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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
61/028,261	02/13/2008		105	08610009PR		

CONFIRMATION NO. 1638

FILING RECEIPT

OC000000028746784

30743
WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C.
11491 SUNSET HILLS ROAD
SUITE 340
RESTON, VA 20190

Date Mailed: 03/12/2008

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Theodore S. Rappaport, Austin, TX;

Power of Attorney:
Michael Whitham--32635

If Required, Foreign Filing License Granted: 03/10/2008

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/028,261**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

System and Method for Local placement of advertising using wireless infrastructure

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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Doc Code:

PROVISIONAL APPLICATION FOR PATENT COVER SHEET - Page 1 of 2

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. _____

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Theodore S.	**Rappaport**	**Austin, Texas**

☐ *Additional inventors are being named on* _____ *separately numbered sheets attached hereto*

TITLE OF THE INVENTION (500 characters max)

System and Method for Local placement of advertising using wireless infrastructure

Direct all correspondence to: **CORRESPONDENCE ADDRESS**

☒ The address corresponding to Customer **30743**

OR

☐ Firm *or*					
Address					
City		State		ZIP	
Country		Telephone		Emai	

ENCLOSED APPLICATION PARTS *(check all that apply)*

☐ Application Data Sheet. See 37 CFR 1.76

☒ Specification *Number of Pages* **30**

☒ Drawing(s) *Number of Sheets* **15**

Total # of sheets **45** = Application Size Fee **$0.00**

☐ CD(s), Number of CDs _____

☐ Other (specify) _____

Fees Due: Filing Fee of $210 ($105 for small entity). If the specification and drawings exceed 100 sheets of paper, an application size fee is also due, which is $260 ($130 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR

METHOD OF PAYMENT OF THE FILING FEE AND APPLICATION SIZE FEE FOR THIS PROVISIONAL APPLICATION FOR PATENT

☒ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fee and application size fee (if applicable).

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

☒ The Director is hereby authorized to charge the filing fee and application size fee (if applicable) or credit any overpayment to Account Number: **50-2041**. A duplicative copy of this form is enclosed for fee processing.

$105.00

TOTAL FEE AMOUNT ($)

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This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PROVISIONAL APPLICATION COVER SHEET

The invention was made by an agency of the United States Government or under a contract with an agency of the United States

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____

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SIGNATURE		Date	**February 13, 2008**
TYPED or PRINTED NAME	**Michael E. Whitham**	REGISTRATION NO. *(if appropriate)*	**32,635**
TELEPHONE	**703-787-9400**	Docket Number:	**08610009PR**

System and Method for Local placement of advertising using wireless infrastructure

This invention allows for advertising content, either provided through standard internet browsers, or through recorded, or real-time means in audio or video or multimedia or text formats, that may be transmitted through transmission to cellphone devices, computer devices, or other mobile devices or other devices that are connected using wireless transmission, known now or in the future, to be delivered on a location–specific basis. As mentioned above, ad content may be audio, video, multimedia, or webpage based, as well as other forms that may be known now or in the future. Furthermore, this invention can be used generally for any type of content, not just advertisement content, that has specific value to users or viewers in specific geographic, physical locations. That is, the invention may be used for signage that provides location-specific content to wireless displays or wireless users, for example.

Today, the internet advertising industry has difficulty in providing location-based content, since people who log onto the web may be located anywhere in the world. For example, on a Google search page, ads that appear on the right hand column of the display, are generally not displayed in a location-specific basis. Indeed, access over the internet allows users from all over the planet to access a particular webpage, through a web address (an Internet Protocol address). Thus, the standard internet protocol does not allow a web server to know, ahead of time, the specific physical location of a particular browsing user.

However, wireless communications (which includes optical communications, and all electromagnetic signals), based on the law of physics such as Friis free space equation, is limited in propagation distance based on a number of factors such as the radiated power of the transmitter, the height of the transmitting and receiving antenna, antenna gains, and carrier frequency, obstructions in the physical environment, etc and thus wireless provides a built in ability to ensure location-based advertising. This invention describes a way that advertising content can be pushed to users within the radio frequency (RF) propagation range of mobile/portable/fixed users who are tuned to a specific transmitted signal. Similarly, this invention applies for devices that are capable of receiving multiple transmitted signals, from multiple radiating sources, either simultaneously or in sequence, or sporadically.

The concept of today's internet-based advertising is to use generic, nationwide webpages, such as a typical webpage that may use banner ads to offer a product or service, or the use of banner ads on web blogs or other web pages, or adsense or adword ads (by Google, for example). However, the difficulty with these ads, from the standpoint of the advertiser, is that it is unknown where the specific user is physically located, thus it is very difficult to offer, in an efficient or market-driven manner, ads that are specifically local to the wireless users that might have interest (for example, a local coffee shop in a particular city would not want to pay for a national ad on a national webpage, but would rather pay only for those ads which are viewed specifically by mobile or fixed wireless users who are in the same city/town or neighborhood of the café.

One approach, to provide location-based ads, is being pursued by Loopt, where they are working to sign up carriers in the cellular radio field. It was reported in Dec 2007 that Loopts has partnerships with Sprint Nextel and Boost Wireless. Loopt relies on users being able to run a middlewear application on their cellphone device, which allows the mobile device to send its GPS coordinates through the cellular infrastructure, and based on the cellular infrastructure and GPS location, the location of user is determined, and an ad may be pushed to the device from the carrier network. Ref. NYTimes Feb 6, 2007 Business Day article,"In CBS Test, Mobile ads find users"

In our invention, we approach location-based advertising in a different, and more efficient way. The invention allows for the Clearinghouse database to be an integral and valuable part of a novel local advertising system and method, that uses readily available hardware to store, reformat, revise and transmit altered web pages that have specific local content. No middlewear is required on the mobile/fixed wireless device in the present invention , although in some embodiments it may be used for acquiring user data, and helping to cache or provision the invention in a more efficient manner . By using the Clearinghouse and database for radio quality and service for wireless devices, as described in Provisional ZZZ filed Oct. 4, 2007, and through use of some of the same mechanisms used to create the on-going quality records of users described in the Provisional, it becomes possible to build a listing of towers, frequencies, types of service, users who have permission/access abilities to the network, coverage regions of a particular tower or transmitting signal, etc. as well as the physical location and proximity of users on one or more wireless services. However, even without the GPS information from users, one can provide location based advertising, as disclosed herein and in conjunction with the knowledge of towers, frequencies, and services offered.

Instead of having to determine the GPS location of each mobile user, as with Loopt, we use the information of the specific tower or transmitter site in order to "alter" or "fill" the national webpage with specific, local ads in particular places on the displayed webpage. That is, a server, which may be remote or located at the same location as the wireless infrastructure providing the local signal, would be used to alter, modify, or rewrite the "original" webpage, and then would transmit the 'localized" webpage over the local infrastructure, so that local advertisements would be used in place of national advertisements, in various places on a webpage, or in various audio or video fill locations, or in specific text messages that are tailored for specific locations.

In this manner, its possible for a national or international organization, or an international web portal, to be able to provide local, target-specific ads, through knowledge of the location of specific base stations. In addition, the clearinghouse system would further allow particular users to be monitored for what type of ads they use, how they select different links (in the case of a webpage) and the internet browsing pattens or effectiveness of the localized ads.

What is needed is computerized system, that may be a web-server, or multiple servers, that may be located at, near, or remote from the base station infrastructure, whereby this

server (or group of servers) may be provided the local-advertising information, in a machine readable format that allows the server to "override" or replace the national webpage server in particular parts of the displayed webpage at the mobile/fixed wireless device.

Using the position-tagged listing of wireless assets for one or multiple bands, and one or multiple carriers, we can provide the ability to provide local advertising content for transmission in the datastreams at particular local infrastructure. This may be done by providing content for a localized ad in a computer file, and then providing a format for said content within the file so that it may be conveniently packaged/placed, as either a banner or pop-up or adword type or other form suitable for use on a partial webpage. The webpage may be of ordinary form, with the local content in standard form as would be used for display on a wireless device. Then, a server computer or computers is used to take a source webpage (say from the national or template provided over the internet)to then alter the datastreams transmitted from the local infrastructure, being different from the datastream obtained from a source (such as a national webpage), and altered specifically for the specific physical location of the transmitter tower, or group of towers, or infrastructure that is located in some physical location such that wireless coverage is provided within a specified geographical range. The transmitted local webpage is altered efficiently based on the format of the local content file, which provides instructions as to where, specifically on the web page, the local ad should be placed. This placement may either replace an ad on the national webpage, or it could be a new placement, or some other placement.

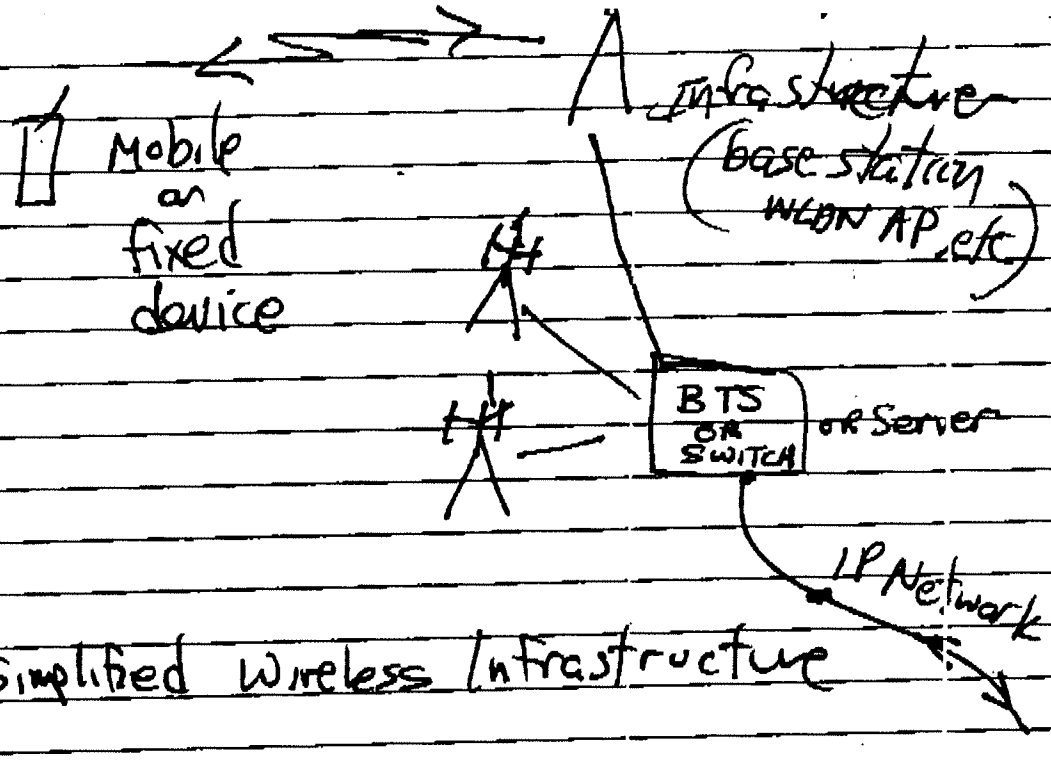
This allows an advertiser to have local information filled in the proper locations on a web page display, or at the proper time sequence or file location in an audio or video or multi-media transmission, This also allows web portals such as Google or Yahoo or Ebay or any other to provide localized advertising without requiring a specific GPS coordinate for each user in its region, thereby preserving valuable wireless resources that would oterhwise be used up to provide position acquisition and handshaking between the wireless infrastructure and the mobile device.

The clearinghouse could maintain a large archive of local advertisement files, and formats, that could be used and invoked over multiple bands and for one or many carriers and services that could be provided over wireless infrastructure for specific locations on earth. This invention can be extended to work for different kinds of wireless infrastructures and rdevices, for example WiFi LANs are different than cellular/WiMax/LTE systems, which are different than standard 2.5 cellular. The advertising system could be used in conjunction with the clearinghouse invention described in the Oct. 4, 2007 provisional, and one can invision this type of local advertising system being available for each type of service or carrier, or for a specific set of infrastructure (e.g. a WLAN system in a convention center, where our invention would provide specific local advertising for the specific convention center, whereas other convention centers around the world would have their own specific ads placed on their web pages). This invention could also be useed to provide local ad content and

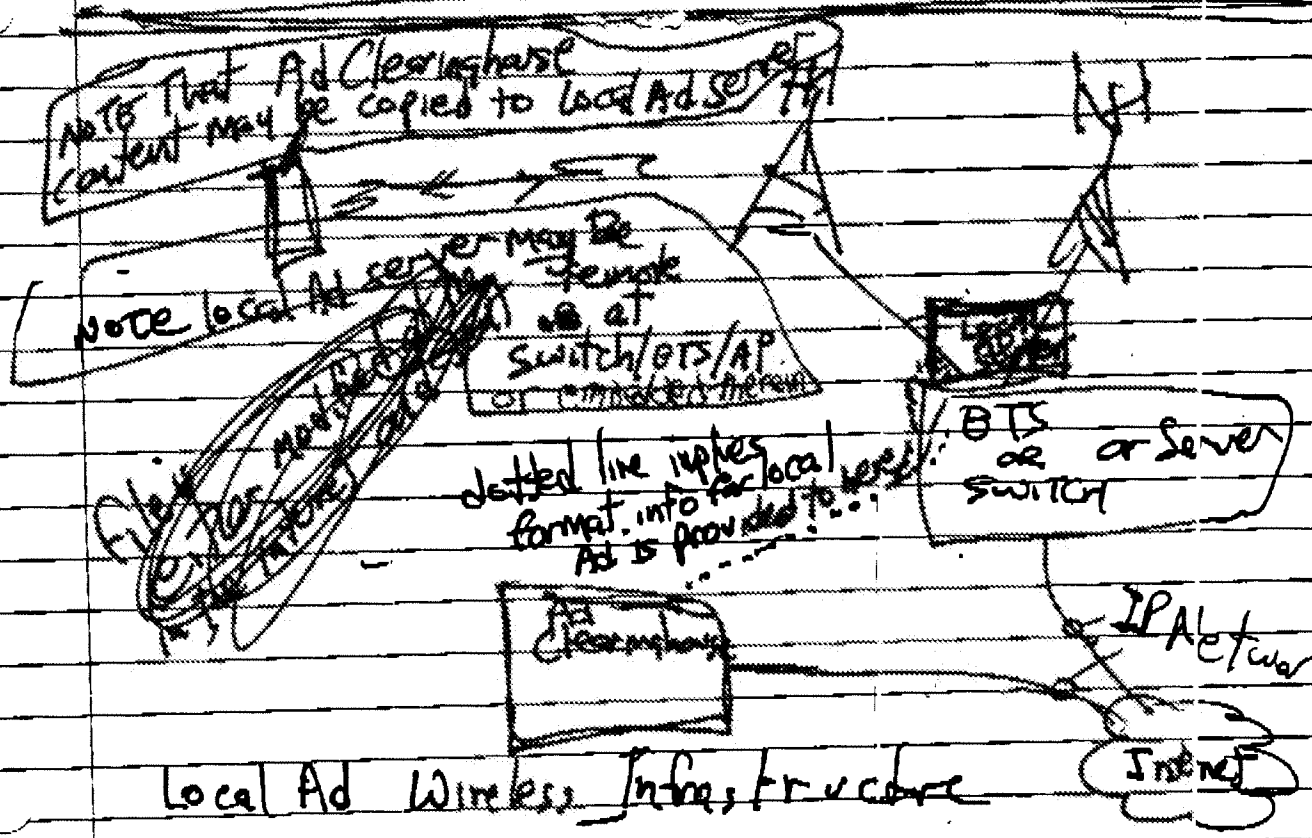
information for all types of infrastructures and wireless standards from a single clearinghouse.

We envision the local ad content to be updated by a specific advertiser, where they are able to access a web portal and format their ad, along with payment for their ad, and having the ability indicate which city, specific tower locations, or specific geographnies they would like to have their ad appear on. Furthermore, they may pick if they want continual, or partial time ad placements, which would be at differing costs, of course.

