PATent Information EXpo
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Tech & IP

Trends & Issues with Strategic Patent Management for Mobile Communication Technologies

Nov. 11 2009

www.techipm.com

Abstract

We are now eye witnessing the dawning of 4th generation mobile evolution era. Technology innovations have been the key enabler for the mobile evolution, and IPRs for technology innovations were at the heart of mobile business. Thus, as the starting of worldwide commercial services and standardization by ITU, it will be timely matter to review the current trends and issues with IPRs for emerging 4G mobile technologies.

In parallel with the current increasing interests in 4G mobile IPRs, we analyze the IPRs for LTE, which is one of emerging 4G mobile technologies, as a case study. In this presentation, we show the result of analysis for LTE IPR landscape, the case study for the strategic management of LTE patent portfolios, licensing issues such as patent pool royalties, and NPE related problems.

Contents

1. Mobile Revolution Began with Patent

The mobile communication revolution began at the beginning of the 20th century. In 1908 the first US Patent for a wireless phone was registered by Nathan B. Stubblefield (US887357).

The first US Patent for cell phone technology is described in U.S. Patent 4152647, issued May 1, 1979 to Charles A. Gladden and Martin H. Parelman.

UNITED STATES PATENT OFFICE.

NATHAN B. STUBBLEFIELD, OF MURRAY, KENTUCKY, ASSIGNOR OF TWELVE AND ONE-HALF ONE-HUNDREDTHS TO CONN LINN, FIVE ONE-HUNDREDTHS TO R. DOWNS, FIVE ONE-HUNDREDTHS TO B. F. SCHROADER, FIVE ONE-HUNDREDTHS TO GEORGE C. McLARIN, FIVE ONE-HUNDREDTHS TO JOHN P. McELRATH, TWO AND ONE-HALF ONE-HUNDREDTHS TO JEFF D. ROULETT, AND ONE-TWENTIETH TO SAMUEL E. BYNUM, ALL OF MURRAY, KENTUCKY.

WIRELESS TELEPHONE.

No. 887,357. Specification of Letters Patent. Patented May 12, 1908.

Application filed April 5, 1907. Serial No. 366,544.

To all whom it may concern:

Be it known that I, NATHAN B. STUBBLEFIELD, a citizen of the United States, residing at Murray, in the county of Calloway and State of Kentucky, have invented a new and useful Wireless Telephone, of which the following is a specification.

The present invention relates to means for electrically transmitting signals from one point to another without the use of connecting wires, and more particularly comprehending means for securing telephonic communication between moving vehicles and way stations.

The principal object of the invention is to provide simple and practical means of a novel nature whereby clear and audible communication can be established, said means being simple and of a character that will permit certain of the station mechanisms to be small and compact.

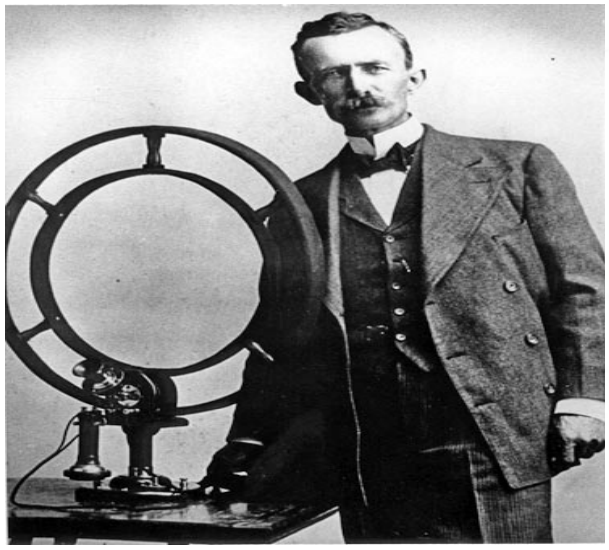
In the accompanying drawings:—Figure 1 is a perspective view, showing means for establishing communication between a vessel and a shore station. Fig. 2 is a diagrammatic view of the mechanism mounted on the boat. Fig. 3 is a cross sectional view on an enlarged scale of the shore coil. Fig. 4 is a perspective view of a road-way, showing a system for establishing communication between road vehicles and a way-station, the latter being illustrated diagrammatically. Fig. 5 is a detail view of a vehicle equipped with one of the instruments, which is shown diagrammatically. Fig. 6 is a perspective view showing the system applied to a railway for establishing communication between a moving train and a way-station. Fig. 7 is a sectional view through a car showing in diagram the car mechanism illustrated in Fig. 6.

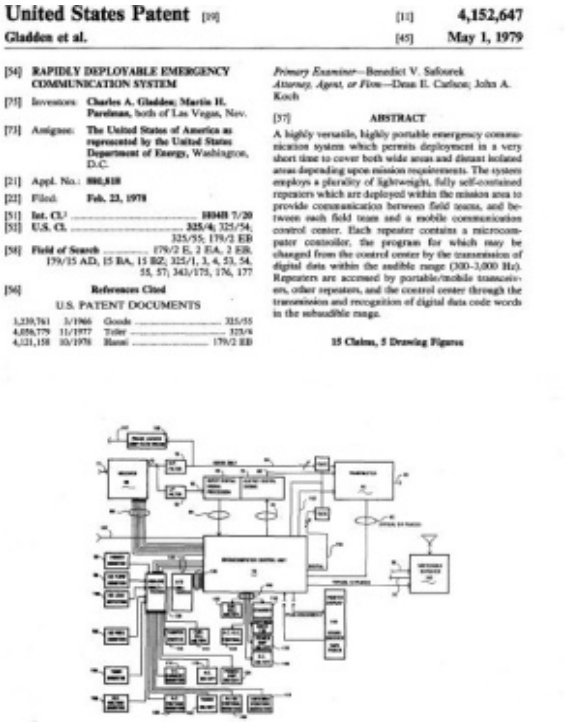
Similar reference numerals designate corresponding parts in all the figures of the drawings.

