Samsung Electronics Co. LTD., Apple Inc., and Samsung Electronics America, Inc. (Petitioner)
v.
Smart Mobile Technologies, LLC (Patent Owner)

Petitioner Demonstratives

Case No. IPR2022-01249
U.S. Patent No. 9,019,946
Before Hon. HYUN J. JUNG, GARTH D. BAER, and AARON W. MOORE

FISH.

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Background / Overview

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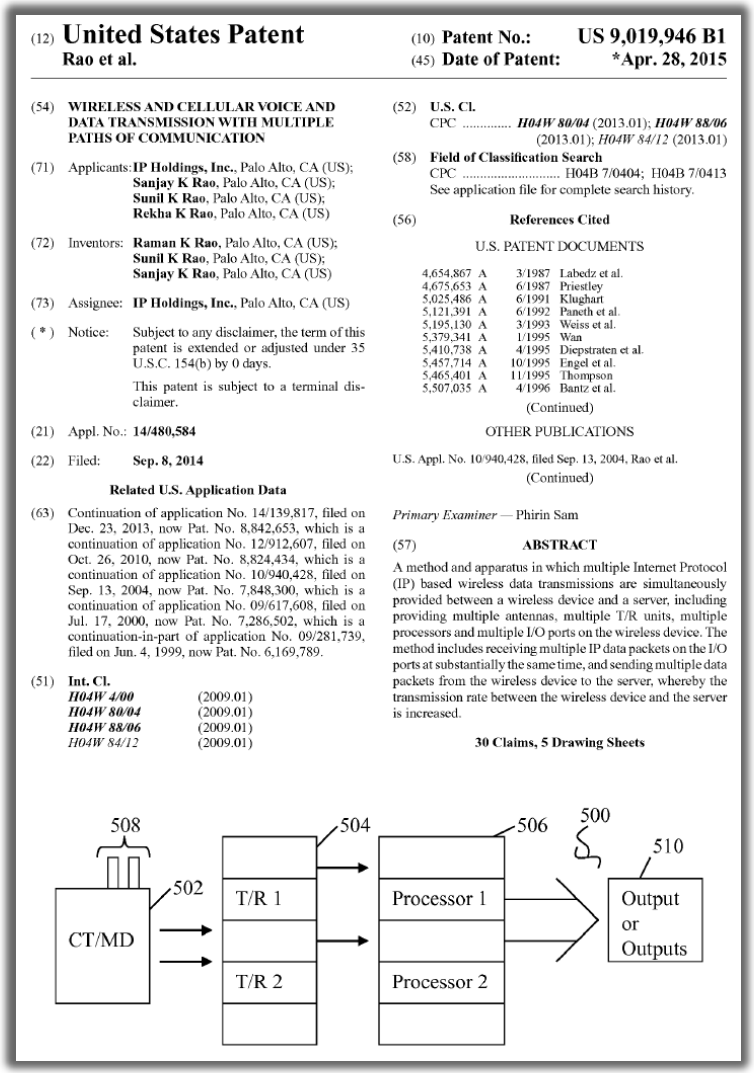
Overview of the ’946 Patent

EX-1001 (’946 Patent), Cover



(12) **United States Patent**
Rao et al.

(10) **Patent No.: US 9,019,946 B1**
(45) **Date of Patent: *Apr. 28, 2015**

(54) **WIRELESS AND CELLULAR VOICE AND DATA TRANSMISSION WITH MULTIPLE PATHS OF COMMUNICATION**

(71) Applicants: **IP Holdings, Inc.**, Palo Alto, CA (US); **Sanjay K Rao**, Palo Alto, CA (US); **Sunil K Rao**, Palo Alto, CA (US); **Rekha K Rao**, Palo Alto, CA (US)

(72) Inventors: **Raman K Rao**, Palo Alto, CA (US); **Sunil K Rao**, Palo Alto, CA (US); **Sanjay K Rao**, Palo Alto, CA (US)

(73) Assignee: **IP Holdings, Inc.**, Palo Alto, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/480,584**

(22) Filed: **Sep. 8, 2014**

Related U.S. Application Data

(63) Continuation of application No. 14/139,817, filed on Dec. 23, 2013, now Pat. No. 8,842,653, which is a continuation of application No. 12/912,607, filed on Oct. 26, 2010, now Pat. No. 8,824,434, which is a continuation of application No. 10/940,428, filed on Sep. 13, 2004, now Pat. No. 7,848,300, which is a continuation of application No. 09/617,608, filed on Jul. 17, 2000, now Pat. No. 7,286,502, which is a continuation-in-part of application No. 09/281,739, filed on Jun. 4, 1999, now Pat. No. 6,169,789.

(51) **Int. Cl.**

H04W 4/00	(2009.01)
H04W 80/04	(2009.01)
H04W 88/06	(2009.01)
H04W 84/12	(2009.01)

(52) **U.S. Cl.**
CPC ***H04W 80/04*** (2013.01); ***H04W 88/06*** (2013.01); *H04W 84/12* (2013.01)

(58) **Field of Classification Search**
CPC H04B 7/0404; H04B 7/0413
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

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(Continued)

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U.S. Appl. No. 10/940,428, filed Sep. 13, 2004, Rao et al.

(Continued)

Primary Examiner — Phirin Sam

(57) **ABSTRACT**

A method and apparatus in which multiple Internet Protocol (IP) based wireless data transmissions are simultaneously provided between a wireless device and a server, including providing multiple antennas, multiple T/R units, multiple processors and multiple I/O ports on the wireless device. The method includes receiving multiple IP data packets on the I/O ports at substantially the same time, and sending multiple data packets from the wireless device to the server, whereby the transmission rate between the wireless device and the server is increased.

30 Claims, 5 Drawing Sheets

- U.S. Patent No. 9,019,946 (the “**’946 Patent**” or “**EX-1001**”) has an earliest possible priority claim to U.S. patent application 09/281,789 filed June 4, 1999.

- Challenged Claims
  - Independent claims 1, 14, 17, and 27
  - Dependent claims 2-13, 15-16, 18-21, 26, 28-30

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Overview of the ’946 Patent

Petition 3-4

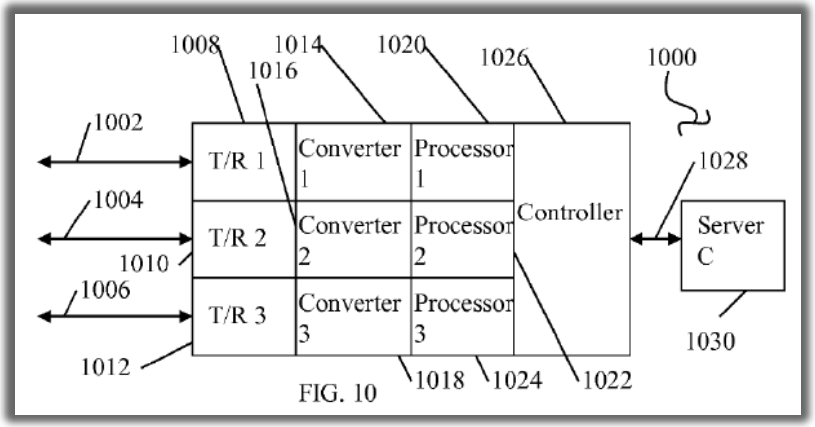

FIG. 10

EX-1001 (’946 Patent), Figure 10

FIG. **10** is an embodiment of the present invention showing a data system **1000** with three data streams DS1 **1002**, DS2 **1004** and DS3 **1006**. In FIG. **10**, three wireless T/R units **1008**, **1010**, and **1012** are shown. The three data streams **1002**, **1004**, and **1006** are processed by the three T/R units **1008**, **1010** and **1012**, converted by converters **1014**, **1016**, and **1018**, and presented to processors **1020**, **1022**, and **1024** under the control of controller **1026**. The data streams may be interfaced separately with server C **1030** or combined into data stream **1028** and interfaced to Server C **1030**. The processor or CPU speed is seldom a limiting factor, so the improvement in speed by providing multiple data paths is fully realized by the present invention. Each subtask being processed can be assigned to a separate channel. The rate at which the data is acquired, processed and converted is dependent on the type of electronic components. Therefore, component limitations can be overcome in a straightforward and convenient way by parallel processing. In such cases, the processor speed is seldom a limitation, and conversion speed of RF to electrical and electrical to RF, becomes the primary bottleneck in data transfers for wireless systems. By providing, for example, a single chip, multichip, or hybrid converter for parallel conversions in accordance with the present invention under the supervision of the Server C **910**, this bottleneck is avoided. Each channel may be sampled and clocked individually as necessary to optimally process each data stream and combine the individual data packets.

EX-1001 (’946 Patent), 7:21-47

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Independent Claim 1

EX-1001 ('946 Patent), Claim 1

1[pre]	1. An Internet-enabled mobile communication device comprising:
1[a]	a memory;
1[b]	at least two or more antennas;
1[c]	at least one or more processors; and
1[d]	a plurality of wireless transmit and receive units including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols;
1[e]	wherein the device is configured for multi-band wireless communication;
1[f]	wherein the device is enabled for communication using Internet Protocol (IP);
1[g]	wherein the device is enabled for wireless communication on a local area network;
1[h]	wherein the first wireless transmit and receive unit is configured to communicate using a plurality of antennas; and
1[i]	wherein a first interface for transmission is created and wherein said first interface for transmission uses a plurality of interfaces for Internet Protocol communication on the mobile device which utilize the plurality of wireless transmit and receive units on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive units; and
1[j]	and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple communication paths including at least one connection to a networked server; and wherein at least one communication path is used for wireless signals representing voice data and at least one communication path is used for wireless signals representing non-voice data.

Independent Claim 14

EX-1001 ('946 Patent), Claim 14

14[pre]	14. An Internet-enabled mobile communication device comprising:
14[a]	a memory;
14[b]	a display;
14[c]	at least two or more antennas;
14[d]	at least one or more processors; and
14[e]	a plurality of wireless transmit and receive units including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols;
14[f]	wherein the device is enabled for communication using Internet Protocol (IP);
14[g]	wherein the device is enabled for wireless communication on a wireless local area network;
14[h]	wherein the first wireless transmit and receive unit is enabled to communicate using one or more antennas simultaneously; and
14[i]	wherein the mobile device maintains multiple IP addresses, wherein the first wireless unit is accessible on a first IP address and the second wireless transmit and receive unit is accessible on a second IP address and wherein the mobile device operates using a plurality of ports;
14[j]	and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;
14[k]	and wherein the device is enabled for communication of wireless signals representing voice data and for communication of wireless signals representing non-voice data.

FISH.

Independent Claim 17

EX-1001 ('946 Patent), Claim 17

17[pre]	17. A portable wireless communication device, comprising:
17[a]	a memory;
17[b]	at least two or more antennas;
17[c]	at least one or more processors; and
17[d]	a plurality of wireless transmit and receive unit including a first wireless transmit and receive unit and a second wireless transmit and receive unit, wherein each wireless transmit receive unit is configured to communicate using one or more protocols;
17[e]	wherein the device is configured for multi-band wireless communication;
17[f]	wherein the device is enabled for communication using Internet Protocol (IP);
17[g]	wherein the device is enabled for wireless communication on a local area network;
17[h]	wherein the first wireless transmit and receive unit is configured to communicate using a plurality of antennas; and
17[i]	wherein the first wireless transmit and receive unit is configured to communicate over Internet Protocol with a remote system over a first network path and the second wireless transmit and receive unit is configured to communicate with the same or a different remote system using a second network path and wherein the processor on the device is configured to combine the data paths into a single transmission interface to one or more applications on the device;
17[j]	and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;
17[k]	and wherein at least one of the different networks comprises a voice network and wherein at least one of the different networks comprises an Internet protocol data network.

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Independent Claim 27

EX-1001 ('946 Patent), Claim 27

27[pre]	27. An IP-enabled communication device comprising:
27[a]	a memory;
27[b]	one or more processors;
27[c]	a plurality of wireless communication units, wherein the device supports a plurality of transmit and receive frequencies and a plurality of wireless protocols;
27[d]	wherein a first wireless communication unit is coupled to a first set of antennas configured to transmit and receive on a first network and wherein a second wireless communication unit is coupled to a second set of antennas and configured to transmit and receive on a second network;
27[e]	wherein the at least one wireless communication unit is configured for radio frequency communication;
27[f]	wherein the first wireless communication unit is configured to operate at a lower frequency than the second wireless communication unit such that the first and second wireless communication units operate as complementary systems and reduce interference with each other; and
27[g]	wherein the device is configured for voice and/or data connectivity and Internet connectivity; and
27[h]	wherein the first wireless transmit and receive unit operates on the first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on the second network path in response to a change in the signal strength and/or connectivity of the first wireless communication unit or second wireless communication unit; and
27[i]	wherein video or audio can be accessed simultaneously with performance optimized for each through dedicated or multiplexed paths.

Instituted Grounds

Institution Decision, 7

Claim(s) Challenged	35 U.S.C. §	References/Basis
14, 15	103(a)	Yegoshin, Johnston, Billström
1–11, 16–21	103(a)	Yegoshin, Johnston, Billström, Bernard
12	103(a)	Yegoshin, Johnston, Billström, Bernard, WO748
13, 26	103(a)	Yegoshin, Johnston, Billström, Bernard, Sainton
27–30	103(a)	Yegoshin, Johnston, Billström, Bernard, Preiss

Issue 1

The “IP Addresses” Limitations
(Claims 14-16)

FISH.

The "IP Addresses" Limitations In Claims 14

EX-1001 ('946 Patent), Claim 14

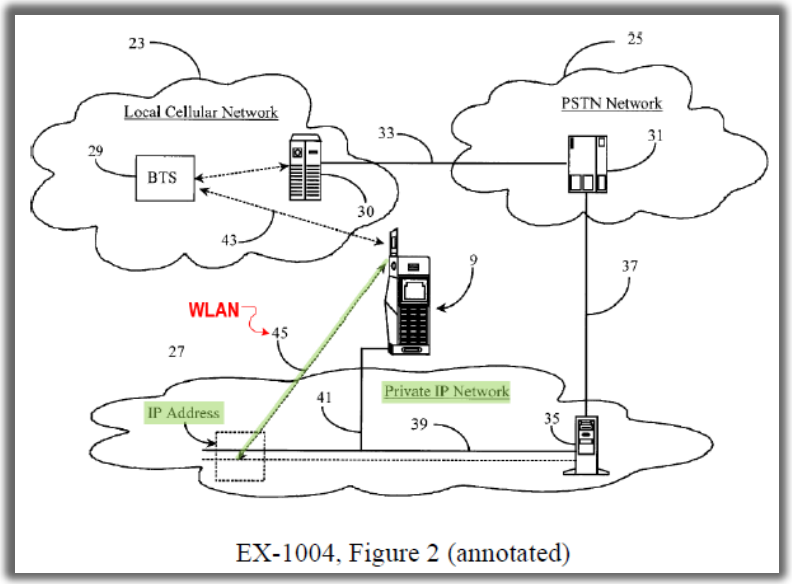
Relevant Limitations (14[i])

wherein the mobile device maintains multiple IP addresses, wherein the first wireless unit is accessible on a first IP address and the second wireless transmit and receive unit is accessible on a second IP address and wherein the mobile device operates using a plurality of ports;

Yegoshin's Disclosure of an IP Address for WLAN

Petitioner's Reply, 1-2

Yegoshin



EX-1004, Figure 2 (annotated)

Figure 2 (annotated in EX-1003 (1st Jensen Decl.), [80])

10-base D adapter (common in the art). When a user operating cell phone **9** logs-on to either LAN (**38** or **39**) he or she is assigned a temporary IP address for purposes of device identification. This is illustrated via a dotted rectangle labeled IP Address.

EX-1004 (Yegoshin), 7:10-14

Referring again to FIG. **3**, when a user, via the dual-mode device **9**, logs onto network **27** via LAN **38** or **39** of FIG. **2**, he or she will, during configuration, obtain a new and temporary IP address (DN **2**) as previously described. Alternatively, a roaming IP address may be used, that would be fixed for the device, if the connected to network supports this feature. Such technologies are known to the inventor.

EX-1004 (Yegoshin), 7:48-54

✓ Yegoshin expressly describes use of an IP address for WLAN.

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Yegoshin's Disclosure of IP Communication for Cellular

Petitioner's Reply, 1-2

Yegoshin

The example described above of an instance of a cellular call **55** placed to cell phone **9** assumes that the user is taking all cellular calls in IP format while logged-on to IP network **27**. All such calls would then be routed via PSTN **25** to IP network **27**. However, it may be that certain cellular calls will be exempt from IP delivery at the user's discretion. In this case, callers from known origination numbers will be routed to local cell network **23**, local to the visited IP network, and therefore may be received by the user of telephone **9** in normal cell-phone mode.

EX-1004 (Yegoshin), 8:47-56

A client software suite **19** enables a user to select a type of network for communication, to select a protocol for voice communication, and to set-up a temporary IP address on a network for the purpose of identifying and registering the device for normal operation on the network. Client software

EX-1004 (Yegoshin), 5:33-37

scope of the present invention. Alternatively, the program may be given a series of preferences by the user, and then may negotiate the best possible connection accordingly. It may use such protocols as DHCP etc. to set up IP addresses and so forth. Selection of the network could be according to an order of preference, by availability.

EX-1004 (Yegoshin), 5:49-54

- ✓ Yegoshin contemplates "taking all cellular calls in IP format."
- ✓ Yegoshin generally describes selecting a type of network for voice communication and setting up an IP address for device identification.

Yegoshin's Disclosure of IP Address for Cellular

Petitioner's Reply, 2; EX-1051 (2nd Jensen Decl.), [5]

Yegoshin

as a PSTN network. Such an IP network is usually of the form of a wired LAN such as an Extranet or Intranet. However, it is known to the inventor that such networks may also operate in various wireless technology modes such as a code-division-multiple-access CDMA or a time-division-multiple-access (TDMA) convention. The well-known cellular system is typically a variation of the latter. RF,

EX-1004 (Yegoshin), 2:30-36

Cellular phone **9** is not, however, the only form of *telecommunications device that may be used to practice the* present invention. For example, any type of wireless communication device may be used that may also be adapted for having at least one mode of IP communication via wireless and or wired connection. The purpose of using a cell phone,

EX-1004 (Yegoshin), 5:6-9

It will be apparent to one with skill in the art that the present invention may be practiced with wide area networks (WANs) in addition to LANs without departing from the spirit and scope of the present invention. As long as the appropriate protocol is used and conversion methods are observed when required, the present invention may be utilized with any IP switched packet network. Such an example would be that of a mobile overseer of several companies or partners that are interconnected through an IP WAN. The method and apparatus of the present invention should be afforded the broadest scope possible. The spirit and scope of the present invention is limited only by the claims that follow.