The advertiser would have the ability to view through the web portal what their ad would look like to mobile users in the specific selected geographic area, and they could compare that to the template, or national website.
See the accompanying figures, which illustrate how the Local Ad sever and clearinghouse work together. They may be the same device, or information from the Clearinghouse may be copied, in part or in whole, to the Local Ad server. The Local Ad server, itself, may be collocated with base station or network provider infrastructure, or itself may be remote and addressable, although speed is of the essence to allow the localized webpage to quickly be revised and sent out over the infrastrucxture.

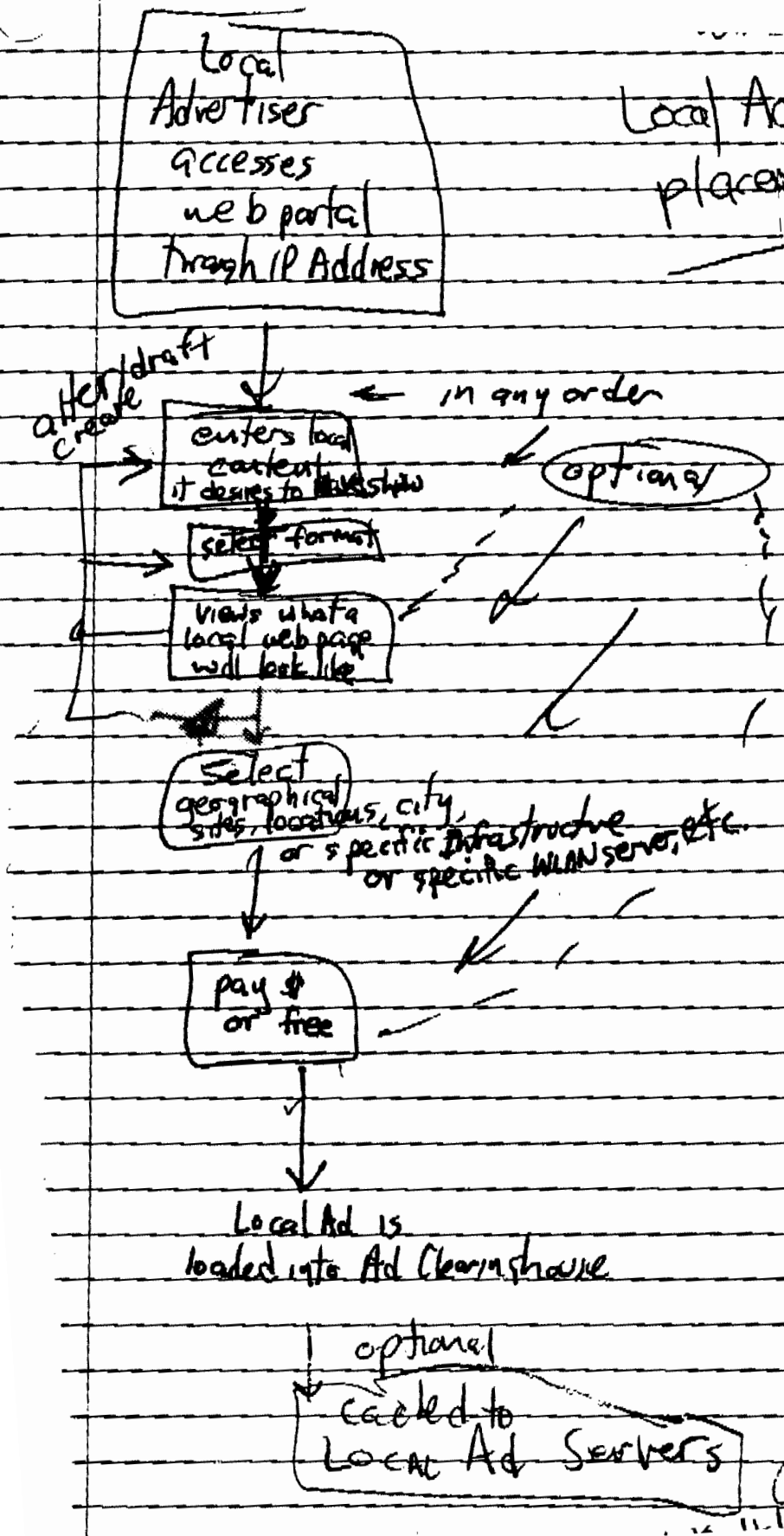


Simplified Wireless Infrastructure



Local Ad Wireless Infrastructure

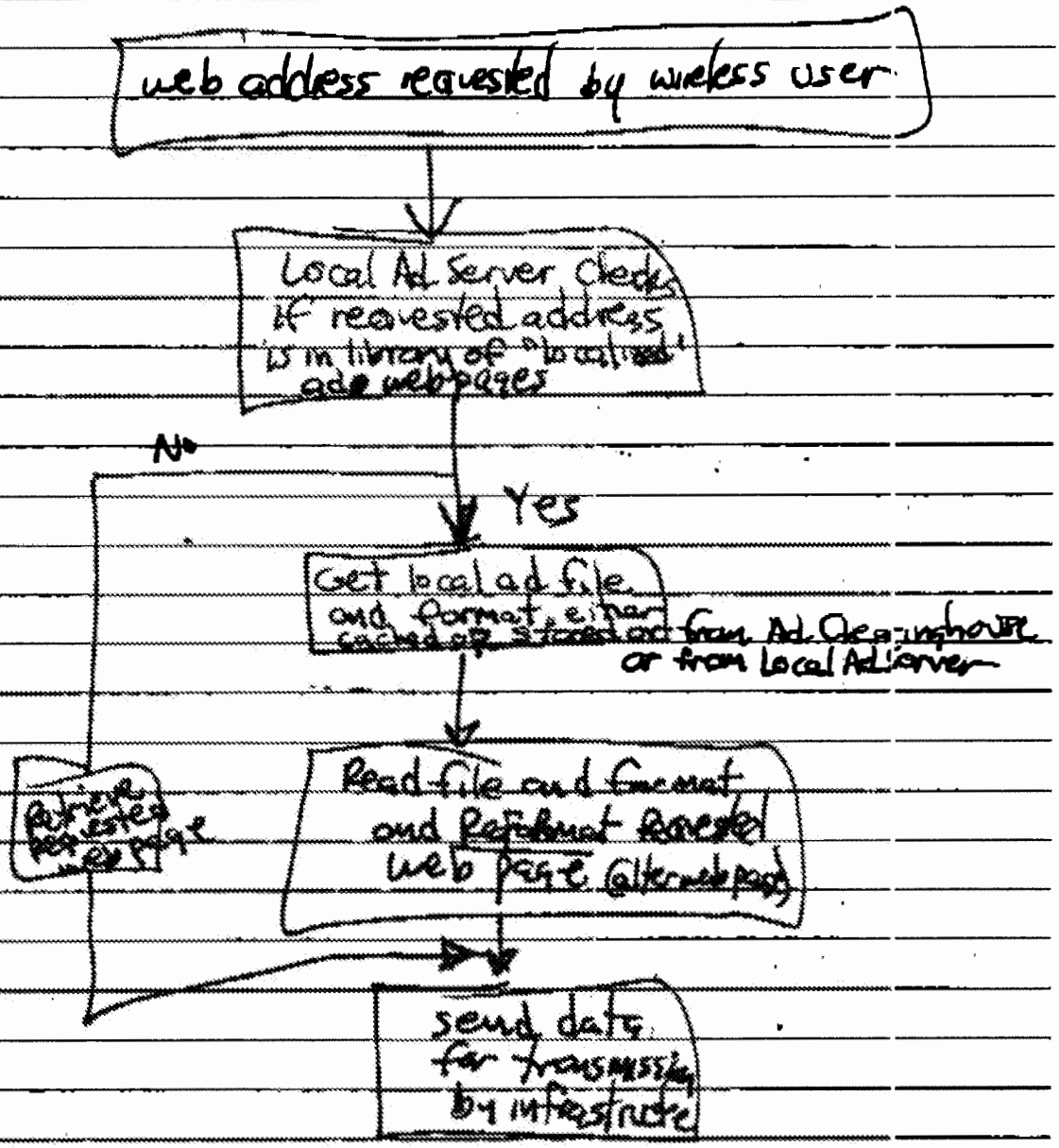
Local Advertiser placement Flow Chart



Mike Whitham
FAX: 703-787-1557

Generate reports for advertisers

wireless/[illegible]
public or Private Carrier
enterprise, Campus, convention center
City, tower cluster, cellular, etc.



Ad Server Function Flowchart

Public clearinghouse system, method, and process for locating antennas and equipment for carriers and end users

Abstract:

A computerized technique for telecommunications carriers to find, evaluate and select locations for equipment through direct access to end users, while providing citizens the opportunity to offer the use of their dwelling to carriers. Invention further provides a computerized mechanism for creating an inventory and a market for available properties and facilitates negotiations and agreements between end users and carriers. The clearinghouse capabilities may be replicated and transported, reformatted, re-branded, or franchised for specific customer groups, industry segments, or localized populations.

Present state of the art:

Many companies own or lease towers, and have expertise in the positioning (sighting), leasing, designing and/or building towers and other equipment that are used in telecommunications. American Tower, Crown Castle, InnerWireless and America Connect, are examples of companies that own, lease, use, or construct towers or distributed antenna systems in and around towers or buildings to enable wireless communications services to be distributed by various users, either their own company or their customers, such as AT&T Wireless, Vodaphone, Sprint, or public or private radio system operators. These companies have proprietary techniques and their own staff, which is generally quite large and includes lawyers, engineers, sales people, and accountants, to implement business models that allow them to conduct some or all of the following businesses: charge rent for towers and or antenna systems, charge for tower/antenna maintenance or tower location services, provide engineering or physical plant maintenance for towers, or antennas, and other associated equipment, install equipment, provide wireless service for telecom carriers, argue zoning ordinances and request variances for tower or equipment installations, and other related products and services pertaining to towers, antennas, and wireless infrastructure in general, in order to maintain and grow a business.

The aforementioned companies often use maps and population projections, along with topographical or geographical features, and radio frequency (RF) software simulators, in order to determine where to place towers or antennas for effective coverage of a service region, how high the tower should be, where a distributed antenna system (DAS) should be placed, what types of antennas are best suited for a particular need, and other technical, esthetic, physical, or economic details regarding how towers and or antennas will effectively support radio communications through its coverage regions and through its building database and tower database. An example of maps, databases, engineering services, and other prior art works, including many by the inventor, are given below. These firms also generally use lawyers to review and assess zoning ordinances involved with the erection of towers or equipment.

See published reports of these public companies, such as American Tower, Spectrasite, which later merged with American Tower (AMT), Crown Castle International, from 2004-2007. See also press releases and webpages regarding America Connect, and the sale and acquisition of Galaxy Engineering by American Tower, and InCode selling to Verasign, the growth of InnerWireless, and some patents created by the present inventor when he was the principal officer of Wireless Valley Communications, Inc. (Wireless Valley Communications, Inc. was sold to Motorola in 2005). See specifically US patents 6,317,599; 6,442,507; 6,493,679; 6,499,006; 6,625,454; 6,721,769; 6,850,946; 6,876,951; 6,971,063; 6,973,622; 7,019,753; 7,035,642; 7,055,107; 7,085,697; 7,096,160; 7,096,173; 7,155,228; 7,164,883; 7,171,208; 7,243,054; and 7,246,045. The aforementioned companies, their products, and the patents deal with very technical issues, and focus strictly on specific technical solutions or business solutions that must be engineered for specific applications in the telecommunications business. These solutions are not in any way aimed at, or directly useable by, ordinary customers or ordinary landowners, homeowners, farmers, church parishioners, public service organizations, local governments, or building tenants who are generally not at all familiar with the technical details of telecommunications engineering, radio frequency planning, zoning restrictions, neighborhood covenants, or network management and operations.

Clearly, utility companies, such as power utility and television cable companies, also have a need for accessing, designing, acquiring, or leasing towers, and using towers, light poles, rooftops, and other structures for supporting and routing wiring in the provisioning of their services. These carriers also have a need of being able to access the location of towers and other equipment, such as utility boxes and cabling, for maintenance purposes, and need to be able to access the physical locations of their equipment and cabling runs, for the purpose of installing or modifying, or upgrading equipment associated with its distribution of services.

Tower companies may lease or sell access to their towers, often with complicated lease arrangements, and at times may also sell their towers in undesirable or less useful locations. Typically, these less desirable sites are sold on an individual ad-hoc basis, requiring a written cash offer. Sometimes, technical hobbyists, such as amateur (Ham) radio operators, may be able to purchase such tower sites for hobby use **(See end of this document - Google: Tower sites; ham tower sites),** for $20,000, a large sum of money, comparatively speaking, in the amateur radio hobby and for most hobbyists in general.

Ebay has pioneered the field of auctioning of goods between people directly over the internet, and the Ebay website allows people to auction off items through the internet without having to deal with a large staff or complicated legal agreements. Meanwhile, Web 2.0 companies, such as MySpace, Itaggit, eHarmony, and Facebook allow people with similar interests to meet on line, and allow the exchange of information between people, often resulting in bartering or sharing of knowledge or information. Google has become one of the most trusted sources of information on the web, because of its powerful searching capability to find postings on many topics. The public is able to access items quickly, efficiently, and at no cost to them.

All of these previously mentioned websites allow people to easily and directly interact, without a lot of overhead or hassle. However, up to this point in time, complicated technical transactions, such as the specification or leasing of towers, or the specification of location or suitability of towers for telecommunications companies, does not occur on today's websites, due to many reasons, including: 1) the tower industry and telecom equipment industry is a specialized industry requiring technical knowledge in the areas of mechanical design, electrical design, tower ordinances and zoning laws, and also antenna design and radio propagation; 2) the use of commercial communications towers today are relegated to wireless carriers, such as cellphone companies, wireless internet service providers, public and private radio carriers, and other businesses or enterprises that work in a business-to-business manner to build out its networks, and these business have heretofore only engaged in business with ordinary citizens when signing them up as end users, and billing them, typically on a monthly or pay-as-you go basis; and 3) the telecommunications industry, because of its cost structure and technical complexity, among other things, has not heretofore relied upon individual citizens or end user customers to actively assist or participate in the delivery or provisioning of its services.

Today, customers of internet or telephone service are generally viewed by the carrier as passive subscribers, paying a monthly bill to the telecom provider but not actively participating in the engineering or business improvement of the telecom provider's service. Today, telecommunication customers generally have no ability to readily participate in the improvement of services or the quality of their provider, or to actively play a useful role in the distribution of the telecom company's capabilities, except through the action of calling customer service to complain about their personal service experience. Today's telecom customer is virtually powerless to readily participate in the improvement of delivery of service of a commercial telecommunication company's product, and is thus shut out from benefiting, financially, from any such improvement that that individual customer might otherwise be able to offer. While there may be special cases, where "someone knows someone at the telephone company who has a problem", by and large, telecom companies have no way to readily scale or access the interests of individual customers who have a willingness and interest to help improve their own telecom experience, while also helping the carrier.

Other industries which involve carrier services also suffer from this problem, not just the telecom industry. The public good is not served as efficiently as it might be if the individual customer were otherwise given the opportunity or forum to express its interest and ability to support the carrier's needs, and where the carrier could exploit such customer interest for the betterment of its business. Were such an opportunity provided, the customers of the carrier could benefit from better service, lower price for service, and could receive benefits from the carrier for being a "helping" or "value added" customer, etc. while the carrier would be able to use the "helping" customer to improve its service or better utilize its resources, better locate its infrastructure, and most likely improve its capital expenditures. In the specific case of a telecom carrier, more effective, reliable and cost effective provisioning and placement of network gear, antennas, bandwidth allocation, over its geographic region, more effective equipment or tower locations, etc.

could result from awareness and access to end users who were in a position to help the carrier.