Referring to the embodiment illustrated in Figs. 1, 2 and 3, a water-way 8 is disclosed, upon which a vessel 9 operates. Surrounding the path of travel of the vessel, and preferably elevated on poles 10, is a coil 11 of considerable magnitude. This coil, as shown in Fig. 3, consists of an outer casing 12, within which is placed a conducting wire comprising a plurality of convolutions 13, each of which is insulated from the other. The terminals 14 of this coil extend to a suitable way-station, and at the station is located a powerful source of electrical energy 15, to which is connected by a suitable wire 16 an electrically operated transmitter 17. The battery or other source of electricity has a connection 18 with one of the leads 14. A receiver 19 of the ordinary type has a connection with the same lead 14, to which the battery is connected, and both the receiver and transmitter have connections 21 with the contacts of a switch 22. This switch has suitable means, as for instance, a spring 23, which normally maintains the receiver in circuit with the coil 11, as will be evident by reference to Fig. 1, but if the switch is thrown to break the circuit, it will then cut in the source of electrical energy 15 and the transmitter 17.

An outfit similar to the above, is located on the vehicle or boat 9, but the coil 24 thereof, shown in Fig. 2, is much smaller. As further illustrated in said figure, the mechanism mounted on the boat, consists of a transmitter 25, and a battery or other source of electrical energy 26 electrically connected, as shown at 27 and having a connection 28 with one of the leads of the coil. The receiver 29 also has a connection 30 with said lead. A switch 31 is connected to the other lead, and is normally held in a position by a spring 32 to maintain a closed circuit through the receiver 29 and the coil, though it may be moved to cut out said receiver and close the circuit through the coil, the source of electrical energy and the transmitter.

In this system, if it is desired to transmit from one station, as for instance, the shore-station, the switch 22 is moved downwardly to cut out the receiver and throw in the transmitter and source of electrical energy, while the operator upon the boat or vehicle leaving the mechanism in the condition shown in Fig. 2, holds the receiver 29 to his ear. If therefore the operator at the shore-station uses the transmitter in the ordinary manner, a varying current corresponding to that passing through the coil of great magnitude 11,





United States Patent [19] [11] 4,152,647

Gladden et al. [45] May 1, 1979

[54] RAPIDLY DEPLOYABLE EMERGENCY COMMUNICATION SYSTEM

[75] Inventors: Charles A. Gladden; Martin H. Parelman, both of Las Vegas, Nev.

[73] Assignee: The United States of America as represented by the United States Department of Energy, Washington, D.C.

[21] Appl. No.: 888,818

[22] Filed: Feb. 23, 1978

[51] Int. Cl.[2] H04B 7/20

[52] U.S. Cl. ..... 325/4; 325/54; 325/55; 179/2 EB

[58] Field of Search ..... 179/2 E, 2 EA, 2 EB, 179/15 AD, 15 BA, 15 BZ; 325/1, 3, 4, 53, 54, 55, 57; 343/175, 176, 177

[56] References Cited

U.S. PATENT DOCUMENTS

1,230,761	3/1966	Goode	325/55
4,056,779	11/1977	Toler	325/4
4,121,158	10/1978	Rassi	179/2 EB

Primary Examiner—Benedict V. Safourek
Attorney, Agent, or Firm—Dean E. Carlson; John A. Koch

[57] ABSTRACT

A highly versatile, highly portable emergency communication system which permits deployment in a very short time to cover both wide areas and distant isolated areas depending upon mission requirements. The system employs a plurality of lightweight, fully self-contained repeaters which are deployed within the mission area to provide communication between field teams, and between each field team and a mobile communication control center. Each repeater contains a microcomputer controller, the program for which may be changed from the control center by the transmission of digital data within the audible range (300–3,000 Hz). Repeaters are accessed by portable/mobile transceivers, other repeaters, and the control center through the transmission and recognition of digital data code words in the subaudible range.