EX-1004 (Yegoshin), 9:19-29

Within network **23**, there is illustrated a mobile-switching-center (MSC) **30** that is adapted for storing tables and records of information associated with cell network patrons such as cell-phone numbers, a visitor list register (VLR), a home list register (HLR), and so on. Look-up tables such as VLR and HLR tables list who is currently logged-in to a particular service area as is well known in the art of global cellular services. Other functions of MSC **30**

EX-1004 (Yegoshin), 6:27-35

✓ Yegoshin expressly describes how cellular networks were known to use IP and known to include a mobile-switching-center (MSC).

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Billström's Disclosure of IP Address for Cellular

Petitioner's Reply, 2-3; EX-1051 (2nd Jensen Decl.), [5]-[6];
EX-1003 (1st Jensen Decl.), [83]-[85]

Billström

FIG. **14** illustrates an example of routing from an inter-working function (IWF) to an MS's currently serving Mobile services Switching Centre (MSC) in Embodiment I, when the addressing scheme chosen is such that an MS's IP address identifies the MS as belonging to a particular public land mobile network (or group of MSCs).

"mobile station (MS)"
EX-1006 (Billström), 5:26-27

EX-1006 (Billström), 5:60-65

FIG. **15** illustrates an example of routing from an IWF to an MS's currently serving MSC in Embodiment I, when the addressing scheme chosen is such that an MS's IP address identifies the MS as belonging to a particular MSC.

EX-1006 (Billström), 5:66-6:2

The basic packet data network service provided is a standard connectionless network (datagram) service based on a standard connectionless IP protocol. IP is here used to denote the Internet Protocol (the de facto standard IP protocol used in the TCP/IP protocol suite) or the ISO (International Standards Organisation) Internetwork protocol (ISO 8473). (Possibly both these protocols may be sup-

EX-1006 (Billström), 7:58-64

No Dispute On Yegoshin and Billström's IP Addresses

Petitioner's Reply, 1-3

Second Declaration of Patent Owner's Expert (Dr. Cooklev)

113. Yegoshin and Billström each teach a device with only a single IP address. Because each reference only has a device with a single IP address, each reference only teaches how to route using one IP address, not two. I do not see any recognition from Petitioner or Dr. Jensen of this disconnect, much less any explanation of how a POSITA could resolve it such that Yegoshin's phone decides and enforces which IP address to use to route each data packet.

EX-2019 (2nd Cooklev Decl.), [113]

- ✓ No dispute that Yegoshin describes using IP address for communication on WLAN
- ✓ No dispute that Billström describes using IP address for communication on cellular network

Predictable Modification of Yegoshin Based on Billström

Petitioner's Reply, 2-3; EX-1051 (2nd Jensen Decl.), [6];
EX-1003 (1st Jensen Decl.), [84]

Dr. Jensen's First Declaration

84. Notably, Billström describes that a mobile station ("MS") (like a cellular phone) stores an IP address "such that an MS's IP address identifies the MS as belonging to a particular public land mobile network (or group of MSCs)." EX-1006, 5:60-6:2, 21:26-24:28, Figures 2-3, 14-15. Therefore, a POSITA would have understood or found obvious that Yegoshin's phone maintains another IP address for access to the cellular network, as taught by Billström, so that Yegoshin's second communication interface for cellular connection (corresponding to the first wireless transmit and receive unit) is accessible on that IP address (corresponding to the first IP address). This is evidenced by several references. EX-1030; EX-1031; EX-1032; EX-1033. For example, it was known that, in CDPD (a known

Dr. Jensen's Second Declaration

6. Again, as evidenced in Billström, a POSITA would have understood that, in addition to an IP address designed for WLAN communication as disclosed in Yegoshin, a separate IP address would be useful and a well-known option for implementing Yegoshin's IP-based cellular communication. *See, e.g.*, EX-1006, 5:63-6:2 ("an MS's IP address identifies the MS"), 10:64-66. Therefore, simply referencing Billström's use of an IP address in implementing Yegoshin's already-contemplated IP-based cellular communication would have been predictable to a POSITA with a reasonable expectation of success.

Maintaining Two IP Addresses Was Well-known

Petitioner's Reply, 1

Dr. Jensen's First Declaration

85. Indeed, it was known for a mobile device to maintain two different IP addresses to route a packet over two different communications channels. EX-1016,

EX-1003 (1st Jensen Decl.), [85]

Ota (Corroborating)

feature corresponding to the selected interface. As described above, in this embodiment, since the micro cell and the macro cell are the logically separated networks, an IP address used when the mobile station is linked to the macro cell base station is different from an IP address used when the mobile station is connected to the micro cell base station. That is, the mobile station has a kind of routing feature.

The network side (server or base station) sees the mobile station with two IP addresses. These two addresses can be regarded as addresses indicating routes to reach the mobile station. As described later, one of the characteristics of this invention is that the address of the mobile station itself is provided besides the addresses of indicating routes. Notice that the address of a path changes when the mobile station moves.

A communication system of this embodiment is characterized by switching routes of a packet in the network layer, as shown in FIG. **8**. In the communication system of the first embodiment shown in FIG. **3**, the mobile station has two network layer level addresses (IP addresses). In this

EX-1016 (Ota), 6:42-56, 9:6-10

Patent Owner Reads More Into The Claim (14[i])

Petitioner's Reply, 1

Dr. Cooklev's Second Declaration

113. Yegoshin and Billström each teach a device with only a single IP address. Because each reference only has a device with a single IP address, each reference only teaches how to route using one IP address, not two. I do not see any recognition from Petitioner or Dr. Jensen of this disconnect, much less any explanation of how a POSITA could resolve it such that Yegoshin's phone decides and enforces which IP address to use to route each data packet.

114. Yegoshin does not need to select between a first IP address or a second IP address. Yegoshin teaches that calls can be routed via cellular or LAN

EX-2019 (2nd Cooklev Decl.), [113]-[114]
(cited in POR, 39-40)

- ✓ Claim 14 does not state ***selecting*** between a first IP address or a second IP address

FISH.

Selection Between Two IP Addresses Was Well-known

Petitioner's Reply, 1

Dr. Jensen's Second Declaration

3. Even if it is assumed that selection is required, the selection would be simple and straightforward—use the first IP address when communicating over the cellular network and use the second IP address when communicating over the WLAN. As noted in my Original Declaration, using different IP addresses for different networks was well-known before the Critical Date. EX-1016, 6:42-56, 9:6-10; EX-1003, ¶85.

EX-1051 (2nd Jensen Decl.), [3]

Ota (Corroborating)

feature corresponding to the selected interface. As described above, in this embodiment, since the micro cell and the macro cell are the logically separated networks, an IP address used when the mobile station is linked to the macro cell base station is different from an IP address used when the mobile station is connected to the micro cell base station. That is, the mobile station has a kind of routing feature.

The network side (server or base station) sees the mobile station with two IP addresses. These two addresses can be regarded as addresses indicating routes to reach the mobile station. As described later, one of the characteristics of this invention is that the address of the mobile station itself is provided besides the addresses of indicating routes. Notice that the address of a path changes when the mobile station moves.

A communication system of this embodiment is characterized by switching routes of a packet in the network layer, as shown in FIG. **8**. In the communication system of the first embodiment shown in FIG. **3**, the mobile station has two network layer level addresses (IP addresses). In this

EX-1016 (Ota), 6:42-56, 9:6-10

Yegoshin's Call Forwarding Does Not Disrupt The Yegoshin-Billström Combination

Petitioner's Reply, 3-4

Patent Owner	Dr. Jensen
✓ Yegoshin assigns an IP address based on a phone number and argues that would be a reason that Yegoshin-Billström's two IP addresses would not work.	✓ Yegoshin's association between the IP address and the phone number is merely an example way to forward a cellular call to WLAN. EX-1004, 8:16-27, 4:10-14.
Ex-2019, ¶114. Moreover, unlike Yegoshin's single IP address structure, it would not be possible for the Yegoshin-Billström system to merely assign which IP address to use for each data packet based on the user's phone number:	✓ Billström's use of an IP address would not be redundant because it is for IP-based cellular data communication, which is independent from IP-based WLAN communication using another IP address.
POR, 40-41 (citing EX-2019 (2nd Cooklev Decl.), [115], [117]-[118])	EX-1051 (2nd Jensen Decl.), [7]

FISH.

Yegoshin's Call Forwarding Does Not Disrupt The Yegoshin-Billström Combination

Petitioner's Reply, 3-4

Dr. Jensen's Second Declaration

1004, 8:16-27, 4:10-14. This forwarding mechanism does not disrupt the combination because the combination is not limited to implementing call forwarding. As found by the Board, Billström's use of an IP address would not be redundant because it is for IP-based cellular data communication, which is independent from IP-based WLAN communication using another IP address. Institution Decision (ID), 22. For example, when a call is made using IP-based cellular communication, it is not "regular GSM voice/circuit data calls," but in the form of data packets that would employ an IP address for the IP-based cellular communication (whether or not it is "add-on data capability," POR, 41), as taught in Billström and acknowledged by Dr. Cooklev. EX-1006, 9:41; EX-1053, 18-25 (Dr. Cooklev acknowledged VoIP "refer[s] to packet-based communications."); EX-1054, 50:8-13, 58:4-9 ("Well, a person of ordinary skill in the art would have known that Internet Protocol relates to the transmission of data packets. I said if they had some knowledge of Internet Protocol and would have known that that relates to the transmission of data packets.").

EX-1051 (2nd Jensen Decl.), [7]

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 3-4

Patent Owner	Dr. Jensen
✓ Patent Owner requires Petitioner's demonstration of how to modify Yegoshin's system to incorporate Billström's ***entire infrastructure ("apparatuses")*** for providing packet data communication services over cellular systems. POR, 42-48 (citing EX-2019 (2nd Cooklev Decl.), [123]-[126])	✓ "This represents an overly narrow view of the combination because, as discussed above, Petitioner's combination simply modifies Yegoshin's ***phone*** to use Billström's ***IP address*** for IP-based cellular communication." EX-1051 (2nd Jensen Decl.), [8]

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 5

"The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller, 642 F.2d 413, 425* (C.C.P.A. 1981)

"Combining the ***teachings*** of references does not involve an ability to combine their specific structures." *In re Nievelt*, 482 F.2d 965, 968 (C.C.P.A. 1973) (emphasis original).

- ✓ Patent Owner's argument that Billström's teachings would not be physically combinable with Yegoshin improperly requires bodily incorporation from Billström into Yegoshin, which is not the law.

FISH.

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 2, 4; EX-1051 (2nd Jensen Decl.), [9]-[10]

Dr. Jensen's Second Declaration

9. Implementing IP-based cellular communication using an IP address (Billström's or generally) was well-known and within the skill of a POSITA and Patent Owner does not dispute that. POR, 42-48. In fact, Dr. Cooklev expressly

EX-1051 (2nd Jensen Decl.), [9]

Dr. Cooklev

were fielded. But the concept that a mobile device could access the Internet, for example, the concept was known.

THE WITNESS: I meant that the idea of Internet access by a mobile device was -- was -- seems to be known as of that timeframe.

EX-1053, 28:14-16, 29:10-12

Yegoshin

as a PSTN network. Such an IP network is usually of the form of a wired LAN such as an Extranet or Intranet. However, it is known to the inventor that such networks may also operate in various wireless technology modes such as a code-division-multiple-access CDMA or a time-division-multiple-access (TDMA) convention. The well-known cellular system is typically a variation of the latter. RF,

EX-1004, 2:30-36

Billström

The basic packet data network service provided is a standard connectionless network (datagram) service based on a standard connectionless IP protocol. IP is here used to denote the Internet Protocol (the de facto standard IP protocol used in the TCP/IP protocol suite) or the ISO (International Standards Organisation) Internetwork protocol (ISO 8473). (Possibly both these protocols may be sup-

EX-1006, 7:58-64

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 4-5

Dr. Jensen's Second Declaration

11. Further, the '946 patent has limited disclosure of implementing IP, which indicates that a POSITA would have had the requisite skill needed to implement IP-based technologies. The '946 patent is silent as to how to use IP addresses and only provides superficial discussion of Internet technology. EX-1001, 2:28-31, 4:44-48, 6:14-41, 10:48-11:8. Therefore, the '946 patent relies on the state of the art for its disclosure, which confirms that a POSITA would have understood that the '946 patent does not teach anything new about implementing IP and a POSITA would have had sufficient knowledge/skill to implement IP-based cellular communication, for example Billström's more detailed description of known IP communication. EX-1053, 98:17-101:3 ("even if [the '946 patent] doesn't expressly cite to

EX-1051 (2nd Jensen Decl.), [11]

FISH.

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 5-6

Dr. Cooklev

A. For the record, I'm looking at the '946 patent. And even -- even if it doesn't expressly cite to these documents, it refers to Internet Protocol, and a person of skill given astute that it is referring to the set of documents describing Internet Protocol.

EX-1053, 98:17-22

Yegoshin-Billström Was Within a POSITA's Capabilities

Petitioner's Reply, 4-5

Criticizing a rigid approach to determining obviousness based on the disclosures of individual prior art references, with little recourse to the knowledge, creativity, and experience of a POSITA (*KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007))

Emphasizing the importance of interpreting prior art in view of "the background knowledge possessed by a person having ordinary skill in the art" and "the inferences and creative steps that a person of ordinary skill in the art would employ" (*Randall Mfg. v. Rea*, 733 F.3d 1355, 1363 (Fed. Cir. 2013))

FISH.

Issue 2

The “Remote Server” Limitations
(Claims 27-30)

FISH.

"Remote Server" In Claim 27

EX-1001 ('946 Patent), Claim 27

Relevant Limitations (27[h])

wherein the first wireless transmit and receive unit operates on the first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on the second network path in response to a change in the signal strength and/or connectivity of the first wireless communication unit or second wireless communication unit; and wherein video

Yegoshin Describes a "Remote Server"

Petitioner's Reply, 10-11

Petition

27[h]

As described in 17[i], Yegoshin's first and second communication interfaces (***first and second wireless transmit and receive units***) in the phone communicate with the PSTN switch (***remote server***) on cellular and WLAN networks (***first and second network paths***). EX-1003, ¶249; EX-1004, 5:33-54, 5:66-7:25, 7:48-58, 8:47-56, 3:35-4:42.

Petition, 80-81 (discussing 27[h])

Next Slide

Petition

As illustrated in Figure 2, Yegoshin's phone is in communication with several remote systems. EX-1004, 5:66-7:25; EX-1003, ¶188; *see* claims 4 and 15, 14[j]. Particularly, the phone communicates with "PSTN switch 31" (***remote system***) through MSC and BTS (***remote systems***) via a cellular network (***first network path***). EX-1004, 5:66-7:25, Figure 2, 7:26-9:12, Figure 3, 3:35-4:42. Therefore, in the combination, Yegoshin's "first communication interface" (***first wireless transmit and receive unit***) communicates over the IP-enabled cellular network (as taught by Billström). EX-1003, ¶188.

Petition, 56-57 (discussing 17[i])

FISH.

32

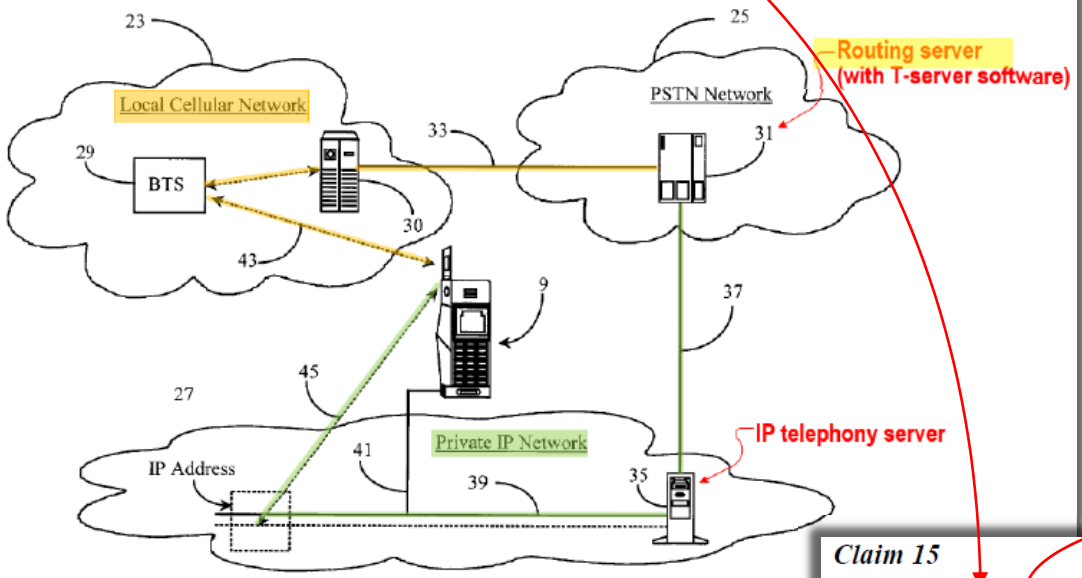
Yegoshin Describes a "Remote Server"

Petitioner's Reply, 10-11

Petition

Claim 4

As described in claim 15, Yegoshin's phone is in communication with at least one server. EX-1003, ¶155; EX-1004, 3:35-4:34, 5:66-6:4, 6:38-64, 7:15-37, Figure 2.



EX-1004, Figure 2 (annotated)

Next Slide

Claim 15

As described in 14[j], Yegoshin's phone is in communication with servers. EX-1003, ¶101; EX-1004, 3:35-4:34, 5:66-6:4, 6:38-64, 7:15-37.

