

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CISCO SYSTEMS INC.,

Petitioner

IPR2023-00822

U.S. Patent No. 9,883,047

**DECLARATION OF HENRY HOUE, PH.D.,
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION
FOR *INTER PARTES* REVIEW**

TABLE OF CONTENTS

I.	INTRODUCTION	3
II.	QUALIFICATIONS AND PROFESSIONAL EXPERIENCE	5
III.	LEVEL OF ORDINARY SKILL IN THE ART	10
IV.	RELEVANT LEGAL STANDARDS	11
V.	BACKGROUND	12
A.	Identity and Access Management	12
B.	Application Programing Interfaces (APIs).....	13
VI.	OVERVIEW OF THE '047 PATENT	15
VII.	CLAIM CONSTRUCTION	18
VIII.	IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE....	18
IX.	RALEIGH RENDERS OBVIOUS CLAIMS 1 AND 4-7	19
A.	Summary of Raleigh.....	19
B.	Reasons to Combine Raleigh's Teachings.....	24
C.	Detailed Analysis of Claims.....	27
1.	Claim 1	27
2.	Claim 4.....	62
3.	Claim 5	67
4.	Claim 6.....	75
5.	Claim 7	80
X.	CONCLUSION.....	83

I, Henry Houh, Ph.D., do hereby declare as follows:

I. INTRODUCTION

1. I am making this declaration at the request of Cisco Systems, Inc. in the matter of the *Inter Partes* Review of U.S. Patent No. 9,883,047 (“the ’047 patent”) to Hunt et al.

2. I am being compensated for my work in this matter at my standard hourly rate. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this proceeding. My compensation is not contingent on the outcome of this matter or the specifics of my testimony.

3. I have been asked to provide my opinions regarding whether the subject matter of claims 1 and 4-7 (“the Challenged Claims”) of the ’047 patent would have been obvious to a person having ordinary skill in the art (“POSITA”) at the time of the alleged invention, in light of the prior art. It is my opinion that the Challenged Claims would have been obvious to a POSITA.

4. In the preparation of this declaration, I have studied:

- a. the ’047 patent, Ex.1001.
- b. the prosecution history of the ’047 patent (“’047 File History”), Ex.1002.
- c. U.S. Pat. Appl. Pub. No. 2013/0132854 to Raleigh et al. (“Raleigh”), Ex.1005.

5. In forming the opinions expressed below, I have considered: the documents listed above; the relevant legal standards, including the standard for obviousness; and my own knowledge and experience based upon my work in the field of network communications and security as described below, as well as portions of the following additional materials:

- a. U.S. Pat. No. 7,593,980 to Marascio et al. (“Marascio”), Ex.1006.
- b. U.S. Pat. No. 7,496,054 to Taylor (“Taylor”), Ex.1007.
- c. Microsoft Press Computer Dictionary (3d ed. 1997) (“Microsoft”) Ex.1008.
- d. Newton’s Telecom Dictionary (18th ed. 2002) (“Newton”) Ex.1009.
- e. U.S. Pat. App. Pub. No. 2011/0126266 to Weatherston (“Weatherston”) Ex.1010.
- f. U.S. Pat. App. Pub. No. 2006/0048212 to Tsuruoka et al. (“Tsuruoka”) Ex.1011.
- g. U.S. Pat. App. Pub. No. 2007/0240202 to Sullivan et al. (“Sullivan”) Ex.1018.

6. Unless otherwise noted, all **emphasis** in any quoted material has been added. Claim terms are *italicized*.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

7. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Ex.1004. The following is a brief summary of my relevant qualifications and professional experience.

8. I received a Ph.D. in Electrical Engineering and Computer Science from the Massachusetts Institute of Technology (“MIT”) in 1998. Beforehand, I received a Master of Science degree in Electrical Engineering and Computer Science in 1991, a Bachelor of Science degree in Electrical Engineering and Computer Science in 1989, and a Bachelor of Science degree in Physics in 1990, all from MIT.

9. I am currently self-employed as an independent technical consultant. I am also president of a company that provides supplemental science, technology, engineering, and mathematics (“STEM”) education to children of all ages.

10. I first entered telecommunications in 1987 when I worked as a summer intern at AT&T Bell Laboratories as part of a five-year dual degree program at MIT. I continued to work at AT&T Bell Laboratories as part of this MIT program. While at MIT, I was a teaching assistant (“TA”) in the Electrical Engineering and Computer Science Department’s core Computer Architectures course. I first was a TA as a senior for a role typically reserved for graduate students. I later became head TA. The course covered various topics in computer

architectures. As a TA, I helped write homework assignments, lab assignments, and exams. I also taught in the recitation sections.

11. Later, as part of my doctoral research at MIT from 1991-1998, I was a research assistant in the Telemedia Network Systems (“TNS”) group at the Laboratory for Computer Science. The TNS group built a high-speed gigabit network and created applications that ran over the network. Example applications included ones for remote video capture, processing, and display of video on computer terminals. In addition to working on the design of core network components, designing and building the high-speed links, and designing and writing the device drivers for the interface cards, I also set up the group’s web server.

12. I also helped to build the web pages that initiated the above-mentioned video sessions via a web interface. Vice President Al Gore visited our group in 1996 and received a demonstration of—and remotely drove—a radio-controlled toy car with a wireless video camera mounted on it that was built by our group. This toy car device received commands transmitted over a network from a remote computer, and video data from the toy car was transmitted wirelessly then over a computer network back to the user controller. On occasion, we allowed users visiting our web site to drive the toy car from their remote computer while they watched the video on their computer. The video stream was encoded by TNS-

designed hardware, streamed over the TNS-designed network, and displayed using TNS-designed software.

13. I defended and submitted my Ph.D. thesis, titled “Designing Networks for Tomorrow’s Traffic,” in January 1998. As part of my thesis research, I analyzed local area and wide area flows to show a more efficient method for routing packets in a network, based on traffic patterns at the time.

14. From 1997 to 1999, I was a Senior Scientist and Engineer at NBX Corporation, a start-up that made business telephone systems for streaming packetized audio over data networks instead of using traditional telephone lines. NBX was later acquired by 3Com Corporation and the phone system is still used today by numerous businesses.

15. As part of my work at NBX, I designed the core audio reconstruction algorithms for the telephones, as well as the packet transmission algorithms. I also designed and validated the core packet transport protocol used by the phone system. The protocol was used for all signaling in the phone system, including for the setup of conference calls.

16. The NBX system also featured a computer interface for initiating phone calls, which could also initiate conference calls. The NBX system also supported the Telephony Application Programming Interface (“TAPI”) that allowed other computer programs to integrate with our system telephony features.

We obtained U.S. Patent No. 6,967,963, entitled “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data,” as part of this work.

17. From 1999-2004, I was employed by Empirix or its predecessor company, Teradyne. Empirix was a leader in test tools for telecommunications protocols and systems, providing functional testing tools as well as load testing tools. From 2000-2001, I conceived and built a test platform for testing Voice-over-IP (VoIP). The first application on this new test platform was a cloud emulator for simulating the effects of transmitting VoIP over a busy network.

18. In 2006, as part of my role at BBN Technologies, I helped found PodZinger Inc., now known as RAMP Inc. PodZinger utilized BBN’s speech recognition algorithms to search through the spoken words in audio and video segments. While I was Vice President of Operations and Technology, PodZinger followed its initial prototype with a full streaming audio and video search solution. I also created a social networking web site, which BBN sold to a venture-funded startup company. In the process of creating the web site, I designed and specified the authentication and authorization protocols.

19. I have been awarded several United States patents, and I have several patent applications pending including the following examples:

- U.S. Patent No. 7,975,296, “Automated security threat testing of web pages”;
- U.S. Patent No. 7,877,736, “Computer language interpretation and optimization for server testing”;
- U.S. Patent No. 7,801,910, “Method and apparatus for timed tagging of media content”;
- U.S. Patent 7,590,542, “Method of generating test scripts using a voice-capable markup language”;
- U.S. Patent No. 6,967,963, “Telecommunication method for ensuring on-time delivery of packets containing time-sensitive data”;
- U.S. Patent Application Publication No. 20070106685, “Method and apparatus for updating speech recognition databases and reindexing audio and video content using the same”;
- U.S. Patent Application Publication No. 20070106693, “Methods and apparatus for providing virtual media channels based on media search”;
- U.S. Patent Application Publication No. 20070106760, “Methods and apparatus for dynamic presentation of advertising, factual, and informational content using enhanced metadata in search-driven media applications”;

- U.S. Patent Application Publication No. 20070112837, “Method and apparatus for timed tagging of media content”;
- U.S. Patent Application Publication No. 20070118873, “Methods and apparatus for merging media content”; and
- U.S. Patent Application Publication No. 20090222442, “User-directed navigation of multimedia search results.”

III. LEVEL OF ORDINARY SKILL IN THE ART

20. I understand there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including (1) the levels of education and experience of persons working in the field at the time of the invention; (2) the sophistication of the technology; (3) the types of problems encountered in the field; and (4) the prior art solutions to those problems.

21. A Person of Ordinary Skill in The Art (“POSITA”) in October 2013 would have had a working knowledge of the telecommunications and networking art that is pertinent to the ’047 patent. A POSITA would have had a bachelor’s degree or graduate degree in computer science, computer engineering, or an equivalent, and two years of relevant experience in telecommunications and networking. Lack of professional experience can be remedied by additional education, and vice versa.

22. For purposes of this Declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my own experience and what a POSITA would have understood or known generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the relevant field as of the priority date of the '047 patent.

IV. RELEVANT LEGAL STANDARDS

23. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '047 patent, I am relying on certain basic legal principles that Cisco's counsel has explained to me.

24. I understand that prior art to the '047 patent includes patents and printed publications in the relevant art that predate the priority date of the '047 patent. For purposes of this Declaration, I am applying October 9, 2013, as the priority date of the '047 patent.

25. I have been informed by Cisco's counsel that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a POSITA. I have also been informed by Cisco's counsel that the obviousness analysis considers factual inquiries, including the level of ordinary skill in the art, the scope and content of

the prior art, and the differences between the prior art and the claimed subject matter.

26. I have been further informed by Cisco's counsel that there are several recognized rationales for combining references or modifying a reference to show obviousness. These rationales include: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art or to combine prior art teachings to arrive at the claimed invention.

V. BACKGROUND

A. Identity and Access Management

27. Service providers and retail distributors keep track of users who subscribe to their services for several reasons, including billing and authentication. When a user initially subscribes to a service, the service provider stores the user's credentials and service configuration information for the service in one or more

databases to provision the service for the user. *See* Tsuruoka, [0045], [0048]; Sullivan, [0035], [0041]. The credentials may include the user's username, password, telephone number, email address, device ID, or account ID. The service provider may use these credentials to authenticate the user whenever the user attempts to access the service. Weatherston, Abstract, [0022].

28. Service providers may also provide subscription options to allow a group of users, such as a family wireless service account or a group of company employees, to subscribe to a service. Weatherston, Abstract. For instance, a group service plan can be shared for some or all users on a wireless family plan with a single bill. Raleigh, [0819]. Although family plans typically have an administrator, such as a parent, all users on the group account can access the service. The service provider activating the service for the group account associates all users on the account with the subscribed service. As with individual subscriptions, a service provider uses the credentials (e.g., device ID, telephone number, account ID) of the users on the group account to authenticate each user for future access.

Weatherston, [0022].

B. Application Programming Interfaces (APIs)

29. It was common practice for network entities to use APIs to communicate and request information and resources from other network entities. Generally speaking, APIs allow two pieces of software to communicate with each

other. Many APIs define messaging protocols for different parties (e.g., service providers, retail distributors) to integrate their information and resources with other parties for a more seamless combination of services. Some APIs may be specific to a service provider or platform. Other APIs are not service provider-specific, but are more generally applicable to an industry, such as telecommunications services. For instance, a telephony-specific API, known as TAPI, was introduced in 1993. TAPI allowed computer applications to interact with the telephone system to, for example, place and route calls. *See, e.g.*, Newton, pp. 723-727, 195; Microsoft, p. 461. Microsoft Outlook used TAPI to dial a user's phone by clicking on a contact in the Microsoft Outlook user's contact list. The NBX100 telephone system that I worked on had released a system with TAPI integration prior to the time I left NBX in 1999. In order to allow these applications or software programs to communicate with other software, an interface is needed.

30. It was common to use APIs to interface between programming languages, computer operating systems, software libraries¹, and communications protocols. Marascio, 5:37-58; Taylor, 2:64-3:6. Computer applications coded in different languages use different APIs to interface with, for instance, a given computer operating system; for instance, the API interfacing Ruby with Apple's iOS is different than the API interfacing Python with iOS.

31. All of the features and functionality described in this section were well known in the early 2010s, and a POSITA would have been familiar with them.

VI. OVERVIEW OF THE '047 PATENT

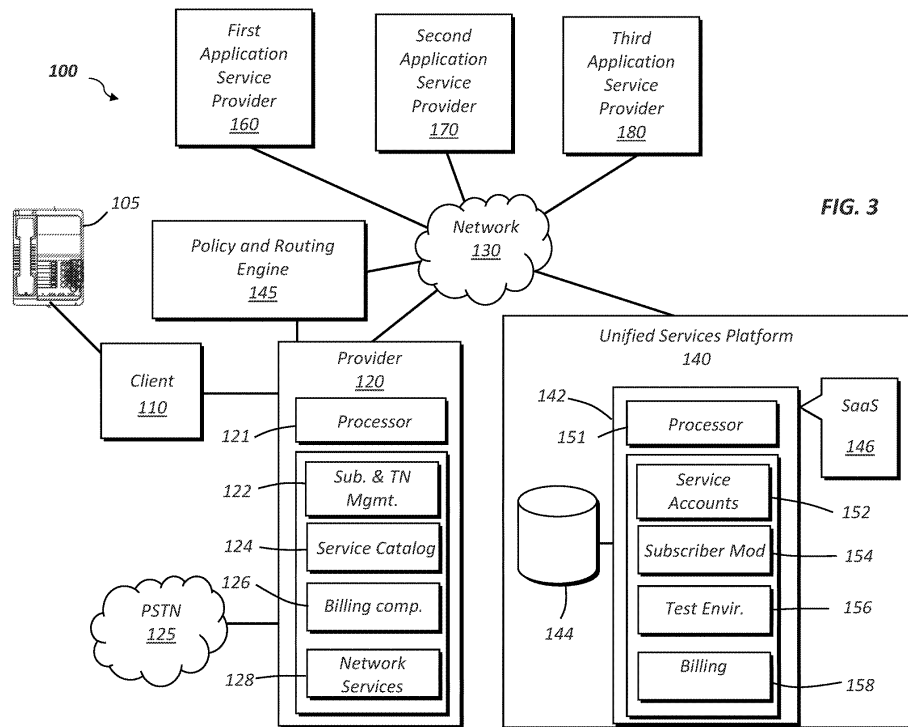
32. The '047 patent relates to methods for “provisioning a service for use with a group plan.” '047 patent, 3:47-67. The '047 patent explains that a group

¹ A software library is a collection of resources used by a computer program. A software library may include pre-written code and routines for performing certain software functions. For instance, “cmath” is a library in C++ that includes code for performing various math functions, such as calculating a maximum value. These resources in a software library can be used by different programs. *See, e.g.*, <https://cplusplus.com/reference/cmath/>; Taylor, 9:41-49; Marascio, 7:14-19, 29:13-24.

plan may be administered by a “group account representative” on behalf of the employees of a company, or for members of a family, for example. ’047 patent, 30:31-32. Referring to the company employees example, the ’047 explains that the group account representative may be an “enterprise administrator” who is “responsible for establishing a service for one or more subscribers.” ’047 patent, 30:29-31. The services that the group account representative may subscribe to include “video conferencing, text messaging, interactive texting, hosted private branch exchange (PBX) seats, voice mail systems, and other services and applications.” ’047 patent, 11:25-29.