15 Claims, 5 Drawing Figures

Image Source: http://symonsez.files.wordpress.com/2009/03/stubblefield.jpg

2. Patents at the Heart of Mobile Business: Qualcomm's Profit Center

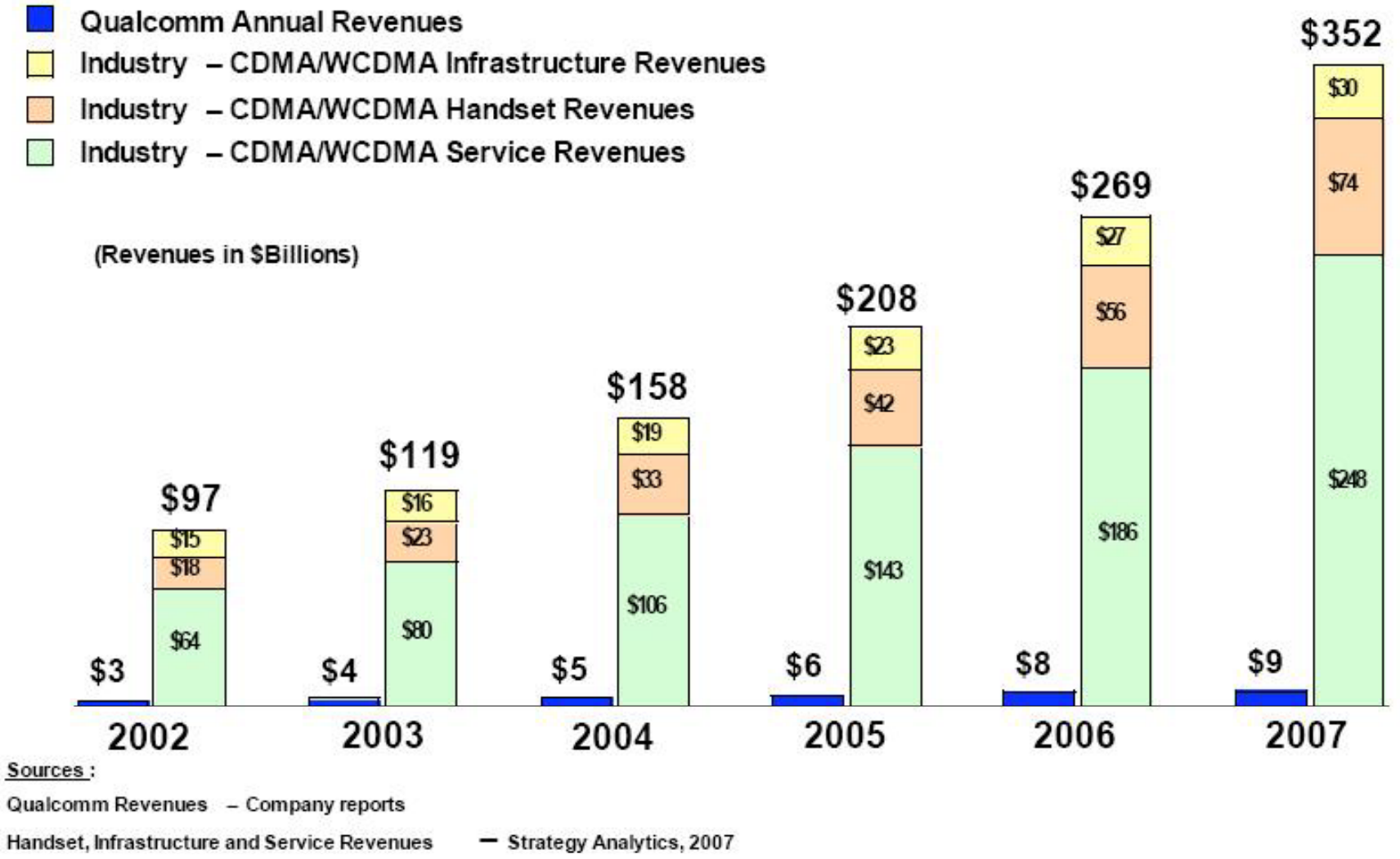


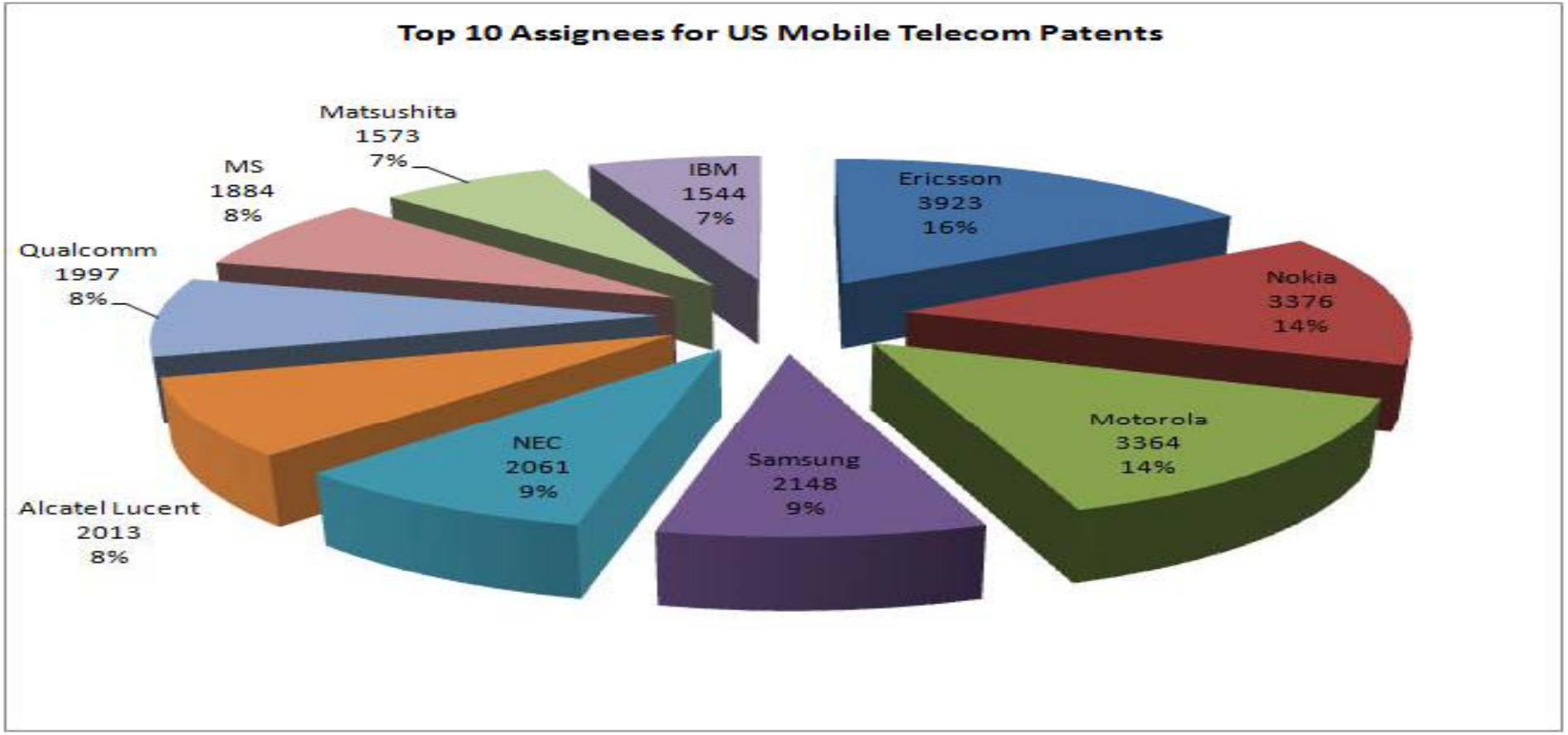
Figure Source: Qualcomm

3. Beginning of 4th Generation Mobile

The 4G mobile standardization (IMT-Advanced) was started this October by ITU-R and the standards establishment is scheduled to be early 2011. 