Petition, 48-49 (discussing claim 4)

Petition, 26 (discussing claim 15)

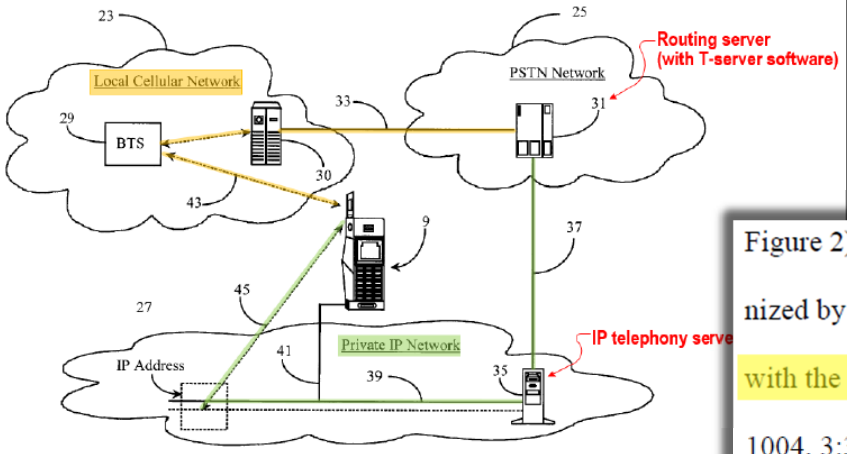
Yegoshin Describes a "Remote Server"

Petitioner's Reply, 10-11

Petition

14[j]

Yegoshin's phone is in communication with *networked servers* such as "PSTN-connected routing server" and "IP telephony server." EX-1004, 3:35-4:34, 5:66-6:4, 6:38-64, 7:15-37, Figure 2; EX-1003, ¶94. Therefore, Yegoshin's first and second communication interfaces (***transmit and receive units***, 14[e]) communicate with these ***networked servers*** in cellular and WLAN paths (***multiple network paths***). EX-1003, ¶94; EX-1004, 1:31-67, 2:21-4:14, 4:65-5:8, 5:23-32, 6:62-7:14, 8:28-34.



EX-1004, Figure 2 (annotated)

Petition, 23 (discussing claim 14[j])

Yegoshin

FIG. **3** is an overview of a routing and control system used with cell phone **9** according to an embodiment of the present invention. In this embodiment telephony switch **31** is linked to a CTI processor **49** via a CTI connection **51**. CTI processor **49** provides intelligent routing capability to switch **31** by virtue of added software known as T-server software to the inventor. A separate digital link **47** links CTI processor **49** to IP switch **35** to provide control from within IP network **27**. Other equipment may be assumed to be present within network **25**, such as an interactive voice response unit (IVR) and/or a statistical server.

EX-1004 (Yegoshin), 7:26-37

Dr. Jensen

Figure 2). As *generally* pointed out in annotated Figure 2 below and also recognized by Patent Owner (POR, 5[7), "PSTN switch 31" is included in or associated with the "PSTN-connected routing server" along with "T-server software." EX-1004, 3:35-4:34, 7:26-37, 9:1-12.

EX-1051 (2nd Jensen Decl.), [28]

Yegoshin Describes a "Remote Server"

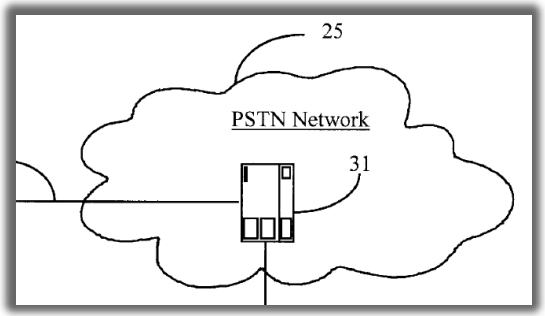
Petitioner's Reply, 12

Dr. Jensen

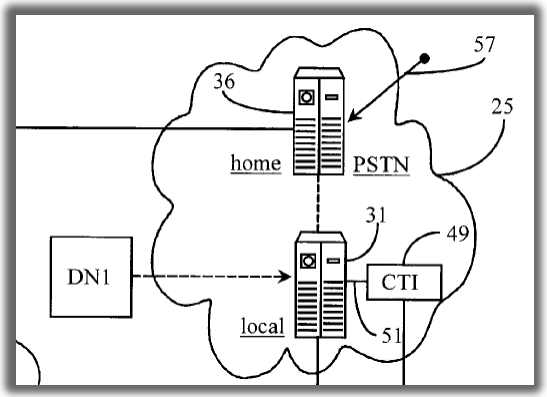
29. Patent Owner's overly strict interpretation of the Petition's mapping is inconsistent with the *schematic* illustration of Yegoshin's Figure 2. Figure 2 is "an *overview* of network connection" and does not disclose all of the elements constituting the "PSTN network 25." As acknowledged by Patent Owner, Yegoshin's "PSTN network 25" includes more than the "PSTN switch 31," such as "CTI processor 49" and another "PSTN switch 36," to name a few. EX-1004, 7:26-8:34. A POSITA would have understood that the PSTN switch 31 does not operate alone in the PSTN network 25 but works with other components to enable switching in the PSTN network 25 and thus constitutes at least a part of a server system in the PSTN network (e.g., "PSTN-connected routing server").

EX-1051 (2nd Jensen Decl.), [29]

Yegoshin's "PSTN Network 25"



EX-1004 (Yegoshin), Figure 2



EX-1004 (Yegoshin), Figure 3

FISH.

Issue 3

"Combin[ing] The Data Paths Into A Single Transmission Interface To One Or More Applications" (Claims 6-10, 17-21, and 26)

FISH.

The “Combine …” Limitations In Claims 6 and 17

EX-1001 (’946 Patent), Claims 6 and 17

Relevant Limitations (Claim 6)

a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

Note: Claim 17 recites similar limitations

FISH.

"Combining The Data Paths"

Petitioner's Reply, 14

Patent Owner

✓ Patent Owner argues the Yegoshin-Bernard combination does not teach the limitation because Yegoshin and Bernard do not describe that their devices utilize two networks simultaneously.

POR, 29-35

Petitioner relies on its discussion of limitation 1[i] (multiplexing) for the alleged disclosure of the "combining" limitation, Pet., 58, which fails for similar reasons as those discussed in Section II, *supra*. Ex-2019, ¶96. As Dr. Cooklev explains:

> Petitioner relies on Yegoshin's cellular network as the claimed "*first network path*," *and on Yegoshin's WLAN network as the claimed* "second network path." Pet., 55. Yegoshin, however, never combines its cellular and WLAN paths. Specifically, a given phone call in Yegoshin utilizes either cellular or WLAN, but never both. In

POR, 30-31 (citing EX-2019 (2nd Cooklev Decl.), [97]

applications, the "combining" limitation is allegedly met. Pet., 56. However, as Dr. Cooklev explains, packet routing has nothing to do with the claimed invention:

> The concept of combining two data paths into a single transmission interface to one or more applications is absent from Bernard, and Petitioner does not point to anything to the contrary. At a conceptual level, Bernard does not disclose the concept of combining two data paths such as cellular and Wi-Fi, nor does it disclose any use for such a combination, for example to increase the data rate by servicing a data request through two networks instead of one. *Contra* Ex-1001 ['946] 6:64-7:10, FIG. 9. That in Bernard, because of connection to an external cradle, a serial connection happens to be used, and therefore, the data that is transmitted at different times all happen to pass through the same connection, albeit never at the same time, has no relevance to the claimed invention.

POR, 34 (citing EX-2019 (2nd Cooklev Decl.), [100]

Patent Owner's Interpretation Is Incorrect

Petitioner's Reply, 9-10

> a second network path and wherein the processor on the mobile device is configured to combine the data paths into a single transmission interface to one or more applications on the mobile device.

EX-1001 ('946 Patent), Claim 6

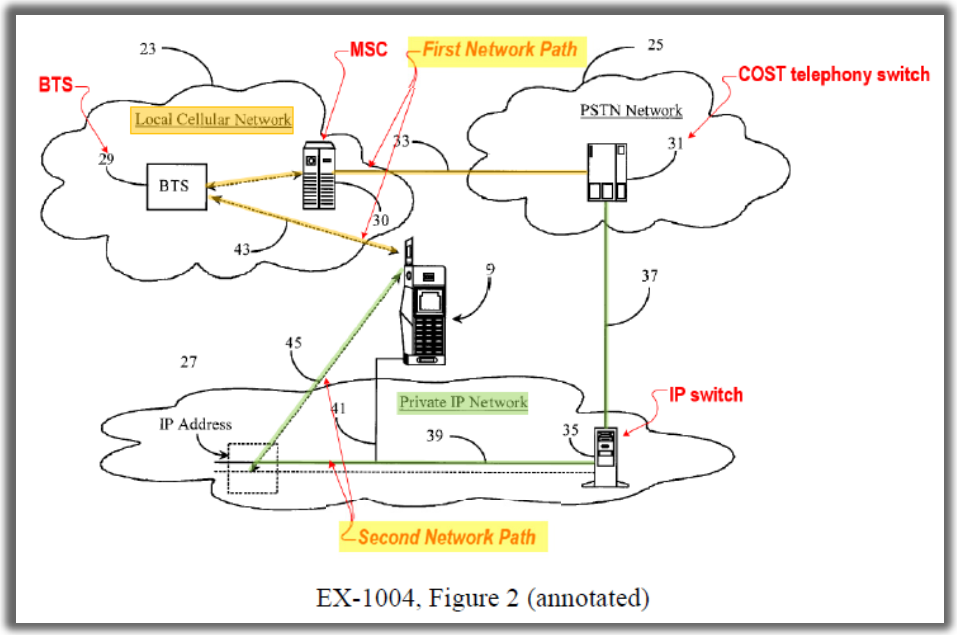
- ✓ "data ***paths***" ≠ data
- ✓ Simultaneous communication of "data" over different networks is not required in the claims.

EX-1051 (2nd Jensen Decl.), [36]

Yegoshin Combines Cellular and WLAN Data Paths

Petitioner's Reply, 14-16

Petition



EX-1004, Figure 2 (annotated)

Petition, 58; EX-1003 (1st Jensen Decl.), [189]

35." EX-1004, 5:66-7:25; *see* claims 4 and 15, 14[j]. Particularly, the phone communicates with "PSTN switch 31" (corresponding to a remote system) through *MSC and BTS (corresponding to remote systems)* via a cellular network (corresponding to the first network path). EX-1004, 5:66-7:25, Figure 2; *see also* 7:26-

EX-1003 (1st Jensen Decl.), [188]

189. Yegoshin's phone is also in communication with "IP switch 35" (thus corresponding to a different remote system) via WLAN (corresponding to the second network path). EX-1004, 6:52-7:25. Additionally, the phone is in communica-

EX-1003 (1st Jensen Decl.), [189]

FISH.

Yegoshin Combines Cellular and WLAN Data Paths

Petitioner's Reply, 14-15

Dr. Jensen

over different networks is not required. As discussed in the Original Declaration, Yegoshin includes multiple "data paths" from/to different networks (e.g., cellular and WLAN paths) that combine into a "single transmission interface" that is included in or defined by Yegoshin's phone. EX-1003, ¶190; EX-1004, Figure 2 (below). Specifically, because Yegoshin's cellular and WLAN paths combine into a single interface, an application on Yegoshin's phone (e.g., a call handling application) operates in the same way, regardless of whether data is received by the cellular path or the WLAN path. EX-1004, 3:14-15 ("calls coming from any source network may be routed to the user's device on the LAN"), 6:65-7:3, 7:15-25, 8:47-56.

EX-1051 (2nd Jensen Decl.), [36]

FISH.

Yegoshin Combines Cellular and WLAN Data Paths

Petitioner's Reply, 14-15

Yegoshin

The example described above of an instance of a cellular call **55** placed to cell phone **9** assumes that the user is taking all cellular calls in **IP** format while logged-on to IP network **27**. All such calls would then be routed via **PSTN 25** to IP network **27**. However, it may be that certain cellular calls will be exempt from IP delivery at the user's discretion. In this case, callers from known origination numbers will be routed to local cell network **23**, local to the visited IP network, and therefore may be received by the user of telephone **9** in normal cell-phone mode.

EX-1004 (Yegoshin), 8:47-56

Dr. Jensen

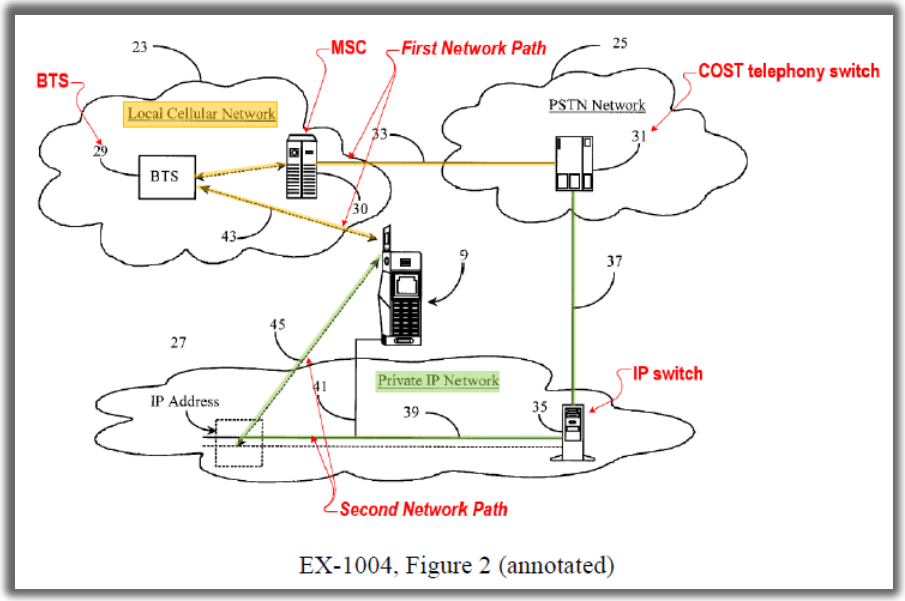
Notably, Yegoshin describes an example scenario that considers simultaneous use of cellular and WLAN communications ("multiple network paths"). For example, as noted in the Supplemental Declaration, Yegoshin describes that, while its phone is located at a place where IP calls are available, certain calls can be routed through the cellular network per a user preference. EX-1004, 8:47-56 ("However, it may be that certain cellular calls will be exempt from IP delivery at the user's discretion."); EX-1050, ¶¶34-36. With these teachings, a POSITA would have understood that, regardless of whether the phone has actually connected to either or both of the calls, Yegoshin's phone uses two different network paths or data paths that are combined into Yegoshin's phone that defines or includes a single interface to the call handling application at the phone.

EX-1051 (2nd Jensen Decl.), [36]

"One Or More Applications"

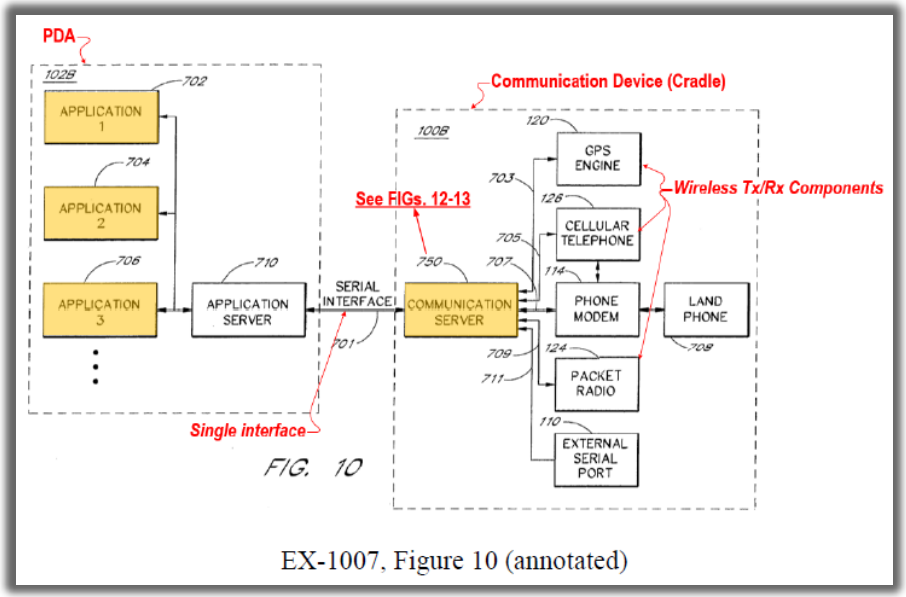
Petitioner's Reply, 15-16

Petition



EX-1004, Figure 2 (annotated)

Petition, 58



EX-1007, Figure 10 (annotated)

Petition, 36 (discussing 1[i], referred in discussion of 17[i])

- ✓ Bernard's serial interface combines multiple paths into a single interface to one or more applications 702, 704, 706.
- ✓ Combined "data paths" in Yegoshin-Bernard permit the signals from cellular and WLAN to be combined through Bernard's serial interface 701 ("single transmission interface")

EX-1051 (2nd Jensen Decl.), [38];
EX-1003 (1st Jensen Decl.), [190]

FISH.

Patent Owner's Interpretation Is Incorrect

Petitioner's Reply, 16-17

Patent Owner

✓ Patent Owner argues that Bernard fails to teach "combin[ing] the data paths into a single interface to one or more applications" because "the different data paths [which are already combined into a single transmission interface—Bernard's serial interface] are separated upon arrival at the mobile device." POR, 44-46.

POR, 35-37

Dr. Jensen

device." POR, 35-37. This argument presumes that "data" (not "data paths") must be delivered to a single application in the combined form. But the claims do not require "data paths" (much less "data") to be ***directly*** delivered or connected "to one or more applications on the mobile device." EX-1001, cls. 6, 17; EX-1053, 93:1-13

EX-1051 (2nd Jensen Decl.), [39]

FISH.

Patent Owner's Interpretation Is Incorrect

Petitioner's Reply, 17

Dr. Cooklev

Q. If we look at the language of Claim 6, that reads, "a single transmission interface to one or more applications on a mobile device," does that language require the single transmission interface to route data directly to one or more applications?

A. If -- again, I'm -- I'm not completely certain what do you mean by "directly." If -- if this -- to the extent this is an implementation detail about how is this single transmission interface implemented to one or more applications -- let's state one application. How is this trans -- single transmission interface to an application *implemented? Could be implemented in -- in --* there's not a single way that it could be implemented, so all of the ways in which a single transmission interface to one or more applications is implemented, they -- all of them will fall within the scope.