Currently, companies such as Tropos Netwtorks, and the MotoMesh and Canopy products (by Motorola), and many other companies, as well, are offering wireless telecom gear that can offer communications network connectivity, where network traffic is sent wirelessly through several nodes of a network over a geographic area such as a city. This was explained at the 2006 AWA Conference, Oct 2006, by reference incorporated herein. Many WISPs today are deploying hub and spoke networks using line of sight radios at 900MHz, 2.4 GHz, and 5 GHz in various unlicensed (and sometimes licensed) bands. Many WISPs today struggle with finding suitable towers or rooftop locations, or struggle gaining access to water tower locations, often hindered by zoning ordinances, lack of public understanding, or knowledge of why and how they could easily place their equipment to serve customers. Even though many rural residents would love to have wireless service, it is difficult for many WISPs to deploy broadband networks with limited capital, and the difficulty with dealing with town ordinances, neighborhood covenants, and other restrictions, regulations, or bureaucracy involved for gaining permission to use or erect towers and other infrastructure deployments.

Even in today's implementation of Mesh or WiFi Networks, the deployments of such systems rely on a particular municipality (muni-wifi customer) to have its own tower infrastructure (for example, city lamp poles, or water towers or police towers near city hall, etc.) in order to build the system. Boingo Wireless is aggregating WiFi hotspots around the world, and they are constantly searching for venues where they can install WiFi or partner with existing WiFi network operators in public venues. WiMax networks are in the very early stages of growth, with companies such as Clearwire, Digital Bridge, Nextwave, and Alvarion beginning to deploy networks or provide equipment for broadband wireless " last mile" capabilities for fixed, portable, and mobile customers. The WiFi and WiMax standards, such as IEEE 802.11a/b/g/n, IEEE 802.16a,d,e, IEEE 802.20, 3GPP, 3GPP2, and the ECMA and IEEE 802.15 family of standards are hereby incorporated by reference. Cellular 3G/4G, WiMax, LMDS, RFID and other wireless technologies and interface protocols are certainly likely to become more popular throughout the world as wireless networks proliferate, and are considered to be included by reference here. For example, it is virtually certain that cable companies, satellite companies, web companies such as Google and EBay (through Skype), and even other utilities, such as power companies, shall become involved with telecommunications distribution services. As Moore's Law allows semiconductor technology to become faster and more power efficient at higher frequencies, and as battery power sources become more efficient (including the use of solar cells at fixed stations, and fuel cells or kinetic energy sources on mobiles), telecommunications will be more and more based on wireless techniques, because the traffic bandwidths at the higher frequencies, as related to the carrier frequency, becomes so much larger that today's practice. Such emerging wireless communications technologies and protocols will allow computer to computer connectivity, computer to human connectivity, and human to human connectivity unlike ever before, at higher throughput speeds than today. It is likely that in the future Internet-protocol based wireless connectivity will exist for fixed, portable, and mobile users in

licensed or unlicensed spectrum, for voice, data, text, images, music, and multimedia traffic.

Unfortunately, ordinary citizens are not being used efficiently, if at all, by telecom carriers today for the provisioning of such cellular, mesh, LMDS, RFID,cellular, line of sight, WiFi networks, WiMax networks or other wireless and wired networks, since there presently does not exist any community host – there presently does not exist any "convener" or "trading firm" or "melting pot" where a dialogue that allows individual citizens or businesses of a community to offer the use of their homes, land, building structures, outbuildings, billboards, churches, water towers, towers, trees, light poles, barns to eager telecom service providers. That is, there is no dialogue currently available that allows citizens or businesses (end users) to inform their telecommunication providers of their individual capabilities, and furthermore, there does not exist a forum where such telecom carrier can publicly solicit the help of citizens to aid in the carrier's goal of improving its network capabilities, coverage, capacity, more effective capital expenditures, expansion, or provisioning of services. An important emerging trend is that as frequencies go higher, and as digital signal processing techniques such as MIMO improve, the physical size of antennas will decrease, meaning that the future tower structures and physical size of antennas needed for telecom's wireless communications links will shrink. Thus, towers of the future will not need to be today's large, bulky and ugly cellular or line-of-sight microwave variety, but will be much more lightweight, less obtrusive (e.g. skinnier), and more convenient, less expensive, and readily available for use on rooftops, billboard, church towers, or home TV or ham towers.

In the power industry, over the past decade, power companies have begun to encourage individual customers to become active and involved participants and supporters of the power utility. Many municipalities allow individual customers to "give back" or "sell back" power to their power utility, as a means of incentivizing individual customers to cut back on power consumption or to invest in alternate forms of energy generation (such as wind, solar, or geothermal power generation at their home). The individual customer can actually make money by selling power back to the power utility, and the power utility company is able to serve other customers with the energy not utilized by the engaged "helper" customer who is more energy efficient customer. However, unlike the more complex delivery means in the telecommunications industry, all power companies are such that any power delivered to an individual's home is done through conductive wiring. That is to say, wires are connected to/from the power grid to each customer's home, and a "helping" customer simply must couple its own power generation plant (e.g. a solar or wind energy power source) to the wiring that leads directly to the power company, and this connection is made either by the end user herself or through the assistance of a technician provided by or on behalf of the power company.

The telecommunications industry is very different, technologically speaking, from the power industry, since wireless telecommunications is being used more and more in the telecommunications grid, particularly for the last few miles of connectivity between a telecommunications company and an ordinary rural customer, and routing circuitry and nodes and servers are required more and more in both wired and wireless networks that

are evolving to the Internet Protocol (IP). In fact, wireless communications is being deployed faster than wired DSL or cable to provide broadband (defined as greater than 200 kbps in one direction) connections in homes and businesses in the USA in mid 2007, according to a recent FCC report. This trend is certain to remain in other countries throughout the world, and most particularly in countries such as China, India, and other emerging nations that have a strong need to be connected on the world's telecom grid, e.g. the world wide web. Because of the necessity of towers or antennas, and associated network equipment, to be situated at particularly good radio locations that are specific to each telecom company and their customer's specific locations, and given each carrier's need is specific to their own network's specific design criteria and history of evolution, and because of the radio propagation aspects and geographical impact associated with wireless transmissions, it has been heretofore impossible for telecom companies to engage in direct communication with a large customer base, in order to energize and engage its customer base to help its product and service delivery. In other words, the power company can much more easily tell its customers to buy solar panel systems, and how to hook up a coupling mechanism that lets the customers sell back power, because of the orderly, wired connections that are made in the power grid to every single home. Without exception, power companies have conducting wires, often times buried or carried on utility poles, that enter each end user's home. This makes it easy for power companies to have an orderly adoption of end user savings methods. The customer easily knows where the power line comes into their home.

Today, however, it is extremely difficult, and in fact impossible, for a telecommunications company to tell a wide customer base that it needs a specific tower located at a particular latitude and longitude, that complies with neighborhood covenants, town ordinances, and yet has a tower height that permits RF propagation with a signal strength (say of -70 dBm), and a particular front to back ratio (say of 20 dB) in order to cover a particular neighborhood that is just out of reach of its existing tower. It simply has not been done in the history of the telecommunications industry, and there is clearly an unmet need that could allow both customers and telecom providers to benefit if such a clearinghouse existed. Today, carriers view it as a potential harmful revelation if they admitted where it has service problems, possibly allowing competitors to seize opportunities where the carrier is known to be having poor quality or coverage problems.

It is the complexity of tower height, tower engineering and installation, antenna design and radio propagation fundamentals, and town ordinances and restrictions in neighborhoods, combined with the desired secretive nature of a network operator's coverage and quality issues, that has led precisely to the current state of affairs, where specific companies serve as tower owners or brokers, and where specific, specialized companies provide for the telecom carrier detailed technical or electrical services, such as antenna engineering or propagation design, or access to building structures or towers, at higher costs than what telecom companies would likely pay if they otherwise could deal directly with their end customers in a non-confusing and trusted way. Not only wireless infrastructure is affected, but there are surely instances where a carrier would like to install power conditioning, wired infrastructure, or backup equipment or gear in a particular location, and if the carrier could locate such devices or infrastructure on a

particular customer's premise, it would likely be of great value to the carrier, particularly if the end user was trustworthy, had expressed an interest and willingness to help the carrier, and gained some consideration (e.g. free internet or help with her power bill).

A promising development that points to the eventual "democratization" of the carrier infrastructure world, where all end users have an opportunity to participate and assist in the operations of the carrier, with benefit to the carrier, is the willingness of end user customers to have satellite TV services, such as Echostar or Direct TV, bolted onto their homes or place in their yards. These new satellite services require that a technician come directly to the end user's home, and in a matter of just one to two hours, the technician installs a satellite dish and receiver on the roof, yard, or telephone pole or tree of the end-user's property, often having to drill holes through the exterior of the home, or through a wiring cabinet to bring the cable into the end users home, all the while hammering/bolting hardware to the exterior or roof of the home. Customers are willing to allow equipment to be installed at their premises, as shown by the satellite TV industry, and its very rapid growth in just a few years. While satellite dish antennas serve the individual homeowner, the satellite system is a receive-only system and the equipment installed at the homeowner does not allow the satellite provider to improve the delivery of its content to neighboring houses or neighborhoods. But this early indicator shows how citizens are now willing to have alien telecom equipment installed on their own premises, and to allow a technician to climb around on the roof, yard, and drill holes in the house, if it provides some benefit to them (e.g. gives them the ability to watch satellite TV). Note that satellite antennas being installed today by Echostar and DirecTV are relatively small and unobtrusive.

Today, customers do not have, and never before have had, a way of receiving perks or bartered value, in addition to improved service from carriers, in exchange for giving carriers the right to install and operate the carrier's special equipment on its own property. However, if the carrier was able to communicate and take inventory of each end user's capabilities, the carrier could derive extreme value in its business and technical operations beyond just servicing the end user, in exchange for the end user's willingness to allow the carrier access to its dwelling and property for the carrier's overall benefit.

Today, thousands of small, medium, and large telecom companies, such as wireless cable companies, wireless Internet service providers (WISPs), and mainstream wireless carriers throughout the world such as those companies mentioned above are deploying wireless broadband networks, using an inventory of towers and or building structures where they have access, to deliver last-mile services, but with no ability to enlist or solicit the interests of ordinary citizens or hobbyists who, if they were aware of the opportunity, might jump at the chance to offer assistance to carriers. Today, the telecommunications industry is unable to solicit the help directly from its customer base, or from the citizenry at large, because of the previously mentioned technical difficulties and trust issues involved with tower and equipment site selection, and the sheer lack of ability to communicate the needs and wants and capabilities of the service provider, and the needs and wants and capabilities of the end customer, in an easy, clear, and orderly manner. There has not been, to date, a trusted source that carriers can rely upon to broker

communications directly between end users and the carrier, itself. That is, there has not been, to date, such a "convener" for the telecommunications industry that would allow carriers to tap the interest of its end user customers to aid it in the rapid expansion, or improvement of quality and capabilities of telecommunication services, particular broadband, multimedia, WiFi, WiMax, RFID or sensor based mass- communication networks, and at lower design, operating, and ongoing cost levels.

Summary of Invention

This patent now discloses an invention that will dramatically reduce the costs of antenna, equipment, or tower site acquisition, dramatically improve the ability for carriers to deploy wireless networks from a cost, efficiency, and quality standpoint, and provides previously unavailable, non-obvious, and unknown methods, systems, processes, and business models for carrier networks to be augmented or built from scratch more efficiently through the aid, assistance, and participation of end users. In addition to the opt-in assistance offered by end users, the invention also contemplates the public at large being able to contribute to the knowledge base that may be exploited by both carriers and end users, since the invention contemplates that ordinances, laws, zoning regulations, and graphical data such as plat maps, topographical contours of land, and radio coverage zones be made available through the clearinghouse.

Furthermore, this patent describes a new kind of business that can exploit the inventorying and clearinghouse information provided by end users, carriers, and the public, in a form such that it may be franchised or distributed in a private label or Original Equipment Manufacturing manner, and where the systems and methods described herein may be offered as a trusted service by carriers, non-profits, for-profit companies, and the like, either across specific customer types, or within specific geographic localities.

This invention applies to any telecommunication system, no matter what the distance is between users of the network, whether it is wired or wireless, or what the transmitter-receiver separation distance is of wireless components, or what the technology, modulation, access method, etc. may be. That is, this patent is not limited to wireless, optical, cellular, WiMax, Mesh, WiFi, RFID, LMDS, cable, or satellite, and not limited to fixed, mobile, or portable operation by users , as it is intended to be used in its broadest form, as would be understood by one skilled in the art in deploying, designing, operating, or using such a network that has end users, and where infrastructure is needed and must be located, at physical locations, for carrying out communications, either wired or wireless communications. Thus, this invention may serve the needs of indoor/enterprise networks within public or private buildings, as well as micro or macrocell coverage ranges, as well as county, country, or worldwide networks.

Furthermore, this invention could be extended beyond telecommunications, and may be applied to any carrier-based service, where subscribers pay for an on-going service over a period of several days, months, or years, and where participation of the end users, and

direct interaction between the carrier and the users could improve the efficiency, quality, business operations, or technical operations of the carrier over its serving areas.

This invention offers:

A way for carriers to become aware of its customer's ability to help them provision their network with better quality, less capital expenditures, and more cooperation from its customers.

Automated Voice, touchtone, web, handwritten, or human to human interaction for a carrier or clearinghouse company to determine end user's inventory, interest, needs, etc.

A way for end user customers of telecommunications services to make its telecom carrier, or even their potential competitors to its telecom carrier, aware of his or her ability and/or interest to help carriers with their distribution of telecommunications services through the use of their own premises.

A business method that allows a 3rd party entity (A person or a corporation, say a website company, for example) to offer inventory and polling services to carriers and the carrier's customers (end users), as well as to the public.

A business method that allows a carrier to inform, educate, and solict inputs from its customers regarding its customers interest or ability to help the carrier with expansion, alteration, or improvement of the carrier's network.

A business method that allows a company, such as a publisher, a Web 2.0 company, a carrier, or a trusted web portal, to offer an e-magazine, a printed magazine, a newsletter, and/or an internet blog, where each may include an inventorying service between a carrier and its customer base of end users, such that end users are able to provide the carrier an inventory of their assets that may be used to help the carrier.

A business method that allows a company, such as a publisher, a Web 2.0 company, a carrier, or a trusted web portal, to offer an e-magazine, a printed magazine, a newsletter, or an internet blog, where each may include a bartering system and method between a carrier and its customer base, for the bartering of installation or redeployment of equipment at the end user's dwelling in exchange for compensation of some type from the carrier.

A business method that allows a company, such as a publisher, a Web 2.0 company, a carrier, or a trusted web portal, to offer an e-magazine, a printed magazine, a newsletter, or an internet blog, where each may include a registration system and method between a carrier and its customer base, whereby end user customers may register to express interest and ability to support equipment at their dwelling with one or more carriers.

A business method that allows a company, such as a publisher, a Web 2.0 company, or a trusted web portal, to offer an e-magazine, a printed magazine, a newsletter, an internet blog, where each may include a system and method that allows a carrier to execute an agreement regarding the installation or modification of telecommunications equipment at the dwelling owned or occupied by end users in its customer base.

A business method that permits carriers to connect directly with its end user customers in order to aid the carrier in determining how and where new or existing telecommunications assets may be deployed at its end user customer's land, home, buildings, towers, structures, or property.

A business method that allows a company, such as a publisher, a Web 2.0 company, a carrier, or a trusted web portal, to offer one or more of an inventorying, registration, agreement execution, and bartering service, system, or method to specific types of land owners in order to aggregate the assets available to form a database.

A computerized system that serves at least two types of customers: end users or carriers, with password protection and opt-in capabilities where the end users may chose to have their availability/interest in supporting carrier needs shared among more than one carrier.

A computerized system that provides the entry of customer interests, customer data, and provides access to legal documents such as town ordinances, town zoning rules, neighborhood covenants, and contracts or sample contracts or agreements between telecom carriers and end users for allowing end users to aid the carriers under mutually agreeable terms.

A computerized system that allows end users or carriers or a third party to add legal documents such as town ordinances, town zoning rules, neighborhood covenants, state or local laws, and contracts or sample contracts or agreements between telecom carriers and end users.

A computerized system such as described in the preceding three paragraphs, where a graphical information system (GIS), such as (but not limited to) Google Earth, MapInfo, USGS, may be further included to aid either carriers or end users for determining radio coverage footprints or

A computerized system such as described in the preceding paragraph, where radio propagation prediction algorithms may be run using the GIS and equipment models in order to determine coverage regions, obstacles due to terrain or buildings, and viable locations for towers, antennas, repeaters, nodes, and end user premise equipment.