3GPP's LTE-Advanced and IEEE's Mobile WiMAX Evolution are the two major candidates for IMT-Advanced standards.

4. Complex IPR Landscape

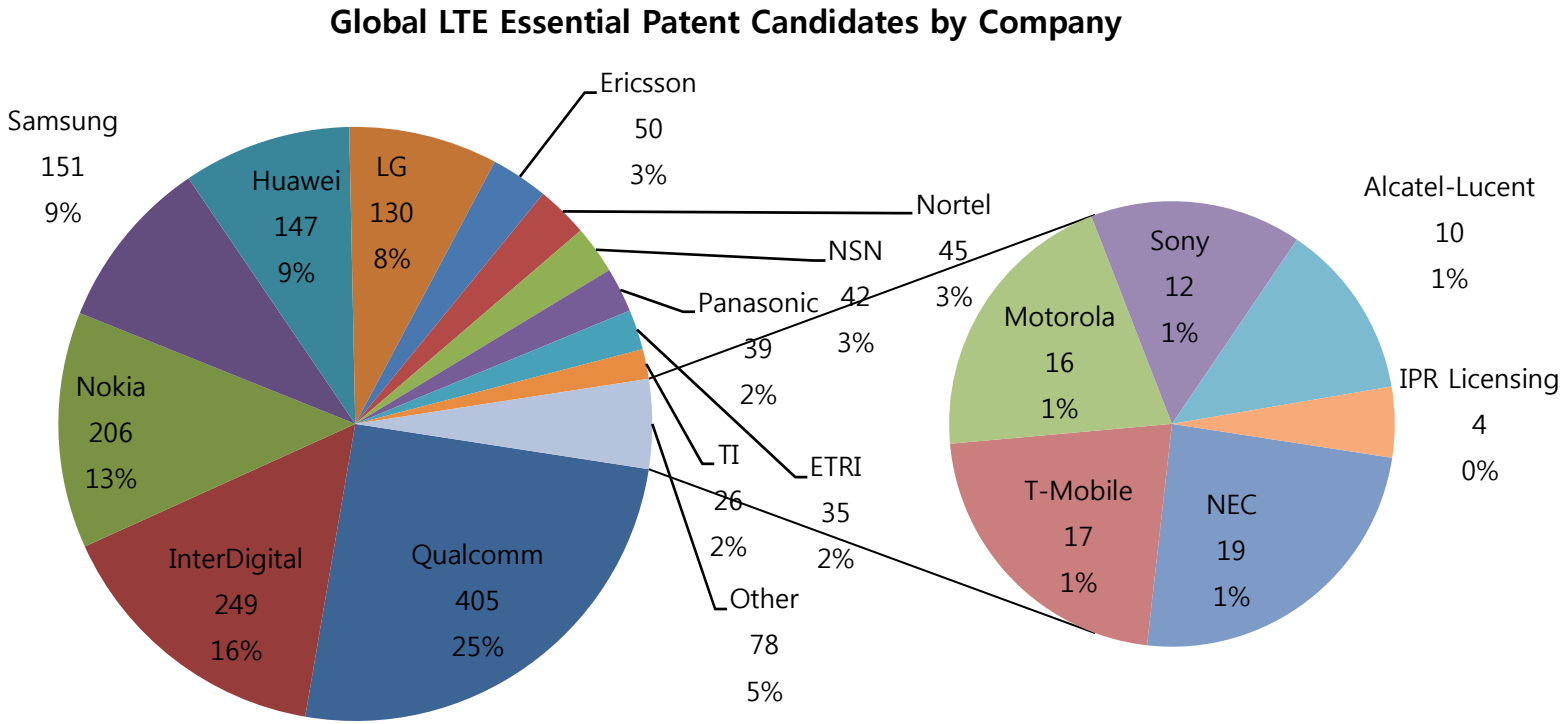
As of September 30 2009, there are more than 100,000 patent applications and more than 2,000 IPR holders identified by keyword searching, which are issued in the US.