EX-1053, 92:21-93:13

45

Patent Owner's Erroneous Interpretation Is Still Covered By Yegoshin-Bernard

Petitioner's Reply, 17-18

Patent Owner

Even if Petitioner were to argue that Bernard combines data paths in the serial interface 701, it still fails. Even if Bernard's servicing of one application at a time, through one network at a time, were "combining" the data paths as claimed because the data being transmitted at different times happen to pass through a single serial connection, the different data paths are separated upon arrival at the mobile device, and thus Bernard does not "combine the data paths into a single interface to one or more applications." Specifically, Bernard

POR, 44-45
(citing EX-2019 (2nd Cooklev Decl.), [102])

Dr. Jensen

mented."). Even if Patent Owner's interpretation were correct, Bernard clearly describes an instance where data from multiple networks are combined through Bernard's serial interface 701 and then delivered to a single application. EX-1007, 17:66-18:1 ("For example, the first application 702 may utilize the GPS engine 120 and the packet radio 124[.]"). In this example, Patent Owner's hypothetical ("the different data paths are separated upon arrival at the mobile device") does not occur. My Original Declaration already provided how a POSITA would have been motivated to modify Yegoshin's system based on Bernard's teachings described above. EX-1003, ¶¶136-146.

EX-1051 (2nd Jensen Decl.), [41]

circuits **114**, **120**, **124**, **126**. For example, the first application **702** may utilize the GPS engine **120** and the packet radio **124**, while the second application **704** utilizes the phone modem **114**. In the second embodiment communication

EX-1007 (Bernard), 17:66-18:2

"Combin[ing]" Does Not Require Simultaneous Transmission of Data

Petitioner's Reply, 17

Dr. Cooklev

> THE WITNESS: Only that -- in the abstract, in a certain context, interleaving could be a type of combining.

EX-1053, 11:12-13

- ✓ "Interleaving" can be performed for data being communicated both simultaneously and sequentially.
- ✓ Similarly, "combining" can be performed without requiring data to be transferred simultaneously.

EX-1051 (2nd Jensen Decl.), [40]

47

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

Petitioner's Reply, 17-18

Dr. Jensen

41. Lastly, even if Patent Owner's assumption (that "combining" requires simultaneous data communications) were correct, a POSITA would have found it obvious to communicate simultaneously over Yegoshin's cellular and WLAN paths, as discussed above at §II.C. As discussed in my Original and Supplemental Declarations, the Yegoshin-Bernard combination also teaches simultaneous data communication through multiplexing. EX1003, ¶¶123-135; EX-1050, ¶¶34-41. In

EX-1051 (2nd Jensen Decl.), [41]

48

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

Petitioner's Reply, 17-18

Dr. Jensen

107. To the extent that multiple simultaneous communication paths over connections between the device and the server in this element requires communication using both the first and second wireless transmit and receive components (14[e]), the analysis of 14[j] applies here. In particular, Yegoshin describes that the phone is "capable of taking some calls via cellular path while receiving other calls via IP path." EX-1004, 5:55-57; As noted above, such calls are routed through the "IP telephony server" and/or "PSTN-connected routing server." EX-1004, 3:35-51. Therefore, Yegoshin's phone implements multiple simultaneous communication paths over connections between the phone and one or more servers. *See also* 14[j].

127. As noted above, Yegoshin-Johnston-Billström's phone is configured to communicate on the cellular network and the WLAN selectively or simultaneously (as taught by Yegoshin) using IP-enabled cellular and WLAN communication interfaces (as taught by Yegoshin and Billström). EX-1004, 5:33-65; EX-1006, 1:6:12, 1:54-60, 3:53-61. Based on my knowledge and experience in the field and my review of the prior art, it would have been obvious and predictable that, in order to receive calls on both cellular network and WLAN simultaneously or to switch between two networks, the phone includes multiplexing of the signals communicated on two network paths.

EX-1003 (1st Jensen Decl.), [107], [127]

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

Petitioner's Reply, 17-18

Dr. Jensen

¶¶97-98. Yegoshin's cellular and WLAN interfaces are separate, independent modes of communication and a POSITA would have found it obvious to use them simultaneously. In fact, a POSITA would have considered only two options for the simultaneity of Yegoshin's cellular and WLAN interfaces—simultaneous or non-simultaneous—and viewed the simultaneous option as an obvious option to consider, particularly in the combination with Billström where two IP addresses are maintained. Dr. Cooklev admitted that using two different networks simultane-

EX-1051 (2nd Jensen Decl.), [21]

Simultaneous Use of Two Networks Was Well-Known

Petitioner's Reply, 17-18

Example 1: Bernard

described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:57-65

Dr. Cooklev

Q. Okay. And so Bernard, therefore, teaches the concept of transmitting data, nonvoice data specifically, over a cellular system while using a separate telephony network to transmit voice data, correct?

A. Yeah. This -- this sentence says, "data to be transferred over the cellular system." And that's -- that was the digital information to be transferred over the cellular system and is using the phone modem 114 and the cell phone 126 for this while a user just talks over the -- over the land-based phone. That's what -- I think this is what this sentence says. But, again, it's -- it's -- it's a concept in -- in Bernard.

EX-1053, 64:2-15

Simultaneous Use of Two Networks Was Well-Known

Petitioner's Reply, 17-18

Example 2: Gillig

Referring now to FIG. 7, there is illustrated a flow chart for the process used by the CCTs **100** and **200** in FIGS. **2** and **3**, respectively, for simultaneously processing both a cellular telephone call and a cordless telephone call and, if desired, three-way linking both calls.

EX-1045 (Gillig), 6:36-7:16

52

Simultaneous Use of Two Networks Was Well-Known

Petitioner's Reply, 12-13

Dr. Jensen

22. As an example, I referred to three-way calling and explained how a POSITA would have found it obvious to employ three-way calling in Yegoshin. EX-1003, ¶98. Patent Owner's sole argument against the obviousness of three-way calling is to attack Gillig, which is the reference cited for corroboration. Patent Owner contends that the term "data" should be limited to "digital" data and Gillig is an analog system. POR, 53-55. But this misses the point of the obviousness argument advanced in my Original Declaration column 5, which contemplated adding three-way calling, not Gillig's analog calling. Even if "data" is limited to digital, the Yegoshin-Billström combination teaches digital data communication over both of the WLAN and cellular networks because both WLAN uses IP (which is digital) and Billström's GSM is digital, whether the communication is routed over the standard GSM communication or over the added packet data capability. With this, a POSITA would have employed three-way calling using these digital technologies, rather than turning back to Gillig's older, analog functionality. As acknowledged by Dr. Cooklev, it was well-known for calls to be simultaneously connected over two different networks. EX-1053, 64:2-15; EX-1045, 6:35-7:16 ("three-way linking" simultaneously connecting to cellular and cordless calls).

EX-1051 (2nd Jensen Decl.), [22]

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

Petitioner's Reply, 13

Dr. Jensen

paths, as discussed above at §II.C. As discussed in my Original and Supplemental Declarations, the Yegoshin-Bernard combination also teaches simultaneous data communication through multiplexing. EX1003, ¶¶123-135; EX-1050, ¶¶34-41. In particular, Yegoshin, as a whole, teaches simultaneous connections to cellular and WLAN. Similarly, Bernard describes that "multiple connections" over different communication circuits can be "established simultaneously." EX-1007, 26:56-65.

EX-1051 (2nd Jensen Decl.), [40]

FISH.

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

Petitioner's Reply, 13

Bernard

described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:57-65

FISH.

Patent Owner's Reading of "Combin[ing]" Is Still Covered by Yegoshin-Bernard

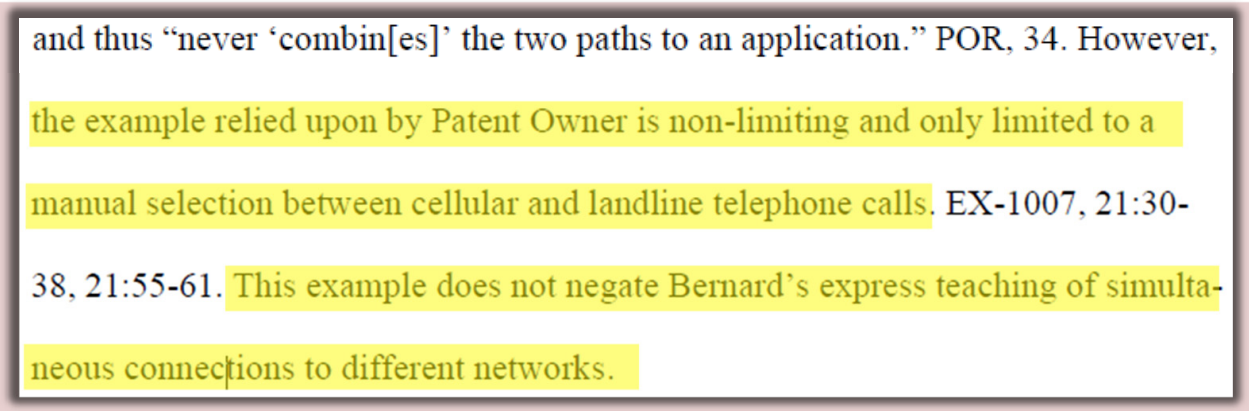
Petitioner's Reply, 13

Patent Owner

✓ Despite this express disclosure, Patent Owner relies on a particular example as support that Bernard's device uses "only one of the landline or cellular networks" and thus "never 'combin[es]' the two paths to an application."

POR, 34-35
(citing EX-2019 (2nd Cooklev Decl.), [100]-[103])

Dr. Jensen



and thus "never 'combin[es]' the two paths to an application." POR, 34. However, the example relied upon by Patent Owner is non-limiting and only limited to a manual selection between cellular and landline telephone calls. EX-1007, 21:30-38, 21:55-61. This example does not negate Bernard's express teaching of simultaneous connections to different networks.

EX-1051 (2nd Jensen Decl.), [41]

Issue 4

The “Multiplex” Limitations
(Claims 1-13)

FISH.

The "Multiplex" Limitations In Claim 1

EX-1001 ('946 Patent), Claim 1

Relevant Limitations (Claim 1)

wherein a first interface for transmission is created and wherein said first interface for transmission uses a plurality of interfaces for Internet Protocol communication on the mobile device which utilize the plurality of wireless transmit and receive units on the mobile device to enable a single interface comprised of multiplexed signals from the plurality of wireless transmit and receive units; and

✓ ***The claims do <u>not</u> require data being communicated "simultaneously."***

58

Sub-Issues

Petitioner's Reply, 18-30

1. **The '946 Patent Requires No More Than Known Use of "Multiplexing"**
   - ***A. The Record Clarified The Term "Multiplex"***
   - *B. The Intrinsic Record Supports Petitioner's Understanding of "Multiplex"*

2. Yegoshin, Alone or As Modified, Renders Obvious The "Multiplexed" Limitations
   - *A. Yegoshin Renders Obvious Both Simultaneous and Selective Cellular and WLAN Connections*
   - *B. The Yegoshin-Bernard Based Combination Renders Obvious "Multiplexed Signals"*
   - *C. Patent Owner's Arguments Do Not Impact Petitioner's Prior Art Analysis*
   - *D. Sufficient Motivations Existed To Modify Yegoshin-Johnston-Billström Based on Bernard To Satisfy The "Multiplex" Limitations*

3. The Parties' District Court Constructions Are Met

FISH.

The Record Clarified The Term "Multiplex"

Petitioner's Reply, 18

Dr. Jensen

42. As already discussed in my Original Declaration and Supplemental Declaration, multiplexing was widely known in packet switched networks long before the Critical Date, such as the IP-based cellular and WLAN systems utilized in the Yegoshin-Johnston-Billström and Yegoshin-Johnston-Billström-Bernard combinations. EX-1003, ¶¶126-135; EX-1050, ¶¶6-33. No intrinsic and extrinsic evidence indicates otherwise.

EX-1051 (2nd Jensen Decl.), [42]

The Record Clarified The Term "Multiplex"

Petitioner's Reply, 18-19

Example 1: EX-1011

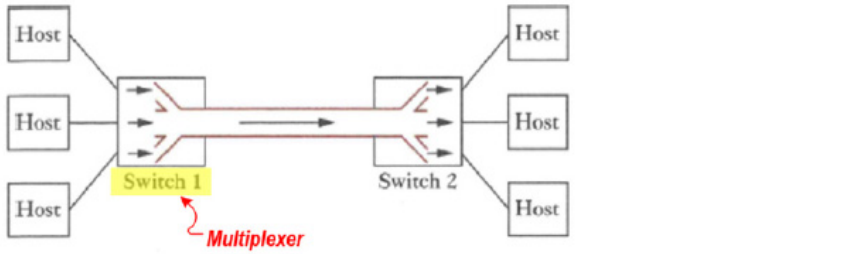


Figure 1.7 Multiplexing multiple logical flows over a single physical link.

Figure 1.7 of EX-1011

There are several different methods for multiplexing multiple flows onto one physical link. One method, which is commonly used in the telephone network, is *synchronous time-division multiplexing* (STDM). The idea of STDM is to divide time into equal-sized quanta, and in a round-robin fashion, give each flow a chance to send its data over the physical link. In other words, during time quantum 1, data from the first flow is transmitted; during time quantum 2, data from the second flow is transmitted; and so on. This process continues until all the flows have had a turn, at which time the first flow gets to go again, and the process repeats. Another common method is *frequency-division multiplexing* (FDM). The idea of FDM

EX-1011, 15, Figure 1.7 (cited in Petition, 34, 39, 42); EX-1003 (1st Jensen Decl.), [128], [134], [140]; EX-1051 (2nd Jensen Decl.), [44]

FISH.

The Record Clarified The Term "Multiplex"

Petitioner's Reply, 19

Example 2: EX-1013

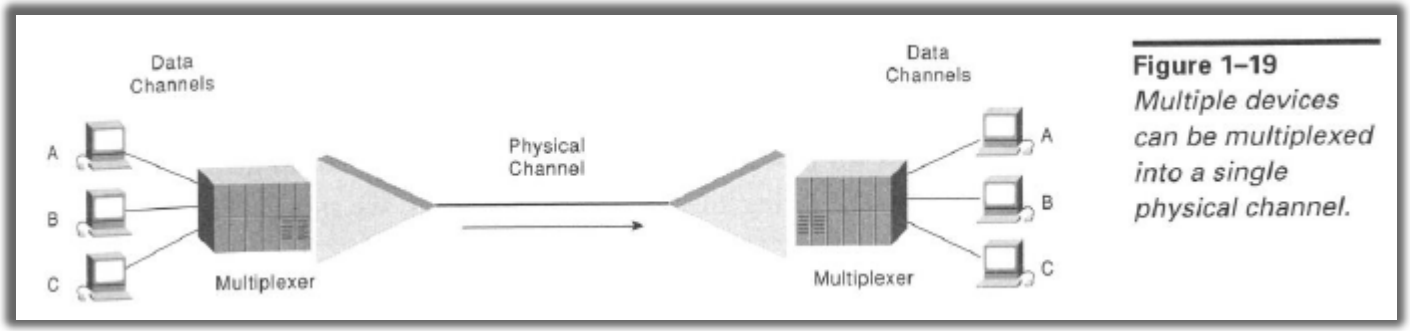


Figure 1–19
Multiple devices can be multiplexed into a single physical channel.

A multiplexer is a physical-layer device that combines multiple data streams into one or more output channels at the source. Multiplexers demultiplex the

In TDM, information from each data channel is allocated bandwidth based on preassigned time slots, regardless of whether there is data to transmit. In

EX-1013, 33, Figure 1-19 (cited in Petition, 25, 28, 34, 39, 50);
EX-1003 (1st Jensen Decl.), [98], [108], [128], [134], [158];
EX-1050 (Supp. Jensen Decl.), [9];
EX-1051 (2nd Jensen Decl.), [45]

FISH.

The Record Clarified The Term "Multiplex"

Petitioner's Reply, 19

Dr. Jensen

> ***there is data to transmit***."). Notably, the known use of "multiplexing" was accomplished via time division multiplexing or similar techniques, and does not distinguish signals by time scale. Particularly, as I testified, multiplexing, as described in terms of Petitioner's district court construction ("interleaving"), does not depend on "how many packets come through or how much time is elapsed before the next one comes." EX-2020 (Dr. Jensen's Dep. Tr.), 66:5-68:6; EX-1071, 1.

EX-1051 (2nd Jensen Decl.), [45]

63

Sub-Issues

Petitioner's Reply, 18-30

1. The '946 Patent Requires No More Than Known Use of "Multiplexing"
   - A. *The Record Clarified The Term "Multiplex"*
   - **B. *The Intrinsic Record Supports Petitioner's Understanding of "Multiplex"***

2. Yegoshin, Alone or As Modified, Renders Obvious The "Multiplexed" Limitations
   - A. *Yegoshin Teaches Both Simultaneous and Selective Cellular and WLAN Connections*
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   - D. *Sufficient Motivations Existed To Modify Yegoshin-Johnston-Billström Based on Bernard To Satisfy The "Multiplex" Limitations*

3. The Parties' District Court Constructions Are Met

FISH.