33. The group plan service provisioning methods described by the ’047 patent are facilitated by a “unified services platform” that receives subscription requests from the group account administrator and manages service activation with third party application service providers. ’047 patent, 3:47-67. The unified services platform “integrat[es]” API interfaces from the application service providers and telecommunications provider (network provider) “with a unified services platform system API interface.” ’047 patent, 5:29-44, 51:60-63. In this way, the unified service platform aims to provide “a common interface for each third party service as well as a common interface for the telecommunication provider.” ’047 patent, 8:47-50.

34. Fig.3 below illustrates the unified services enabler platform 140 connected by internet 130 to client 110, telephone service provider 120, and application service providers 160, 170, and 180. '047 patent, Fig.1, 3:24-37, 4:7-29.



'047 patent, Fig.3

35. As demonstrated below, it was well-known in the prior art to use a unified platform system to request and provision third party services for a group plan. It was also well-known in the prior art to integrate APIs of third party service providers and network providers with a unified platform API.

VII. CLAIM CONSTRUCTION

36. It is my understanding that in order to properly evaluate the '047 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would have been understood by a POSITA in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. I have also been informed that claim terms only need to be construed to the extent necessary to resolve the obviousness inquiry. I have reviewed the entirety of the '047 patent, as well as its prosecution history.

VIII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

37. The discussion in this Declaration provides a detailed analysis of how the asserted prior art teaches each limitation of the Challenged Claims.

38. As part of my analysis, I have considered, and discuss in detail, the scope and content of the prior art and any differences between the alleged invention and the prior art.

39. It is my opinion that the alleged invention recited in the Challenged Claims would have been obvious in view of the teachings of the asserted prior art and the knowledge of a POSITA.

IX. RALEIGH RENDERS OBVIOUS CLAIMS 1 AND 4-7

A. Summary of Raleigh

40. Raleigh describes:

...methods, systems, and apparatuses to enable **subscribers of mobile wireless communication devices** to view, research, **select and customize service plans**; to create and manage **device groups**, share and set permission controls for service plans among devices in device groups; ... and control communication services through **application programming interfaces**.

Raleigh, Abstract.

41. Raleigh's thorough disclosure is organized into several sections that illustrate each of these aspects. A listing of these sections and those most relevant to this Declaration will be provided below.

42. Referring to creating and managing device groups, Raleigh provides some examples where it may be beneficial to include several mobile devices and/or users on the same service account:

...a husband and wife may want to establish **a single service account** for both of their smart phones. As another example, a parent may want to establish **a single service account** for the several mobile phones used by family members. As another example, an employer may want to establish **a single service account** for multiple smart phones used by one or more of its employees.

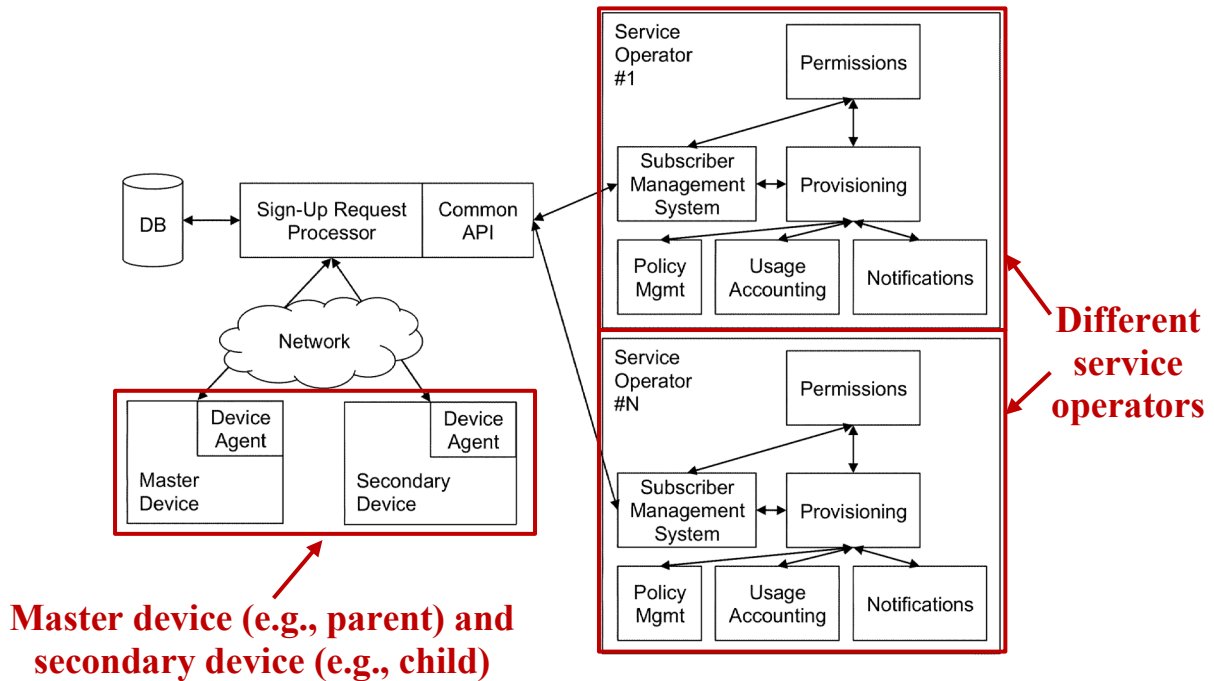
Raleigh, [0382].

43. The benefits of a single service account for multiple devices include “simplifying billing for the service provider and for the subscriber, and potentially reducing service costs for subscribers, e.g., by sharing the particular service account among multiple wireless communication devices.” Raleigh, [0382].

44. Raleigh refers to the “single service account” as a “master service account.” Raleigh, [0382]. Raleigh’s methods allow a master service account administrator, such as a parent, “to purchase a single service plan that is shared among all members of the family.” Raleigh, [0383]. The service plans include “voice services (e.g., phone calls, etc.), messaging services (e.g., text messages, multimedia messages, etc.), data services (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (VOIP), video chat, etc.).” Raleigh, [0381]. Raleigh also describes providing access to services such as “Facebook, Yahoo, Netflix, Amazon, etc.” Raleigh, [0612].

45. Raleigh contemplates purchasing or subscribing to different kinds of services and from a variety of service providers. Raleigh, [0930]. For instance, FIG.15I of Raleigh shows a “system configuration for service plan management for multiple mobile wireless communication devices and **multiple service operators** through a common application programming interface (API).” Raleigh,

[0255].



Raleigh, FIG.15I (partial annotated)

46. Raleigh’s architecture includes a “third party service partner [that] provides a communication service marketplace directly to users of mobile devices 105, e.g., akin to or integrated with **an application store.**” Raleigh, [1711]. This architecture plan selection allows users to select and sign up for service plans from various service providers. Accordingly, users can select a service plan by “a uniform and consistent communication service plan purchase and communication service management experience.” Raleigh, [1711]. Raleigh teaches that the “uniform and consistent service selection and purchase process” is also facilitated by the use of APIs. Raleigh, [1455]. For instance, APIs are used to enable users to

“select and customize service plans,” to “create and manage a group of two or more devices,” and to “share or assign service plans with different devices.”

Raleigh, [0057]. Raleigh’s APIs also “enable subscribers, service providers, and third parties to manage communication services for mobile wireless communication devices in a uniform and consistent manner across different devices and/or different service providers.” Raleigh, [0057].

47. Raleigh contemplates different service distribution models. Raleigh, [1495]-[1505]. One of these models uses an app store (e.g., third party app store) that reduces the need for the carrier and the individual app developers to deal directly with one another:

Services distribution model 4: app store becomes app service distributor to app sponsors—**reduces or eliminates need for carrier to deal with all the app developer/sponsors, reduces or eliminates need to app developer/sponsors to create infrastructure to deal with carrier**, allows app store to offer same app services across multiple carrier stores.

Raleigh, [1502].

48. Raleigh also describes that various entities involved in service plan provisioning and distribution may be “third parties,” including the service providers, service partners (e.g., app store providers), and carriers. For instance, Raleigh describes:

Example **3rd party provider scenarios** (i.e. **party that provides service and is not the party that owns the access network assets**): global carrier with wholesale partnerships with other carriers; app store providers (e.g. Google, Apple); OS providers (e.g. Google, Microsoft); device OEMs (e.g. Apple, RIM, Samsung, Nokia); M2M service providers (e.g. car connection services provider, vending machine connection services provider, home 2-way power meter connection services provider, etc); other 3rd party connection services provider.

Raleigh, [1610].

49. As mentioned above, Raleigh is divided into several sections, including:

- FIGS.1H-1P are functional diagrams that show an architecture for service access control and monitoring.
- FIGS.2A-8J are mobile device user interfaces (UIs) for users to view, research, select, and customize service plans.
- FIGS.9A-14D are mobile device UIs used for creating and managing device groups, and sharing and setting permission controls within the device group.
- FIGS.15A-15I include schematic diagrams and signaling diagrams illustrating methods and architectures for allowing one or more devices of a device group to sign-up for service plans provided by one or more service providers.

- FIGS.17B-24G include various UIs (e.g., desktop computer UIs) of a network manager environment that enable a network manager to design and administer service plan offerings, advertisements, and notifications for subscribers.
- FIGS.25A-28J are schematic diagrams and message sequence charts illustrating how subscribers, service providers, and third party service partner systems communicate with one another using APIs to provision services.
- FIGS.34A-36B illustrate processes whereby a user selects a service provider and a service.

50. This Declaration will refer primarily to the teachings of FIGS.1H-1P, 9A-14D, 25A-28J, and 34A-36B, and the corresponding text. However, other sections may also be referred to as providing additional support or context for the teachings of FIGS.1H-1P, 9A-14D, 25A-28J, and 34A-36B.

B. Reasons to Combine Raleigh's Teachings

51. Raleigh's disclosure provides a cohesive system to facilitate each of the aspects listed above. *See* Raleigh, Abstract; *see also* Raleigh, [0057]. For instance, Raleigh's Abstract and Summary describe these aspects together, with each aspects being an integral part of a comprehensive architecture for selecting, sharing (e.g., in a master service account), designing, promoting, and managing

services. Raleigh, Abstract, [0053]-[0057]. In this way, Raleigh's description itself would suggest to a POSITA to combine or incorporate some or all of these aspects to achieve its benefits, such as "a uniform and consistent communication service plan purchase and communication service management experience." Raleigh, [1711]. The combination would involve performing the service selection and activation procedures as described in FIGS.35A-36B for a "master service account." The combination would also include implementing and integrating APIs to "assist in providing a uniform and consistent service selection and purchase process." Raleigh, [1455].

52. Raleigh acknowledges that its sections and teachings are interrelated and combinable. For instance, Raleigh explicitly teaches that the aspects of FIGS.36A-36B may be "conducted in conjunction with selection of a service provider as described [in FIGS.35A-35B]." Raleigh, [1846]. Indeed, the description of FIGS.35A-36B refers to FIGS.4F, 4N-4V, 4AD, 4AL-4AN, 4AQ, 5A-5H, 6A-6J, 7C-7G, 8C-8J, 9A-9F, 25F-25I, 25K-25M, 26A, 26D, 27A, 27D, 28A, 28G, 29A-29H. Raleigh teaches that the teachings of those figures also "can apply equally" to the teachings of FIGS.35A-36B. Raleigh, [1841], [1847], [1851], [1853], [1855], [1856]. At least FIGS.8C-8E and 8G-9F describe managing services for a "master service account." *See, e.g.*, Raleigh, [0739], [0741], [0743], [1841].

53. Further, Raleigh explains that its API teachings “can apply equally to aspects of service provider selection, service provider account activation, and/or service selection processes for FIGS. 34A, 34B, **35A, 35B, 36A, 36B....**” Raleigh, [1833]. Raleigh teaches that APIs provide a “uniform and consistent communication service plan purchase and communication service management experience.” Raleigh, [1711].

54. A POSITA would have therefore been motivated to combine the service selection processes with Raleigh’s teachings for APIs and managing service plans for master service accounts, because Raleigh’s own disclosure suggests the combination. Additionally, a POSITA would have had a reasonable expectation of success in the combination because the combination would have been within the skill level of a POSITA. For instance, a POSITA would have been capable of implementing software changes to enable Raleigh’s service provider systems to activate and provision service plans for a master service account associated with multiple lines. A POSITA would also have been capable of implementing and integrating APIs from the various network entities (e.g., service provider systems, third party service partner systems, access carrier systems) to provide a “uniform and consistent communication service plan purchase and communication service management experience.” Raleigh, [1711]. Thus, a

POSITA would have been motivated to combine Raleigh's teachings and would have had a reasonable expectation of success in the combination.

C. Detailed Analysis of Claims

1. Claim 1

[1.0] *A method of provisioning a service for use with a group plan, the method comprising:*

55. Raleigh's disclosure includes:

methods, systems and apparatuses that provide for communication of control messages for device authorization, device activation, service plan selection and customization, **service plan provisioning**, service usage monitoring, service notifications, service control, service accounting/charging/billing, and service plan design using one or more APIs.

Raleigh, [0057].

56. A POSITA would have understood that a method for "service plan provisioning" is "[a] *method of provisioning a service.*" As mentioned above, some of the services contemplated by Raleigh include "voice services (e.g., phone calls, etc.), messaging services (e.g., text messages, multimedia messages, etc.), data services (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (VOIP), video chat, etc.)." Raleigh, [0381].

57. Raleigh’s disclosure also includes methods “to create and manage device groups, share and set permission controls **for service plans among devices in device groups.**” Raleigh, Abstract. For instance:

a user or administrator also reviews, **subscribes, shares,** assigns or otherwise manages **service plans and service plan bundles for devices in a device group.**

Raleigh, [0380].

58. Raleigh describes that a device group can be associated with “a **single service account** for the several mobile phones used by family members” (“*for use with a group plan*”). Raleigh, [0382]. Raleigh refers to the “single service account” for a device group as a “master service account” (“*group plan*”). Further, “it may be desirable **to share a service plan** that is associated with the master service account **among the multiple wireless communication devices** associated with the master service account.” Raleigh, [0383].