A computer system that is built upon a database of customer needs, and may also include carrier needs, that allows the rapid sorting and pinpointing of available locations for a carrier to build, lease, or use a Dwelling or existing location for improvement of services.

A computer system that allows end users to learn about telecom laws, ordinances, opportunities, and technical details so that they are more knowledgeable and interested in assisting telecom carriers in the provisioning of telecom networks.

A computerized system that allows end users to rank their happiness or satisfaction with their carrier after entering into a relationship through the "convener", and where carriers may also rank their happiness with their end users, too.

A computer system that includes a database of locations of end users who are willing to assist with the provisioning of telecom services at their premises, combined with RF coverage details that enable the determination of promising locations of towers or structures (either existing or to be built), combined with legal records such as covenants, town ordinances, combined with plat maps or zoning boundaries, so that a telecom carrier or end user can quickly and easily see what is viable for provisioning of telecom services. In fact, one embodiment of the invention allows for the computerized system and method to automatically determine the best locations

A computer system that allows for an educational or newsworthy web publication or paper publication to be created rapidly from content stored on a computer, where such web publication or paper publication may be private labeled or customized specifically for a particular carrier, neighborhood, locality, or group of people or entities/customers.

A Detailed Description of the Invention

The invention will be better understood by considering the following diagrams:

Figure 1 is a block diagram of the clearinghouse computer, including applications that run on the computer system.

Figure 2 illustrates an embodiment of how the database of the clearinghouse system is organized

Figure 3 illustrates an example form that is completed by an end user or carrier user

Figure 4 illustrates a flow diagram of how the clearinghouse determines matches between the end user interests, the carrier's infrastructure requirements, and local ordinances that apply, and how the clearinghouse notifies the carrier. This also can assume an automated process, that may have carrier involvement/intercession if required by the carrier, to notify end users that they may be of assistance to the carrier's needs, and the terms and conditions available to the end user.
Figure 5 is a schematic diagram illustrating interaction of the various parties over a network.
Figure 6 is a block diagram of a clearinghouse computer similar to Figure 1

Before describing the invention, here are some useful definitions that we incorporate throughout this patent.

Dwelling or **Premises**: any property, building, outbuilding, structure, tower, vegetation, or land, or any thing on or in or over or under the property occupied or controlled by the end user for which the end user may allocate rights of use to others. The definition of "dwelling" may also include one or more rooftops, silos, billboards, trees, church steeples, poles, towers, ledges, parts of a building, outbuildings, lookouts, extensions to buildings, or signs.

Carrier: Any company that offers services to an end user on a regular basis over time. The term "carrier" is intended to be given its broadest possible meaning, as it is meant to describe companies that offer to end users services such as telecommunications, connectivity, entertainment (such as movies, cable, multimedia, music, on all possible media and all possible delivery mechanisms), AC power for the home, mail delivery/retrieval, archiving or storage, inventorying, cleaning, yard maintenance, water delivery, laundry service, and the like.

End user: Any person or entity that pays for ongoing service from a carrier. An end user may also include those people or entities which are not yet subscribing to the service offered by a carrier, but who have interest in participating and possibly contributing assets or capabilities to a carrier, either from their own personal interest or edification, or because they hope to gain some benefit or remuneration of some kind at some point. An end user may be a person, but also may be an entity or an enterprise, such as a church, and apartment building complex, a co-op of people, a shopping mall, a car dealership or chain of car dealerships, or a business, either stand-alone or spread out on a campus or throughout the world, for example.

Computer: May be a single computer or a group of computers, which may include associated circuitry and components, such banks of memory (storage), back up gear, displays, human and machine interfaces of various kinds, parallel computers, distributed computers, distributed or single connections to the internet, distributed or single displays or editing/viewing capabilities, one or more web servers, mail servers, and multipurpose servers and routers, or any coupling of computerize components that allow for one or more of: telephonic answering, touch tone interpretation, voice recognition, handwriting recognition, facial or fingerprint recognition, stylus recognition or typed data entry (either directly from a keyboard, via telephone or internet connection, from a phone, over wired or wireless or optical connection), text recognition, file transfers, data transfers, file caching, file storage or entry or manipulation, running of software, hosting of applications, running of applications made up of computer programs from one or many sources, where components and software are coupled or combined as known to one skilled in the art. The term "Computer" is to be construed in its broadest interpretation, as the invention may clearly be practiced at a single location, distributed across a country, a city, or used worldwide with a network of computers and backup storage located throughout different continents, as it is contemplated to host at least one website, and to enable connections of the website with and between end users and carriers.

Many techniques are known in the art for computers to be able to interact with and assimilate data from people. Consider some examples of telephonic and touch tone phone

inputs that are provided by humans and are processed by a computer. as taught by the patents of Ronald L. Katz which are hereby incorporated by reference. Furthermore, voice recognition systems, and voice over IP (VoIP) calls to a computer are well understood today, and it is further recognized that end users of telecom services, and people throughout the world in general, may access a computer in many different ways using the worldwide web. For example, web interfaces are used in programs for personal computers, and personal computers may be connected via any form of internet connection to a computer that hosts a website. Websites may also be accessed by cellphones, PDAs, tablet computers, such as those made by Motion Computing with handwriting and fingerprint recognition, and many other devices.

Companies such as the tower holding companies (such as Crown Castle, American Tower, etc.) have proprietary techniques and in-house experts regarding dealmaking terms, leases on towers, and RF engineering for tower citing and placement, and these companies do not allow consumers or the public to volunteer to help carriers with their own personal assets on premises, nor do they provide a clearinghouse function that goes direct to consumers or which can be made available to the public or either/both end users and carriers. Furthermore, these companies do not allow their knowledge to be shared or repackaged, rebranded, or put in OEM format to target particular end user market segments or specific geographic locations. The aforementioned patents, companies, processes and procedures do not contemplate or make obvious in any way the invention disclosed herein.

Mobiledea and its extension, CellReception.com, were started by Allen Tasi. These are firms or websites that use the FCC database of tower locations, and plot the approximate coverage for customers to see using Google Maps. These websites also allow customers to share comments on cellphone reception. Consumer-based websites and companies such as Mobiledia.com and CellReception.com provide revenues for the website owner by allowing for advertising by companies such as Radio Shack and various cellphone vendors, and the sites provide for public comments regarding cell reception, individual cellphones, cellular and wireless issues, but they do not serve in a clearinghouse capacity as contemplated by this invention. Clearly the aforementioned websites do not allow customers or the public to offer their own assets for the deployment of telecom services, nor do they shed light on antenna regulations, zoning ordinances, RF planning (suitable for specifying new or inventoried tower sites), or neighborhood restrictions. Theses type of websites furthermore offer no forum to exchange or add public domain documents pertaining to town ordinances or covenants for neighborhoods in specific zip codes, which would be of great value to end users, the public, and carriers wishing to serve that particular area. Zip codes are a popular sorting technique for parcel delivery services that are scheduling using the world wide web for companies such as FedEx, DHL, and UPS. These websites also do not allow a carrier to discretely determine which of its customers, or potential customers, might have some land, tower site, rooftop, or building that he would be willing to allow the carrier to use for buildout of its network.

Using Google Maps or a GIS package, such as the USGS, or commercial programs such as those made by EDX Engineering, Wireless Valley Communications (now owned by

Motorola), Comsearch, Celplan, etc., are well known in the art. In schools across the world, students are learning how to interact with Google Maps and other GIS applications, even when they have no or little regard for wireless theory, telecom regulations, the needs of the telecom industry, or RF propagation. For example, at the Massachusetts Institute of Technology (MIT) in Spring 2007, a computer science course on pervasive human-centric and mobile computing (MIT 6.883 taught by Larry Rudolph) had students using Google Maps to create circular contours of hypothetical tower locations, without regard for tower zoning ordinances or RF coverage or equipment installation guidelines, and with no contemplation of the invention disclosed herein. The user's manuals for these products, and the course notes and links to information which are posted on the worldwide web for the Spring 2007 Class of 6.883 at MIT are hereby incorporated by reference. It should be evident that none of these contemplate or make obvious the invention disclosed herein.

See:
http://people.csail.mit.edu/rudolph/Teaching/home883.html

http://people.csail.mit.edu/rudolph/Teaching/ps1.pdf

Websites which allow for posted materials, updated materials, and graphical and text interactions, even podcasts or videos, are well known in the art, as demonstrated by Google, Inc.'s wide range of web portals, as well as those by eBay, YouTube, Yahoo, and the like. All of these websites and product companies described above use a "computer" as contemplated here. Furthermore, automatic document generators are also well known and are in regular use today, where content can be bundled and packaged into web form, electronic media form, or print form, to have a homogenous look and feel, based on content that is stored in file formats such as files in .XML, .HTML, .BMP, .TIG, .GIF, .PDF and other formats known now or in the future, and through use of JavaScript programming language, and rcross-platform techniques such as AJAX (Asynchronous Java Script and XML), which allows web applications to seem much more responsive by not interfering with normal web page loading.

To launch a commercial website, many companies provide tools and capabilities that make it viable. For example, InetU or Rackspace provide Managed Web Hosting, where they provide a computerized system that a customer (the website company) can use and access through a log in to edit, remove, add, or reorganize content in the form of webpages, downloads, documents, and a wide range of other viewable or useable multimedia forms that may be accessed by the public, or by password protected classes of users who may or may not pay a subscription for access to the website. Also, the website company may chose to simply do hosted services. In order to generate revenue, PayPal offers software and servicers that enables a hosted site to exploit the PayPal developer network to create webpage(s) that allows a website company to securely collect monies from the browsing public, accepting all major credit cards and PayPal currency through web transactions. To maintain databases that contain important information, a website company will use SQL or SQLServer, or Postgress as a backend database system to store

myriads of data records, for rapid access by the applications running on the computer, and other known document management techniques are used for archiving and retrieving documents, and for accessing applications over the web such as Google Earth, USGS, or county or local city/county plat maps, ordinances, or board meeting notes that are often available on line.

Figure 1. Clearinghouse System

Figure 1 shows the Clearinghouse system. On the left portion of the figure, we show the various types of users of the system. Note that Carriers, End user customers, and public users each may have access to the clearinghouse via a wide range of interfaces, including web, phone (using cellphone or wired phone or VoIP phone), email, or through automated voice recognition or digital recorders (that may recognize speech, handwriting, fingerprinting, etc). The owner or operator or proprietor (and any employees or subcontractors) of the clearinghouse may also access the clearinghouse by these interfaces, as well, and may have one or more additional proprietary interfaces to the system (not shown).

The carriers and end user customers may or may not be regular subscribers to the clearinghouse. A preferred embodiment is for the clearinghouse to have revenue-generating subscribers, where the carriers and end user customers sign up for access, preferably using credit card (although written check or wire transfer or debit card may also be accepted by the clearinghouse) for monthly or annual billing. The sign up and password management**, and credit card billing is handled by the credit card sign up application (shown on right portion of figure). By signing up as a subscriber, for example over a year period, carriers have continual access to the clearinghouse during that time, and some of the features that they would enjoy are: automatically notified when new end-users offer dwellings for use, either by email or by on-screen notification when they log on or through a messaging feature. Furthermore, the selection/optimizer application will run periodically (on an hourly/daily/weekly basis) based on inputs by the carrier that are stored in the clearinghouse. The clearinghouse will automatically check the carriers' needs with the end-user offers (which are stored and processed using the End User record application and the sorting and parsing application) .**

Alternatively, depending on the business model, the clearinghouse may be implemented without a subscriber model, where carriers and end users access the clearinghouse for no charge. In either case, the carriers or end users may simply be given unique ID's or clearinghouse names (their unique ID may be their email address, or a customer–specified log in name), and in any case, these customers are provided passwords (that may either be specified by them, or issued by the clearinghouse) that allows the end users and carrier customers to the clearinghouse. The various access permissions allowed to each class of user of the clearinghouse is managed by the "access to web" manager application.

The clearinghouse allows its users to connect over the myriad of connections, such as phone, internet, email, etc. The clearinghouse is connected via the internet to allow dissemination of its content over the worldwide web, so that the public can gain access and view/use the information contained in the clearinghouse. The content of the clearinghouse is stored in a wide range of forms, such as databases that may be within the computer, databases that are located outside of the computer, in applications that may be run or managed by third parties.

Some of the information may be modified or viewed by different users. For example, carriers may view the records of all end users to help the carrier see what opportunities exist for it to locate its equipment, and the carriers could also use the clearinghouse to indicate its own desires, needs, interests, and problem areas where they have need to find locations for equipment. Other carriers, end-users, or the public users would not be privy to the carrier's specific desires or needs, but the carrier would be able to use these recordsCarneebreuipqes. End-users may use the clearinghouse to enter their data, expressing their interest (an offer) in having their dwelling used by carriers. Other end-users would not generally be allowed to see the offers of a particular end-user, but carriers would be allowed to see it. The storing, parsing, controlling, and organization of end-user records is one of the applications used by the clearinghouse (shown on right of diagram). The construction and creation of software applications to do this are well understood , and this could be internally developed by the clearinghouse staff, or developed using run using well known third party programs.

All users, including public users could use the clearinghouse to view various zoning/covenants affecting their own neighborhoods. Users can submit records, documents, plat maps, zoning ordinances, or provide web links thereto, by accessing the Clearinghous and using one of the applications dedicated for such locationing and mounting or linking of records in the clearninghouse. Thereby, all users of the clearninghouse can readily access, in an easy manner, key documents, zoning records, or other public ordinances surrounding telecom regulations in their specific location, neighborhood, country, or city, etc. Such records can be mounted in the Clearinghouse and sorted using either Zipcode, city, county, township, state, country name, whereby applications allow the documents to be retrieved and stored in a manner that makes them easily retrievable and accessible by users of the Clearinghouse. Note that some documents may be uploaded to the Clearinghouse by PDF or other well known document formats, or may simply be pointed to using URL addresses or other techniques known now or in the future. Services such as Google or eebcrawlers may also be used to provide the clearinghouse information, and in many instances a particular map or document might need to be categorized under a state or national as well as local category. The Clearinghouse computer could maintain its own storage facility, or rely on the web-based storage of other websites (although this latter approach may mean some data disappears or becomes incorrectly pointed to over time).

Carriers, end users and public users may access the clearinghouse with phone banks, web servers, telephone operators (either its own phone operators, or through a leased or rented

call center, or using a 3rd party provider for telephone answering services), automatic speech recognition devices (not shown), voice mail, or digital recorders to and email servers. Note that some or all of these may be used in an actual embodiment, and it is understood that other embodiments other than the one shown might be used, based on the cost to provide a more . It should be clear that not all applications would need to be installed or used at once, and one skilled in the art can envision different applications, or different approaches to organizing content, while keeping in the spirit and intent of the invention.

Given the aggregation capabilities of the Clearinghouse, advertisers, attempting to focus on various customer segments, can provide advertising to the various users of the Clearinghouse, either through email, the website display, through voice mail and video/multimedia services when users access the Clearinghouse, and through regular mail, based on the address records contained in the end user records and carrier records applications. Web advertising is an emerging business, and the clearinghouse would serve as a highly targeted and useful medium for advertising over many domains, given the new capability afforded by the present invention.

The Clearinghouse also supports forums and exchanges, where end users may communicate with one another, where caarriers and end users may communicate with each other, and where carriers may meet and communicate with each other. This may be provided using chat facilities, instant messaging, VoIP, or web posting, as well as other forms of peer-to-peer and peer-to-group hosting applications. The archives in this portion of the clearinghouse will help others in gaining knowledge and understanding of the clearinghouse and the needs of the telecommunication industry, carriers, and end users in general, thereby providing valuable insights for a growing customer base.

In addition to the forums, the clearinghouse serves as an educator, a trusted resource that provides content, links to important telecom rulings and happenings, and provides open content for the world to access. This education/content capability allows the Clearinghouse to also publish, either in print, email, or web, or podcast, or broadcast form, newsletters, information pieces, and promotional pieces that may advance the needs of particular carriers or segments of the telecom industry.

