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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	DJL-3
First Inventor	DANIEL J LIN
Title	PEER-TO-PEER MOBILE DATA TRNSFEI
Express Mail Label No.	ER 036214087 US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. ☑ **Fee Transmittal Form** (e.g., PTO/SB/17)
   (Submit an original and a duplicate for fee processing)
2. ☑ **Applicant claims small entity status.** See 37 CFR 1.27.
3. ☑ **Specification** [*Total Pages* 11]
   Both the claims and abstract must start on a new page
   (For information on the preferred arrangement, see MPEP 608.01(a))
4. ☑ **Drawing(s)** (*35 U.S.C. 113*) [*Total Sheets* 3]
5. **Oath or Declaration** [*Total Sheets* 2]
   a. ☑ Newly executed (original or copy)
   b. ☐ A copy from a prior application (37 CFR 1.63(d))
   (for continuation/divisional with Box 18 completed)
   i. ☐ DELETION OF INVENTOR(S)
   Signed statement attached deleting inventor(s) name in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
6. ☐ **Application Data Sheet.** See 37 CFR 1.76
7. ☐ **CD-ROM or CD-R** in duplicate, large table or Computer Program *(Appendix)*
   ☐ Landscape Table on CD
8. **Nucleotide and/or Amino Acid Sequence Submission**
   (if applicable, items a. – c. are required)
   a. ☐ Computer Readable Form (CRF)
   b. Specification Sequence Listing on:
      i. ☐ CD-ROM or CD-R (2 copies); or
      ii. ☐ Paper
   c. ☐ Statements verifying identity of above copies

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ACCOMPANYING APPLICATION PARTS

9. ☐ **Assignment Papers** (cover sheet & document(s))
   Name of Assignee _____
10. ☐ **37 CFR 3.73(b) Statement** *(when there is an assignee)* ☐ **Power of Attorney**
11. ☐ **English Translation Document** *(if applicable)*
12. ☑ **Information Disclosure Statement** (PTO/SB/08 or PTO-1449)
    ☑ Copies of citations attached
13. ☐ **Preliminary Amendment**
14. ☐ **Return Receipt Postcard** (MPEP 503)
    (Should be specifically itemized)
15. ☐ **Certified Copy of Priority Document(s)**
    (if foreign priority is claimed)
16. ☐ **Nonpublication Request** under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent.
17. ☐ Other: _____

18. If a CONTINUING APPLICATION, *check appropriate box, and supply the requisite information below and in the first sentence of the specification following the title, or in an Application Data Sheet under 37 CFR 1.76:*

☐ Continuation ☐ Divisional ☑ Continuation-in-part (CIP) of prior application No.: 10/817,994

Prior application information: *Examiner* _____ *Art Unit:* 2681

19. CORRESPONDENCE ADDRESS

☐ The address associated with Customer Number: _____ *OR* ☐ Correspondence address below

Name	DANIEL J LIN				
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Country	USA	Telephone	415-956-3005	Fax	

Signature		Date	1-23-2005
Name (Print/Type)	DANIEL J LIN	Registration No. (Attorney/Agent)	47,750

This collection of information is required by 37 CFR 1.53(b). 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 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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Effective on 12/08/2004.
Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL
For FY 2005

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 725.00

Complete if Known	
Application Number	
Filing Date	
First Named Inventor	DANIEL J LIN
Examiner Name	
Art Unit	
Attorney Docket No.	DJL-3

METHOD OF PAYMENT (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

Application Type	FILING FEES Fee ($)	FILING FEES Small Entity Fee ($)	SEARCH FEES Fee ($)	SEARCH FEES Small Entity Fee ($)	EXAMINATION FEES Fee ($)	EXAMINATION FEES Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	500.00
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
29 - 20 or HP =	9	x 25	= 225

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
3 - 3 or HP =	0	x 100	= 0

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims Fee ($)	Multiple Dependent Claims Fee Paid ($)
0	0

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 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).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
14 - 100 =	0	/ 50 = 0 (round up to a whole number)	x 0	= 0

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	0
Other (e.g., late filing surcharge): _____	0

SUBMITTED BY

Signature	DJL	Registration No. (Attorney/Agent) 47,750	Telephone 415-956-3005
Name (Print/Type)	DANIEL J LIN		Date 1-23-2005

Peer-to-Peer Mobile Data Transfer Method and Device

Cross Reference to Related Applications

This application is a continuation-in-part of U.S. patent application No. 10/817,994, filed April 4, 2004, and a continuation-in-part of U.S. patent application No. 10/935,342, filed September 7, 2004.

Field of the Invention

The present invention relates generally to data transfer techniques for mobile devices, and more specifically, a technique to establish data transfer directly between mobile devices.

Background of the Invention

Current multimedia messaging technologies for mobile devices depend upon a server that receives and prepares multimedia content to be retrieved by the recipient of the multimedia message. For example, the Multimedia Messaging Service ("MMS") protocol utilizes a server known as a Multi Media Service Center ("MMSC") to store multimedia content in preparation for a retrieval process initiated by the recipient. Specifically, under MMS, the initiating device initiates a data connection over TCP/IP and performs an HTTP POST of an MMS Encapsulation Format encoded multimedia message to the MMSC. The MMSC stores the multimedia message and makes it available as a dynamically generated URL link. The MMSC then generates a notification message containing the dynamically generated URL and sends the notification message to the recipient through WAP Push over the Short Message Service ("SMS") protocol. When the recipient receives the MMS notification message, it initiates a data connection over TCP/IP and performs an HTTP request to retrieve the MMS message containing multimedia content from the MMSC through the dynamically generated URL.