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 20

Dr. Jensen

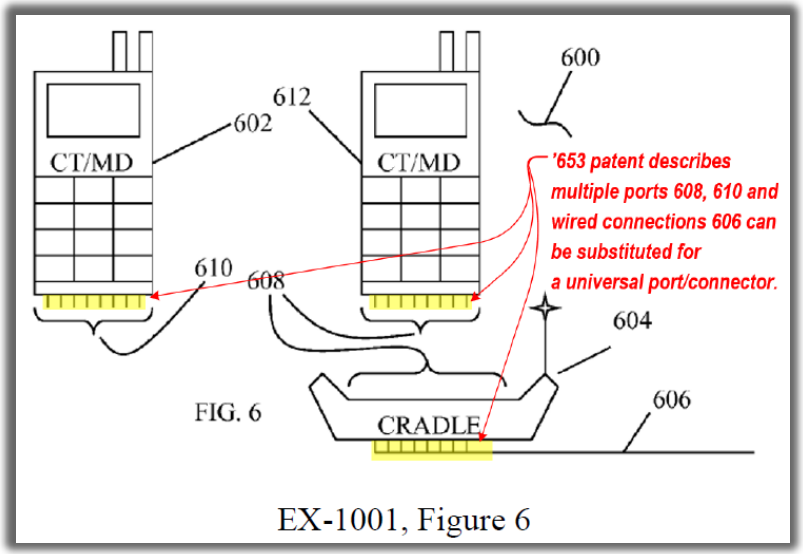
48. As noted in the Supplemental Declaration, the '946 patent offers no specific definition of the term "multiplex," much less one being different from the general understanding. EX-1050, ¶¶11-12; EX-1001, 3:47-48, 5:8-67, 8:32-37, 9:4-44, 10:18-21, 11:1-41. A POSITA would have understood that the '946 patent provides no suggestion for deviating from the well-known understanding of the term. EX-1001, 5:46-67, 11:1-30. For example, a cellular telephone/mobile device

EX-1051 (2nd Jensen Decl.), [48]

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 20-21

'946 Patent



EX-1001, Figure 6

FIG. **6** is an embodiment of the present invention showing a wired interface system **600** for wireless or non-wireless devices. In FIG. **6**, a wireless device, CT/MD **602** with I/O ports **610** and CT/MD **612** with the ability to interface through a cradle adapter **604** having both wireless and wired connections **606** interfacing with multiple input/output (I/O) ports **608** is shown. One, all, or some of the connections may be used simultaneously or sequentially for combining multiple data paths into a single path. Whether to combine all the paths into a single data channel or use separate data channels for simultaneous operations will be based on the needs of the application. Examples of inputs/outputs are, for example, standard telephone, coaxial cable, Ethernet, twisted pair, wireless, optical, and USB. In addition to the multiple I/O ports **610** shown on the CT/MD **602** and the ports **608** shown for connecting the CT/MD **612** to cradle adapter **604**, the present invention anticipates a universal port and a universal connector. By having the signal path selection done by user defined menu driven software and multiplexing the signals onto a universal input/output port as opposed to the multiple ports **608**, **610** or wired connections **606**, the desired signals are delivered to the universal port.

EX-1001 ('946 Patent), 5:46-67, Figure 6

FISH.

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 20

Claim 2 vs. Claim 3

2. The device of claim **1**, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections simultaneously transmitting and receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

EX-1001 ('946 Patent), Claim 2

3. The device of claim **1**, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections sequentially transmitting and receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

EX-1001 ('946 Patent), Claim 3

Dr. Jensen

nals into the single transmission connection." EX-1001, 12:25-37. Given the '946 patent's description that "the receiving signals" are multiplexed in both cases where the signals are received "simultaneously" (claim 2) or "sequentially" (claim 3), a POSITA would have understood that the '946 patent intended "multiplexing" to cover simultaneous and non-simultaneous (or sequential) communications.

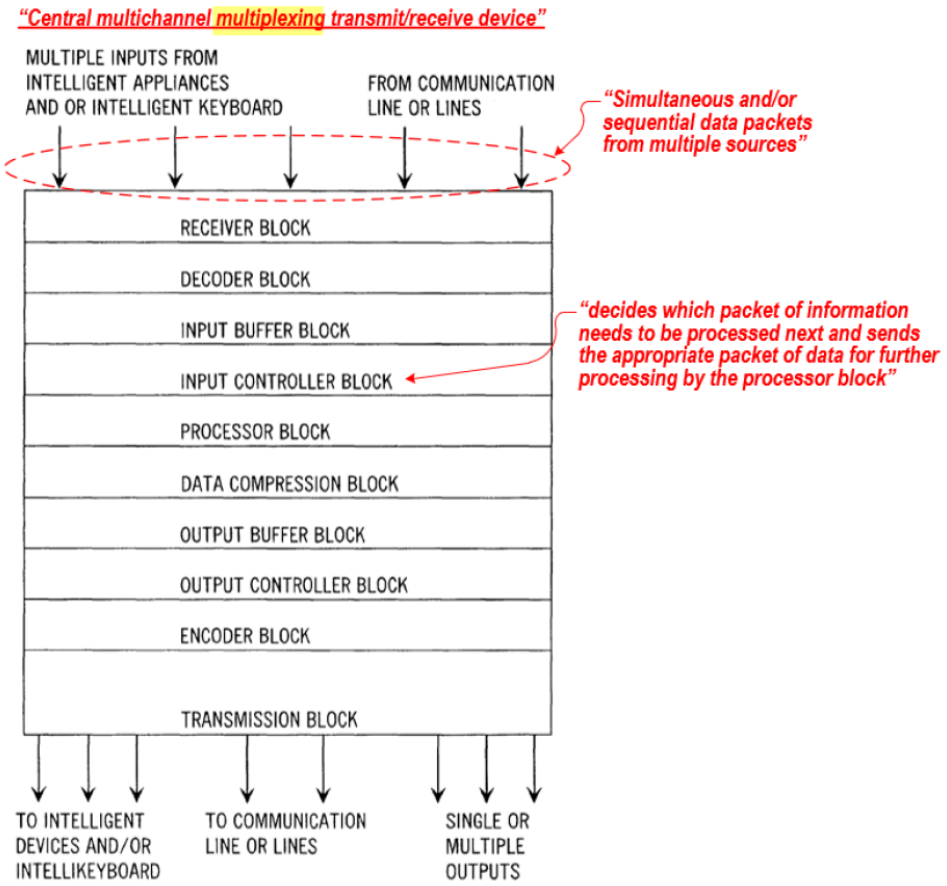
EX-1051 (2nd Jensen Decl.), [49]

67

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 21; EX-1051 (2nd Jensen Decl.), [50]-[51]

'946 Patent's Priority Application ("'789 Patent")



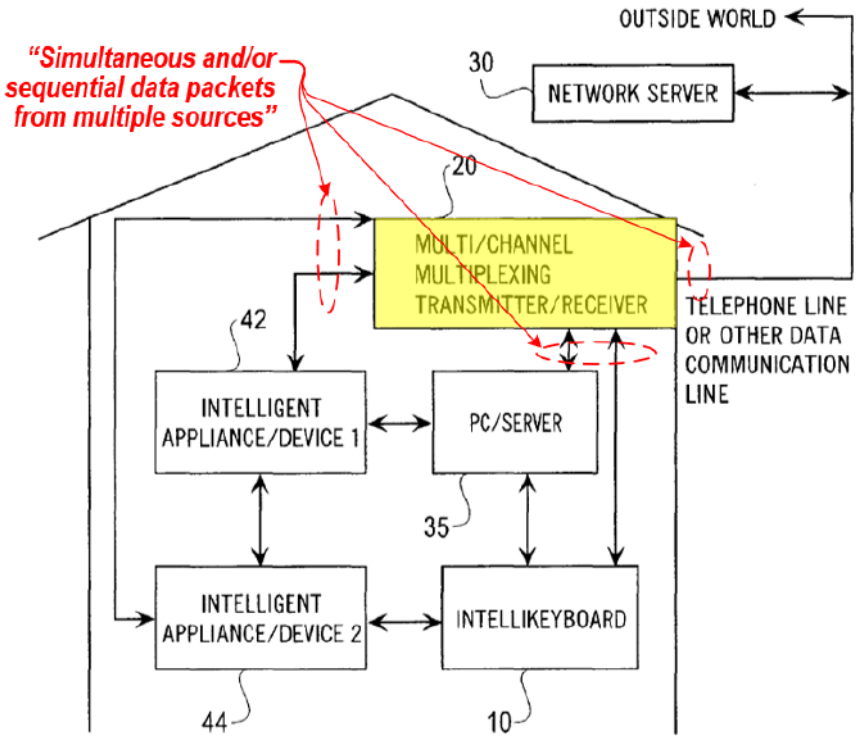
EX-1052, Figure 3

EX-1052 ('789 Patent), 11:30-12:2, Figure 3

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 21; EX-1051 (2nd Jensen Decl.), [50]-[51]

'946 Patent's Priority Application ("'789 Patent")



EX-1052, Figure 4

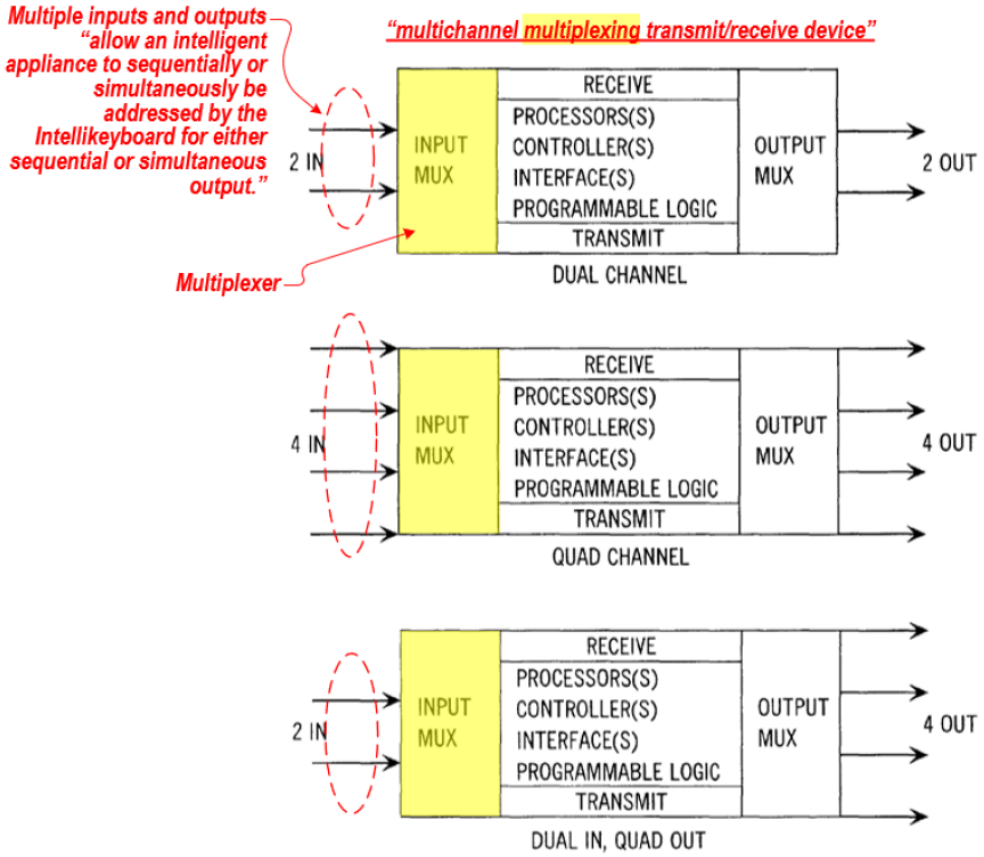
EX-1052 ('789 Patent), 11:30-12:20, Figure 4

FISH.

Intrinsic Evidence Supports Petitioner's Understanding

Petitioner's Reply, 21; EX-1051 (2nd Jensen Decl.), [52]

'946 Patent's Priority Application ("'789 Patent")



EX-1052, Figure 6

EX-1052 ('789 Patent), 13:51-31, 21:4-20, Figure 6

Sub-Issues

Petitioner's Reply, 18-30

1. The '946 Patent Requires No More Than Known Use of "Multiplexing"
   - *A. The Record Clarified The Term "Multiplex"*
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   - *D. Sufficient Motivations Existed To Modify Yegoshin-Johnston-Billström Based on Bernard To Satisfy The "Multiplex" Limitations*

3. The Parties' District Court Constructions Are Met

FISH.

Yegoshin Renders Obvious Both Simultaneous and Selective Cellular and WLAN Connections

Petitioner's Reply, 21-22

Yegoshin

In one embodiment of the present invention cell phone **9** is capable of taking some calls via cellular path while receiving other calls via IP path. In such a situation, integrating software is provided to coordinate activity between the two paths. For example, if engaged with an IP call, an incoming cell call would get a busy signal and so on, or it would be redirected to the IP call point, where it would then be presented as a call-waiting call, if that feature set is available and enabled. In a preferred embodiment, phone **9** may be switched from one network capability to another at the user's discretion.

The example described above of an instance of a cellular call **55** placed to cell phone **9** assumes that the user is taking all cellular calls in IP format while logged-on to IP network **27**. All such calls would then be routed via PSTN **25** to IP network **27**. However, it may be that certain cellular calls will be exempt from IP delivery at the user's discretion. In this case, callers from known origination numbers will be routed to local cell network **23**, local to the visited IP network, and therefore may be received by the user of telephone **9** in normal cell-phone mode.

EX-1001 ('946 Patent), 5:55-65, 8:47-56

Dr. Jensen

empt from IP delivery at the user's discretion."); EX-1050, ¶¶35-36. Although not express, it suggests the phone's capability of having calls routed through both cellular and IP networks at the same location. Therefore, this would have informed a POSITA to understand Yegoshin's disclosure (e.g., Yegoshin's phone "is capable of taking some calls via cellular path while receiving other calls via IP path." EX-1004, 5:55-57) as obviously suggesting the capability to have simultaneous calls over the different networks. Indeed, the simultaneous use of two different networks

EX-1051 (2nd Jensen Decl.), [55]

Both Simultaneous and Selective Cellular and WLAN Connections Would Have Been Obvious

Petitioner's Reply, 21-22

Dr. Jensen

over the different networks. Indeed, the simultaneous use of two different networks was well known, as evidenced by Gillig's discussion of three-way linking of calls over two different networks. EX-1003, ¶158 (citing EX-1045, 6:35-7:16 (describing three-way linking of two calls over different protocols such as cellular and cordless telephone calls)); EX-1003, ¶140 (citing EX-1007, 26:56-65 (describing simultaneous use of multiple different communication circuits such as cellular and land-line calls)).

EX-1051 (2nd Jensen Decl.), [55]

Gillig

Referring now to FIG. 7, there is illustrated a flow chart for the process used by the CCTs **100** and **200** in FIGS. **2** and **3**, respectively, for simultaneously processing both a cellular telephone call and a cordless telephone call and, if desired, three-way linking both calls.

EX-1045 (Gillig), 6:36-7:16

Bernard

described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:57-65

Both Simultaneous and Selective Cellular and WLAN Connections Would Have Been Obvious

Petitioner's Reply, 22

Dr. Jensen

1006, 1:6:12, 1:54-60, 3:53-61. Based on my knowledge and experience in the field and my review of the prior art, it would have been obvious and predictable that, in order to receive calls on both cellular network and WLAN simultaneously or to switch between two networks, the phone includes multiplexing of the signals communicated on two network paths.

EX-1003 (1st Jensen Decl.), [127]

FISH.

Sub-Issues

Petitioner's Reply, 18-30

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   - *B. The Intrinsic Record Supports Petitioner's Understanding of "Multiplex"*

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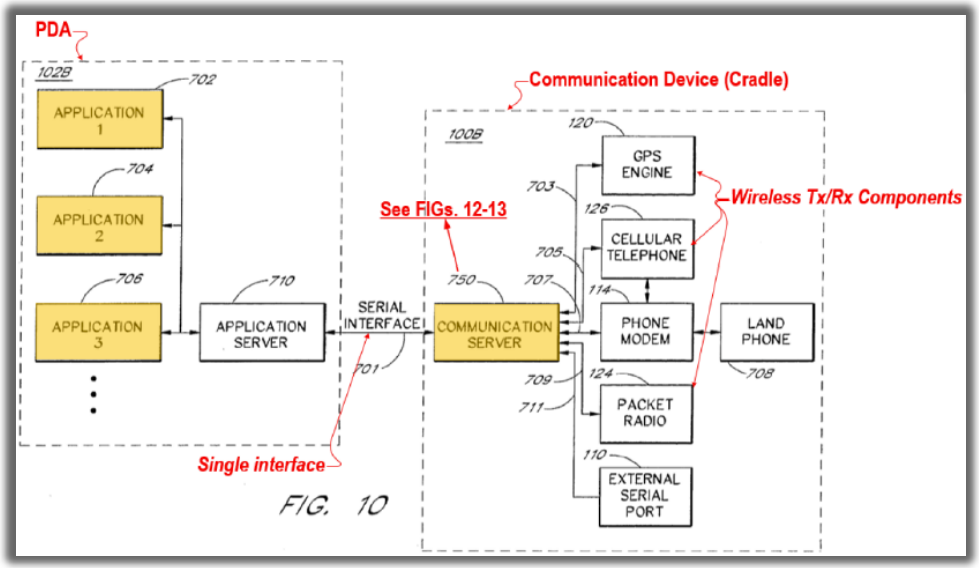
3. The Parties' District Court Constructions Are Met

FISH.

The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

Petitioner's Reply, 22-23

Bernard



EX-1007 (Bernard), Figure 10

- ✓ Multiple application programs 702, 704, 706 run on a PDA 102B, and data are routed to or from these multiple application programs through an application server 710.
- ✓ The application server 710 in the PDA 102B interacts with a communication server 750 in a communication device 100B through a single serial interface 701.
- ✓ The communication server 750 is coupled to different types of networks (e.g., GPS engine 120, cellular telephone 126, phone modem 114, and packet radio 124).

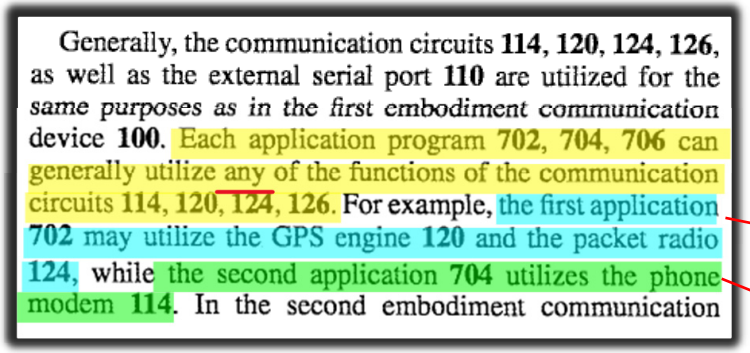
EX-1007 (Bernard), 17:26-60;
EX-1051 (2nd Jensen Decl.), [57]

FISH.