An important part of this invention is that the access to carriers and end-users allows the clearinghouse to be private labeled or OEMed by particular carriers, or by particular entities, such as the American Radio Relay League or JARL, which has many constituents who own towers or have interest in advancing telecom in general. By creating a private labeled web presence or print presence, the knowledge and content of the clearinghouse can be dispensed to particular groups of customers or end users, for the benefit of the industry or for the benefit of a particular carrier or industry segment. Thus, the knowledge contained by the clearinghouse may be sliced and diced, distributed in many ways in parallel. This perpetuates the growth of subscribers or users of the Clearinghouse, while serving an unmet need which would benefit many carriers or organizations, particualrly small and medium WISPs and other smaller telecom

companies that do not have the resources to promote their own technology or their own presence as effectively or efficiently as the present invention allows.

In addition to the abilities mentioned above, the computer provides the Clearinhouse with the ability to allow a carrier to exploit the end-user information in order to identify locations or dwellings where end users will allow it to install equipment or towers, etc. \NOTE: Someone has to program in the links to the county/city, this is a step in process, or we can use a CRAWLER application to get it readily, or we can allow the PUBLIC to install the link (and have the community validate its good – generally people in the same neighborhood will be interested in seeing if it's the right plat map, the right link, etc). We could have people rate the quality of the postings (one to 5 stars) and let everyone who uses the site have a screen name so they can be credited with finding and posting info/data, and get ranked by the community. We will need our own internal quality check, as well, and may need to staff for this service of populating the website with this content.

NOTE: We let carriers to have a look at all end user offerings without giving away what the carrier wants or needs. Carriers should put up their standard term agreements and have the ability to use the Clearinghouse to see readily if there will be local ordinance hassles, neighborhood hassles, limitations due to covenents . Letting the end users and the public post this information, on a zip code or neighborhood by neighborhood, county by county, township by township, sq mile by sq mile basis, is best, as these maps for the boundaries exist.

NOTE: Amateur Radio Relay League, (ARRL); Japan Amateur Radio League (JARL), Radio Society of Great Britain (RSGB) would have interest in possibly hosting or rebranding the clearinghouse to its own purposes, and would have interest in offering this clearinghouse service as revenue generating opportunity for its own society and as a service to its ham radio operator members, who often have towers and have already taken care of the zoning issues in their own neighborhoods. Amateur radio towers are often exempt from tower restrictions due to the common good and emergency preparedness that amateur (or "ham") operators provide to society. The lower profile of today's wireless telecom equipment, such as WiFi, WiMax, and much of the emerging broadband wireless infrastructure, does not require bulky cell towers, and can readily be installed on most ham radio towers today. The invention will allow carriers to immediately find these hams, so that the carriers may approach this community for potential tower sites. This helps quicken the deployment of wireless without the need to erect new towers or to go through extensive zoning hearings. Increasing the time to build out coverage or capacity is very valuable to a carrier, and thus the carrier would likely pay to have access to the clearinghouse.

Forms, on web or submitted by voice, email/ touch tone, data entry/handrwriting, etc.

Does user have:
Tower/

Places on roof/house/building for antenna mounting/equip mounting
Does end user have to be on site when telecom company comes?
Does end u ser have ;power available
Does end user want maintenance of tower/building?
Will user want cash rebate or free service?
Does owner own the land or rent

Is user aware of any zoning or limitations, neighborhood covenants that would prevent stuff going up, if so wher?

Tie tower or home ownershio; into database with fCC, with Town/country records of public land, with google maps

Provide feedback on web, voice/email regafding perks and benefits to end user given their responses, they may then edit before submitting again.

If good, provide an agreement, on line via email or via fax or by phone recofding, with human/computer katz method

---

Google TOWER SITES

to **Tower Sites** Inc.
Welcome to **Tower Sites** Inc.! Antenna **Sites** for Communications. If your company needs antenna space, **Tower Sites** Inc. has many prime locations to fit your ...
www.**tower**site.com/ - 13k - Cached – Similar pages

Welcome to Fybush.com
WLW's Blaw-Knox **Tower**, Mason OH. Your source for broadcasting news and **tower** information in the northeastern U.S. and eastern Canada. Industry News ...
www.fybush.com/ - 6k - Cached - Similar pages

American **Tower** Home
American **Tower** Mexico strikes additional acquisition and build-to-suit agreements in Mexico for up to 1000 additional **tower sites**, strengthening our ...
www.american**tower**.com/atcweb/AboutUs/CompanyHistory.htm - 46k - Cached - Similar pages

Ten Unusual Cell **Tower Sites**
Thanks to local ordinances, a new game for long road trips could be "find the cell **tower**." See if you can pick these out.
images.businessweek.com/ss/06/08/**tower**/index_01.htm?campaign_id=rss_tech - 2k - Cached - Similar pages

Tower Maps - Wireless Co-location **Tower**, Rooftop and Billboard ...
A source for wireless antenna facility location data. **Tower**, rooftop and billboard **sites** for collocation lease throughout North America.
www.**tower**maps.com/ - 15k - Cached - Similar pages

Cell Phone Carriers - Cell Phone Service and **Tower** Search
Search for cell phone service, **tower** locations, and coverage nationwide.
www.cellreception.com/ - 27k - Cached - Similar pages

Tower sites
Here's a site some of the **tower** hunters might find interesting. The site of the week this week is something else: ...

forums.wirelessadvisor.com/cell-**tower**-hunting-club/13390-**tower-sites**.html - 29k - Cached - Similar pages

Digg - Slide Show: Ten Unusual Cell **Tower Sites**

Slide Show: Ten Unusual Cell **Tower Sites**. Thanks to local ordinances, a new game for long road trips could be "find the cell **tower**. ...

digg.com/tech_news/Slide_Show_Ten_Unusual_Cell_**Tower_Sites** - 46k - Cached - Similar pages

Tower of English ESL **Sites**

Links to specific efl/esl **sites** and other **sites** of interest for students and teachers of English. Student writings and projects. Homework assignment. ...

towerofenglish.com/esl**sites**.html - 29k - Cached - Similar pages

Links to **Tower** Clock **Sites** Worldwide

It's just an exercise in assembling **sites** from all over that feature **tower** clocks. If any links are broken, or if you know of one I've missed, let me know, ...

members.aol.com/donnl/tclinks.html - 3k - Cached - Similar pages

-Oriented Web **Sites**

Radio controlled model aviation oriented web **sites** index compiled by **Tower** Hobbies.

www.**tower**hobbies.com/rcwair.html - 40k - Cached - Similar pages

Tower bell **sites** in Central and South America

Tower bell **sites** in this area can be categorized according to the type of instrument. Each of the pages linked here presents a variety of indexes for one ...

www.gcna.org/data/CSA_area_ixs.html - 3k - Cached - Similar pages

More about carillons and other **tower** bells

This is the introduction to (or top page of) a very large collection of pages

www.gcna.org/data/Data_Top.html - 15k - Cached - Similar pages

[More results from www.gcna.org]

SSE Sells 220 Mobile **Tower Sites**

SSE Sells 220 Mobile **Tower Sites**. By Meenakshi Shanks. TMCnet Contributing Editor. One of the prime energy companies in UK, Scottish and Southern Energy ...

news.tmcnet.com/news/2007/08/09/2851352.htm - 127k - Cached - Similar pages

Digital Media Asia: News - SSE sells over 220 mobile **tower sites**

The transaction involves over 220 **tower sites** which mobile phone operators, the emergency services and local authorities use to provide mobile ...

www.digitalmediaasia.com/default.asp?ArticleID=26025 - 48k - Cached - Similar pages

SSE sells over 220 mobile **tower sites** to | SEO, Tech and Social ...

SSE sells over 220 mobile **tower sites** to the Wireless Infrastructure Company.

www.colesearchreports.com/2007/08/08/sse-sells-over-220-mobile-**tower-sites**-to/ - 14k - Cached - Similar pages

Copper Theft Deterrants - TESSCO.com

It serves as a key component to deter and document the unrelenting copper and raw material theft taking place at cell **tower sites** across the country. ...

www.tessco.com/yts/industry/products/infra/infrastructure/sitehardware/copper_theft.html - 15k - Cached - Similar pages

Communication Specialists Company of Wilmington, LLC ...

Jacksonville **Tower Sites**, Print · E-mail. Jacksonville **Tower Sites** JACKSONVILLE (Pony Farm Road Area) approx. 4 miles west of center of city ...

www.comspeco.com/cms/index.php?option=com_content&task=view&id=26&Itemid=56 - 17k - Cached - Similar pages

Communication Specialists Company of Wilmington, LLC - Wilmington ...

you are here: Home arrow **TOWER** RENTAL arrow Wilmington **Tower Sites** ... Coordinates (**Tower** 1): 34-12-35 N 77-56-53 W (NAD-27) AGL: 435' AMSL: 445' AAT: 434' ...

www.comspeco.com/cms/index.php?option=com_content&task=view&id=24&Itemid=54 - 18k -

Cached - Similar pages
[More results from www.comspeco.com]
ARRLWeb: Surfin': **Sites** for Towers and **Tower Sites**
"If you have $20000-plus to burn, you might just want to check on the hundreds of complete hilltop surplus microwave **tower sites** that are for sale! ...
www.arrl.org/news/features/2002/09/14/1/ - 27k - Cached - Similar pages

Google HAM TOWER SITES
ARRLWeb: Surfin': **Sites** for Towers and **Tower Sites**
One **ham** just bought a whole site, building, **tower** and 60-kW generator for $20K!" Go to the American **Tower** Corp. Web site, click on the "**Tower Sites** For ...
www.arrl.org/news/features/2002/09/14/1/ - 27k - Cached - Similar pages
ARRLWeb: Surfin': Down on the Antenna Farm
It is full of tidbits of information regarding broadcast radio towers and **tower sites**, as well as broadcast radio history. In addition to reading stories ...
www.arrl.org/news/features/2005/08/26/1/ - 26k - Cached - Similar pages
[More results from www.arrl.org]
VE3FLF - Links to Antenna/**Tower Sites**
K3QK's **Tower** Talk and Legal Resources for **HAM** with Towers and those planning ... Singal **Tower** Communications Inc.- Antenna **sites** and **tower** space for lease ...
www.qsl.net/ve3flf/others.htm - 52k - Cached - Similar pages
Hill top **tower sites** for sale
One **ham** just bought the whole site, building, **tower** and 60K generator for $20k! ... Not all **sites** are listed for sale, even though they may be available. ...
www.amsat.org/amsat/archive/amsat-bb/200209/msg00231.html - 7k - Cached - Similar pages
HAM TOWER PHOTOS KT-34 A PHOTOS 4 ELEMENT BEAM PHOTOS **HAM** ANTENNA ...
Amateur Radio **Ham Tower** Pictures **Ham** Radio **Ham Tower** Pictures ... CNET Networks Links. Other **sites** in the CNET Networks family ...
home-and-garden.webshots.com/photo/2725230810057018041aLfqLB - 52k - Cached - Similar pages
HAM TOWER PHOTOS KT-34 A PHOTOS 4 ELEMENT BEAM PHOTOS **HAM** ANTENNA ...
In album: Amateur Radio **Ham Tower** Pictures Ha... In Webshots channel: home & garden .... CNET Networks Links. Other **sites** in the CNET Networks family ...
home-and-garden.webshots.com/photo/2903932370057018041mpqaul - 52k - Cached - Similar pages
[More results from home-and-garden.webshots.com]
Transmitter **Sites** from Hell ! RADIO STATIONS studio pictures AM ...
Transmitter **Sites** PICTURES OF RADIO STATIONS antenna world trade center ... FM Transmitter **sites** from hell,pirate,radio,fcc,shortwave FM,**ham**,FM **tower** ...
www.netfeed.com/~jhill/ - 23k - Cached - Similar pages
Amateur Radio **Ham Tower** Pictures **Ham** Radio **Ham Tower** Pictures ...
HAM TOWER PICTURES **HAM TOWER** PHOTOS KT-34 A PHOTOS 4 ELEMENT BEAM PHOTOS **HAM** .... CNET Networks Links. Other **sites** in the CNET Networks family ...
community.webshots.com/album/550312376dzMwkv - 93k - Cached - Similar pages
Ham Radio Home Page - QTH.COM by KA9FOX! Classified swap ads for ...
Ham Radio Club and Organization web **sites** hosted on QTH.COM ... Champion Radio: Professional **tower** supplies and specialty products for hams and industry ...
www.qth.com/ - 33k - Cached - Similar pages
Amateur Radio Club Links
AAT Communications, **Tower Sites**. Ace Communications, Radios. Advanced Battery

Systems, Batteries. Advanced Specialties, Dealer ...
tcarc.compcenter.com/links.html - 33k - Cached - Similar pages