Ref. http://techipm-innovationfrontline.blogspot.com/

4.1 LTE IPR Landscape

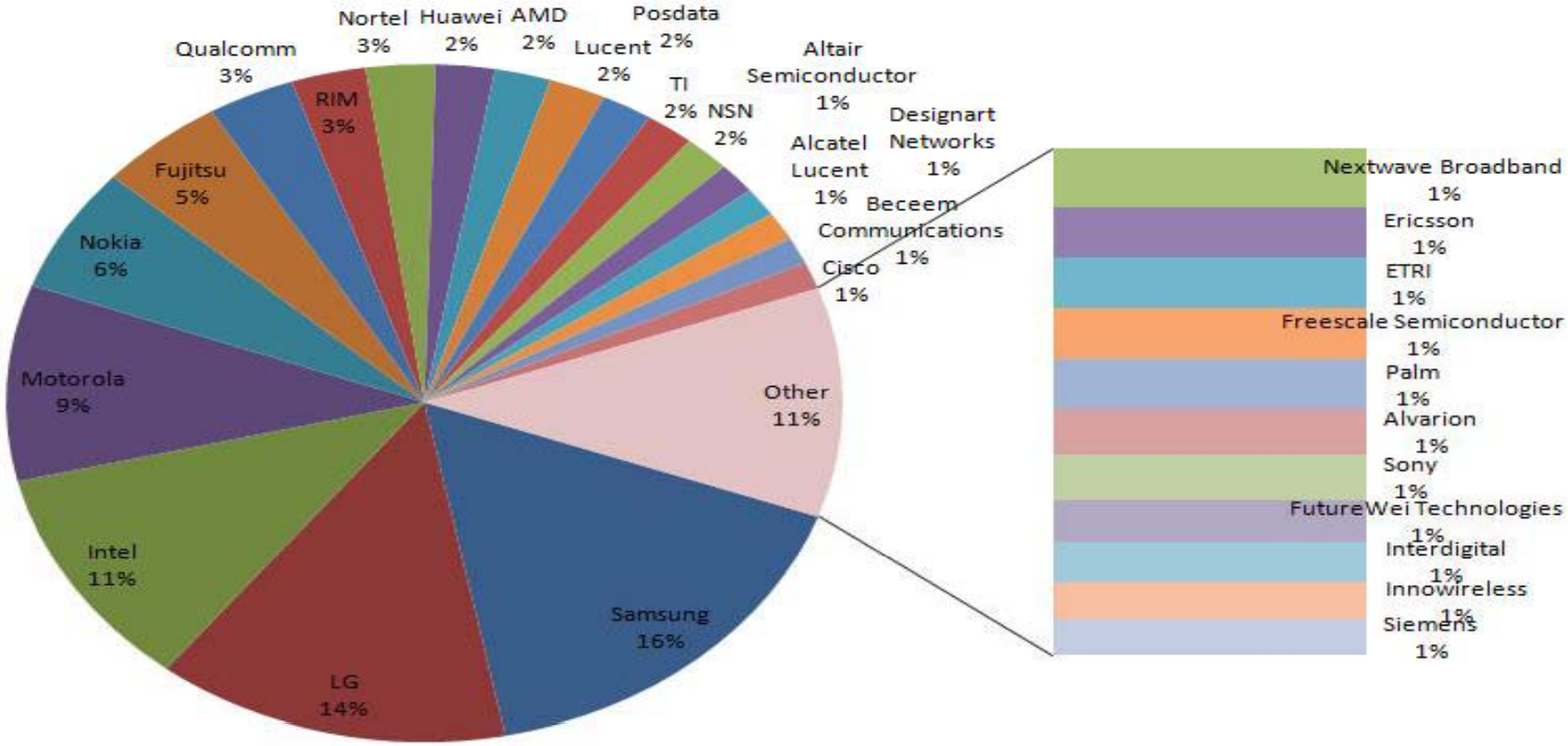
As of September 30 2009, there are total of 1607 declarations for LTE essential patent candidates and more than 20 IPR holders in the lists of ETSI IPR Online, which are issued, published, and pending patents worldwide including PCT applications.



Ref. http://techipm-innovationfrontline.blogspot.com/

4.2 Mobile WiMAX IPR Landscape

As of September 30 2009, there are more than 2000 patent applications and more than 100 IPR holders identified by keyword searching, which are issued and published patents worldwide including PCT applications.