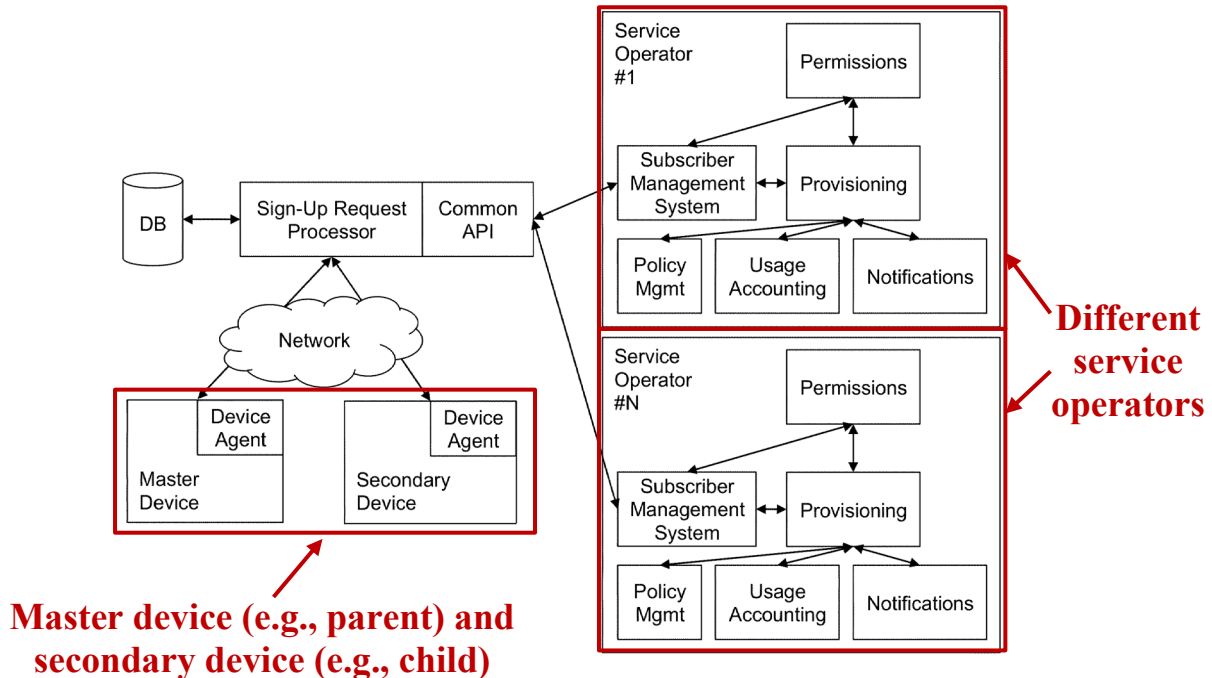
59. A POSITA would understand that Raleigh’s “master service account” is a “*group plan*,” because Raleigh’s description of the “master service account” is consistent with the ’047 patent’s description of the claimed “*group plan*.” Raleigh, [0382]. For instance, the ’047 patent explains that a “group account may be described in the context of an **enterprise, ... a family group** (e.g., a family account), a social group, or any other group of subscribers however related.” ’047 patent, 30:32-36.

60. Therefore, to the extent Raleigh does not anticipate the preamble, Raleigh's disclosures of provisioning service plans and managing service plans for a "master service account" render obvious "[a] *method of provisioning a service for use with a group plan.*"

61. The service provisioning sequence recited in [1.1]-[1.7] includes: "*receiving ... a subscription request for a service for a group plan,*" "*associating the service with each telephone number of the plurality of telephone numbers [associated with the group plan],*" and "*providing access to the service for each telephone number based on the associating.*" This sequence of events is repeated in elements [1.8]-[1.13] except that the subscription request in [1.8] is "*from a subscriber*" and "*for a second service ... provided by a second third party application service provider system.*"

62. The claimed sequence of events in [1.1]-[1.7] and repeated in [1.8]-[1.13] is taught by Raleigh's FIGS.35A-36B. The service provider activation and service plan selection procedures described in FIGS.35A-36B are performed for a "service account." Raleigh does not explicitly equate the service account to a "master service account" ("*group plan*"). Raleigh, [1840]. However, Raleigh contemplates that a "service account" may be a "master service account" associated with a plurality of users and telephone numbers. *See, e.g.,* Raleigh, FIG.9G, [0789], [0382]. FIG.15I illustrates a scheme for a master device and a

secondary device on “a master service account” to sign up for services provided by different service operators. Raleigh, [0926].



Raleigh, FIG.15I (annotated)

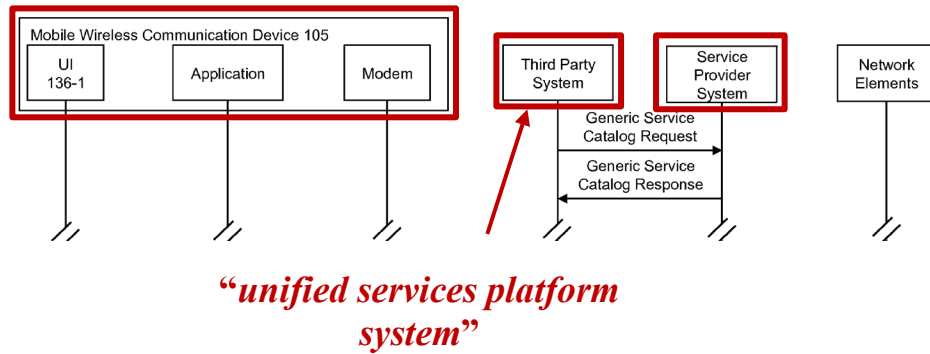
63. Further, Raleigh’s own disclosure suggests combining its teachings related to master service accounts to the service provider activation and service plan selection procedures of FIGS.35A-36B. Raleigh, [1841], [1846], [1847], [1851], [1853], [1855], [1856]. Combining these teachings would have involved computer programming changes that would have been within the skill level of a POSITA. *See supra*, Section IX.B. Thus, to the extent Raleigh does not explicitly disclose that the “service account” in FIGS.35A-36B is a “master service account,” it would have been obvious to a POSITA to apply Raleigh’s service selection and

activation procedures for the “service account” to its master service account (“*for a group plan*”).

[1.1] *receiving, by a unified services platform system, a subscription request for a service for a group plan,*

64. FIGS.36A-36B of Raleigh illustrate “a representative process to select a service offered by a service provider for a mobile wireless communication device.” Raleigh, [0372]; *see also*, Raleigh, [1846]. FIGS.35A-35B of Raleigh illustrate “a representative process to associate a mobile wireless communication device with a service account for a service provider.” Raleigh, [0370]. Raleigh’s service plan selection procedures of FIGS.36A-36B may be “conducted in conjunction with selection of a service provider as described above [in FIGS.35A-35B].” Raleigh, [1846]. Accordingly, the discussion below will refer to the processes of FIGS.36A-36B and FIGS.35A-35B together for the limitations of [1.1]-[1.13].

65. FIGS.36A-36B illustrate a procedure for service plan selection that includes a mobile wireless communication device, a third party service partner system (illustrated in FIG.36A as “Third Party System”) and a service provider system. Raleigh, [1848].



Raleigh, FIG.36A (partial annotated)

66. First, the “third party service partner system” is a “*unified services platform system*.” Raleigh, [1848]. Raleigh explains that “the third party service partner system maintains information for a **generic catalog of service plans** for a service provider from which one or more service plans can be offered to a user.” Raleigh, [1848]. The third party service partner may maintain an “application store” or “marketplace” similar to Apple’s App Store, Google’s Play Store, or Amazon’s App Marketplace. Raleigh, [1832], [1605], [1610], [1711]. The third party service partner system “provides a uniform and consistent communication service plan purchase and communication service management experience to users of mobile devices 105 for different service providers.” Raleigh, [1711]. Further, “a third party service partner provides a storefront through which service plans for multiple service providers are made available.” Raleigh, [1801].

67. Thus, Raleigh teaches that the third party service partner system provides a uniform service distribution platform by multiple users or administrators to select and manage services from multiple service providers.

Raleigh's description of the third party service partner system is consistent with the '047 patent's description of the "*unified services platform system*." The '047 patent explains that "[t]he unified services platform provides **a common interface for each third party service** as well as a common interface for the telecommunication provider." '047 patent, 8:47-50. Thus, the third party service partner system is a "*unified services platform system*."

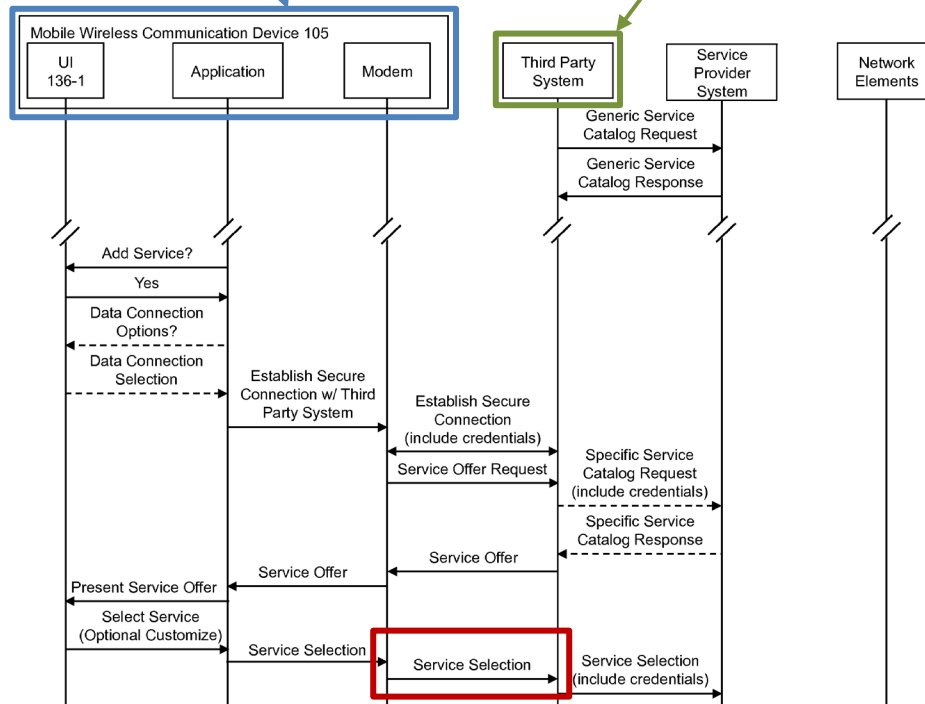
68. Second, in the service plan selection process shown in FIG.36A, Raleigh teaches that:

the user selects a service plan through the UI 136-1, and the mobile wireless communication device 105 **communicates the service plan selection to the third party service partner system**. In some embodiments, the third party service partner system communicates the service plan selection to the service provider system and includes one or more credentials with the service plan selection.

Raleigh, [1850].

Mobile wireless communication
device of a user

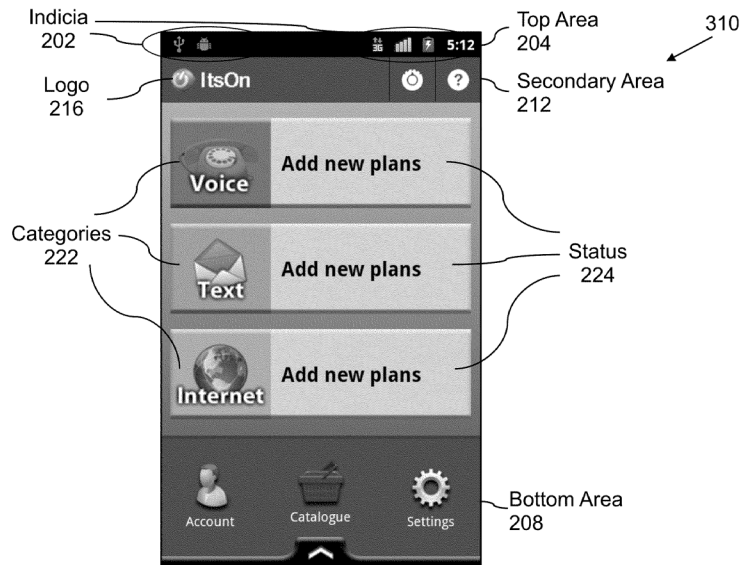
Third party service partner system



Raleigh, FIG.36A (partial annotated)

69. A POSITA would have understood that the “service plan selection” is the “*subscription request for a service.*” In this regard, Raleigh refers to the process of selecting a service plan as “subscrib[ing] to a service plan.” *See, e.g.,* Raleigh [0392]. The user’s wireless communication device “communicates” the service plan selection *to* the third party service partner system (“*unified services platform system*”). Therefore, the third party service partner system “receiv[es]” the service plan selection (“*subscription request for a service*”) from the user’s wireless communication device.

70. The service plans (“service[s]”) contemplated by Raleigh include “voice services, messaging services (e.g., text messages, multimedia messages, etc.), data services (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (VOIP), video chat, etc.).” Raleigh, [0381]. A mobile UI is shown in FIG.3B which includes service plan addition options for “Voice,” “Text,” and “Internet.”



Raleigh, FIG.3B (annotated)

71. FIGS.12A-12B illustrate another service plan referred to as “iStoryBooks,” which is shared between users on a master service account on the basis of data allocation. Raleigh, [0841]-[0842]. Each of these service plans is an example of “a service.”

72. **Third**, in light of Raleigh’s teachings related to managing service plans on a master service account, it would have been obvious to a POSITA for the service plan selection to be “for a group plan.” The service plan selection

procedures of FIGS.36A-36B are for a “service account.” Raleigh explains that “the service provider system adds (and/or customizes) one or more selected service plans to a service account associated with the mobile wireless communication device 105 and/or the user thereof.” Raleigh, [1852].