The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

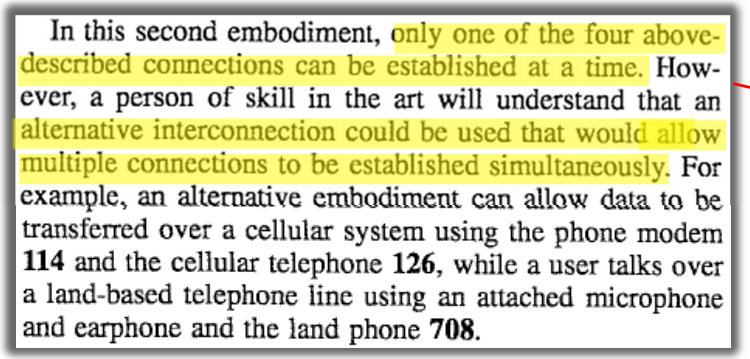
Petitioner's Reply, 22-23

Bernard



Generally, the communication circuits **114**, **120**, **124**, **126**, as well as the external serial port **110** are utilized for the *same purposes as in the first embodiment communication* device **100**. Each application program **702**, **704**, **706** can generally utilize any of the functions of the communication circuits **114**, **120**, **124**, **126**. For example, the first application **702** may utilize the GPS engine **120** and the packet radio **124**, while the second application **704** utilizes the phone modem **114**. In the second embodiment communication

EX-1007 (Bernard), 17:64-18:2



In this second embodiment, only one of the four above-described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:56-65

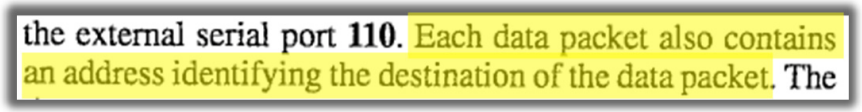
- ✓ Bernard contemplates various operations between the application programs and the communication circuits.
- ✓ For example, a single application can use multiple communication circuits.
- ✓ Different applications can each use different communication circuits.
- ✓ Bernard clearly describes that such "multiple connections" can be "established simultaneously" or "established at a time" (sequentially).

EX-1051 (2nd Jensen Decl.), [57]-[58]

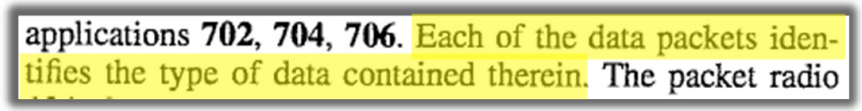
The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

Petitioner's Reply, 23-24

Bernard


the external serial port **110**. Each data packet also contains an address identifying the destination of the data packet. The

EX-1007 (Bernard), 18:19-20


applications **702, 704, 706**. Each of the data packets identifies the type of data contained therein. The packet radio

EX-1007 (Bernard), 18:39-40

- ✓ Each individual packet is uniquely identified by "address" or "type," and routed between appropriate application and communication circuit.
- ✓ The packets exchanged between the applications 702, 704, 706 and the communication circuits 114, 120, 124, 126 are all transferred through the single serial interface 701.

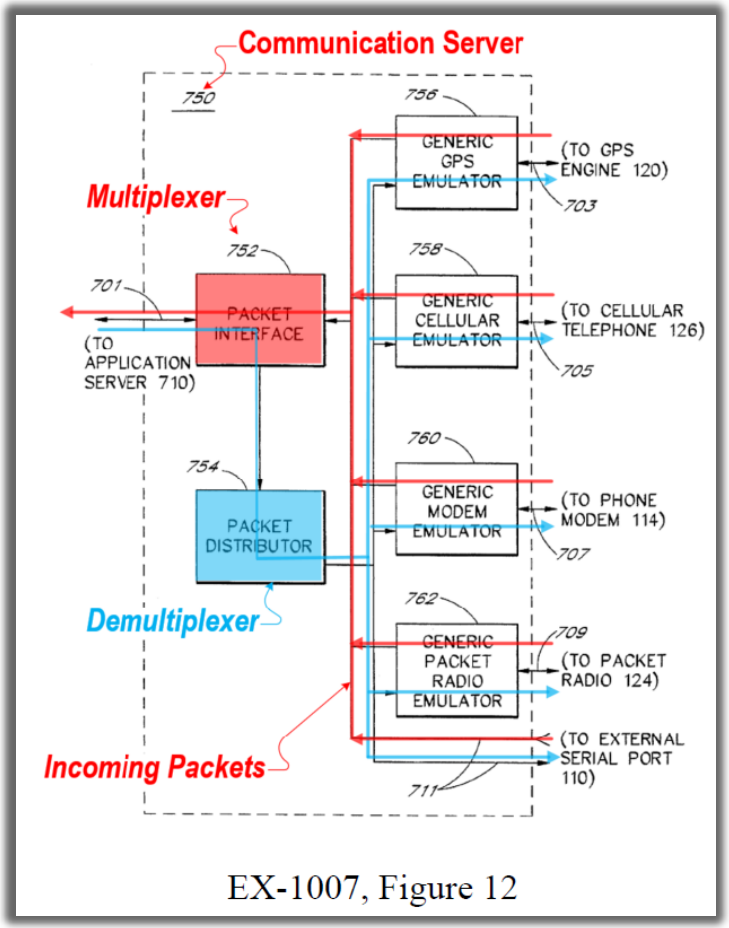
EX-1051 (2nd Jensen Decl.), [59]

78

The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

Petitioner's Reply, 24-25

Bernard



EX-1007, Figure 12

Dr. Jensen

¶¶26-33. Similarly, as illustrated in Figure 12 (below), Bernard's communication server 750 multiplexes data packets from multiple communication circuits and transfers them over the single serial interface 701, which are delivered to one or more appropriate applications. EX-1050, ¶¶26-33. Nowhere does Bernard require that such data packets be simultaneously received or transmitted through multiple emulators 756, 758, 760, 762 and communication circuits 114, 120, 124, 126 in order for the data packets to be multiplexed over the serial interface 701. EX-1050, ¶¶26-33.

EX-1051 (2nd Jensen Decl.), [60]

Bernard

In this second embodiment, only one of the four above-described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:56-65

The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

Petitioner's Reply, 23-24

Dr. Jensen

60. From these teachings, a POSITA would have readily understood and found obvious that the foregoing communications through the single serial interface 701 would employ "multiplexing" of the data packets, regardless of the timing of each data packet's arrival at the serial interface 701. EX-1050, ¶¶26-33. Consistent with the well-known understanding of multiplexing (§V.A.1), Bernard's application server 710 multiplexes data packets from one or more applications to one or multiple communication circuits over the single serial interface 701. EX-1050, ¶¶26-33. Similarly, as illustrated in Figure 12 (below), Bernard's communication server 750 multiplexes data packets from multiple communication circuits and transfers them over the single serial interface 701, which are delivered to one or more appropriate applications. EX-1050, ¶¶26-33. Nowhere does Bernard require that such data packets be simultaneously received or transmitted through multiple emulators 756, 758, 760, 762 and communication circuits 114, 120, 124, 126 in order for the data packets to be multiplexed over the serial interface 701. EX-1050, ¶¶26-33.

EX-1051 (2nd Jensen Decl.), [60]

The Yegoshin-Bernard Combination Renders Obvious The "Multiplex" Limitations

Petitioner's Reply, 22

Dr. Cooklev

So in Figure 10 of Bernard, at any one time one of these communication circuits we can assume will be sending something first to the communication server, and the communication server will send the data from one of these communication circuits bit by bit over the serial interface 701. So that's what's going to happen.

EX-1053, 80:4-10

- ✓ Dr. Cooklev's description of Bernard's Figure 10 in fact supports Petitioner's interpretation of "multiplexing."

Sub-Issues

Petitioner's Reply, 18-30

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3. The Parties' District Court Constructions Are Met

Patent Owner's Argument Has No Impact

Petitioner's Reply, 25-26

Patent Owner	Bernard & Dr. Jensen
✓ Patent Owner argues that simultaneous connection in Bernard is impossible because "Bernard's system determines which application a given data packet belongs to by the ***type*** of data contained in that application." POR, 16-17 (citing EX-1007, 18:36-51)	✓ Bernard's express disclosure: In this second embodiment, only one of the four above-described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**. EX-1007 (Bernard), 26:56-65 the external serial port **110**. Each data packet also contains an address identifying the destination of the data packet. The EX-1007 (Bernard), 18:19-20 ✓ "[T]herefore a POSITA would have understood and found obvious that data packets would be routed to different applications even if they are of the same type." EX-1051 (2nd Jensen Decl.), [64]

FISH.

Patent Owner's Argument Has No Impact

Petitioner's Reply, 25-26

Dr. Jensen

the same type. EX-1007, 18:19-20. Further, Bernard describes other scenarios where simultaneous connections are established, such as a single application requesting data of different types from different communication circuits. EX-1007, 17:66-18:1 ("For example, the first application 702 may utilize the GPS engine 120 and the packet radio 124[.]").

EX-1051 (2nd Jensen Decl.), [64]

Bernard

circuits **114**, **120**, **124**, **126**. For example, the first application **702** may utilize the GPS engine **120** and the packet radio **124**, while the second application **704** utilizes the phone modem **114**. In the second embodiment communication

EX-1007 (Bernard), 17:66-18:1

FISH.

Patent Owner's Argument Has No Impact

Petitioner's Reply, 26

Bernard

In this second embodiment, only one of the four above-described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:56-65

Patent Owner	Dr. Jensen
✓ Dr. Cooklev downplayed Bernard's express disclosure of simultaneous connections by speculating that the "alternative interconnection" would require a parallel interface instead of the serial interface 701 between Bernard's cradle and phone. POR, 19 (citing EX-2019 (2nd Cooklev Decl.), [81])	✓ No evidence supports Dr. Cooklev's conclusion. ✓ Dr. Cooklev's speculation either does not change the obviousness analysis or is not technically reasonable in the context of Bernard. ✓ ***See next slides*** EX-1051 (2nd Jensen Decl.), [65]

85

Patent Owner's Argument Has No Impact

Petitioner's Reply, 26

Dr. Jensen

analysis or is not technically reasonable in the context of Bernard. In particular, whether or not such a parallel bus would be needed depends on the capabilities of the radios and the communication interface. Around the Critical Date, the data handling capabilities of serial wireline communications notably exceeded the data rates supported by most wireless data connections, weakening Dr. Cooklev's arguments. If Dr. Cooklev is suggesting that a "parallel interface" means one interface

EX-1051 (2nd Jensen Decl.), [65]

74. For example, RS-485 is a serial standard released before 1999. EX-1058, 1. This standard accommodates data rates of up to 10 Mbit/second. *Id.* IEEE 802.11 WLAN (1997) supported up to 2 Mbit/second, and 802.11b WLAN (1999) supported up to 11 Mbit/second, although the rate that an application would see was lower, as some of this bandwidth was used for the radio networking packet headers. EX-1059, 1, 3. GPRS, a cellular standard for data over the GSM network, accommodated data rates of 56-114 kbit/second. EX-1060, 1. Therefore, a 10 Mbit/second RS-485 serial interface had capacity to multiplex multiple data streams from the radios available.

EX-1051 (2nd Jensen Decl.), [74]

Patent Owner's Argument Has No Impact

Petitioner's Reply, 26

Dr. Jensen

66. Additionally, Bernard describes "interconnection" as indicating the relationship between components within the cradle, not a connection (e.g., the serial interface) between the cradle and the phone. EX-1007, 2:55-58, 25:19-25. Dr. Cooklev confirmed this, and further recognized that Bernard does not expressly requires removing or replacing the serial interface 701 to achieve the "alternative interconnection." EX-1054, 75:7-20, 77:16-78:1, 78:23-79:4; EX-1053, 63:15-16 ("Bernard doesn't describe what this alternative interconnection could be."). With this disclosure, a POSITA would have understood that the "*alternative* interconnection" does not indicate an alternative to Bernard's serial interface. .

EX-1051 (2nd Jensen Decl.), [66]

Q. Dr. Cooklev, do you understand that the descriptions in the Bernard reference of the interconnections in Figure 14 relate to interconnections between components within the cradle as opposed to serial interface -- the connection made by serial interface 701?

A. I think components such as the cellular telephone, line 26, the phone modem, 114, these components are in the cradle, so, yes, these components are in the cradle.

EX-1054 (Cooklev Dep. Tr. in IPR2022-01248 for '653 Patent), 75:7-20

Does anything in the Bernard specification expressly state that serial interface 701 needs to be removed or replaced in order to achieve the alternative interconnections referenced in Column 26?

A. Well, expressly the words are not there.

EX-1054 (Cooklev Dep. Tr.), 77:16-78:1

A. Not quite, because Bernard isn't -- isn't at all clear about this, just the statement that an alternative interconnection could be used, but Bernard doesn't describe what this alternative interconnection could be. So for this reason I would not quite agree with you.

EX-1053 (Cooklev Dep. Tr.), 63:12-17

Q. Dr. Cooklev, when you referred to the four above-described connections in Column 26, that preceding sentence, would you agree with me that those four above-described connections references the connections that are contained within the communication device or cradle of Bernard?

A. I think, yes.

EX-1054 (Cooklev Dep. Tr.), 78:23-79:4

Patent Owner's Argument Has No Impact

Petitioner's Reply, 27

Patent Owner	Dr. Jensen
✓ Patent Owner erroneously characterizes that "Figure 14 relates to Bernard's PDA, not to the interface 750 that Petitioner seeks to import into Yegoshin." POR, 20 (citing Institution Decision, 37-38)	✓ This is clearly incorrect because Bernard's Figure 14 describes the interconnection between the phone modem 114, cellular telephone126, land phone 708 (through the phone jack 118 and digital audio amplifier 116), and an external microphone and earphone (through the microphone and earphone jack 132 and appropriate amplifiers 128 and 130) within the cradle 110B, not the PDA. EX-1051 (2nd Jensen Decl.), [67]; EX-1007 (Bernard), 25:26-29, 26:25-42, Figure 13

Sub-Issues

Petitioner's Reply, 18-30

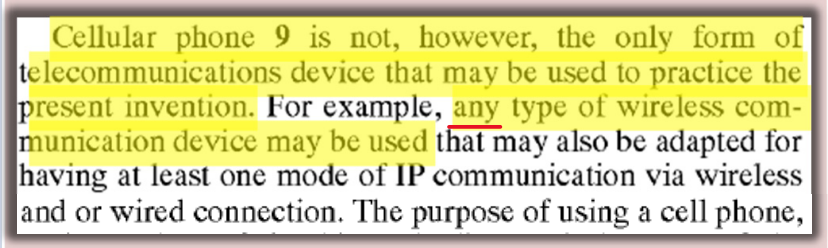
1. The '946 Patent Requires No More Than Known Use of "Multiplexing"
   - *A. The Record Clarified The Term "Multiplex"*
   - *B. The Intrinsic Record Supports Petitioner's Understanding of "Multiplex"*

2. Yegoshin, Alone or As Modified, Renders Obvious The "Multiplexed" Limitations
   - *A. Yegoshin Teaches Both Simultaneous and Selective Cellular and WLAN Connections*
   - *B. The Yegoshin-Bernard Based Combination Renders Obvious "Multiplexed Signals"*
   - *C. Patent Owner's Arguments Do Not Impact Petitioner's Prior Art Analysis*
   - ***D. Sufficient Motivations Existed To Modify Yegoshin-Johnston-Billström Based on Bernard To Satisfy The "Multiplex" Limitations***

3. The Parties' District Court Constructions Are Met

Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 27-28

Patent Owner	Dr. Jensen
✓ Attacks Petitioner's first scenario of the combination (Bernard's cradle being modified as an adapter plugged into Yegoshin's phone) by arguing that "Yegoshin's phone already includes cellular and WLAN interfaces" and thus "[t]here does not appear to be any obvious reason to use a cellular and WLAN network through a cradle with a serial data bottleneck." POR, 21-22	✓ Yegoshin's express disclosure:  Cellular phone 9 is not, however, the only form of telecommunications device that may be used to practice the present invention. For example, any type of wireless communication device may be used that may also be adapted for having at least one mode of IP communication via wireless and or wired connection. The purpose of using a cell phone, EX-1004 (Yegoshin), 5:4-9 ✓ A POSITA would have understood and found obvious that a PDA, such as that of Bernard, would be one of the "type of wireless communication device" that can replace Yegoshin's cellular phone. EX-1051 (2nd Jensen Decl.), [69]

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Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 27-28

Bernard

The present invention is in the field of portable communication devices for providing a computer with multiple integrated communication media, such as a phone modem, a cellular telephone, a packet radio and a Global Positioning System engine. In particular, the present invention relates to a portable multiple integrated communication device for a palm computer.

EX-1007 (Bernard), 1:11-14

The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of

EX-1007 (Bernard), 30:1-2

Dr. Jensen

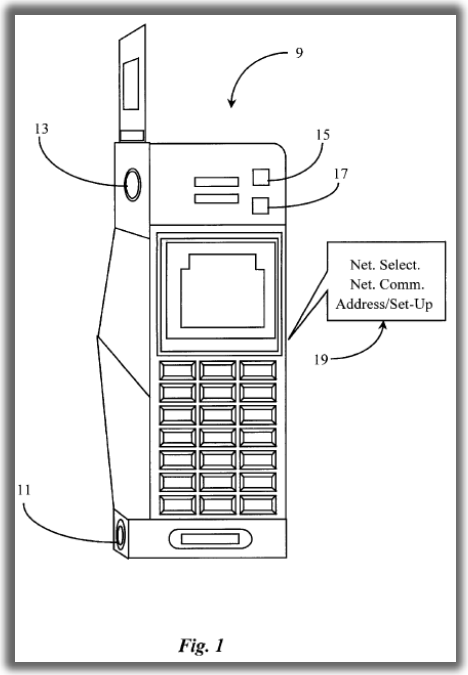
- ✓ Bernard's four different communication circuits (i.e., telephone modem, GPS, packet radio, and cellular telephone) are merely non-limiting examples of "multiple communication media."
- ✓ Thus, a POSITA would have understood and found obvious that other types of networks (e.g., WLAN, or cellular networks having different protocols (e.g., GSM, CDMA)) would be similarly implemented using Bernard's technique.

EX-1051 (2nd Jensen Decl.), [70]

Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 28

Yegoshin



In a preferred embodiment an adapter port **13** is also provided for communication in wireless mode on a wireless IP network having different protocols than the currently available cellular/PCS networks (CCNs) of such types as PCM, GSM, CDMA etc. For example, a wireless network

EX-1004 (Yegoshin), 5:23-32, Figure 1

Dr. Jensen

- ✓ Where Yegoshin's phone has a particular cellular protocol (e.g., GSM), a POSITA would have understood and found obvious that, at a minimum, Yegoshin's adapter, as modified by Bernard's general teachings," would be configured for WLAN and/or cellular networks having a different protocol from that of Yegoshin's phone to thereby expand the capability of the phone.

