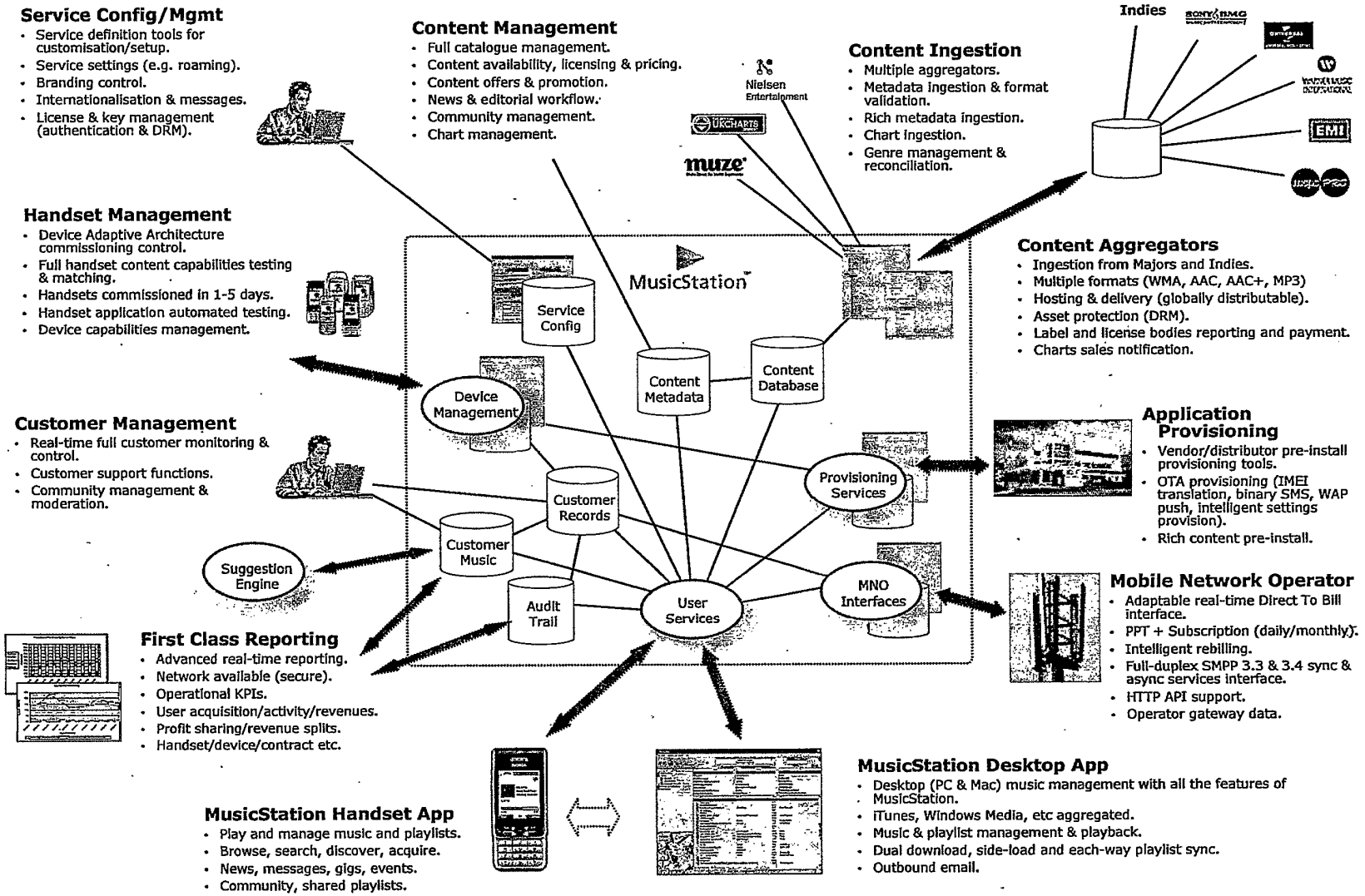

Figure 165

TRILLER EXHIBIT 1006-00388