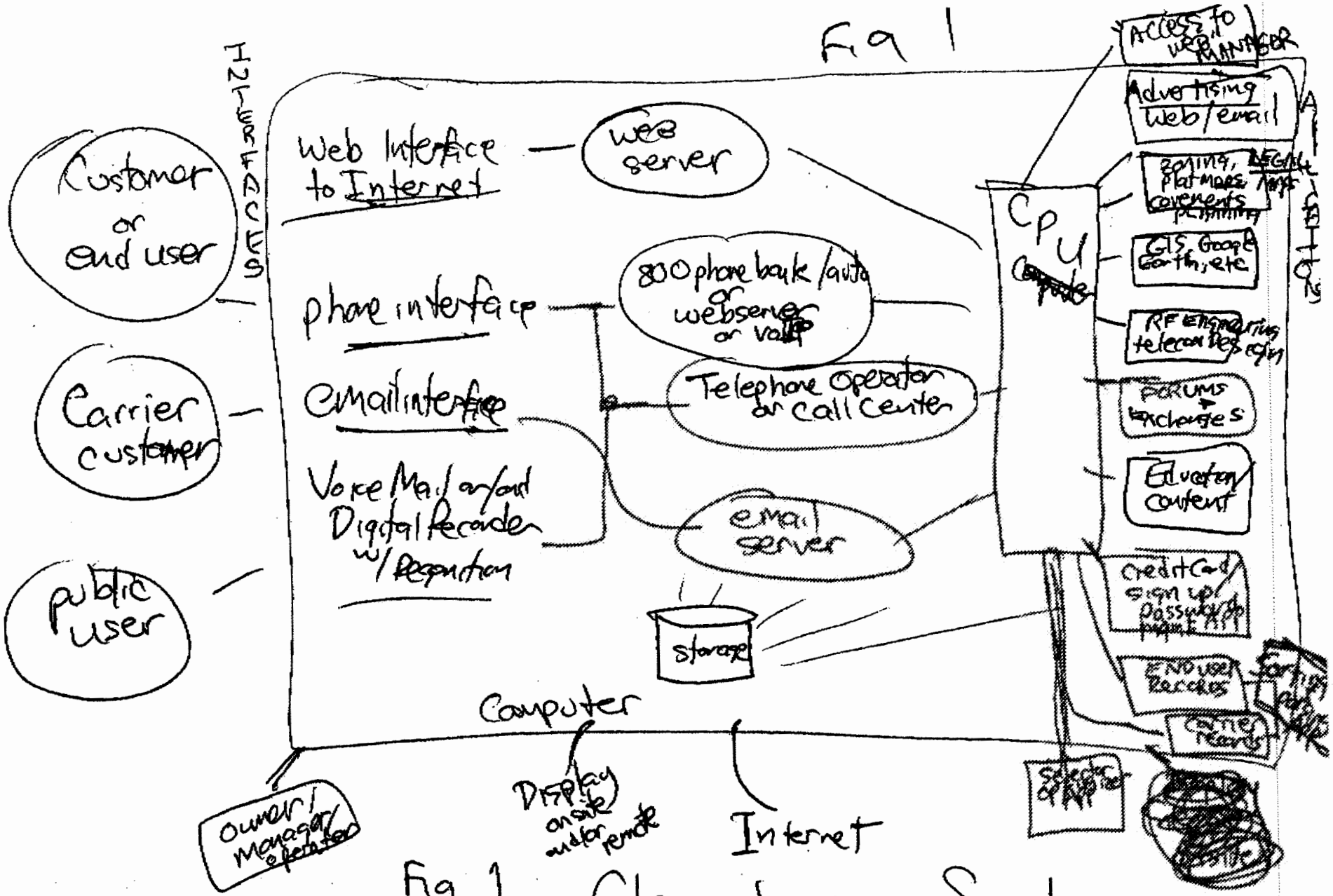
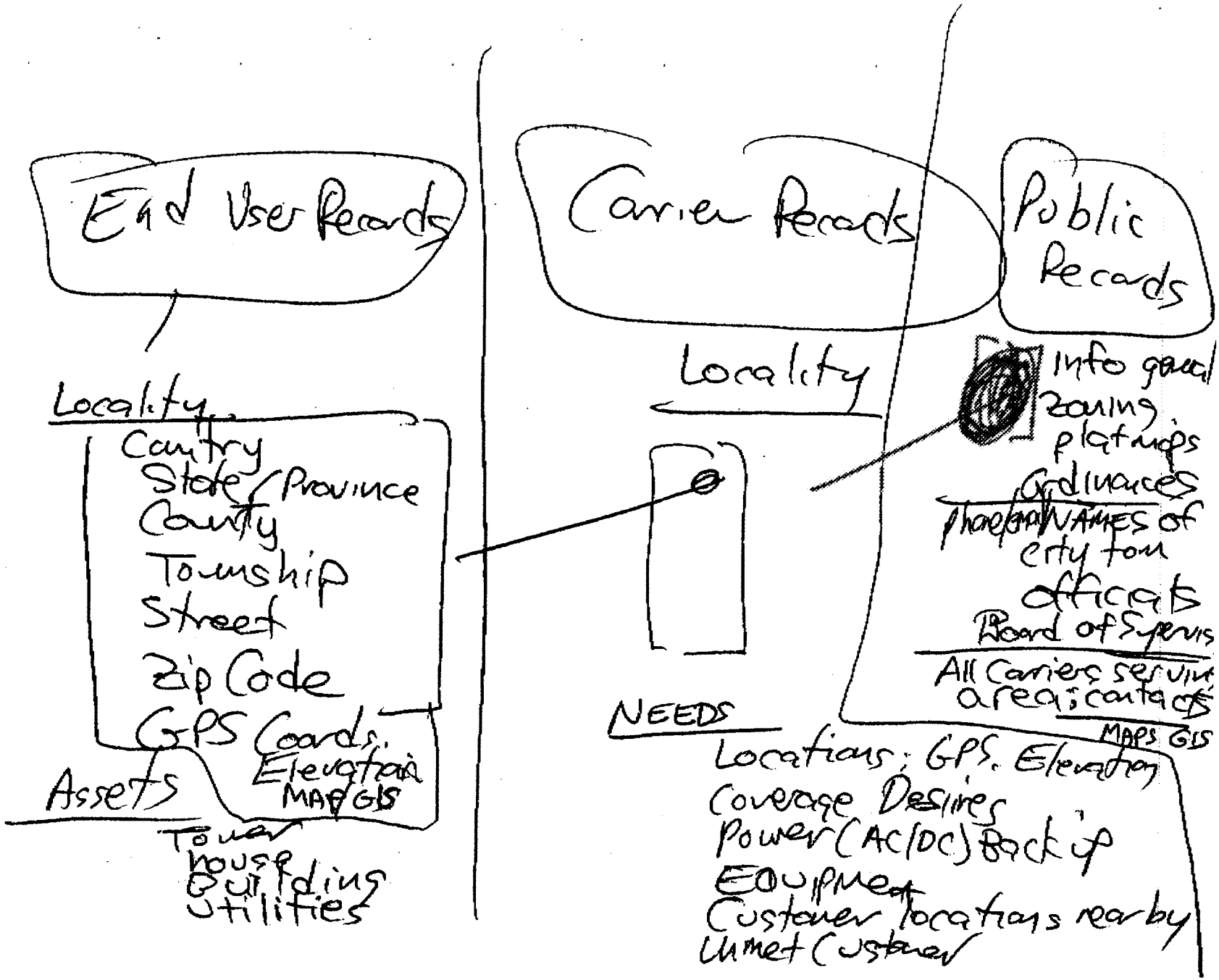


Fig 1. Clearinghouse System

Fig 2

All records



End User form

Name
Address
Phone/email
Own or Rent?
property size
Identify plat map or similar locator _____
HAM RADIO OP? CALL _____

Your Interests:

I have a tower ☐
Rooftop ☐
outbuilding ☐
Church Steeple ☐
AC Power ☐
Back up generator ☐

I would like:

Free Internet ☐
Installed tower ☐
Installed generator ☐
monthly credit on some ☐
Nothing ☐

CLICK MAP on

Fig 3

Carrier form
Phone/email
NAME
Address
Market _____
# of Customers Currently in Market _____

# of desired Customers in market _____

Enter GPS Coord of Current Equip
# of Sites
Site1 Lat _____ Long _____
Site2 Lat _____ Long _____
Site 3 _____ Long _____

Specify Needs
☐ Towers
☐ AC
☐ AC back up
☐ Cable right of way
☐ Storage Barn
☐ Base Station

CLICK on MAP

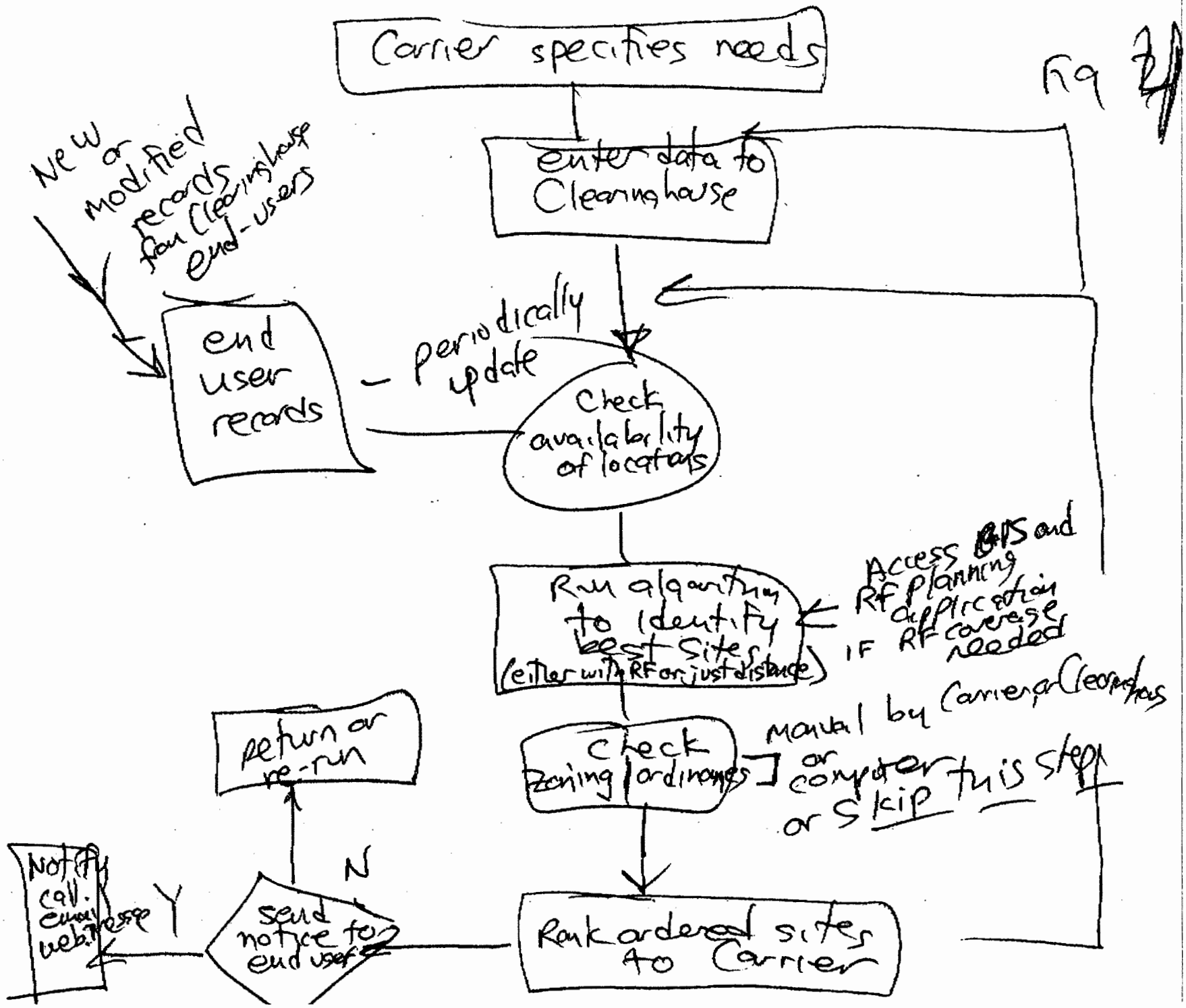
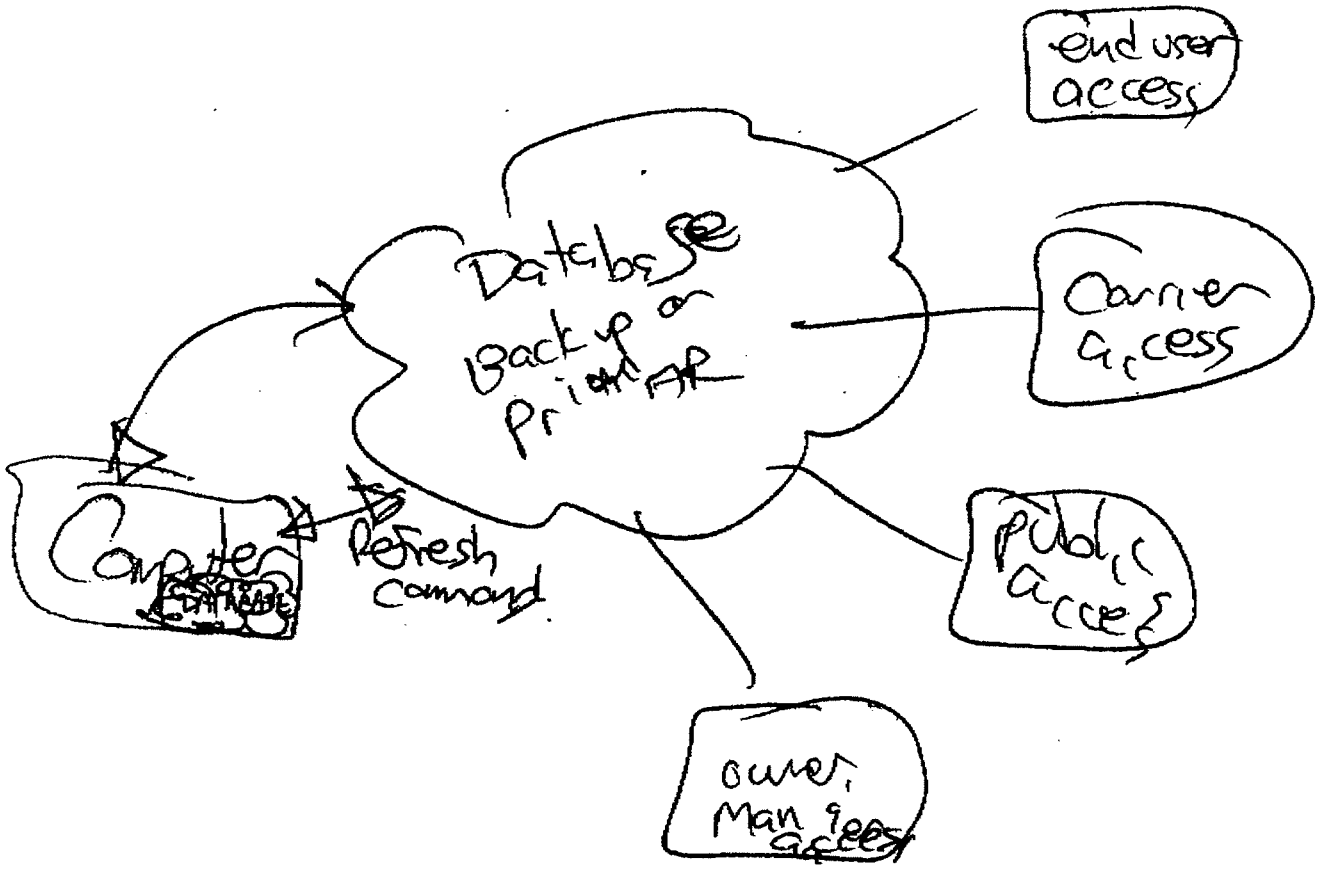

Carrier specifies needs
enter data to Clearinghouse
New or modified records from Clearinghouse end-users
end user records
periodically update
Check availability of locations
Run algorithm to identify best sites (either with RF or just distance)
Access GIS and RF planning application IF RF coverage needed
Check zoning/ordinances
manual by Carrier or Clearinghouse or computer or skip this step
Rank ordered sites to Carrier
send notice to end user
N
Y
return or re-run
Notify call. email web message

Fig 4

Fig 5


end user access
Database backup or primary
Carrier access
Computer
Refresh command
public access
owner, manager access

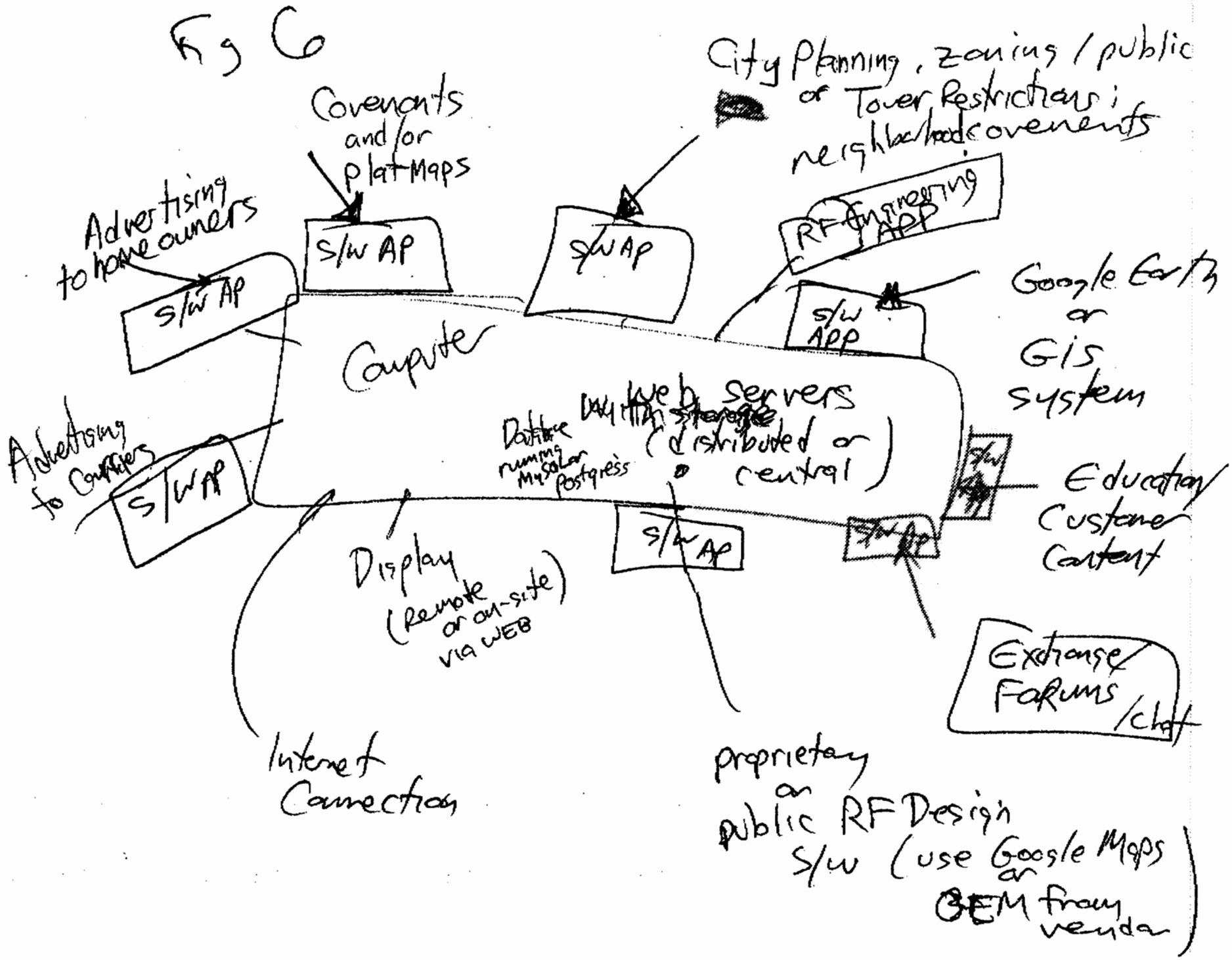


Fig 6
Covenants and/or plat Maps
City Planning, zoning / public or Tower Restrictions; neighborhood covenants
Advertising to homeowners
S/W AP
S/W AP
S/W AP
RF Engineering APP
S/W APP
Google Earth or GIS system
Computer
Web Servers (distributed or central)
Database running MySQL or Postgress
Advertising to Carriers
S/W AP
S/W
Education/ Customer Content
S/W AP
S/W AP
Display (Remote or on-site via WEB
Extranet/ Forums /chat
Internet Connection
proprietary or public RF Design S/W (use Google Maps or OEM from vendor)

Clearinghouse for radio quality and service for wireless devices

Create a database of tower locations, frequencies, heights above ground, owners of spectrum, leaser of spectrum, type of license, date the license expires, type of services offered, etc. so that there exists, on the web, a position-tagged listing of wireless assets for multiple bands, and multiple carriers. This web site may be private access (password/subscriber protected) or open access to the world.