EX-1051 (2nd Jensen Decl.), [70]

FISH.

Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 29

Patent Owner	Dr. Jensen
✓ Patent Owner also argues that the proposed first scenario combination would not be "mobile" "because Bernard's cradle is mean[t] to be connected to a landline." POR, 24	✓ As Dr. Cooklev agreed, a mobile device (like Yegoshin's phone) being connected to a separate stationary computing device (like Bernard's cradle) does not change the "mobile" nature of the device. EX-1051 (2nd Jensen Decl.), [71]

Dr. Cooklev

Q. Dr. Cooklev, my question was this: If a mobile device is connected to a separate stationary computing device for any purpose, does that cause the mobile device to change its nature and cease to become mobile? And for "any purpose," that could include charging, data transfer, or other.

A. And how is it connected to a stationary computing device?

Q. Via a cable.

A. Via a cable. Well, it -- it would be a mobile device still.

EX-1053, 47:15-21

Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 29

Patent Owner	Petitioner
✓ Patent Owner relies on an alleged disadvantage ("unnecessary and detrimental bottleneck") of a serial interface as a single reason against the modification to include Bernard's multiplexing features. POR, 25-28	✓ Simply raising a disadvantage does not obviate the Petition's obviousness analysis. The test for obviousness is whether a person having ordinary skill in the art would have been motivated to combine the "teachings" of the references to arrive at the claimed solution. *Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016). Even if a modification would have "simultaneous advantages and disadvantages," that would not make the modification nonobvious. *Id.*

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Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 29-30

Patent Owner	Dr. Jensen
✓ "[S]erial interfaces were used in the computer industry as connections to external devices or to peripherals" POR, 26-27	✓ This is immediately disproved by Bernard's own disclosure of using serial interfaces 703, 705, 707, 709, and 711 to connect the communication server 750 to multiple communication circuits 120, 126, 114, 124, 110 ***within*** the cradle 100B. EX-1051 (2nd Jensen Decl.), [73]

Dr. Cooklev

Q. Yes. And let me just give you the complete list. This is the question: Would you agree with me that the interfaces numbered 703, 705, 707, 709, and 711 in Bernard's Figure 10, those serial interfaces connecting the communication server are located within the cradle?

A. I think that's correct.

EX-1053, 47:15-21

Bernard

FIG. 4. The communication server **750** is coupled to the GPS engine **120** by a serial interface **703**. The communication server **750** is coupled to the cellular telephone **126** by a serial interface **705**. The communication server **750** is coupled to the phone modem **114** by a serial interface **707**. The communication server **750** is coupled to the packet radio **124** by a serial interface **709**. The communication server **750** is coupled to the external serial port **110** by a serial interface **711**. The phone modem **114** is also coupled to the land phone

EX-1007 (Bernard), 17:51-59

Sufficient Motivation Exists For Combining Yegoshin and Bernard

Petitioner's Reply, 29-30

Dr. Jensen

17:51-59, Figure 10; EX-1035, 47:15-21. Indeed, serial interfaces were well-known to be used for various internal and external connections as simple and cost-efficient connection solutions for a sufficient data transfer rate required for data communication or bandwidth before the Critical Date.

EX-1051 (2nd Jensen Decl.), [73]

74. For example, RS-485 is a serial standard released before 1999. EX-1058, 1. This standard accommodates data rates of up to 10 Mbit/second. *Id.* IEEE 802.11 WLAN (1997) supported up to 2 Mbit/second, and 802.11b WLAN (1999) supported up to 11 Mbit/second, although the rate that an application would see was lower, as some of this bandwidth was used for the radio networking packet headers. EX-1059, 1, 3. GPRS, a cellular standard for data over the GSM network, accommodated data rates of 56-114 kbit/second. EX-1060, 1. Therefore, a 10 Mbit/second RS-485 serial interface had capacity to multiplex multiple data streams from the radios available.

EX-1051 (2nd Jensen Decl.), [74]

Sub-Issues

Petitioner's Reply, 18-30

1. The '946 Patent Requires No More Than Known Use of "Multiplexing"
   - A. *The Record Clarified The Term "Multiplex"*
   - B. *The Intrinsic Record Supports Petitioner's Understanding of "Multiplex"*

2. Yegoshin, Alone or As Modified, Renders Obvious The "Multiplexed" Limitations
   - A. *Yegoshin Teaches Both Simultaneous and Selective Cellular and WLAN Connections*
   - B. *The Yegoshin-Bernard Based Combination Renders Obvious "Multiplexed Signals"*
   - C. *Patent Owner's Arguments Do Not Impact Petitioner's Prior Art Analysis*
   - D. *Sufficient Motivations Existed To Modify Yegoshin-Johnston-Billström Based on Bernard To Satisfy The "Multiplex" Limitations*

3. **The Parties' District Court Constructions Are Met**

FISH.

The Parties' District Court Constructions Are Met

EX-1051 (2nd Jensen Decl.), [46]

Patent Owner	Petitioner
✓ Petitioner did not address its district court construction.	✓ Regardless of either party's district court construction, the prior art reads on the claims in a manner that does not require construction.

insisting that no constructions were necessary. Pet., 2. In the parallel district court litigation, however, Petitioner contends that "multiplexing" means "to interleave or simultaneously transmit two or more messages on a single communications channel." Ex-2003, 37. Though the same claim construction standard applies in both proceedings, Petitioner does not argue that this construction should apply in this proceeding and does not otherwise address its district court construction, nor does Petitioner argue or demonstrate that its district court construction is met. If

POR, 10

"[C]laim terms need only be construed to the extent necessary to resolve the controversy." *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011)

The Parties' District Court Constructions Are Met

Petitioner's Reply, 19-20

Dr. Jensen

47. As discussed in the Supplemental Declaration, both parties' proposed district court claim constructions align with the well-known meaning of "multiplex" as discussed above (§V.A.1). EX-1050, ¶¶5-10; EX-2003, 40 (citing Ex. 49-52 for dictionary definitions of "multiplex," "multiplexing," "multiplexer," etc.).

EX-1051 (2nd Jensen Decl.), [47]

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The Parties' District Court Constructions Are Met

Petitioner's Reply, 19-20

The Parties' District Court Constructions

Defendants' Proposed Construction	SMT's Proposed Construction
Plain and ordinary meaning, which is "to interleave or simultaneously transmit two or more messages on a single communications channel." The preamble of claim 1 of the '075 patent is limiting.	To combine multiple signal streams or data streams into a single signal stream or data stream for transmission or further processing, or split a single signal stream or data stream into multiple signal streams or data streams for transmission or further processing.

EX-2003 (Defendants' Opening Claim Construction Brief (June 8, 2022)), 37

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The Parties' District Court Constructions Are Met

Petitioner's Reply, 19-20

District Court's Claim Construction Order

Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction	Court's Final Construction
#11: "multiplex" / "multiplexes" / "multiplexed" / "multiplexing" U.S. Patent No. 8,842,653, Claim 1-4, 27; U.S. Patent No. 9,019,946, Claim 1-4, 16, 27; U.S. Patent No. 9,084,291, Claim 7; U.S. Patent No. 9,191,083, Claims 5, 8, 12, 19; U.S. Patent No. 9,614,943, Claims 2, 11; U.S. Patent No. 9,319,075, Claim 1 Proposed by Plaintiff	To combine multiple signal streams or data streams into a single signal stream or data stream for transmission or further processing, or split a single signal stream or data stream into multiple signal streams or data streams for transmission or further processing	Plain and ordinary meaning, which is "to interleave or simultaneously transmit two or more messages on a single communications channel" The preamble of claim 1 of the '075 patent is limiting	Plain-and-ordinary meaning[1,2] [1] – Note not for the jury: The plain-and-ordinary meaning of this term does not include demultiplexing functionality. [2] – Note not for the jury: The plain-and-ordinary meaning of this term does not require outputting to physical communications channel(s) or to a single output, *e.g.*, 4:2 mux. The preamble of claim 1 of the '075 patent is limiting

EX-1099 (Claim Construction Order in Parallel Proceeding (6:21-cv-00701-ADA), 11

101

The Parties' District Court Constructions Are Met

Petitioner's Reply, 19-20;
EX-1051 (2nd Jensen Decl.), [47];
EX-1050 (Supplemental Jensen Decl.), [10]

Patent Owner's Exhibits

multiplexer (A) (supervisory control, data acquisition, and automatic control) A device that allows the interleaving of two or more signals to a single line or terminal. **(B) (supervisory control, data acquisition, and automatic control)** A device for selecting one of a number of inputs and switching its information to the output.
(SWG/PE/SUB) C37.1-1987, C37.100-1992

(2) (A) A device that allows the transmission of a number of different signals simultaneously over a single channel or transmission facility. *Synonym:* multiplexor. **(B)** A device capable of interleaving the events of two or more activities or of distributing the events of an interleaved sequence to their respective activities. *Contrast:* demultiplexer.
(C) 610.7-1995

multiplexing (1) (modulation systems) (data transmission) The combining of two or more signals into a single wave (the multiplex wave) from which the signals can be individually recovered.
(PE) 599-1985w

(2) The division of a transmission facility into two or more channels, either by splitting the frequency band transmitted by the channel into narrower bands, each of which is used to constitute a distinct channel (frequency division multiplexing) or by allotting this common channel to several different information channels one at a time (time-division multiplexing).
(SUB/PE) 999-1992w

EX-1061 (The Authoritative Dictionary of IEEE Standards Terms, 7th Ed., 2000)
(Copy of Ex. 49 cited in EX-2003 (Defendants' Opening Claim Construction Brief))

multiplexer (MUX) A device that allows several users to share a single resource (such as a communications circuit). It combines (or funnels) multiple input data streams into an aggregate stream for transport over a single communication channel. At the receiving end, another *multiplexer* separates the single data stream into its constituent parts and directs each on to its destination.

- A device that interleaves two or more signals on a single path.
- A device for selecting one of a number of signal sources and switching it to an output.

multiplexing The process of combining several signals from separate sources into a single signal suitable for delivery on a transmission system and subsequent recovery of the original signals at their respective destinations. The transmission facility is divided into two or more channels such that several independent signals may be transported essentially simultaneously. There are several methods of accomplishing the *multiplexing* task. For example,

EX-1062 (Hargrave's Communications Dictionary, IEEE Press, 2001)
(Copy of Ex. 50 cited in EX-2003 (Defendants' Opening Claim Construction Brief))

FISH.

The Parties' District Court Constructions Are Met

Petitioner's Reply, 20

Dr. Cooklev

> A. And in -- in some contexts, that data selector can be called a multiplexer.

EX-1053, 16:6-15

> THE WITNESS: Only that -- in the abstract, in a certain context, interleaving could be a type of combining.

EX-1053, 11:12-13; *see also* 9:17-21

Issue 5

Certain Dependent Claims
(Claims 2, 5, and 10)

FISH.

Claims 2 & 5

Petitioner's Reply, 30

'946 Patent's Claim 2

> **2**. The device of claim **1**, wherein a single transmission connection is further comprised of at least two or more wireless transmit and receive connections simultaneously transmitting and receiving using the plurality of antennas, and wherein the processor multiplexes the receiving signals into the single transmission connection.

Dr. Jensen

> 75. Patent Owner's sole argument is that "Yegoshin does not disclose 'simultaneously' receiving calls via cellular and WLAN." POR, 65. This argument has been addressed above (§V.B.1) and has no merit.

EX-1051 (2nd Jensen Decl.), [75]

Claim 10

Petitioner's Reply, 30-31

'946 Patent's Claim 10

10. The device of claim **9**, wherein multiple wireless transmit and receive units are presented to the application as a single connection interface such that the multiple transmission interfaces are virtualized into a single transmission interface.

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Claim 10

Petitioner's Reply, 30-31

Patent Owner simply refers to:

Institution Decision

> Patent Owner does not presently dispute Petitioner's contentions for claim 10. However, we find that, in addition to the multiplexing problem in claim 1, Petitioner's showing on claim 10 would ***not*** have been sufficient to establish a reasonable likelihood that Petitioner will prove this claim unpatentable.
>
> The claim is directed to presenting the components "to the application" as a single connection interface. Petitioner argues that the cellular and WLAN interfaces would virtualized into a single transmission interface "from the perspective of the phone," but does not explain how that relates to an "application," or even identify an application.[11]

Institution Decision in IPR2022-01248 (for '653 Patent), 33-34 (cited in POR, 66)

Claim 10

Petitioner's Reply, 30-31

Petition

As described in 1[i], Yegoshin-Johnston-Billström-Bernard's phone uses the IP-enabled cellular and WLAN interfaces (***multiple wireless transmit and receive units*** functioning as ***multiple transmission interfaces***) to transmit/receive signals on cellular and WLAN sequentially or simultaneously. EX-1003, ¶168. Further, the phone in the combination multiplexes the received signals into the single interface (as taught by Bernard) (***single connection/transmission interface***) connected/internal to the phone, which routes the signals to "appropriate *applications*" running on the phone as taught in Bernard. EX-1003, ¶168; EX-1007, 17:33-19:2, 19:37-21:54, 23:60-25:25.

Therefore, a POSITA would have understood or found it obvious that, from the perspective of the phone receiving the signals, the cellular and WLAN interfaces (***multiple transmission interfaces***) appear to be (thus is ***virtualized into a single transmission interface*** because the phone only receives the multiplexed signals via the single interface that connects the applications on the phone with the cellular and WLAN interfaces. EX-1003, ¶169; *see infra* 17[i].

Petition, 52-53

FISH.

Claim 10

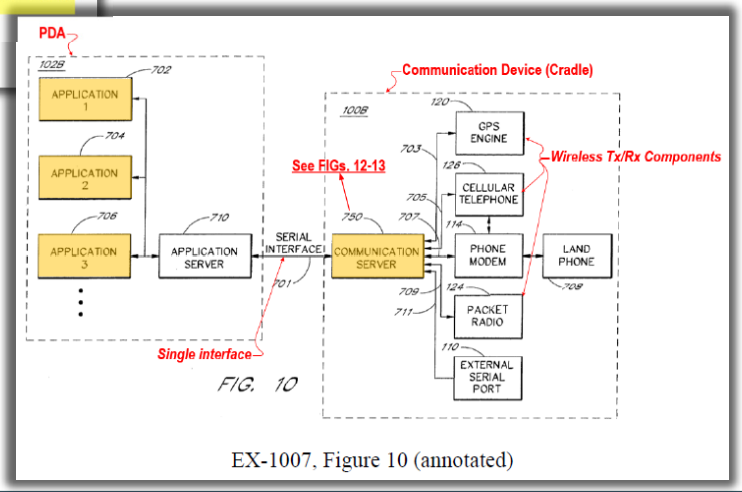
Petitioner's Reply, 30-31

Dr. Jensen

135, 138-139. Therefore, it would have been apparent to a POSITA that these network interfaces ("***multiple wireless transmit and receive units***") ***are presented to the application*** that runs on the phone, and from the perspective of the application running at the phone, these respective interfaces would be invisible and appear only as ***a single connection interface*** because the application can only see Bernard's single, serial interface 701 and receive the multiplexed signals via the same. EX-1050, ¶62. That is, from the perspective of the application running on the phone, the network interfaces ("***multiple transmission interfaces***") are ***virtualized into a single transmission interface*** in the form of Bernard's serial interface 701. EX-1050, ¶¶61-62.

EX-1051 (2nd Jensen Decl.), [76]

Bernard



EX-1007 (Bernard), Figure 10 (annotated in Petition, 34)

EX-1007, Figure 10 (annotated)

Issue 6

"Simultaneous Use of Multiple Network Paths"
(Claims 14-21 and 26)

FISH.

The Relevant Limitations In Claims 14 and 17

EX-1001 ('946 Patent), Claim 14

Relevant Limitations (14[j])

and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;

NOTE: Claim 17 recites the same limitations (17[j]).

The Claims Require Simultaneous Use, Not Simultaneous Data Transfer

Petitioner's Reply, 5-7

Patent Owner	Dr. Jensen
✓ Patent Owner's argument is erroneously premised on a requirement that *data be simultaneously transferred by two "transmit and receive units."*	✓ Patent Owner erroneously conflates the claimed "simultaneous ***use***" with "simultaneous ***data transfer***"
POR, 48-55	EX-1051 (2nd Jensen Decl.), [12]

Ex-1001, cls. 14[j], 17[j]. Petitioner attempts to satisfy this element with Yegoshin, contending that "Yegoshin's phone uses both cellular and WLAN connections (***simultaneous use of multiple network paths***)." Pet. 25, 58 ("*See* 14[j]"). Yegoshin, however, teaches that the mobile device may use the cellular and LAN connections ***consecutively***, not ***simultaneously***.

POR, 48

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The Claims Require Simultaneous Use, Not Simultaneous Data Transfer

Petitioner's Reply, 5-6

14[j] & 17[j]

and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;

EX-1001 ('946 Patent), Claims 14 and 17

Dr. Cooklev

If we focus on the claim language "simultaneous use of multiple network paths," does that claim language require that data should be transmitted on multiple paths at all times or does that language require something else?

MR. GRAVES: Objection. Form.

THE WITNESS: As long as all of the elements, all of the other elements are met, it doesn't require data to be transmitted via the multiple network paths at all times.

EX-1053 (Cooklev Dep. Tr.), 105:1-13

- ✓ This does not require the data to be transmitted simultaneously by the plurality of transmit and receive units.
- ✓ Dr. Cooklev agreed.

EX-1051 (2nd Jensen Decl.), [13]

The Claims Require Simultaneous Use, Not Simultaneous Data Transfer

Petitioner's Reply, 5-6

14[j] & 17[j]

and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;

EX-1001 ('946 Patent), Claims 14 and 17

Dr. Jensen

paths at all times."). Further, limitations 14[j] and 17[j] do ***not*** require that the device ***simultaneously*** connects to different networks (e.g., cellular and WLAN), but only requires "the simultaneous ***use*** of multiple network paths." Limitations 14[j] and 17[j] confirm this by reciting "at least ***one connection*** to a network server," which is clearly not limited to multiple established connections to multiple networks (e.g., cellular and WLAN).