73. Although Raleigh does not explicitly refer to the service account discussed in FIGS.36A-36B as a master service account (“*group plan*”), Raleigh describes:

After a subscriber has established a **master service account**, the subscriber can create a device group by associating additional mobile wireless communication devices **with the established master service account** that is already associated with a master mobile wireless communication device

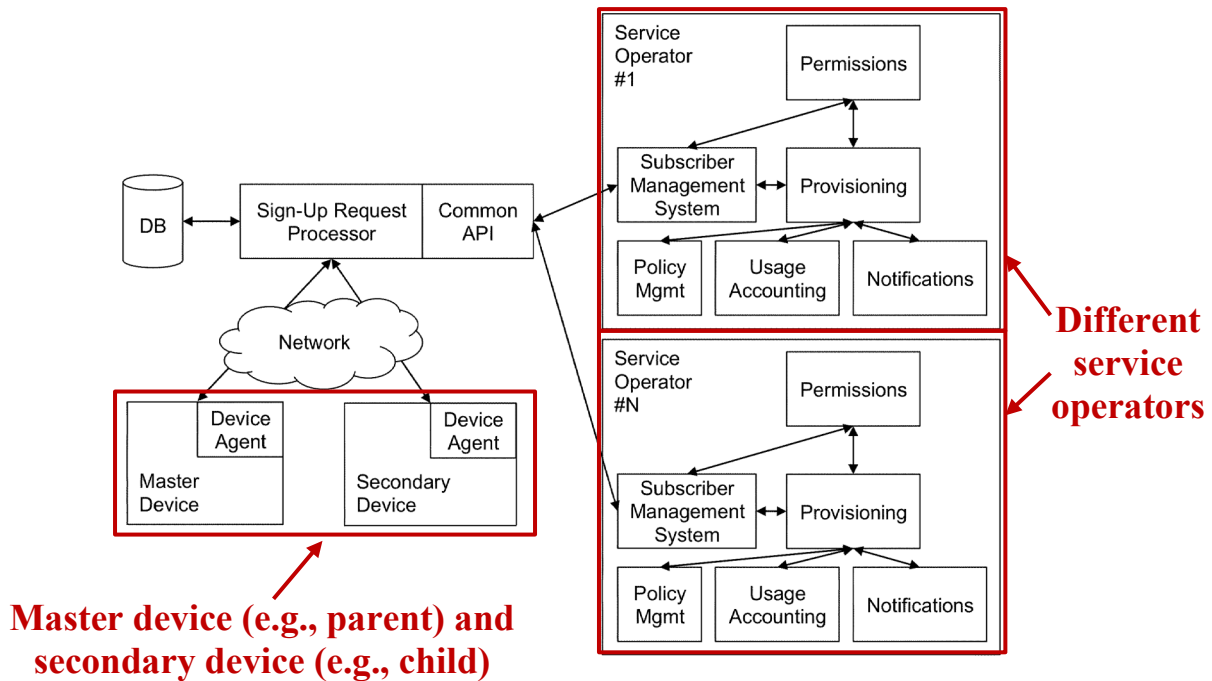
Raleigh, [0053].

74. Further, “service plans can be **shared among multiple devices** in a device group.” Raleigh, [0818]. “For example, a parent might want to purchase a single service plan that is shared among all members of the family.” Raleigh, [0383]. Raleigh further explains that “[i]n some embodiments, an administrator” such as a parent, “**manages service plans** and/or permission capabilities for **devices in the device group.**” Raleigh, [0759], [0758].

75. FIG.15I, mentioned above, illustrates a configuration for signing up for services from different service operators with a “master device” or a

“secondary device.” Raleigh, [0927]-[0929]. Raleigh explains that the master device and secondary device are associated with a “master service account.”

Raleigh, [0926].

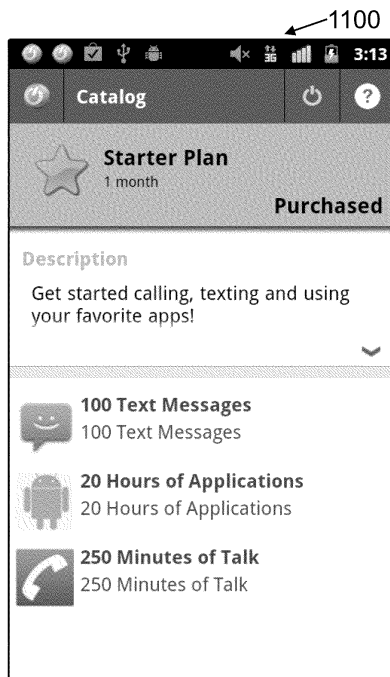


Raleigh, FIG.15I (annotated)

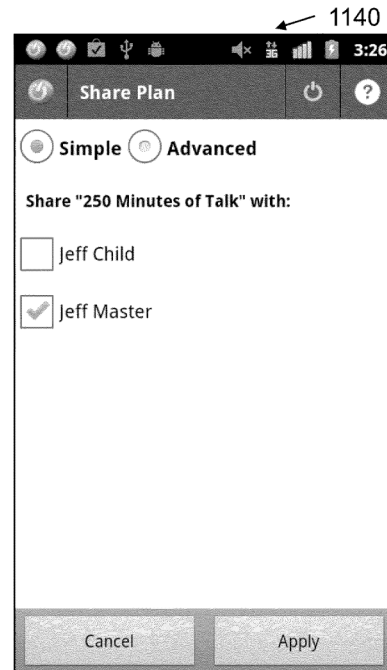
76. It would have been obvious to a POSITA for the service plan selection (“*subscription request*”) to be sent from a master device or secondary device associated with a master service account (“*for the group plan*”). This would allow a primary user or administrator to share service plans with other users associated with the same account. See Raleigh, [0906] (“Master Device subscriber defines what portion or portions of the service plan (voice service plan, messaging service

plan, data access service plan, etc.) are to be shared with the secondary device subscriber”).

77. Referring to the specific service plan examples provided above, a POSITA would have found it obvious for a data service, voice service, messaging service, access to iStoryBooks, or any other service described by Raleigh to be selected for the master service account. For instance, FIGS.11A and 11D of Raleigh (reproduced below) show example UIs for a master user to manage text, voice, and app access services for the master service account (“for the group plan”). Raleigh, [0803]-[0805].

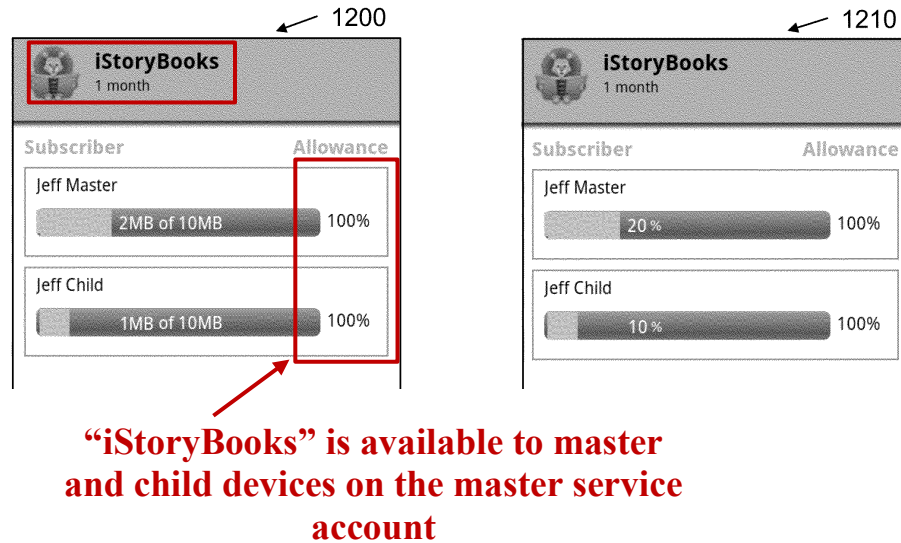


Raleigh, FIG.11A



Raleigh, FIG.11D

78. In another example, FIGS.12A-12B show UIs for sharing data access to an “iStoryBooks” service with multiple devices on a master service account (“group plan”). “[A] service plan (‘iStoryBooks’) [] is **available to both the master device and the child device.**” Raleigh, [0841]-[0842].



Raleigh, FIGS.12A-12B (partial annotated)

79. Voice service, text service, data service, and iStoryBooks are all examples of the “service for a group plan.” It would have been obvious that any of these services would be shared by and available to the members of a master service account (“for a group plan.”) Thus, it would have been obvious to a POSITA for the service plan selected by the user in FIG.36A to be shared by and available to the members of a master service account (“for a group plan”).

[1.2] wherein the group plan comprises a plurality of telephone numbers, wherein each telephone number of the plurality of telephone numbers is associated with a subscriber, and

80. First, as explained above at [1.1], Raleigh describes using a single service account (e.g., master service account) (“*group plan*”) for a device group. Raleigh teaches that each device added to the master service account (“*group plan*”) is associated with credentials:

In some embodiments, the request to be added to the master service account, device group, or multi-device service plan (bundle) includes a credential that uniquely identifies the mobile wireless communication device 105, such as ... **a phone number**.

Raleigh, [0474]; *see also*, Raleigh [0558]-[0559], [0737].

81. For instance, Raleigh explains that each of the screens shown in FIGS.8A-8B “summarizes information about mobile wireless communication devices 105, including users, **service accounts** and **associated lines (e.g., phone numbers)**.” Raleigh, [0737]-[0738]. FIG.9G of Raleigh is a representative mobile user interface where “the subscriber can view **all devices** associated with the master service account.” Raleigh, [0789]. FIG.9G shows that each device is associated with its own phone number.

Phone
numbers for
each line in
the device
group.
Raleigh,
[0789].



Raleigh, FIG.9G (partial annotated)

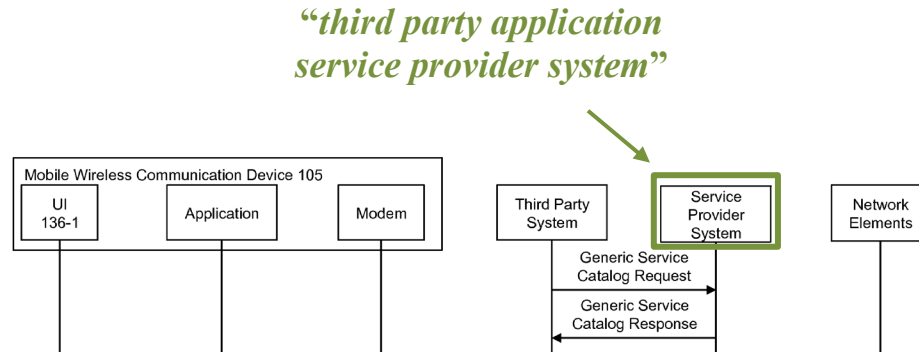
82. Accordingly, a POSITA would have understood that each line or device on the master service account is associated with its own telephone number. Thus, Raleigh teaches “*wherein the group plan comprises a plurality of telephone numbers.*”

83. **Second**, Raleigh teaches that the “subscriber,” who establishes the master service account, “associat[es] additional mobile wireless communication device with the established master service account.” Raleigh, [0053]. As explained above, Raleigh teaches that each user on the account has phone number. Raleigh, FIGS.8A, 9G, [0737]. It would have been obvious to a POSITA that each telephone number is “*associated with*” the “*subscriber*” (e.g., the parent, company administrator) who established the master service account, because each mobile wireless communication device (e.g., mobile phone) is associated with the subscriber’s master service account. Raleigh, FIG.8A, [0737], [0382], [0558].

84. Alternatively, “*a subscriber*” may be interpreted as each individual subscriber associated with the master service account. However, Raleigh also renders obvious the association of a telephone number to each *individual* subscriber on the master account. In this regard, Raleigh refers to the other users on the master service account (e.g., children) as “secondary **subscriber[s]**,” and refers to the administrator (e.g., parent) on the master service account as the “master subscriber.” Raleigh, [0886], [0895], [0909]. Thus, a POSITA would have understood that each secondary subscriber on the master service account is also “*a subscriber*,” and that each subscriber has an associated mobile phone and telephone number. Thus, a POSITA would have understood that each secondary subscriber or user on the master service account is also “*a subscriber*.” Therefore each of the secondary users’ telephone numbers is also “*associated with*” a corresponding “*subscriber*.”

[1.3] *wherein the service is provided by a third party application service provider system;*

85. As explained at [1.1], Raleigh teaches that the user’s “mobile wireless communication device” communicates the service plan selection to the third party service partner system,” and then “the third party service partner system communicates the service plan selection to **the service provider system.**” Raleigh, [1850].



Raleigh, FIG.36A (partial annotated)

86. Raleigh contemplates that a “service provider” may be a “third party service provider.” Raleigh, [0477] (“a service provider (e.g., a wireless network operator or a **third party service provider**”). “[T]he third party service partner provides a communication service marketplace directly to users of mobile devices 105, e.g., akin to or integrated with an application store (Apple App Store, Google Play Store, Amazon App Marketplace).” Raleigh, [1711]. Raleigh also describes a service distribution model in which a carrier operates an app store to provide applications:

App store becomes main carrier partner, distributes app based service policies to individual apps in store per agreement with each app store app developer: (i) app developer does have to deal with carrier infrastructure and app store is just a conduit for disseminating app based services to app store partners. (ii) app store provider deals with carrier and app developer does not have to deal with infrastructure to work with carrier network.

Raleigh, [1505].

87. Thus, to the extent Raleigh does not explicitly teach that the service provider in FIG.36A is “a ***third party application service provider system***,” Raleigh renders this limitation obvious. In this regard, it would have been obvious to a POSITA to select one or more service plans, as described in FIGS.36A-36B, from one or more “*third party application service provider system[s]*.” Allowing customers to select from third party application service provider systems would increase the variety of services available to them. Third party service providers may have different resources and technical capabilities. Thus, facilitating the selection of services from third party service providers would improve or enhance the quality and diversity of the service plans available to the users.

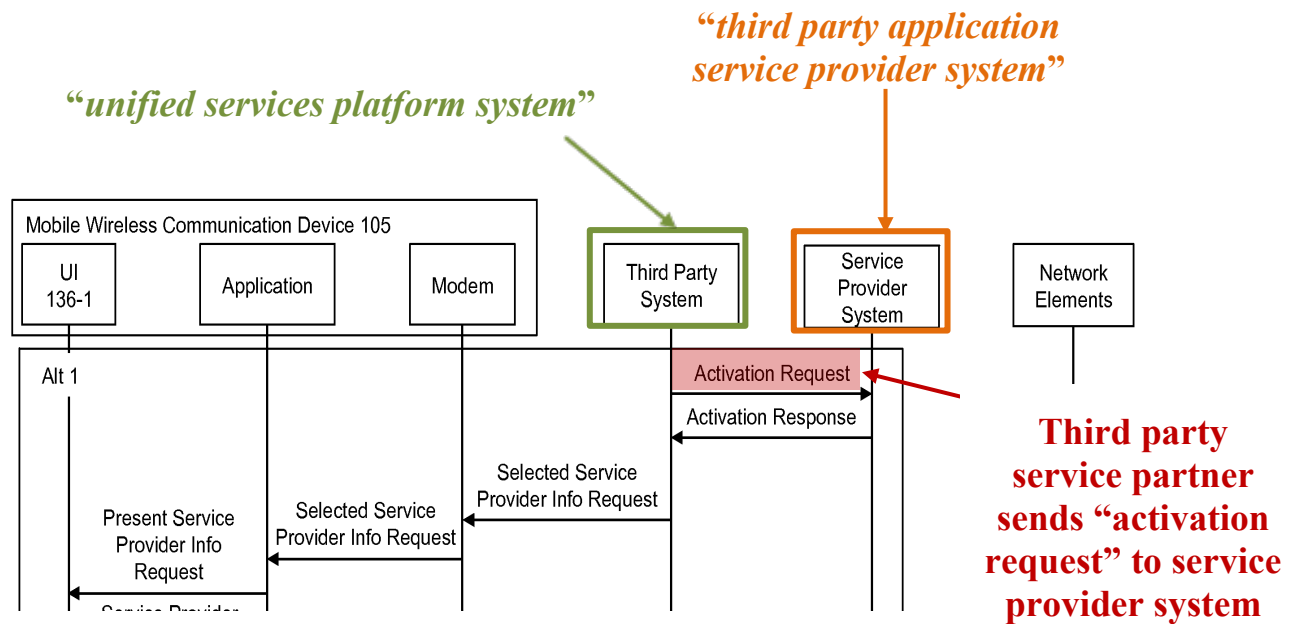
88. Accordingly, it would have been obvious to a POSITA that the service provider would include “a *third party application service provider system*.”