Ref. http://techipm-innovationfrontline.blogspot.com/

5. IPR Strategy: Strategic Alignment

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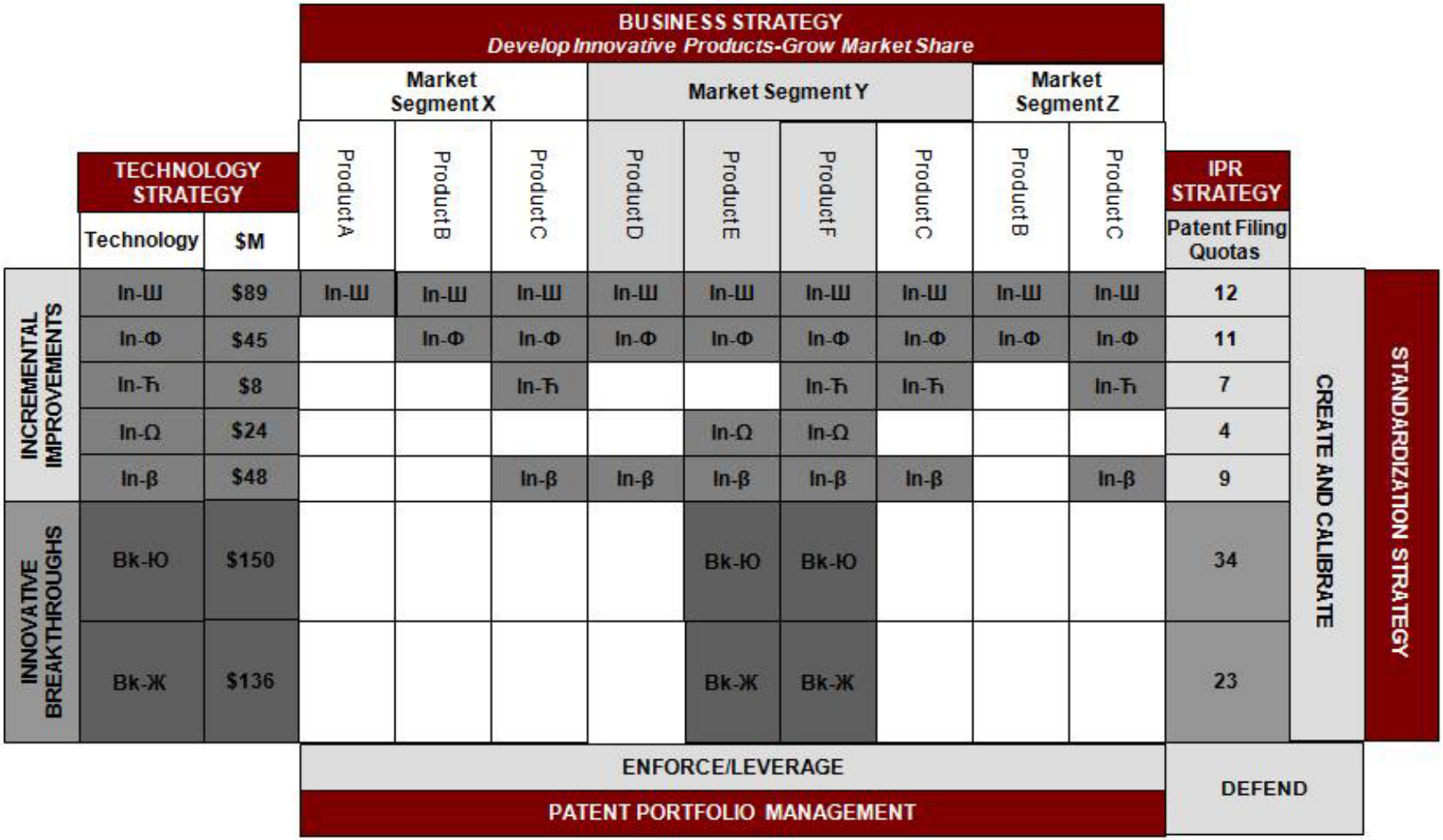
Strategic alignment in business-market-product-technology-patent-standard