EX-1051 (2nd Jensen Decl.), [13]

Yegoshin Covers Simultaneous "Use" of Network Paths

Petitioner's Reply, 6

Yegoshin

In one embodiment of the present invention cell phone 9 is capable of taking some calls via cellular path while receiving other calls via IP path. In such a situation, inte-

EX-1004 (Yegoshin), 5:55-57

while /wɪl, hwɪl/ *conj.* **1.** AT OR DURING SAME TIME at or during the same time that ○ *We can talk while I fix*

EX-1063 (Encarta World English Dictionary)

while (waɪl) *conj also* **whilst** (waɪlst). **1** (*subordinating*) at the same time that: *please light the fire while I'm cooking.* **2** (*subordinating*) all the time that: *I*

EX-1064 (Collins English Dictionary)

while[2] *conjunction* **1** during the time that something is happening: *They arrived while we*

EX-1064 (Longman Dictionary of American English)

Dr. Jensen

fer process. I disagree that Yegoshin's use of the term "while" would not render obvious a temporal understanding to a POSITA, in view of the ordinary understanding of the term "while." That means "at or during the same time" (EX-1063,

EX-1051 (2nd Jensen Decl.), [14]

Yegoshin Covers Simultaneous "Use" of Network Paths

Petitioner's Reply, 6

14[j] & 17[j]

and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;

EX-1001 ('946 Patent), Claims 14 and 17

Dr. Jensen

✓ This does ***not*** require simultaneous ***calls***.

EX-1051 (2nd Jensen Decl.), [15]

Yegoshin

In one embodiment of the present invention cell phone **9** is capable of taking some calls via cellular path while receiving other calls via IP path. In such a situation, integrating software is provided to coordinate activity between the two paths. For example, if engaged with an IP call, an incoming cell call would get a busy signal and so on, or it would be redirected to the IP call point, where it would then be presented as a call-waiting call, if that feature set is available and enabled. In a preferred embodiment, phone **9** may be switched from one network capability to another at the user's discretion.

EX-1004 (Yegoshin), 5:55-65

Dr. Jensen

redirected to the IP call point." EX-1004, 5:55-65. Because a cellular call is processed (e.g., redirected to the IP call point) while engaged with a WLAN call, both cellular and WLAN networks are in ***use simultaneously***, even if the phone does not establish cellular and WLAN calls simultaneously.

EX-1051 (2nd Jensen Decl.), [15]

Yegoshin Covers Simultaneous "Use" of Network Paths

Petitioner's Reply, 7

Yegoshin

In this exemplary embodiment, cell phone **9** may communicate via cellular network in normal fashion as illustrated via dotted double-arrow **43**. In addition to normal cellular communication, cell phone **9** may communicate in wireless mode on wireless IP LAN **38** as illustrated via dotted double-arrow **45**. In some embodiments wherein

EX-1004 (Yegoshin), 6:65-7:3

The example described above of an instance of a cellular call **55** placed to cell phone **9** assumes that the user is taking all cellular calls in IP format while logged-on to IP network **27**. All such calls would then be routed via PSTN **25** to IP network **27**. However, it may be that certain cellular calls will be exempt from IP delivery at the user's discretion. In this case, callers from known origination numbers will be routed to local cell network **23**, local to the visited IP network, and therefore may be received by the user of telephone **9** in normal cell-phone mode.

EX-1004 (Yegoshin), 8:47-56

Dr. Jensen

In this example, a cellular call would not be redirected to the IP call point as in the column 5 example, but, instead, would be delivered to the cellular interface despite another IP WLAN call, indicating simultaneous use of both networks.

EX-1051 (2nd Jensen Decl.), [16]

Patent Owner's Distinction Between "Network Path" and "Communication Path" Is Arbitrary and Unsupported

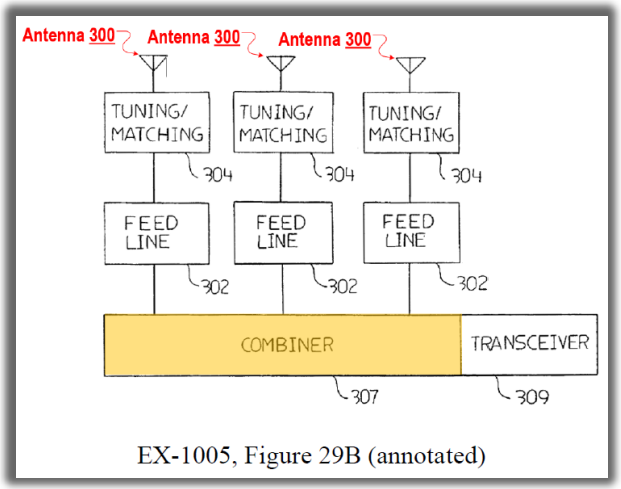
Petitioner's Reply, 7-8

'946 Patent's 14[h]

wherein the first wireless transmit and receive unit is enabled to communicate using one or more antennas simultaneously; and

EX-1001 ('946 Patent), Claim 14

Johnston



EX-1005, Figure 29B (annotated)

Cited in Petition 16

Petition

14[h]

Yegoshin's "first communication interface" for cellular corresponds to the ***first wireless transmit and receive unit***. EX-1003, ¶77; *see* 14[e].

As described in 14[c], the combination modifies the phone to include multiple antennas for cellular communication as taught by Johnston. EX-1003, ¶78; EX-1005, 6:5-15, 11:9-23, 12:6-46. These antennas "simultaneously receive or transmit two or three components of electromagnetic energy." EX-1005, 1:5-7. For example, Johnston's antennas are simultaneously used so that combiner 370 combines the signals received via these antennas. EX-1003, ¶78; EX-1005, 11:9-23, Figure 29B; EX-1028, 316-321.

Petition, 16; see also 23-25

Patent Owner's Distinction Between "Network Path" and "Communication Path" Is Arbitrary and Unsupported

Petitioner's Reply, 8

Patent Owner	Dr. Jensen
✓ Patent Owner contends that Johnston's multiple, simultaneous paths are *communication paths*, not *network paths*. POR, 50-52	✓ This distinction is arbitrary and unsupported. EX-1051 (2nd Jensen Decl.), [17]-[20]
	✓ ***See the next slides***.

multiple communication paths." ID, 23. Patent Owner respectfully submits that this misses an important distinction—claim 14 requires "simultaneous use of multiple ***network*** paths," not multiple "***communication*** paths." Petitioner cited ***only*** to

POR, 51

disclose simultaneous use of multiple network paths, it would be wrong. Petitioner never explains how multipath effects—interference caused by wireless signals reflecting off of obstructions in the environment—could be understood as establishing multiple ***network*** paths. In fact, they do not. Ex-2019, ¶132. As Dr.

POR, 51

not. A "network path" is typically understood as a path through a network or from one network to another, and, depending on the type of network, is typically traced via nodes. The path will go from one node to another, from the start of the path to

EX-2019 (2nd Jensen Decl.), [132]

Patent Owner's Distinction Between "Network Path" and "Communication Path" Is Arbitrary and Unsupported

Petitioner's Reply, 8

Claim 14

wherein the first wireless transmit and receive unit is enabled to communicate using one or more antennas simultaneously; and

wherein the mobile device maintains multiple IP addresses, wherein the first wireless unit is accessible on a first IP address and the second wireless transmit and receive unit is accessible on a second IP address and wherein the mobile device operates using a plurality of ports;

and wherein data transferred by the plurality of transmit and receive units is improved by the simultaneous use of multiple network paths including at least one connection to a networked server;

EX-1001 ('946 Patent), Claim 14

- ✓ "[T]he simultaneous use of multiple network paths" refers to communication by the "first wireless transmit and receive unit" "using one or more antennas simultaneously."
- ✓ Otherwise, "the simultaneous" would lack antecedent basis in the claim.

EX-1051 (2nd Jensen Decl.), [18]

FISH.

Patent Owner's Distinction Between "Network Path" and "Communication Path" Is Arbitrary and Unsupported

Petitioner's Reply, 8-9

Dr. Jensen

conclusory testimony. In particular, the term "network path" is only found in the claims of the '946 patent without any mention in the specification. While the '946 patent uses the term "communication path(s)" in several instances, the use of the term is at best inconsistent. EX-1001, 6:4-8, 6:26-29, 8:13-14, cls., 1, 15, 18, 20,

EX-1051 (2nd Jensen Decl.), [19]

'946 Patent's Inconsistent Use of "Communication Path"

fers of the data. Having multiple channels **912** enhances the data transfer rate compared to a single channel or communication path. Server C **910** oversees the allocation of data to the

EX-1001 ('946 Patent), 7:7-9

etc., through connection **708**. The multiple T/R units and antennas **710** allow multiple simultaneous communication paths over connection **704** between the CT/MD and the Server C such that the communication rate is increased.

EX-1001 ('946 Patent), 6:26-29

Adding additional antennas gives the CT/MD (by extension the same is true for the network switch box) enhanced capabilities to differentiate between various signals or to combine multiple paths into a single communication channel.

EX-1001 ('946 Patent), 4:8-9

612, to access a number of wired, optical or wireless communication paths through the ports **608**. The cradle adapter itself

EX-1001 ('946 Patent), 6:7-8

FIG. **12** is an embodiment of the present invention showing a Virtual Private Network (VPN) communication path **1200**.

EX-1001 ('946 Patent), 8:13-14

Patent Owner's Distinction Between "Network Path" and "Communication Path" Is Arbitrary and Unsupported

Petitioner's Reply, 7-8

Dr. Jensen

20. With this limited description in the '946 patent, a POSITA would have viewed the term "network path" as generically covering any "path" of a signal in a network, including multiple paths in the same network. Dr. Cooklev's own explanation aligns with this perspective. EX-2019, ¶131 ("A 'network path' is typically understood as a path through a network or from one network to another[.]").

EX-1051 (2nd Jensen Decl.), [20]

Dr. Cooklev

not. A "network path" is typically understood as a path through a network or from one network to another, and, depending on the type of network, is typically traced via nodes. The path will go from one node to another, from the start of the path to

EX-2019 (2nd Cooklev Decl.), [132]

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When A Device Has Multiple, Independent Network Paths, It Is Obvious To Use Them Simultaneously

Petitioner's Reply, 9-10

Dr. Jensen

¶¶97-98. Yegoshin's cellular and WLAN interfaces are separate, independent modes of communication and a POSITA would have found it obvious to use them simultaneously. In fact, a POSITA would have considered only two options for the simultaneity of Yegoshin's cellular and WLAN interfaces—simultaneous or non-simultaneous—and viewed the simultaneous option as an obvious option to consider, particularly in the combination with Billström where two IP addresses are maintained. Dr. Cooklev admitted that using two different networks simultane-

EX-1051 (2nd Jensen Decl.), [21]

When A Device Has Multiple, Independent Network Paths, It Is Obvious To Use Them Simultaneously

Petitioner's Reply, 10

✓ Simultaneous use of two networks was well-known.

Example 1: Bernard

described connections can be established at a time. However, a person of skill in the art will understand that an alternative interconnection could be used that would allow multiple connections to be established simultaneously. For example, an alternative embodiment can allow data to be transferred over a cellular system using the phone modem **114** and the cellular telephone **126**, while a user talks over a land-based telephone line using an attached microphone and earphone and the land phone **708**.

EX-1007 (Bernard), 26:57-65

Dr. Cooklev

Q. Okay. And so Bernard, therefore, teaches the concept of transmitting data, nonvoice data specifically, over a cellular system while using a separate telephony network to transmit voice data, correct?

A. Yeah. This -- this sentence says, "data to be transferred over the cellular system." And that's -- that was the digital information to be transferred over the cellular system and is using the phone modem 114 and the cell phone 126 for this while a user just talks over the -- over the land-based phone. That's what -- I think this is what this sentence says. But, again, it's -- it's -- it's a concept in -- in Bernard.

EX-1053 (Cooklev Dep. Tr. in IPR2022-01249 for '946 Patent), 64:2-15

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When A Device Has Multiple, Independent Network Paths, It Is Obvious To Use Them Simultaneously

Petitioner's Reply, 10

✓ Simultaneous use of two networks was well-known.

Example 2: Gillig

> Referring now to FIG. 7, there is illustrated a flow chart for the process used by the CCTs **100** and **200** in FIGS. **2** and **3**, respectively, for simultaneously processing both a cellular telephone call and a cordless telephone call and, if desired, three-way linking both calls.

EX-1045 (Gillig), 6:36-7:16

When A Device Has Multiple, Independent Network Paths, It Is Obvious To Use Them Simultaneously

Petitioner's Reply, 10

Dr. Jensen

calling is to attack Gillig, which is the reference cited for corroboration. Patent Owner contends that the term "data" should be limited to "digital" data and Gillig is an analog system. POR, 53-55. But this misses the point of the obviousness argument advanced in my Original Declaration column 5, which contemplated adding three-way calling, not Gillig's analog calling. Even if "data" is limited to digital, the Yegoshin-Billström combination teaches digital data communication over both of the WLAN and cellular networks because both WLAN uses IP (which is digital) and Billström's GSM is digital, whether the communication is routed over the standard GSM communication or over the added packet data capability. With

EX-1051 (2nd Jensen Decl.), [22]

23. Further, the term data should not exclude analog data. In the POR, Patent Owner defines the term "data" as being limited to digital data and precludes analog data from its definition. I disagree with this assertion, as the claims recite "data" rather than "digital data." EX-1001, cls. 1, 14, 17, 27. Indeed, the term "data" broadly refers to both digital and analog information.

EX-1051 (2nd Jensen Decl.), [23]

FISH.

Issue 7

"In Response To A Change In The Signal Strength And/Or Connectivity"

(Claims 27-30)

FISH.

Relevant Limitations In Claim 27

EX-1001 ('946 Patent), Claim 27

Relevant Limitations (27[h])

wherein the first wireless transmit and receive unit operates on the first network path to a remote server and the second wireless transmit and receive unit communicates to the remote server on the second network path in response to a change in the signal strength and/or connectivity of the first wireless communication unit or second wireless communication unit; and wherein video

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Yegoshin-Bernard Renders Obvious "In Response To A Change In The Signal Strength And/Or Connectivity"

Petitioner's Reply, 13-14

Example 1

Yegoshin

interrupted. It would be desirable then, to have a cell phone or equivalent device adaptable to a wireless or wired IP network at the location or site that a person may be visiting, and have incoming calls forwarded to the connected to the device. Such a telephone device and a system cooperating

EX-1004 (Yegoshin), 3:4-8

Dr. Jensen

2:53-3:16. In this example, as the person moves into the "IP LAN-connected site," Yegoshin's phone switches use of its cellular communication interface to its WLAN communication interface in response to a new or improved WLAN signal ("*in response to a change in the signal strength*" of WLAN) or a new connection to WLAN ("*connectivity*"). Further, to "select a type of network for communica-

EX-1051 (2nd Jensen Decl.), [31]

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Yegoshin-Bernard Renders Obvious "In Response To A Change In The Signal Strength And/Or Connectivity"

Petitioner's Reply, 13-14

Example 2

Yegoshin

A client software suite **19** enables a user to select a type of network for communication, to select a protocol for voice communication, and to set-up a temporary IP address on a network for the purpose of identifying and registering the device for normal operation on the network. Client software **19** may be provided by a plug-in smart card, or may be pre-loaded into a suitable built-in memory provided and adapted for the purpose. A series of selection buttons such as **15** and **17** allow a user to switch modes from cellular to IP communication, and perhaps to switch from differing types of networks using known protocols that are made available via client software **19**. One such protocol is the recently-developed H323 IP protocol allowing different hardware-based devices to communicate with each other over separate networks. There may be more than 2 selection buttons such as buttons **15** and **17** without departing from the spirit and scope of the present invention. Alternatively, the program may be given a series of preferences by the user, and then may negotiate the best possible connection accordingly. It may use such protocols as DHCP etc. to set up IP addresses and so forth. Selection of the network could be according to an order of preference, by availability.

EX-1004 (Yegoshin), 3:4-8

Dr. Jensen

to WLAN ("***connectivity***"). Further, to "select a type of network for communication," Yegoshin's phone "negotiate[s] the ***best possible connection***" among "a series of preferences by the user," which would have led a POSITA to find it obvious to consider the ***change in the signal strength*** as one possible way to identify the "best possible connection." EX-1004, 5:33-51; EX-1027, 3:43-51 (describing "automatically select[ing] and re-select[ing] which of the available radio systems to use" "based on any predetermined criterion" such as "the received signal strength at the radio telephone is greatest"). Yegoshin's phone also selects one of multiple networks "by availability" ("***connectivity***"). EX-1004, 5:53-54.

EX-1051 (2nd Jensen Decl.), [31]

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Yegoshin-Bernard Renders Obvious "In Response To A Change In The Signal Strength And/Or Connectivity"

Petitioner's Reply, 13-14

Dr. Jensen

32. Patent Owner particularly characterizes Yegoshin's disclosure of user selection as "a static configuration" and thus would not satisfy the claim limitation. POR, 63. This argument suffers because even a user selection changes the device's capability of connecting to a network, and thus relates to "connectivity" of the phone's wireless communication interfaces.

EX-1051 (2nd Jensen Decl.), [32]

Yegoshin-Bernard Renders Obvious "In Response To A Change In The Signal Strength And/Or Connectivity"

Petitioner's Reply, 14

Dr. Jensen

33. Patent Owner also disregarded the Petition's discussion of Bernard that is similar to the discussion of Yegoshin. POR, 64. As discussed in the Original Declaration, Bernard explicitly teaches operating its PDA (corresponding to Yegoshin's phone) (e.g., "setting a channel for transmission or reception") based on "determining the current signal strength" of respective networks ("*in response to a change in the signal strength*"), thereby indicating use of "signal strength" to select the best connection in the combination with Yegoshin. EX-1003, ¶251 (citing EX-1007, 21:55-22:4, 22:30-42, 22:56-23:4, 23:18-45).

EX-1051 (2nd Jensen Decl.), [33]

Bernard

selected. The telephone server **730** provides various functions to the applications **702,704,706**, such as allowing for the selection of a type of telephone interface for subsequent operations, dialing a telephone number, answering a call, terminating a phone connection, determining the current signal strength, redialing the last dialed number, setting the

EX-1007, 21:59-64

FISH.