[1.4] sending, by the unified services platform system, an activation request for the group plan to the third party application service provider system;

89. As explained at [1.3], Raleigh’s service provider system is “*the third party application service provider system*.”

90. As explained above at [1.1], the service selection process in FIGS.36A-36B may be “conducted in conjunction with selection of a service provider” as described in FIGS.35A-35B. Raleigh, [1846]. Accordingly, the service selection process of FIGS.36A-36B and the service *provider* selection process illustrated in FIGS.35A-35B will be discussed together for this limitation.

91. First, FIG.35A of Raleigh, reproduced below, illustrates a process “to activate an association between a service provider and [a] mobile wireless communication device.” Raleigh, [1840]. Raleigh teaches that “the third party service partner system **provides an activation request** to the service provider system of the selected service provider.” Raleigh, [1840].



Raleigh, FIG.35A (partial annotated)

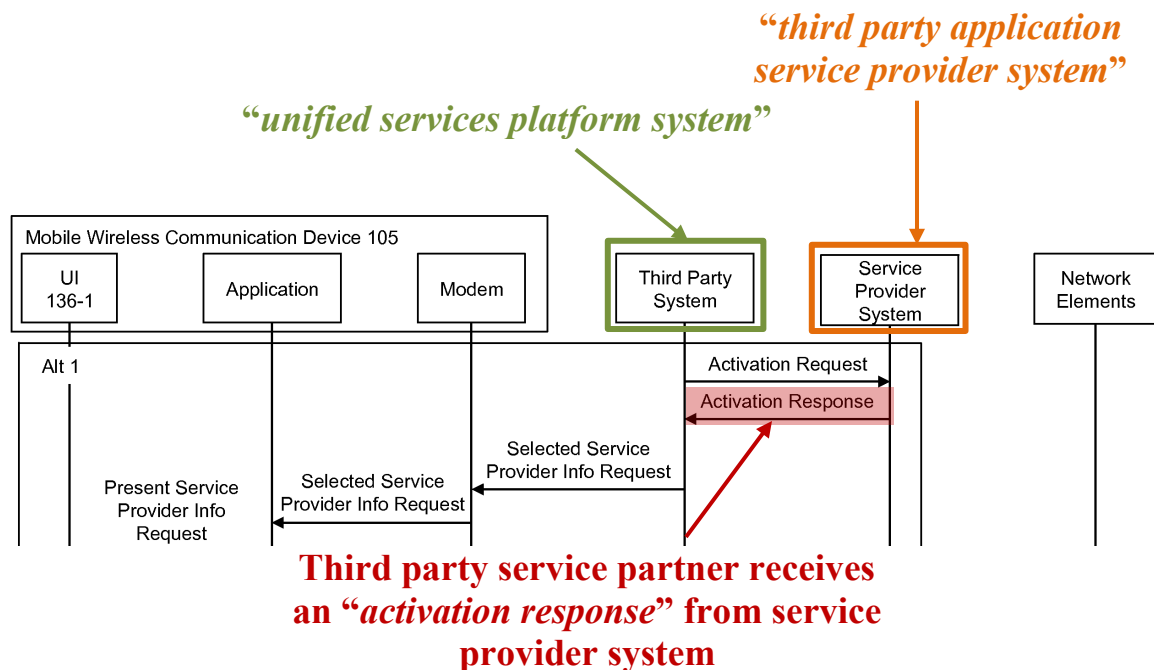
92. Thus, the third party service partner system (“unified services platform system”) sends “**an activation request** to the service provider system” (“an activation request ... to the third party application service provider system”).

93. **Second**, it would have been obvious to a POSITA for the service selection procedures of FIGS.36A-36B to be for a service plan shared by the users associated with a master service account (“*for a group plan*”). *See supra*, [1.1].

[1.5] receiving an activation response from the third party application service provider system;

94. In the service provider selection process illustrated in FIG.35A, after receiving the activation request from the third party service partner system (“*unified services platform system*”), “the service provider system provides **an activation response message to the third party service partner system.**”

Raleigh, [1840].

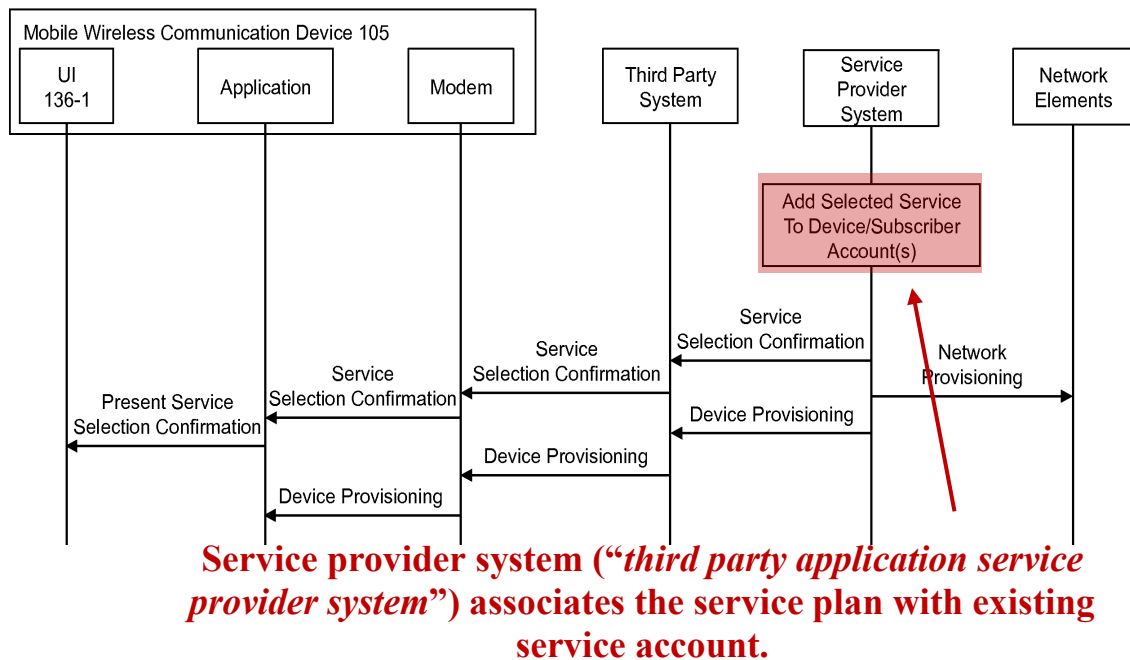


Raleigh, FIG.35A (partial annotated)

95. Accordingly, Raleigh teaches that the third party service partner system (“*unified services platform system*”) “*receiv[es]*” the activation response message (“*activation response*”) from the service provider system (“*from the third party application service provider system*”).

[1.6] associating the service with each telephone number of the plurality of telephone numbers;

96. FIGS. 36A and 36B illustrate the same “representative process for selecting a service for a mobile wireless communication device” discussed above at [1.1]-[1.5]. Raleigh, [1846]. FIG.36B, reproduced in annotated form below, is a continuation of the process shown in FIG.36A.



Raleigh, FIG.36B (partial annotated)

97. FIG.36B teaches that “the service provider system **adds** (and/or customizes) one or more **selected service plans** to a **service account** associated

with the mobile wireless communication device 105 and/or the user thereof.”

Raleigh, [1852]. As explained above, the selected service plan discussed at FIG.36A is “*the service.*” *Supra*, [1.1].

98. Service provider systems add service plans to a service account by storing credentials and configuration data for the account. Raleigh contemplates that adding service plans involves associating the service plan with a user, device, or service account: “the service selection includes credential information that identifies the user, the device, and/or an account with which to **associate the service plan.**” Raleigh, [1766]. Raleigh also teaches that the service selection indicated by the user includes “user payment information, user address, user identity, user credential, and user service preferences.” Raleigh, [1820]. A POSITA would have understood that Raleigh’s teachings of adding selected service plans to an account includes “*associating the service*” with the account.

99. It would have been obvious to a POSITA to add the selected service plan, as taught in the service selection process of FIGS.36A-36B, to the master service account (“*group plan*”). *Supra*, [1.1]. As explained above at [1.2], the master service account comprises “*the plurality of telephone numbers.*” *Supra*, [1.2]. Accordingly, it would have been obvious to a POSITA to add the service plan (“*associat[e] the service*”) with each of the plurality of lines on the service account (“*with each telephone number of the plurality of telephone numbers*”). In

this way, the master user or primary subscriber may purchase a service plan to be shared with all of the users on the master service account. Raleigh, [0383]-[0384].

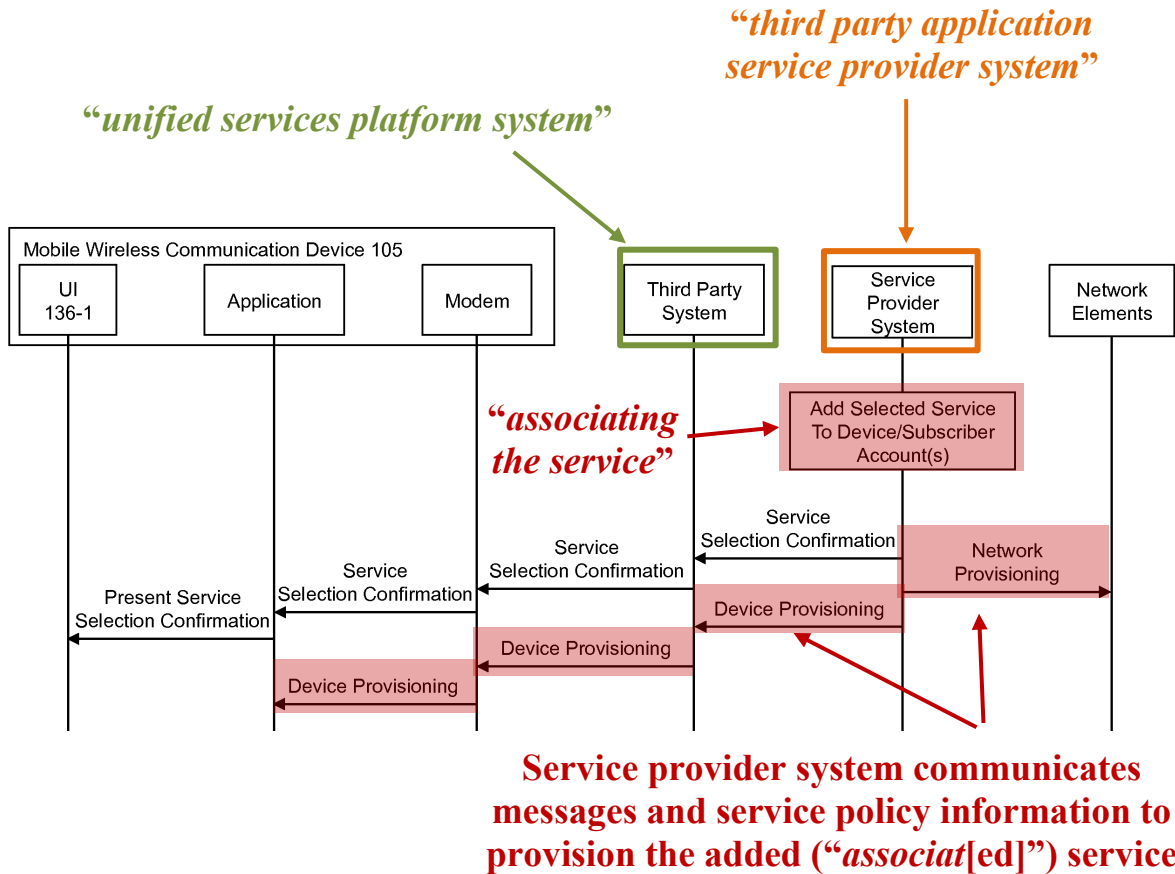
100. In this regard, Raleigh teaches making service plans available to all devices on the master service account, or some of the devices. Raleigh, [0383]; *supra*, [1.1]. Further, each of the devices on the master service account is associated with a telephone number, as also explained above at [1.2]. Raleigh, FIGS.8A, 9G, [0382], [0737], [0789]. Raleigh's disclosure of adding the selected service plan to the service account contemplates that the service plan is added "to a service account **associated with** the mobile wireless communication device 105 and/or the user thereof." Raleigh, [1852].

101. It would have been obvious to a POSITA for the service plan addition ("*associating the service...*") to include associating the selected service plan with each telephone number on the master service account ("*group plan*"). Raleigh teaches that it is desirable to allow subscribers on a master service account to share service plans with all users on the master service account. *See, e.g.*, Raleigh, [0383]-[0384], FIGS.12A-12B; *supra*, [1.1]. Because each of the users is associated with a telephone number, the added service plan for the master service account would be associated "*with each telephone number*" on the master service account ("*group plan*"). Raleigh, [0819]; *supra*, Section V.A.

102. For these reasons, to the extent Raleigh does not explicitly disclose “*associating the service with each telephone number of the plurality of telephone numbers,*” Raleigh renders this limitation obvious.

[1.7] *providing access to the service for each telephone number based on the associating;*

103. In the service selection process of FIGS.36A-36B, “the service provider system communicates messages to one or more network elements that provide for **provisioning of the selected service plans.**” Raleigh, [1852]. FIG.36B of Raleigh, reproduced in annotated form below, illustrates the communication of the messages to the network elements and to the mobile communication device 105 via the third party service partner system.



Raleigh, FIG.36B (partial, annotated)

104. Raleigh explains that **"provisioning** of one or more network elements includes communication of one or more service policy rules for service accounting, control, maintenance, charging, notification, and/or billing for the selected service plans." Raleigh, [1852]. Further, the service provider communicates "service policy information ... through the third party service partner system to the mobile wireless communication device 105 to **provision the mobile wireless communication device 105 for the selected service plans.**" Raleigh, [1852].

105. A POSITA would have understood that provisioning the service plan for the device 105 as shown above is “*providing access to the service.*” For instance, Raleigh explains that the service plan selection discussed above at [1.1] may include credentials to “activate the service plan.” Raleigh, [1766]. Further, the service plan provisioning of FIG.36B is performed after, and as a result of, adding (“*associating*”) the selected service plan to the service account. In this regard, Raleigh teaches that the credentials used to activate the service plan “identif[y] the user, the device, and/or an account with which to **associate the service plan.**” Raleigh, [1766]. Thus, a POSITA would have understood that the provisioning is “*based on the associating.*”

106. As explained at [1.5], a POSITA would have found it obvious to share the selected service plan with each line on the master service account (“*each telephone number of the plurality of telephone numbers*”). Raleigh, [0382]-[0384]; *supra*, [1.2]. Raleigh teaches that the master subscriber on a master service account “can manage all devices in the device group and can **share one or more service plans among devices in the device group.**” Raleigh, [0802]; *supra*, [1.3]. Each of the devices on the service plan is associated with a telephone number (“*each telephone number...*”). *Supra*, [1.2].