Ref. Dr. Jan Jaferian in Business Power: Creating New Wealth from IP Assets, Wiley, 2007.

5.1 IPR-Standardization Alignment Best Practice: LTE Case Study

3GPP TS36.211 (OFDM/MIMO)

US20070xxxxxx A1

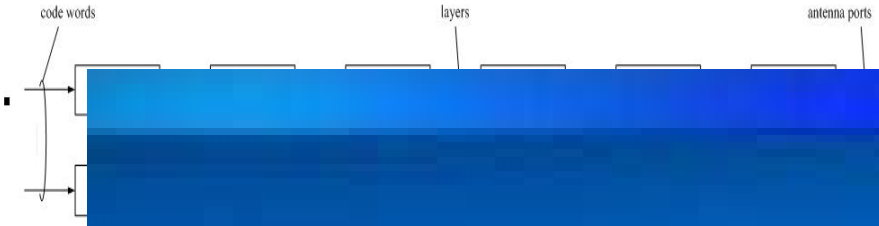
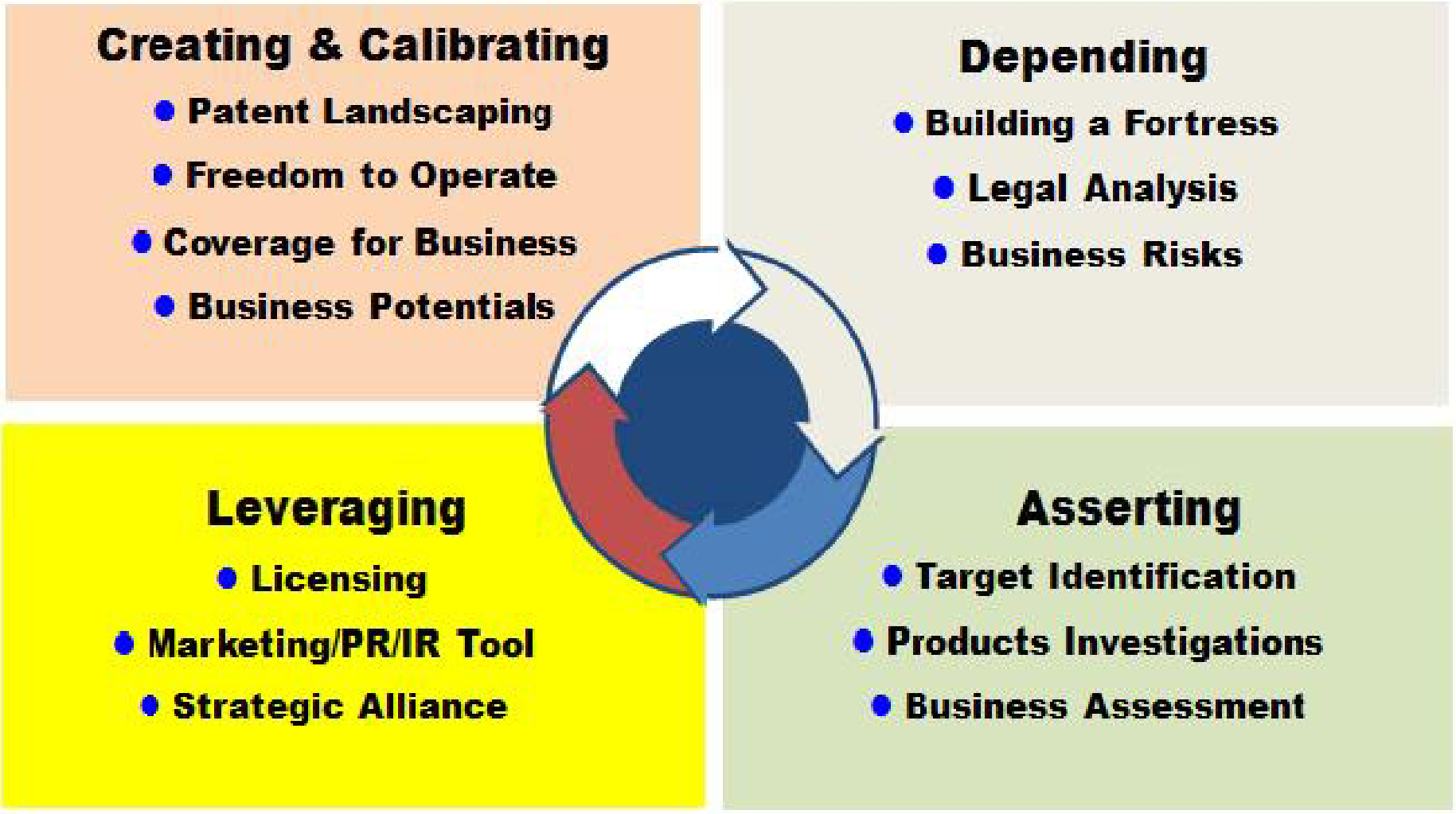