The clearinghouse includes a database accessible over the web that would be used for cataloging the wireless availability (signals, bandwidth/capacity, services, carriers who provide service) over multiple bands and for one or many carriers and services that are available to a particular wireless device in a specific location on earth. This invention can be extended to work for different kinds of wireless devices, for example WiFi LANs are different than cellular/WiMax/LTE phones, so you could imagine this clearinghouse invention being available for each type of service, or providing information for all services in a single clearinghouse.

We envision a (preferably public) clearinghouse that can be used/updated/accessed and built upon, by individual's experiences in accessing wireless connectivity across the globe. The reports of RF quality and capacity could be done by the user, where the user of the wireless device reports to the web clearinghouse its experiences over a wide range of bands, frequencies and services, or it can be done preferably in an automatic manner without user control, where phones or wireless devices (future wireless devices may be simple dongles, computers, IPhones, and a wide range of wearable or sensor devices). The idea is that the phones or wireless devices may access, either in real time or previously or intermittently, a database that contains a location-specific cataloging of radio coverage, services, carriers, bandwidths, and past user experiences, so that a wireless device could automatically determine what channel to tune to, what carrier to use, or what services to expect or access, without wasting transmit power, battery life, or with built in protection that scales the wireless device to access the wireless channel in a certain geographic area in a manner that matches the specific coverage/RF/quality of the location. This info could be obtained by the wireless device either before a user of the device travels to a location (download off of internet before leaving for trip, and determining trip path from Google Map, MapQuest, or road navigation system in the car), or could be determined on the fly as the user moves with her wireless device on the trip, either in band or out of band, across a wireless network during the travel. Given the location of the wireless device, and information of the radio frequency (RF) quality and coverage and the services and bands available for access, the wireless device may make good decisions as how to access wireless in the particular location, thereby saving battery life, cost, time, or improving connectivity for the particular desired application used by the user of the wireless device.

The clearinghouse/database on the web would communicate to wireless devices either in real time over the web, or prior to the wireless device going to a location, with information that allows the phone to determine the best or 2nd best (or a priority/ranked list) of frequencies, or carrier providers, or services, or bandwidths, based on the

customer's predetermined desires/needs (lowest cost service, highest data rate service, longest battery life service, etc). Or the user may adjust their desires for service priority on the fly as they travel and learn the quality of the networks they are in. This may e done automatically (with preset user settings) or may be visible/shown to the user through an application on the web or via the wireless device. Note that the carrier/service provider, or the wireless device manufacturer, or some other party, may also set the priorities for desired service based on price, availability, instant channel loading in the network, or other factors.

In fact, the world's RF/QoS/coverage/service map could be loaded on to a wireless device from the web clearinghouse, and the updated periodically or infrequently, at either the request of the phone user or automatically by the wireless device, to update the database of the RF/QoS/services, capabilities over location.

The phone/wireless device could access the web either through a user application or this could be done autonomously, where a web server that hosts the clearinghouse communicates over wireless or wired means with the wireless device. This can be done using low level formatting that would not be readable by a regular user, but which is loaded into memory of the wireless device.

The web server and clearinghouse may be central or distributed, and can store and represent the services, locations, frequencies, carrier/owners, and other information that would be useful for a wireless device to automatically determine what frequencies or applications or capabilities it might experience in a particular location on the globe. Global coordinates may be represented in many ways known to those skilled in the art, and the ability to autonomously access the web is well understood today.

Users may also, either by their own activities, or through the wireless device autonomously either known or unknown to the user, communicate updates or in-the-field readings of the various signals and capacities/bandwidths received by the wireless device in a particular location back to the clearinghouse. That is, wireless devices may report back (autonomously in a preferred embodiment) to the clearinghouse their user experiences over a wide range of frequencies, bands, applications, along with the location of the wireless device. The idea of using GPS or some other position location means, even if as crude as sensing what major tower or market or carrier signal or nearby TV or FM or AM transmitter, etc. received by the wireless device (crude position locationing) could be used, as could more accurate TDOA or GPS methods. In any case, the invention contemplates the ability of users to report back to the clearinghouse, either in real time or when they become located where network access is easy or free, the measured quality and coverage and capabilities of wireless in a particular location/geographic region. The courseness of the geographic region may be determined based on speed of user, the application used by the user, or set by the clearinghouse, or by many other methods. Similarly, the courseness or the position location may be specified or set by the clearinghouse, and more value or cost or premium preference may be given to certain subscribers or users of the clearinghouse who wish to have more accurate (fine resolution, say within a few meters, few hundred meters) of wireless spectrum

quality/availability than those who are satisfied with course position locationing (say a few thousand meters).

The measurements reported back to the clearinghouse by wireless users, just like the obtaining of various radio qualities and metrics for a particular location of the wireless user, may also be done without knowledge by the user, and may be done in an autonomous communication between the wireless device and clearinghouse.

This database can also be contributed to by users who wish to add/record their own experiences, either autonomously or manually through a public website through a clearinghouse method, as described in previous provisional patent applications. Carriers could enter their own database into the web clearinghouse, or the clearinghouse could use bots or automated web crawlers to find websites from FCC, Chinese government, private or public company wesbsites, Comsearch, etc. to build a large database of spectrum availability and tower locations and bandwidths/services with a common website. Note that this clearinghouse could also have users provide inputs as to their perceived or experiential views of radio coverage or phone/web quality when they were in a particular location. Note that the entry of this "performance" data could be added by users based on their own experience, and could also be provided by carriers based on their known intfrastructure locations. Alternatively, phones of the future, equipped with GPS or any other type of location capability, could automatically, without any human interaction, upload to the website, on a periodic, one-time, infrequent, or regular basis, the perceived/measured radio reception quality, bitrate, capacity, availability, average use profile, average available profile, statistics on outage or reliability or coverage or capacity carrying capabilities, or an evaluation of the RF or end-user application performance, and this information may be loaded to the clearinghouse for inclusion in the database that is available. The database is updated at various intervals that make sense for the implementation of the clearinghouse (daily, hourly, by minute, by week, and this may be done on a global or on a specific location basis across the clearinghouse database, that itself may be distributed or located centrally). The updated information is made available to users on an ongoing basis, for further utility and enjoyment.

Reporters of RF quality and quality of the services, and access to the clearinghouse may be shared between carriers, user populations, owners, etc. so that information may be made available to update the global clearinghouse while providing those updates to large numbers of users who own wireless devices, for the improvement of operation of the wireless devices, or benefit to the carrier(s) or to the customers of wireless devices or customers of the wireless service access.

Note that once this clearinghouse is crated, then future phones or wireless devices could access this internet site, either conducted by the person who is the subscriber, or automatically by the phone device itself, or the carrier or service provider, and even the application that is intended to be used at the specific location, and over a wireless channel, to rapidly determine the type of coverage/ quality of coverage, the various

vendors in the geographic region of the user, how to best send the message, how to conserve bandwidth, improve battery life, etc.

This clearinghouse will also allow reporters of information to be ranked based on their accuracy and collaboration with other reporters of quality/RF/services/information and the service providers or spectrum allocations, themselves, would be ranked by the clearinghouse (e.g. at this Location, WiMax band is best, and gets 5 stars, whereas PCS Band has band coverage and only gets 1 star, etc). Individuals who report in their observations may also be ranked (.e.g. Bill Smith does a good job reporting quality of different radio bands and services near Austin, and gets 5 stars, or a 99% rating, as opposed to someone who frauds the system by reporting bogus measurements – the peer group or the web crawlers/data analysis of the database would find these outliers and give them lower rankings, say 1 star or 10% accuracy)..these could be weighted to give assessment of the entire radio spectrum and services/quality/coverage in any location on the earth. This will be a critical and vital invention for the future of multiband radios, and has clear applications in open-access wireless which is likely to evolve with the 700 MHz FCC spectrum auction, and the entrance of Google, Amazon, EBay/Skype into the wireless world. This also has strong impact and will assist the evolution of Cognitive or Software defined radios. See Figures 1 through 6 for additional concepts and ideas that show how to implement this invention.

RF and quality Clearinghouse
for Multiband Wireless Devices
T S Rappaport 10/4/07

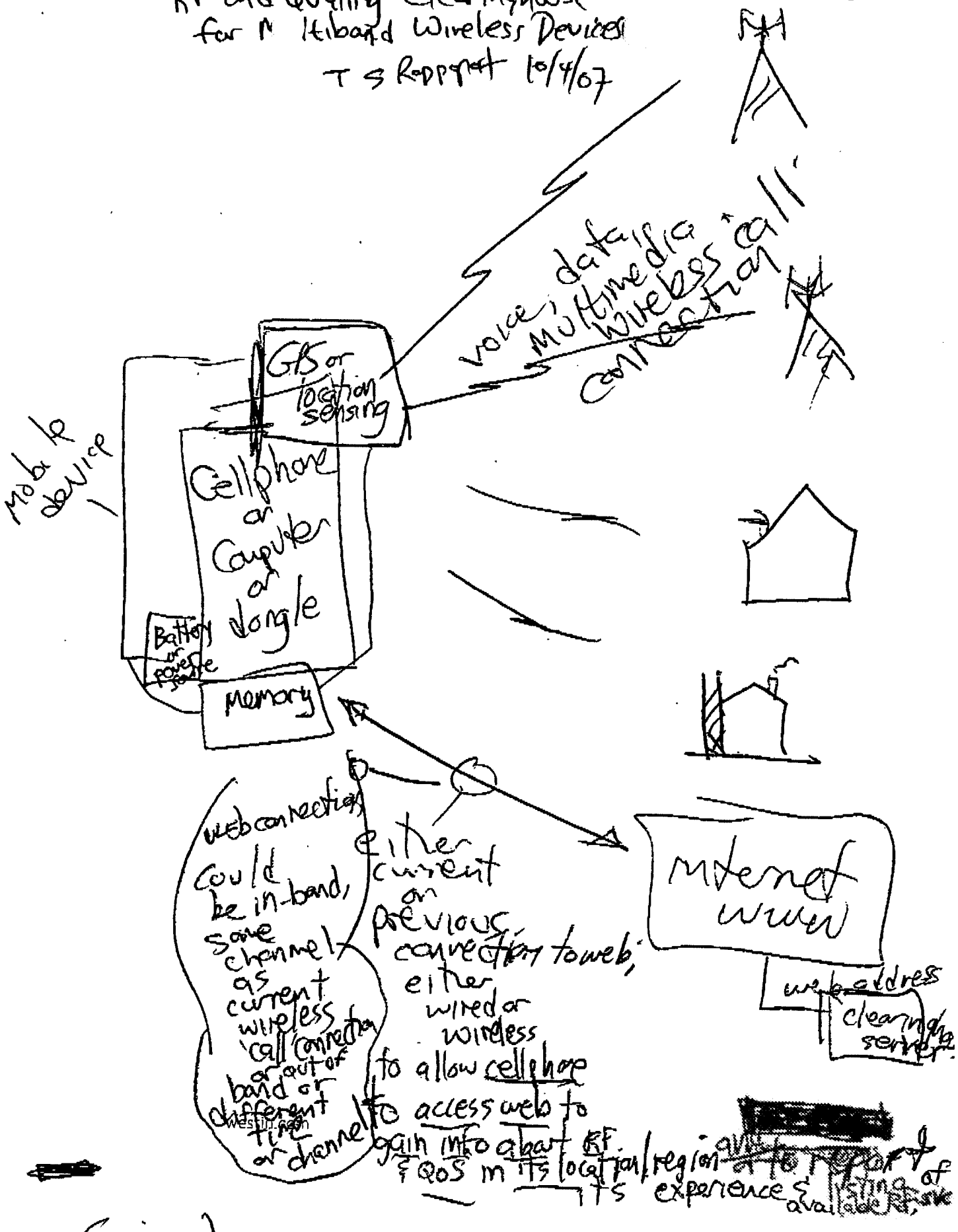
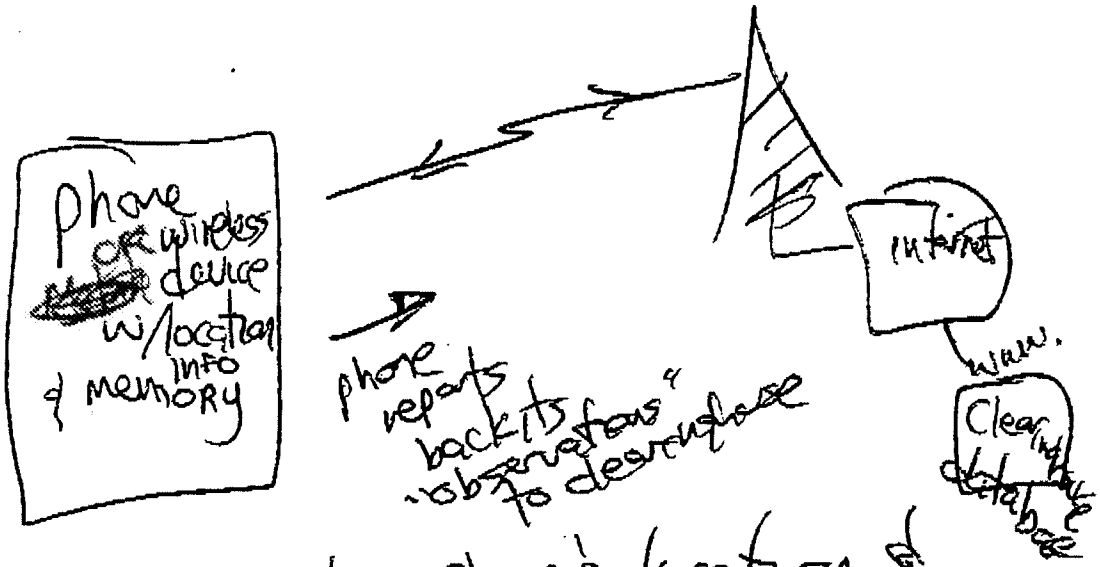


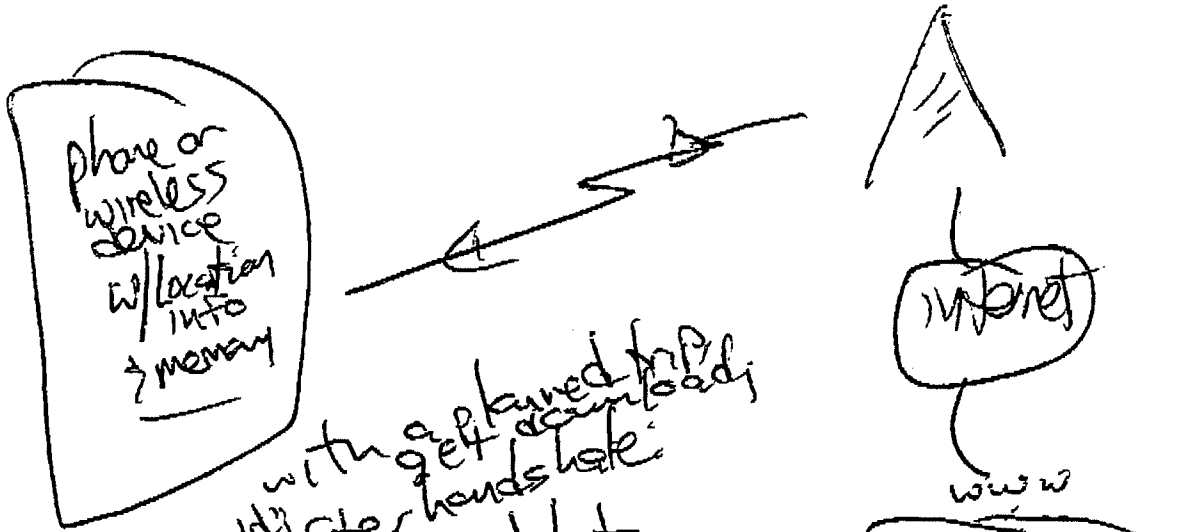
Fig 1.