107. Accordingly, it would have been obvious for the service-provisioning process to include the service provider system provisioning the selected service plan (“*providing access to the service*”) for each line or device on the master service account (“*for each telephone number*”). In this way, the primary subscriber on the account could share the selected service plan with all users on the master service account, which Raleigh explains is a desirable service-provisioning feature. *See, e.g.,* Raleigh, [0383]-[0384], FIGS.12A-12B; *supra*, [1.3].

108. Thus, to the extent Raleigh does not explicitly disclose “*providing access to the service for each telephone number based on the associating,*” Raleigh renders this limitation obvious.

[1.8] receiving, by the unified services platform system, a subscription request for a second service from a subscriber associated with a first telephone number of the plurality of telephone numbers,

109. Claim limitations [1.8]-[1.13] are identical to the respective claim limitations of [1.1]-[1.7], except for three differences. First, [1.8] recites that the “*subscription request*” is “*for a **second** service,*” rather than “*the service.*” Second, [1.8] recites that the “*subscription request*” is “*from a **subscriber associated with a first telephone number.***” Third, [1.9] recites that the “*second service is provided by a **second** third party application service provider system.*”

110. Raleigh’s teachings discussed above for [1.1]-[1.7] also teach or render obvious the limitations of [1.8]-[1.13].

111. First, regarding the “*second service*,” Raleigh contemplates various types of services, including:

...voice services (e.g., phone calls, etc.), messaging services (e.g., text messages, multimedia messages, etc.), data services (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (VOIP), video chat, etc.).

Raleigh, [0381].

112. A POSITA would have found it obvious that the third party service partner system (“*unified services platform system*”), which may implement an app store of a variety of services, would receive subscription requests for both a “[first] *service*” of [1.1], and “*a second service*.” Raleigh explains that “users enjoy a **rich variety of applications** offered for their mobile wireless communication devices.”

Raleigh, [1715]. It would have been obvious that a user (e.g., master service account administrator) would send more than one service plan selection to select more than one type of service available to some or all users on the master service account. For example, the “*service*” introduced at [1.1] may be a “messaging service” or a “data service,” and the “*second service*” introduced here at [1.8] may be a VOIP service. Raleigh, [0381].

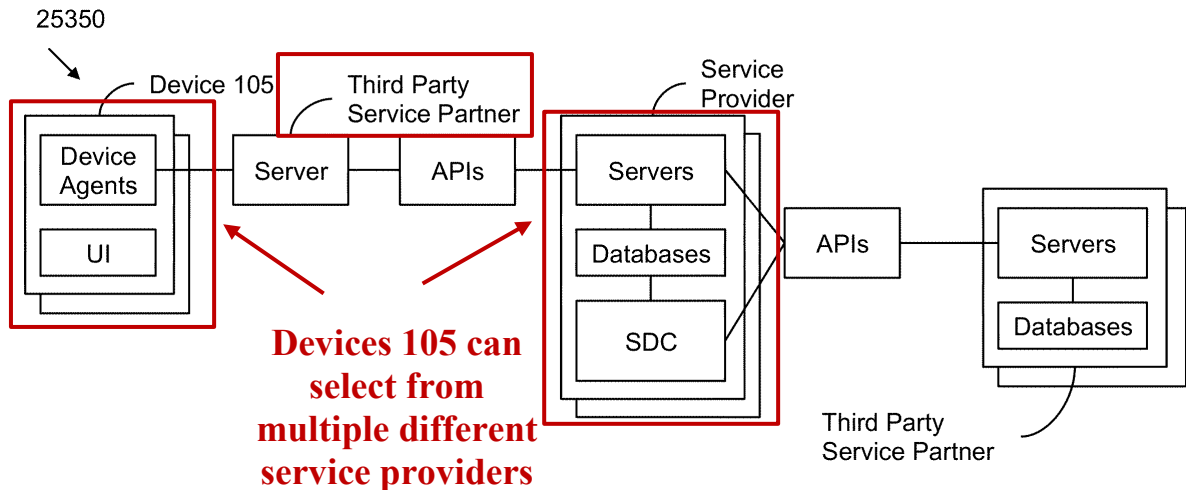
113. Second, regarding the “*subscriber*,” although [1.1] does not specify who or what the “*subscription request*” is received from, elements [1.1]-[1.3] do not preclude that the subscription request for the service for the group plan is

received “*from a subscriber*,” as recited in [1.7]. Raleigh explains that the primary account administrator (e.g., parent) is “a subscriber” who establishes the master service account and “associat[es] additional mobile wireless communication devices with the established master service account.” Raleigh, [0053]. *Supra*, [1.1]. Raleigh, also teaches that the service plan selection in the service plan selection procedures of FIGS.36A and 36B comes from the user of the mobile wireless communication device. Raleigh, [1850].

114. It would have been obvious that the “user” of the mobile wireless communication device 105 would be the master subscriber (“*a subscriber*”) of the master service account. Thus, it would have been obvious to a POSITA for the third party service partner system to receive, “*from a subscriber*,” the service plan selection for the messaging service plan or the data service plan (“*subscription request for a service*”), as well as the service plan selection for the VOIP service plan (“*subscription request for a second service*”).

115. Third, it would have been obvious to a POSITA for “*a second third party application service provider system*” to provide the VOIP service (“*second service*”). Raleigh describes service plan service plan selection methods “with **multiple service providers**, network operators, and/or third party service partners.” Raleigh, [1438]. Further, as explained above at [1.3], Raleigh’s “service provider” may be a “**third party** service provider.” Raleigh, [0477].

116. FIG.25H of Raleigh “illustrates a system 25350 in which a third party service partner provides a set of APIs through which different service providers can communicate with different mobile devices 105 by way of the third party service partner's server.” [1711].

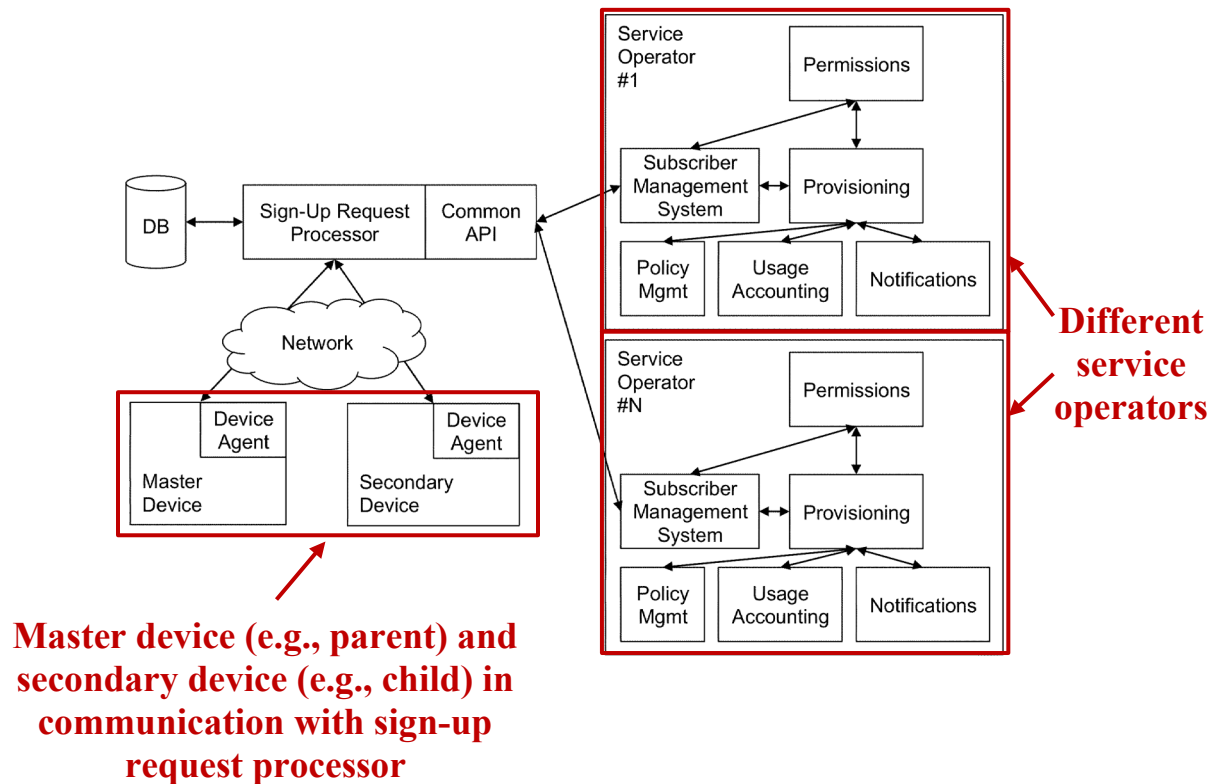


Raleigh, FIG.25H (annotated)

117. Referring to the architecture of FIG.25H Raleigh explains that ...the third party service partner provides a communication service marketplace directly to users of mobile devices 105, e.g., **akin to or integrated with an application store** (Apple App Store, Google Play Store, Amazon App Marketplace). In some embodiments, the third party service partner's server provides **a uniform and consistent** communication service plan purchase and communication service management experience to users of mobile devices 105 for **different service providers** and/or for additional third party service partners, e.g., for communication service application developers.

Raleigh, [1711].

118. In the system configuration in FIG.15I (below), a master device and a secondary device on a master service account (“*group plan*”) can sign-up with different service providers through a “sign-up request processor. Raleigh, [0927]-[0929].



Raleigh, FIG.15I (annotated)

119. Raleigh explains that the Sign-Up Request Processor may be “located in a third party provider network (e.g., device OEM, VSP, MVNO, device OS provider, VoIP provider, etc.)” Raleigh, [0928]. Thus, Raleigh describes users associated with a master service account (“*group plan*”) signing up for services

from different service operators (*“third party application service provider system[s]”*). A POSITA would have found it obvious to select a messaging service or data service (*“the service”*) from a first service provider system (*“third party application service provider system”*), and a VOIP service (*“second service”*) from a second service provider system (*“second third party application service provider system”*).

120. A POSITA would have known that data services, messaging services, and VOIP services (*“second service”*) were commonly provided by different third party service providers (*“third party application service provider system[s]”*). See Raleigh, [0477], [1610]; FIG.15I. Further, a POSITA would have found it obvious to receive the service plan selections for different service plans (*“subscription request[s]”*) from a user on the service account (*“from a subscriber”*) to allow the user to “enjoy a rich variety of applications.” Raleigh, [1715]. The rich variety of applications may be provided through an app store, for example. Accordingly, it would have been obvious to use the service provider activation and service selection processes of FIGS.35A-36B to select a data service or messaging service (*“the service”*) from a first service provider system (*“third party application service provider system”*), and a VOIP service (*“second service”*) from a second service provider system (*“second third party application service provider system”*). In this way, users would enjoy a richer variety of applications than would

otherwise be available with only a single service provider. In the combination, the third party service partner system (“*unified services platform system*”) would send “*a second activation request*” to the second service provider system (“*second third party application service provider system*”), receive “*a second activation response*” from the second service provider system, “*associat[e] the second service with the first telephone number,*” and “*provid[e] access to the second service for the first telephone number based on the associating.*”

121. Thus, because Raleigh also renders obvious the minor distinctions in [1.8]-[1.13] relative to [1.1]-[1.7], the limitations of [1.8]-[1.13] are obvious in light of Raleigh’s teachings discussed above with respect to [1.1]-[1.7].

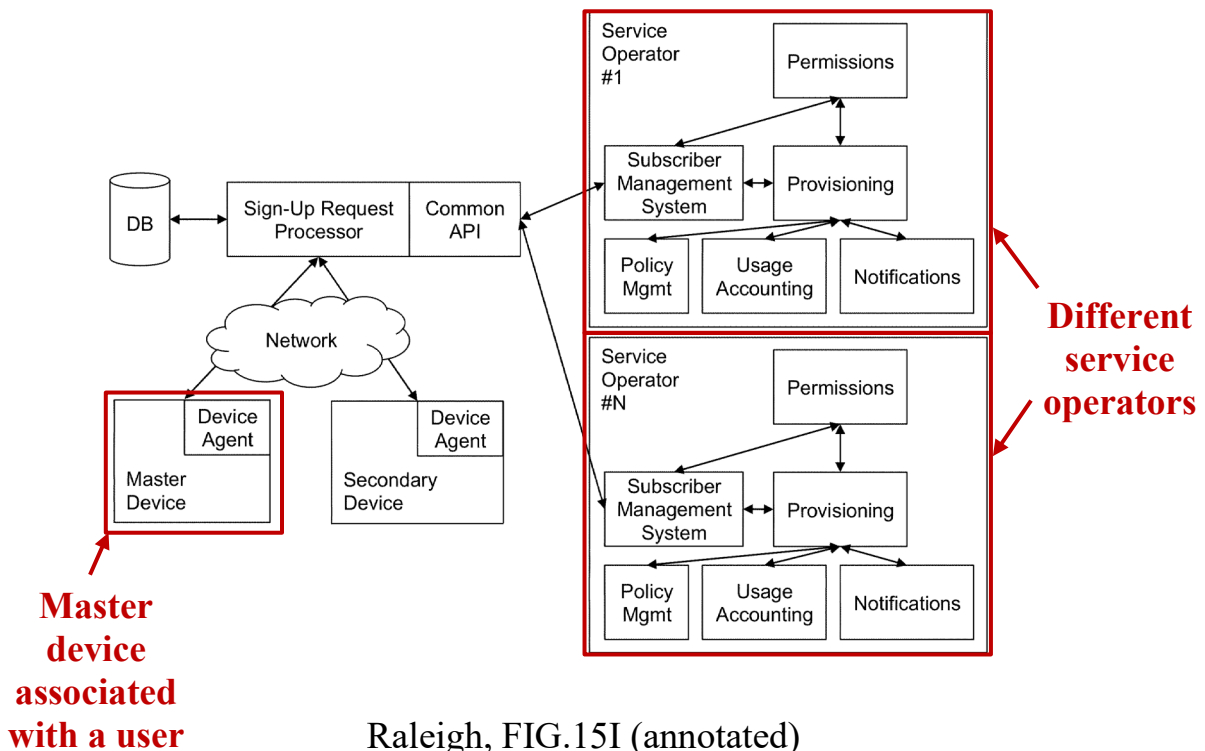
122. Specifically, [1.8] is analogous to [1.1], except that the subscription request is for “*a **second** service from a **subscriber** associated with a **first telephone number** of the plurality of telephone numbers.*” As explained above, these differences are also rendered obvious by Raleigh. Thus, Raleigh renders this limitation obvious.

[1.9] wherein the second service is provided by a second third party application service provider system;

123. [1.9] is analogous to [1.3], except that “*the second service is provided by a **second** third party application service provider system.*” As explained above at [1.8], it would have been obvious to a POSITA to use the service provider activation and service selection processes of FIGS.35A-36B to select a data service

or a messaging service (“*the service*”) from a first service provider system (“*third party application service provider system*”) and a VOIP service (“*second service*”) from a second service provider system (“*a second third party application service provider system*”). Raleigh explains that the service plan selection process via the third party service partner “provides a uniform and consistent communication service plan purchase and communication service management experience to users of mobile devices 105 for **different service providers.**” Raleigh, [1711].