The MMSC is used, in part, by the MMS protocol in order to provide a known address (e.g., a URL) that can be provided to the recipient in a text based format in order to initiate a data transfer transaction to retrieve the multimedia content. Without such a known address, the sender would be unable to transmit multimedia content to the recipient, since other pre-existing messaging technologies (e.g., SMS) only provide the capability to send limited text, and not multimedia content, directly to the recipient. As such, what is needed is a method to establish data transfer sessions directly between mobile devices, where such mobile devices are capable of directly communicating with other mobile devices through the underlying wireless technology, such that no separate multimedia server and separate retrieval notification message is needed to obtain data (e.g., multimedia content) other than text.

Summary of the Invention

The present invention provides a method for establishing a direct data transfer session between mobile devices over a digital mobile network system that supports data packet-based communications. Under the present invention, no separate data server need be used to provide a known location from which a recipient retrieves data such as multimedia content. Instead, a mobile device initiating a data transfer opens a listening port defined by an underlying data packet based network protocol. The initiating mobile device sends an invitation message containing the network address, including the listening port, of the initiating device to a target mobile device through a page-mode messaging service (e.g., text based service) supported by the digital mobile network system. The initiating mobile device further utilizes and incorporates a unique identification number (e.g., telephone number, PIN number, etc.) associated with the target mobile device into the invitation message to locate and contact the target mobile device within the wireless mobile network. Once the initiating mobile device receives a response from the target mobile device at the listening port, the two mobile devices are able to establish a reliable virtual connection through the underlying data packet-based network protocol in order to transfer data directly between the two mobile devices.

Brief Description of the Drawings

FIGURE 1 depicts a diagram of an environment for establishing a data transfer session in accordance with the present invention between a first mobile device and a second mobile device in a GSM mobile network system supporting GPRS as a data packet-based communications service, SMS as a text messaging service, and TCP/IP as an underlying data packet based network protocol.

FIGURE 2 depicts a flow chart for establishing a data transfer session in accordance with the present invention.

FIGURE 3 depicts a flow chart for a second embodiment for establishing a data transfer session in accordance with the present invention.

Detailed Description of the Invention

Figure 1 depicts one environment to deploy an embodiment of the present invention. As depicted, the underlying digital mobile network system in this environment is the Global System for Mobile communications (GSM) **100** standard. Under the GSM standard, each of the mobile devices **105** and **110** includes a Subscriber Information Module (SIM) card that contains unique identification information that enables the GSM system to locate the mobile devices within the network and route data to them. A current commercial example of a mobile device (e.g., smartphone, PDA, handheld, etc.) that might be used in **Figure 1** could be Research In Motion's

(RIM) BlackBerry handheld devices, which include a QWERTY keyboard to facilitate the typing of text. As depicted, a GSM architecture includes the following components: base transceiver stations (BTS) **115** and base station controllers (BSC) (**120A** or **120B**) for managing the transmission of radio signals between the MSC (defined below) and the mobile devices, mobile service-switching centers (MSC) (**125A** and **125B**) for performing the all switching functions and controlling calls to and from other telephone and data systems, a home location register (HLR) **130** for containing all the administrative, routing and location information of each subscriber registered in the network, visitor location registers (VLR) (**135A** and **135B**) for containing selected administrative information about subscribers registered in one HLR who are roaming in a another HLR, and an equipment identity register (EIR) (not shown) for containing a list of all valid mobile equipment on the network). As depicted in **Figure 1**, in one architecture of a GSM network, there may be exist one HLR while there may exist multiple MSCs (each with a related VLR) which each serves a different geographic area. The MSCs also provide the interface for the GSM network to more traditional voice networks **170** such as the PSTN. This underlying GSM architecture provides radio resources management (e.g., access, paging and handover procedures, etc.), mobility management (e.g., location updating, authentication and security, etc.), and communication management (e.g., call routing, etc.) in order to enable mobile devices in the GSM network to send and receive data through a variety of services, including the Short Message Service (SMS), an asynchronous bi-directional text messaging service for short alphanumeric messages (up to 160 bytes) that are transported from one mobile device to another mobile device in a store-and-forward fashion.

A GSM network within which the present invention may be deployed would also support a page-mode messaging service, such as SMS, that relies upon the underlying GSM mechanisms to resolve routing information in order to locate destination mobile devices. A GSM network supporting SMS text messaging may further include the following SMS specific components: a short message service center (SMSC) (**140A** or **140B**) for storing and forwarding messages to and from one mobile device to another, an SMS Gateway-MSC (SMS GMSC) for receiving the short message from the SMSC (**140A** or **140B**) and interrogating the destination mobile device's HLR **130** for routing information to determine the current location of the destination device to deliver the short message to the appropriate MSC (**125A** or **125B**). The SMS GMSC is typically integrated with the SMSC **140**. In a typical transmission of an SMS text message from an originating mobile device **105** to a receiving mobile device **110**, (i) the text message is transmitted from the mobile **105** to the MSC **125A**, (ii) the MSC **125A** interrogates its VLR **135A** to verify that the message transfer does not violate any supplementary services or restrictions, (iii) the MSC **125A** sends the text message to the SMSC **140A**, (iv) the SMSC **140A**, through the SMS GMSC, interrogates the receiving mobile device's HLR **130** (by accessing the SS7 network) to receive routing information for the receiving mobile device **110**, (v) the SMSC sends the text message to

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