Reporting phone's location & user experience/QoS & available carriers/bands/services may be real-time, periodic, or infrequent, polled, or stored and forwarded later.

Shown here as wireless, but could be when device is connected by wired/optical connection.

Fig 2



or in the field with a planned trip, get download; after handshake phone is able to retrieve from web clearinghouse (automated or w/user interaction retrieval) the local "state" of RF environment, what services, frequencies, carriers, locations of towers, so the phone can use power & allocate spectrum better

Fig 3

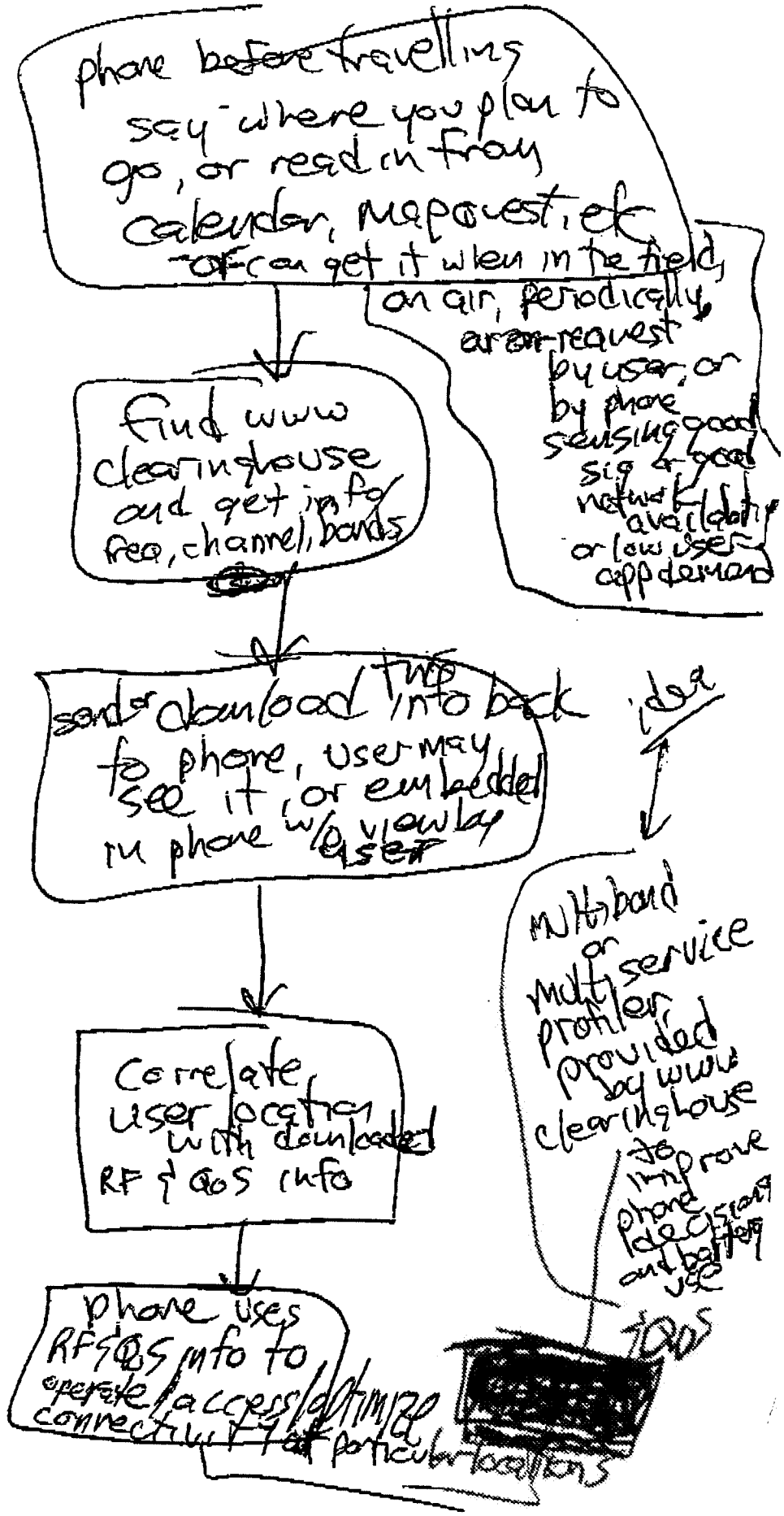
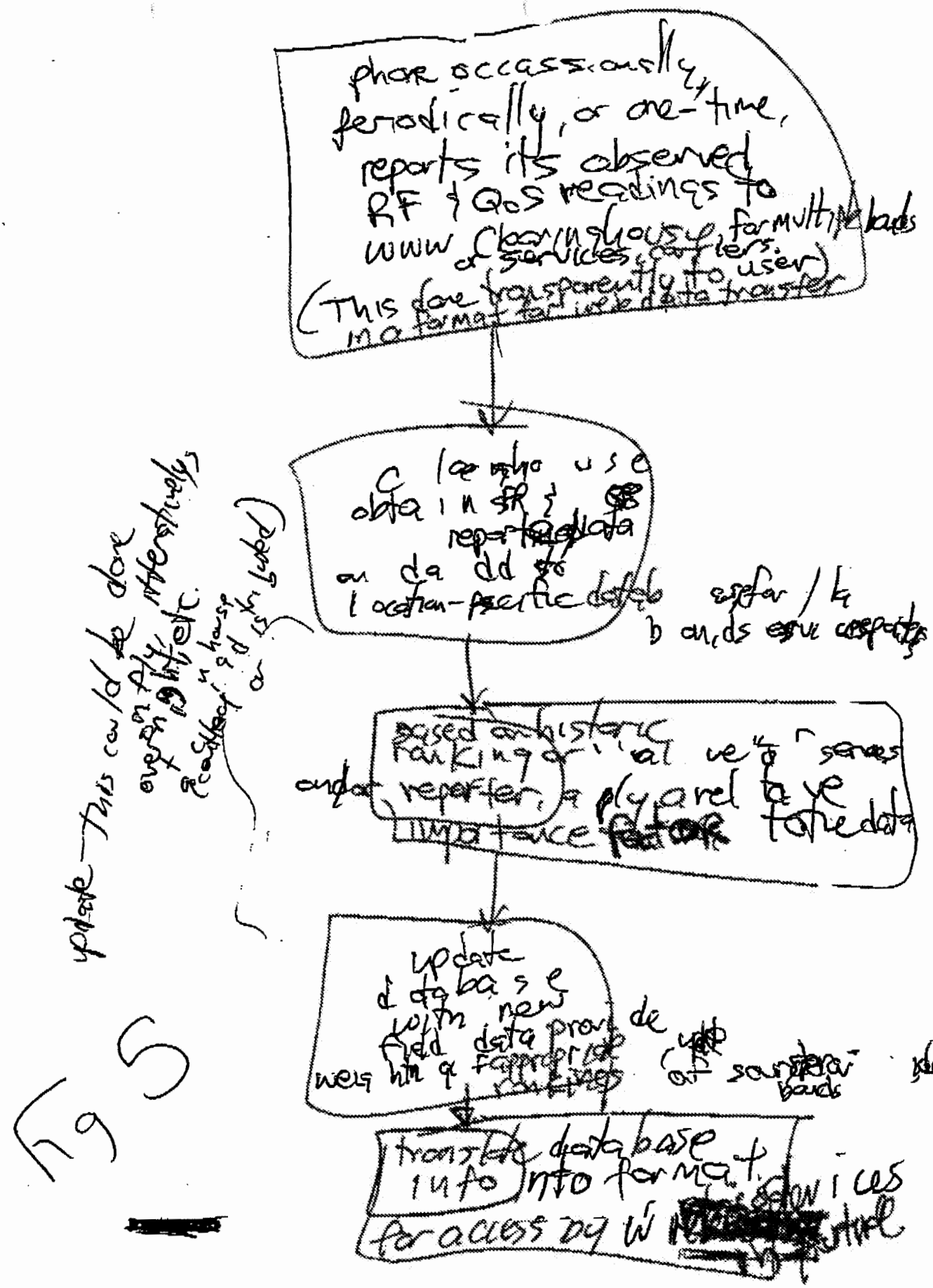
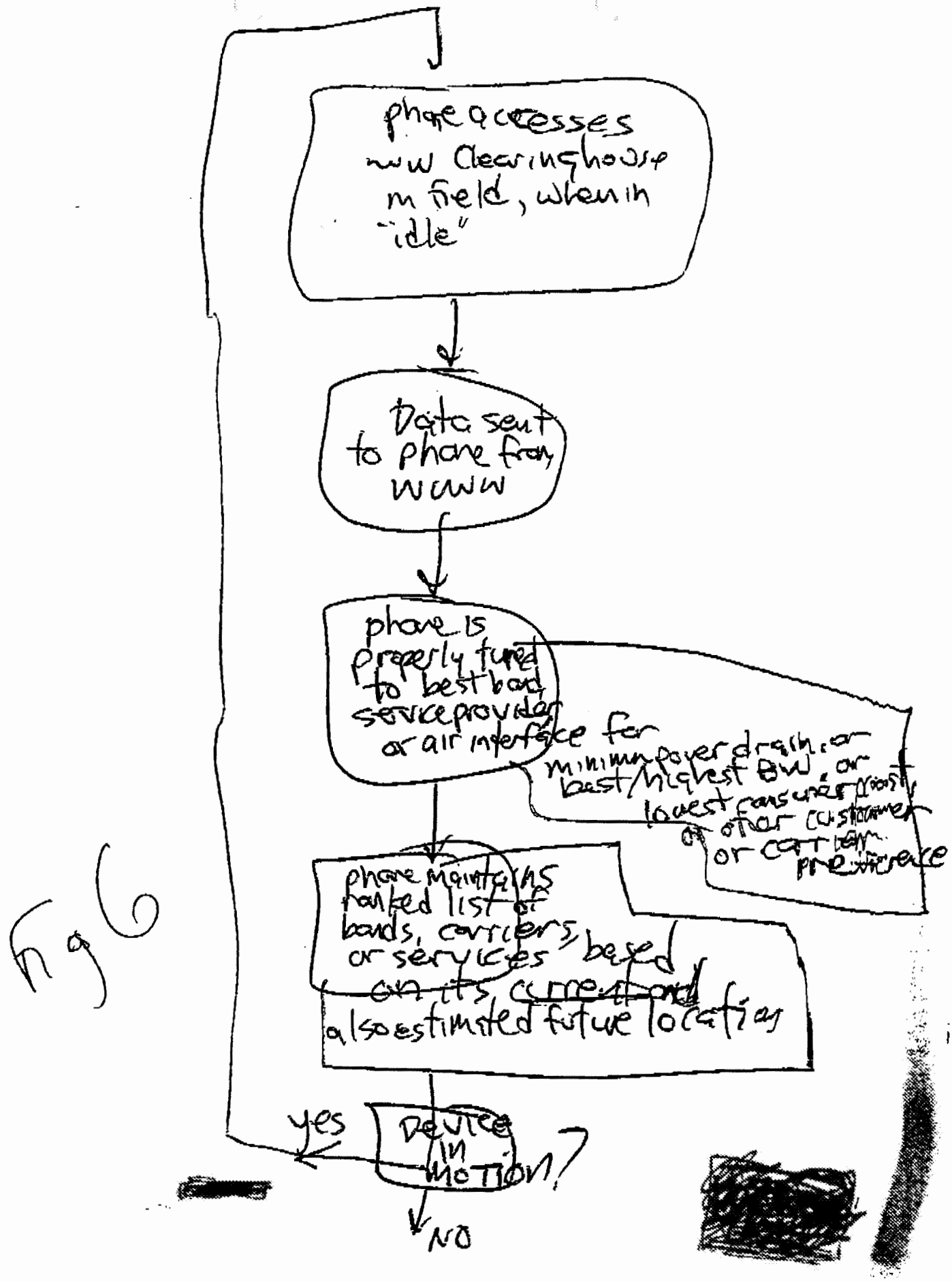

phone before travelling say where you plan to go, or read in from calendar, mapquest, etc or can get it when in the field, on air, periodically, or on request by user, or by phone sensing good sig or good network availability or low user app demand
find www clearinghouse and get info freq, channel, bands
send or download this info back to phone, user may see it, or embedded in phone w/o view by user
idea
multiband or multiservice profiler provided by www clearinghouse to improve phone decisions and battery use
Correlate user location with downloaded RF & QoS info
phone uses RF & QoS info to operate/access/optimize connectivity at particular locations
QoS

Fig 4


phone occassionally, periodically, or one-time, reports its observed RF & QoS readings to www clearinghouse for multiple bands or services, carriers.
(This done transparently to user) in a format for web data transfer
obtain RF & QoS reported data on da dd to location-specific database
based on historic ranking or "value" of services and/or reporter, apply a relative importance factor to the data
update database with new field data provide weighting of appropriate rankings of sources or bands
translate database info into format for access by w services
update - This could be done on fly, interactively, overnight, etc. (contact in house and distributed)
Fig 5


phone accesses www Clearinghouse in field, when in "idle"
Data sent to phone from www
phone is properly tuned to best band service provider or air interface for minimum power drain, or best/highest BW, or lowest consumer cost, or other customer or carrier preference
phone maintains ranked list of bands, carriers, or services based on its current and also estimated future location
Device in MOTION?
yes
NO
Fig 6

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	System and Method for Local placement of advertising using wireless infrastructure
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Filer:	Michael E. Whitham/Philana Handler
Attorney Docket Number:	08610009PR

Filed as Small Entity

Provisional Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Provisional Application filing fee	2005	1	105	105
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**105**

Electronic Acknowledgement Receipt

EFS ID:	2853768
Application Number:	61028261
International Application Number:	
Confirmation Number:	1638
Title of Invention:	System and Method for Local placement of advertising using wireless infrastructure
First Named Inventor/Applicant Name:	Theodore S. Rappaport
Customer Number:	30743
Filer:	Michael E. Whitham/Philana Handler
Filer Authorized By:	Michael E. Whitham
Attorney Docket Number:	08610009PR
Receipt Date:	13-FEB-2008
Filing Date:	
Time Stamp:	14:39:05
Application Type:	Provisional

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$105
RAM confirmation Number	8151
Deposit Account	502041
Authorized User	

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1		08610009pr_app.PDF	2567272 952eaeebd35688302c5ae6c47e7364adf227fc9f	yes	47

Multipart Description/PDF files in .zip description

Document Description	Start	End
Transmittal of New Application	1	2
Specification	3	47

Warnings:

Information:

2	Fee Worksheet (PTO-06)	fee-info.pdf	8171 4edb0f8a7e0a418b42d360a5db5dbc0a7bc709b4	no	2

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