124. As shown in FIG.15I, a user may sign-up for services from different service operators (“*third party application service provider system[s]*”):



125. Thus, it would have been obvious to a POSITA for a VOIP service plan (“*second service*”) to be provided by a VOIP service provider (“*second third*

party application service provider system”), and that the VOIP service provider would be different from the data service provider or messaging service provider (*“the third party application service provider system”*).

126. For these reasons, and the reasons provided above in [1.4] and [1.8], Raleigh renders obvious *“wherein the second service is provided by a second third party application service provider system.”*

[1.10] *sending, by the unified services platform system, a second activation request for the service to the second third party application service provider system;*

127. This limitation is analogous to [1.4]. For the reasons provided above in [1.4], [1.8] and [1.9], Raleigh renders obvious *“sending, by the unified services platform system, a **second** activation request for the service to the **second** third party application service provider system.”*

[1.11] *receiving a second activation response from the second third party application service provider system;*

128. This limitation is analogous to [1.5]. For the reasons provided above in [1.5], [1.8] and [1.9], Raleigh renders obvious *“receiving a **second** activation response from the **second** third party application service provider system.”*

[1.12] *associating the second service with the first telephone number; and*

129. This limitation is analogous to [1.6]. For the reasons provided above in [1.6], [1.8] and [1.9], Raleigh renders obvious *“associating the **second** service with the first telephone number.”*

[1.13] *providing access to the second service for the first telephone number based on the associating.*

130. This limitation is analogous to [1.7]. For the reasons provided above in [1.7], [1.8] and [1.9], Raleigh renders obvious “*providing access to the second service for the first telephone number based on the associating.*”

2. Claim 4

[4.0] *The method of claim 1, wherein an API of the third party application service provider system is incompatible with an API of the network provider system.*

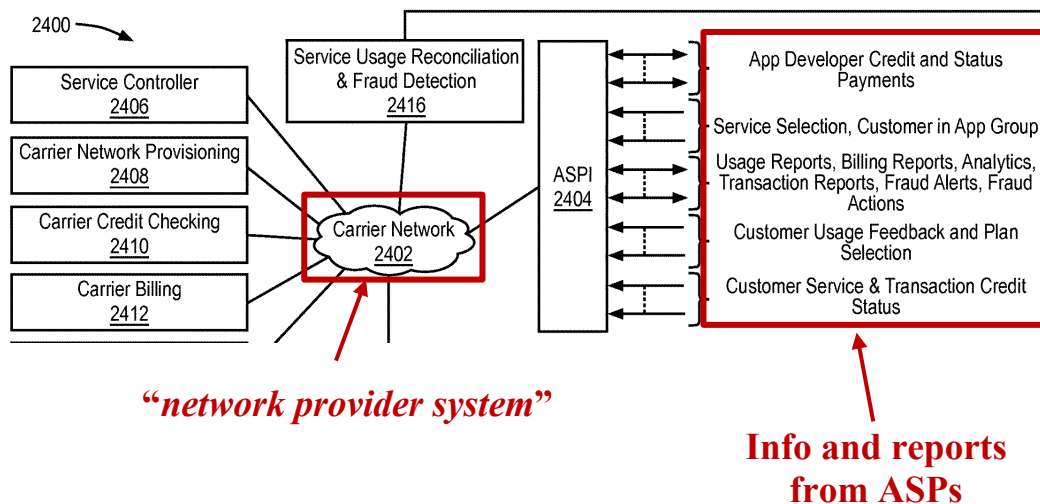
131. First, Raleigh’s service providers use “service operator API[s].” See Raleigh, [0929], [1366], [1693]. For example, Raleigh teaches that “the set of APIs are **specified by the service provider** and/or by the service partners.” Raleigh, [1709]. Raleigh’s “service operator API” is “*an API of the third party application service provider system.*” See *supra*, Section V.B; see also Raleigh, [1693], [1366] (“the [service providers’] APIs provide an indirect communication path between a server [of a service provider] and the mobile device.”)..

132. Second, Raleigh teaches that that a service provider may be a carrier, or “an operator of a wireless communication network.” Raleigh, [1381], [0428], [0826], [1238]. In one example, Raleigh explains that a carrier may be “**a network access carrier** (for example, a wireless network carrier such as Vodafone, Verizon, or AT&T, or a cable network carrier such as Comcast, etc.).” Raleigh, [1001]. A POSITA would have understood that a carrier is a “*network provider*

system.” For instance, in FIG.1AH, reproduced below, applications service providers (ASPs) are in communication with a carrier network 2402 through an ASP interface (ASPI). The carrier network 2402 may be a wireless access carrier, for instance:

the carrier network 2402 could be 2G, 3G and 4G capable, or the device could be 2G, 3G and 4G capable with all or a subset of Global System for Mobile (GSM), General Packet Radio Service (GPRS), Code Division Multiple Access (CDMA) 1X, High Speed Packet Access (HSPA), Evolution Data Optimized (EVDO), Long Term Evolution (LTE) and WiMax modem capability.

Raleigh, [1510].



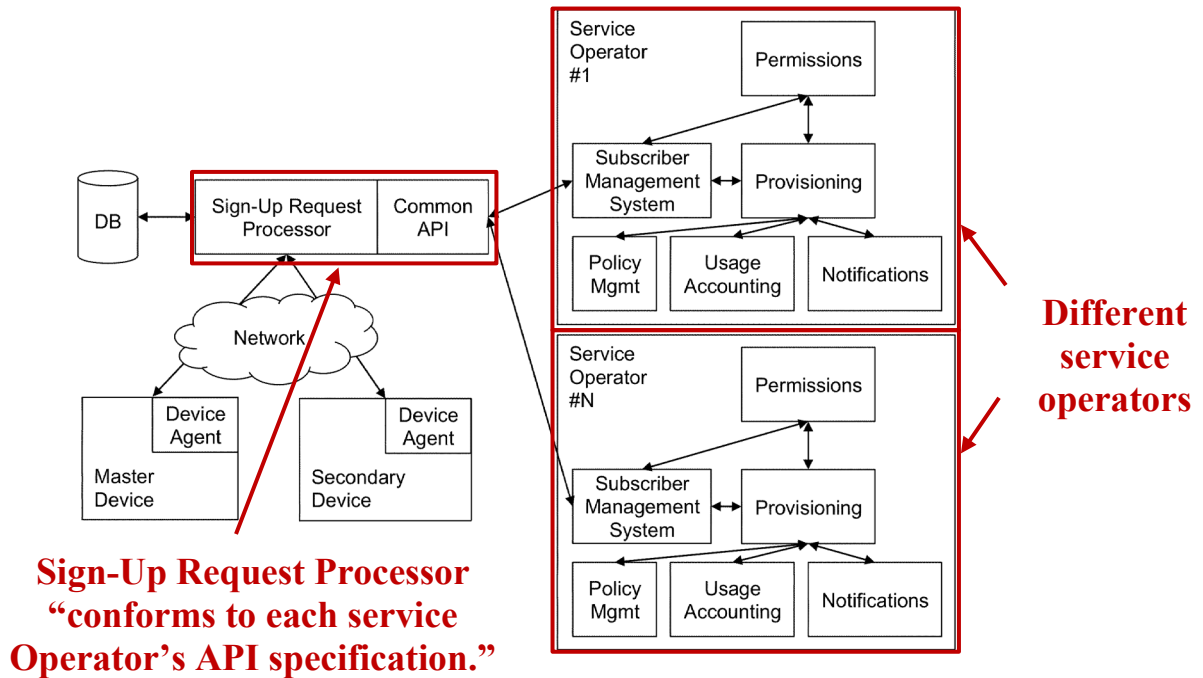
Raleigh, FIG.1AH (partial annotated)

133. Third, it would have been obvious to a POSITA for the carrier network to have at least one API (“API of the network provider system”). Raleigh teaches that “a **network API** can provide an interface for an application to

communicate with a service cloud (e.g., network server).” Raleigh, [1393]. The carrier’s API would facilitate access to carrier resources (e.g., cloud resources) by other third party service providers. The APIs would also provide a standardized protocol for service providers (e.g., data service provider, messaging service provider, VOIP service provider) to access carrier resources and information. Thus, it would have been obvious to a POSITA for the carrier network (“*network provider system*”) to use the “network API” to provide service providers and other third parties “with access to communicate with the application.” Raleigh, [1393].

134. Fourth, Raleigh summarizes that its disclosure includes methods to enable “third parties to manage communication services for mobile wireless communication devices in a uniform consistent manner across different devices and/or **different service providers** using one or more APIs.” Raleigh, [0057]. Indeed, Raleigh describes provisioning services from different service providers to the same device or service account. Raleigh, [0926], [1690].

135. In the system configuration of FIG.15I, master and secondary devices can sign up for services from different service operators through a sign-up request processor. Raleigh, [1690].



Raleigh, FIG.15I (annotated)

136. “[T]he device manufacturer provides the Sign-Up Request Processor and the common API and work[s] with the service operators to have them implement the required functionality **to support the On-Device Service Sign-Up and Multi-Device sharing functions.**” Raleigh, [0926]. Each service operator has an “API specification” and customized “commands and workflow”:

the Sign-Up Request Processor conforms to **each service Operator's API specification**. In some embodiments, the service operator API exposes the “high level” requests ... to the Sign-Up Request Processor and then converts the “high level” commands into the appropriate “low level” commands and workflow **specific to that service operator**.

Raleigh, [0929], *see also* [0930].

Thus, service operators implement additional “required functionality” to integrate with the common API, and service operators have their own “API specification[s]” and workflows. Raleigh, [0926], [0929]. Thus, a POSITA would have found it obvious that at least some of the service operators’ APIs would not be natively compatible with the common API, with the network provider’s API, and with the APIs of other service providers.

137. Accordingly, a POSITA would have understood that service providers of voice services or data services, for example, would use different APIs than the network provider system’s APIs. Raleigh, [0381]. For instance, a POSITA would have understood that the messaging protocols and needs of the carrier network are substantially different from those of a data service provider, a messaging service provider, or a VOIP service provider. For instance, a POSITA would have understood that the call flow messages and protocols for handling a VOIP call session would be substantially different from the messages and protocols for handling data or internet applications. In this regard, Raleigh contemplates scenarios in which the “party that provides service [] is not the party that owns access to network assets,” such as “app store providers (e.g., Google, Apple)....” Raleigh, [1610].

138. For these reasons, a POSITA would have found it obvious that at least one of the APIs of the data service provider or the messaging service provider

(“*third party application service provider system*”) would be incompatible with at least one API of the of the “*network provider system.*” Further, a POSITA would have found it obvious that the carrier network provider providing access to network resources would have at least one “network API” that is incompatible with at least one API of the service provider system (“*third party application service provider system*”).

3. Claim 5

[5.0] *The method of claim 4, wherein the API of the third party application service provider system is integrated with the unified services platform system,*

139. As explained above at [4.0], Raleigh teaches “*the API of the third party application service provider system.*”

140. Raleigh describes that the third party service partner (“*unified services platform system*”) “provides a set of APIs through which different service providers can communicate with different mobile devices 105 by way of the third party service partner's server.” Raleigh, [1711]. Raleigh further explains that “the [service providers'] APIs provide an indirect communication path between a server [of a service provider] and the mobile device.” Raleigh, [1366]. Thus, Raleigh describes that both the third party service partner system and the service providers use APIs to communicate and to provide services to other entities of the system.

141. It would have been obvious to a POSITA to “*integrate[]*” the API of the service provider (“*third party application service provider*”) with the third

party service partner (“*unified services platform system*”). Raleigh describes using standardized APIs for offering service plans and selecting service plans. Raleigh, [1760], [1764]. For instance, Raleigh explains:

the “Selection API” provides for a transaction between a user of the device 105 and a service provider and/or third party service partner to select and activate a service plan. In some embodiments, as a result of a user selection of a service plan through the “Selection API”, one or more service policies are provisioned to one or more network elements and/or to the device 105.

Raleigh, [1765].

142. Integrating the APIs of the service provider with the third party service partner would facilitate communications between the user, the service provider and the third party service partner so as to provide “a uniform and consistent user experience in communication service management.” Raleigh, [1438]. *Supra*, Section V.B.

[5.1] and wherein [sic] *API of the network provider system is integrated with the unified services platform system,*

143. As explained above at [4.0], it would have been obvious to a POSITA for the carrier network to have at least one API (“*API of the network provider system*”). Raleigh teaches that “a **network API** can provide an interface for an application to communicate with a service cloud (e.g., network server),” and that “a network API can facilitate an application provider, central network/service

provider, and/or a third party with access to communicate with the application to provide and/or request information.” Raleigh, [1393].

144. Further, as explained above at [4.0] and [5.0], Raleigh describes that service providers and network operators use APIs to standardize communications between subscribers, third party service partners, and the service providers. In one example, Raleigh explains that a network API may include a “network access API” that may be required for application distributed through app stores:

the network access API for protecting network capacity is an open API or standard/required API (e.g., **required or standardized for applications** for a certain network service provider, such as to be provided via the Verizon application store or **the Apple AppStore**) published for application and OS developers so that the applications and OS functions are designed to understand and implement the network access API for protecting network capacity.

Raleigh, [1393]

145. It would have been obvious to a POSITA for the carrier network operator’s API (“*API of the network provider system*”) to be “*integrated with*” the third party service partner (“*unified services platform system*”). This API integration would provide “a uniform and consistent user experience in communication service management.” Raleigh, [1438]. Further, this integration would facilitate the third party service partner system providing “an intermediary

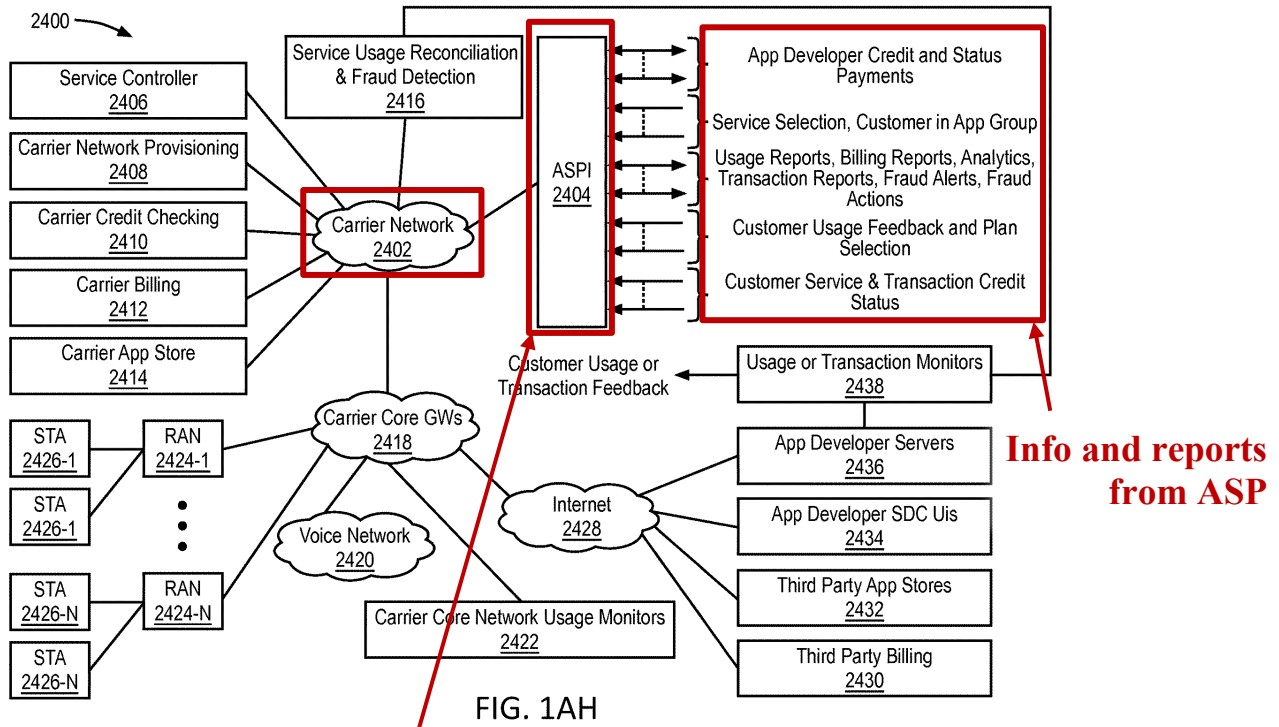
ASPI function to re-distribute carrier access services provided by one or more carrier networks to application service providers.” Raleigh, [1605].

[5.2] and wherein the third party application communicates with the network provider system through the unified services platform system.

146. The “*third party application*” limitation in [5.1] may be interpreted as “*wherein the third party application [service provider system] communicates*”

147. FIG.1AH of Raleigh is reproduced below, and illustrates an ASP interface (ASPI) 2904 coupled to a carrier network 2402.

Raleigh, [1511].



ASPI (“unified services platform system”) as an intermediary between ASPs and carrier network (“network provider system”)

Raleigh, FIG.1AH (annotated)

148. The ASPI engine 2904 is a “unified services platform system.”

Raleigh explains that the ASPI engine “provides **an interface for the ASP into the carrier network 2402.**” Raleigh, [1511]. Raleigh explains that ASPI functions may be provided by “**a third party (e.g., an app store provider and/or an OS system provider) ... to re-distribute carrier access services provided by one or more carrier networks to application service providers.**” Raleigh, [1605]. Similarly, the third party service partner system (“unified services platform system”) “provides a communication service marketplace directly to users of mobile devices, e.g., akin

to or integrated with **an application store.**” Raleigh, [1711]. Further, Raleigh explains that the implementation shown in FIG.1AM is “ASPI System with **3rd Party Service Distribution and Control of ASPI.**” Raleigh, [1493].

149. The ASPI facilitates communication between the application developer or service provider and the carrier network:

a service provider and/or network operator provides an application service provider interface (ASPI) through which applications (**and application developers**) **interwork with communication services** provided by the service provider in association with the applications.

Raleigh, [1646].

150. Further, the ASPI may use APIs to connect the application developer’s systems to network resources:

In some embodiments, the interfaces of the ASPI illustrated in FIGS. 1AH and 1AI (and also provided for in FIG. 1AM) use one or more APIs for communication of information **between the network elements of the carrier network 2402 and systems managed by the application developer.**

Raleigh, [1646].

151. Raleigh teaches that the ASPI may be a third party system that distributes “carrier access services ... to application service providers.” Raleigh, [1605]. It would have been obvious for the ASPI engine 2904 to be implemented by the third party service partner system (“*unified services platform system*”) to

operate as the intermediary between the application service providers and the carrier (“*network provider system*”). Further, it would have been obvious to a POSITA for the APSs to communicate with the carrier network (“*network provider system*”) through the ASPI (“*unified services platform system*”). APSs may communicate “Credit and Status” information, “Usage Reports, Billing Reports, Analytics, Transaction Reports, Fraud Alerts,” etc. Raleigh, FIG.1AH.

152. Therefore, Raleigh describes systems and architectures where an ASPI is implemented by a third party service partner system that links an application service provider (“*third party application service provider system*”) to a carrier network to access the carrier network’s services and resources. Raleigh, [1493], [1511], [1605]. In this way, the service provider systems (“*third party application service provider system[s]*”) communicate with the carrier or network operator (“*network provider system*”) through the intermediary third party service partner system (“*unified services platform system*”). Thus, Raleigh renders obvious “*wherein the third party application communicates with the network provider system through the unified services platform system.*”

153. In a second interpretation, “*the third party application*” may be interpreted as “[a] *third party application*,” such as the “*service*” provided by the “*third party application service provider system.*” Raleigh also renders this limitation obvious under the second interpretation.

154. As explained above with respect to the first interpretation, it would have been obvious for the third party service partner system (“*unified services platform system*”) to implement Raleigh’s ASPI, which provides an interface for the ASP into the carrier network.” Raleigh, [1511], FIG.1AH.

155. Further, Raleigh explains that “[t]he ASPI enables ASPs to **tie access [sic] network service policy enforcement to applications.**” Raleigh, [1487]. Thus, Raleigh teaches that the ASPI links an ASP (“*third party application service provider system*”) with carrier services and resources, and also that the ASP’s applications interwork with communications services through the ASPI. Raleigh, [1646]. For instance, ASPs communicate information associated with their applications to the network provider system through the ASPI, including “Credit and Status” information, “Usage Reports, Billing Reports, Analytics, Transaction Reports, Fraud Alerts,” etc. Ex.1005, FIG.1AH. Accordingly, it would have been obvious to a POSITA for the ASPI to also link the ASP’s application (“*the third party application*”) with the carrier services and resources. Raleigh, [1493], [1511], [1605].

156. Therefore, to the extent Raleigh does not explicitly disclose this limitation, Raleigh renders this limitation obvious.

4. Claim 6

157. Claim limitations [6.0] and [6.2]-[6.5] are identical to the respective features of [1.8]-[1.13], except for a few differences. First, [6.1] recites a “*second subscription request*.” Second, [6.1] does not require that the second subscription request is “*from a subscriber associated with a first telephone number*,” as in [1.8]. Accordingly, in a first interpretation, the features of [6.0] and [6.2]-[6.5] are the same features recited in [1.8]-[1.13] (e.g., the “*second service*” of claim 6 is the same “*second service*” of claim 1). In a second interpretation, the features of [6.0] and [6.2]-[6.5] are distinct from the features of [1.8]-[1.13] (e.g., the “*second service*” of claim 6 is different from “*the second service*” of claim 1).

158. Raleigh renders obvious the limitations of [6.0] and [6.2]-[6.5] under either interpretation for the reasons discussed above with respect to [1.1] and [1.3]-[1.7], and additionally for the reasons articulated in [1.8] and [1.9].

159. If the “*second subscription request*,” “*second service*,” and “*second third party application service provider system*” of claim 6 are the same as the corresponding features in [1.8]-[1.13], then claim 6 is rendered obvious by Raleigh for the reasons described above with respect to [1.8]-[1.13].

160. If the “*second subscription request*,” “*second service*,” and/or “*second third party application service provider system*” of claim 6 are not the same as the

corresponding features in [1.8]-[1.13], claim 6 is still rendered obvious by Raleigh for the reasons described below.

161. Raleigh describes “voice services (e.g., phone calls, etc.), messaging services (e.g., text messages, multimedia messages, etc.), data services (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (VOIP), video chat, etc.).” Raleigh, [0381]. Raleigh contemplates that these services may be provided by “different service providers.” Raleigh, [1711]. Further, Raleigh describes using a set of APIs that:

assist in providing for a uniform presentation of communication service management information to and reception of communication service management responses from the user of the mobile device 105, e.g., through the user interface of the mobile device 105, that interoperates with network elements, e.g., servers, databases, service controllers, and/or service design systems of **various service providers**, network operators, and third party service partners.

Raleigh, [1438].

162. Thus, Raleigh contemplates a service distribution architecture and protocols whereby users can shop for and sign up for services from various providers through a uniform interface. As explained at [1.8], it would have been obvious to a POSITA to use the service selection procedures of FIGS.36A-36B to select voice or data service (“*the service*”) from the first third party application

service provider system, and a video chat service (“*a second service*”) from “*a second third party application service provider system.*”

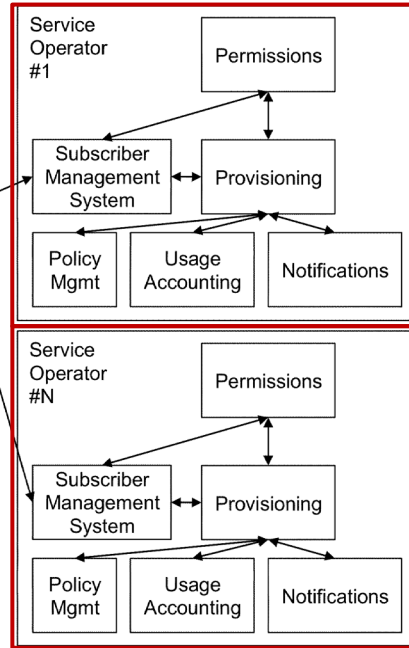
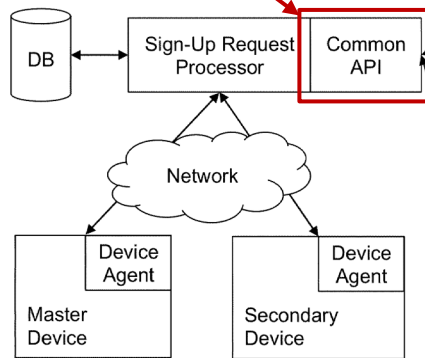
[6.0] The method of claim 1, further comprising: receiving, by the unified services platform system, a second subscription request for a second service for the group plan, wherein the second service is provided by a second third party application service provider system,

163. This limitation is analogous to [1.8] and [1.9], except that the subscription request is claimed as a “*second subscription request*” and is “*for the group plan.*” For the same reasons described above in [1.8] and [1.9], Raleigh renders obvious “*receiving, by the unified services platform system, a second subscription request for a second service for the group plan, wherein the second service is provided by a second third party application service provider system.*”

[6.1] wherein an API of the third party application service provider system is incompatible with an API of the second third party application service provider system;

164. Raleigh describes methods “to design, manage, and control communication services through **application programming interfaces.**” Raleigh, Abstract. Further, Raleigh describes configurations where users associated with a master service account can select services from different service operators through a sign-up request processor using a common API. Raleigh, [1690].

**Common API provided
for communication with
devices**



**Different
service
operators
with
operator-
specific API
specifications**

Raleigh, FIG.15I (annotated)

165. Each operator has its own API specification. Raleigh, [1693]. Further, Raleigh teaches that service operators use their own “low level” commands workflows used in executing higher level commands from the Sign-Up Request Processor:

the Sign-Up Request Processor conforms to **each service Operator's API specification**. In some embodiments, the service operator API exposes the “high level” requests (e.g., add subscriber to a master service account, device group, or multi-device service plan, remove subscriber from a master service account, device group, or multi-device service plan, allocate quotas, add curfew, remove curfew, add notification, delete notification, etc.) to the Sign-Up Request Processor and then converts the “high level” commands into **the appropriate**

“low level” commands and workflow specific to that service operator.

Raleigh, [1693].

166. Raleigh proposes that service providers APIs “to manage communication services for mobile wireless communication devices in a uniform consistent manner across different devices and/or different service providers.” Raleigh, [0057], [1693]. It would have been obvious to a POSITA that at least one API of a first service provider would be “*incompatible*” with at least one API of the other service provider. The signaling and network resource needs are substantially different for different types of service providers. For instance, it would have been obvious to a POSITA that an API of the data service provider or messaging service provider uses protocols and workflows specific to its service, and that those protocols and workflows are incompatible with those of a VOIP service provider or a video chat provider.

167. Accordingly, Raleigh renders obvious “*wherein an API of the third party application service provider system is incompatible with an API of the second third party application service provider system.*”

[6.2] sending, by the unified services platform system, a second activation request for the group plan to the third party application service provider system,

168. This limitation is analogous to [1.10]. As explained above in [1.8] and [1.9], and for the reasons explained above at Section IX.C.4, Raleigh renders

obvious “*sending, by the unified services platform system, a second activation request for the group plan to the third party application service provider system.*”

[6.3] *receiving a second activation response from the third party application service provider system;*

169. This limitation is analogous to [1.11]. As explained above in [1.8] and [1.9], and for the reasons explained above at Section IX.C.4, Raleigh renders obvious “*receiving a second activation response from the third party application service provider system.*”

[6.4] *associating the second service with each telephone number of the plurality of telephone numbers; and*

170. This limitation is analogous to [1.12]. As explained above in [1.8] and [1.9], and for the reasons explained above at Section IX.C.4, Raleigh renders obvious “*associating the second service with each telephone number of the plurality of telephone numbers.*”

[6.5] *providing access to the second service for each telephone number based on the associating.*

171. This limitation is analogous to [1.13]. As explained above in [1.8] and [1.9], and for the reasons explained above at Section IX.C.4, Raleigh renders obvious “*providing access to the second service for each telephone number based on the associating.*”

5. Claim 7

[7.0] *The method of claim 1, further comprising: invoking the service in*

response to a triggering event associated with a first telephone number of the plurality of telephone numbers.

172. As explained above, Raleigh contemplates a variety of communication services, including “voice services (e.g., phone calls, etc.), **messaging services** (e.g., text messages, multimedia messages, etc.), **data services** (e.g., Internet access, etc.), and hybrid services (e.g., voice over IP (**VOIP**), video chat, etc.).” Raleigh, [0381]. In this Declaration, “messaging services” and “data services” are used as examples of “*the service*.”

173. Raleigh provides an example action executed in response to an “incoming text message or multi-media message” (“*in response to a trigger event*”). Raleigh, [0781]. In this example, the messaging service provider provides a “notification message” that “present[s] options to purchase a service plan and **accept an incoming text message or multi-media message (or equivalent)**.” Raleigh, [0781]. Raleigh also explains that “purchase of a service plan can be completed before or after accepting and viewing an incoming text message or multi-media message.” Raleigh, [0781].

174. A POSITA would have understood that [presenting] options to purchase a service plan and accepting an incoming text message or multi-media message” teaches “*invoking the service*.” It would have been obvious to a POSITA that an incoming message such as a text message would be “*associated with*” the user’s telephone number (“*the first telephone number*”). Further still, it would have

been obvious to a POSITA in light of Raleigh's disclosure of group service accounts that the user's telephone number would be associated with a plurality of telephone numbers (e.g., lines) on the master service account ("*...of the plurality of telephone numbers*"). *See, e.g.*, Raleigh, FIG.9G; *supra*, [1.2], [1.8].

X. CONCLUSION

175. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code.

Dated: April 19, 2023

A handwritten signature in black ink that reads "Henry H. Houh." The signature is written in a cursive, slightly slanted style.

Henry Houh, Ph.D.