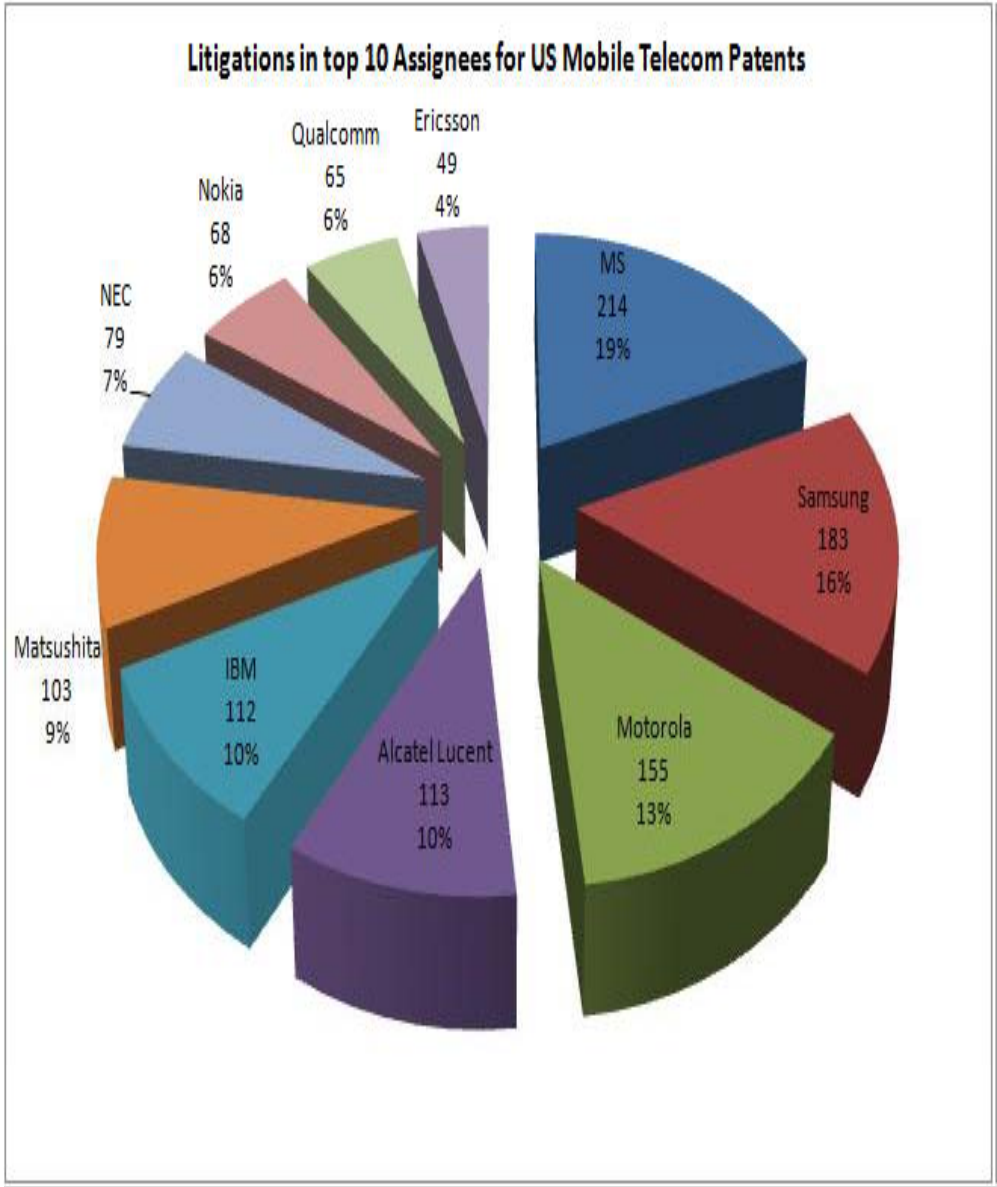
FIG. 19

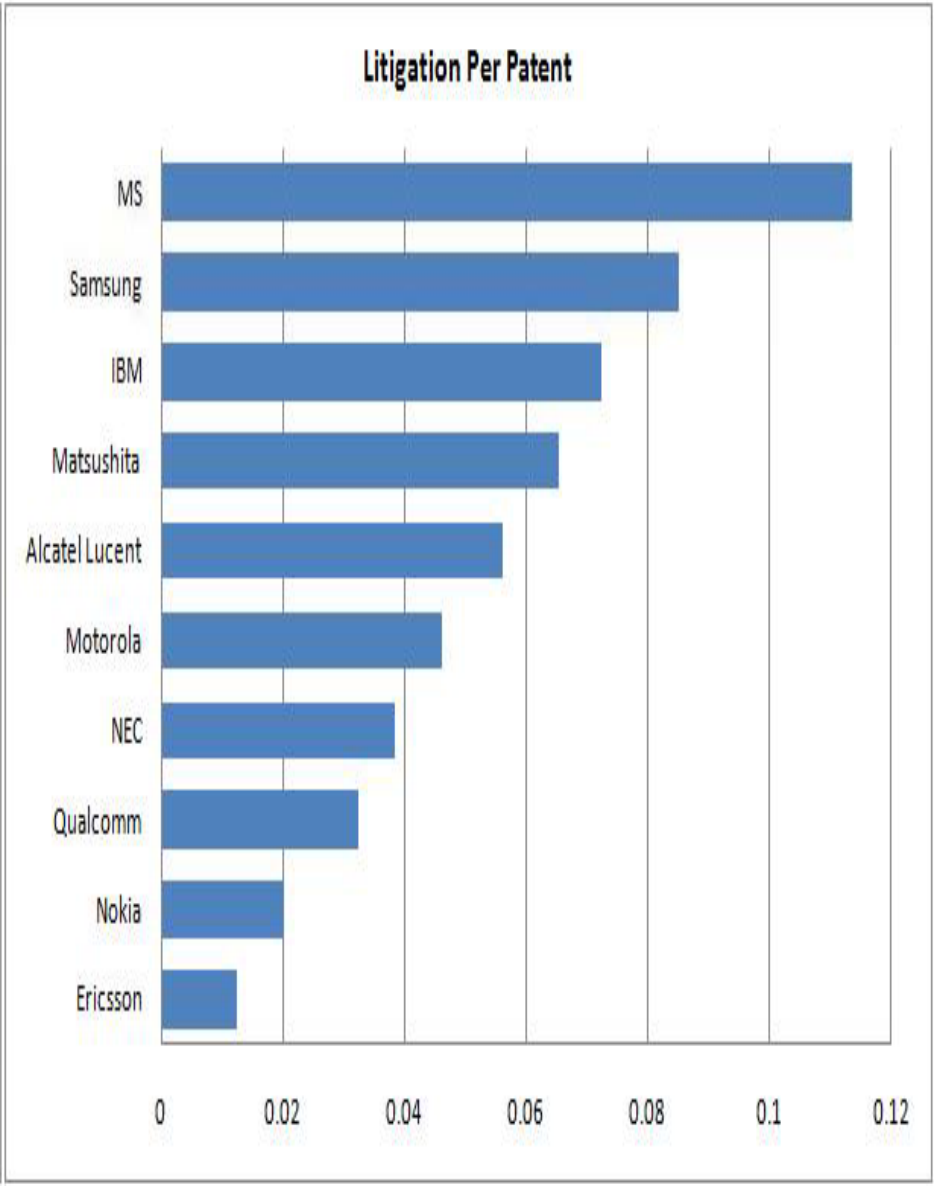
6. Strategic Management of Patent Portfolio



Ref. Dr. Jan Jaferian in Business Power: Creating New Wealth from IP Assets, Wiley, 2007.

7. Patent Portfolio Management: Mobile Telecom Case Study





8. Patent Portfolio Management: LTE Case Study (1)

An interesting point in recent LTE related news is that LTE patent portfolios are used as a strategic business tool, especially for marketing and PR purpose:

In recent press interview for “LG's Successful LTE-CDMA Handover", Dr. Scott Ahn, President & CEO of LG Mobile Communications, expressed that LG will lead the 4G innovations based on about 300 LTE-related patents and experiences in leading the LTE standardization.(http://techipm-innovationfrontline.blogspot.com/2009/08/lgs-lte-innovation-leadership.html)

Yin Weimin, President of LTE at Huawei, advertised in recent press interview that Huawei has been granted 147 Long Term Evolution (LTE) patents as of August 2009. He said that “The achievement reflects our pioneering vision and firm commitment to support operators worldwide as they evolve towards delivering advanced services to end-users through LTE networks”. (http://www.ednasia.com/article-24626-huaweipullsaheadinltepatentranking-Asia.html)

9. Patent Portfolio Management: LTE Case Study (2)

Based on TechIPm's recent IPR analysis for LTE OFDM/MIMO standards (http://www.slideshare.net/alexglee/lteiprofdmmimo20093q), a possible scenario for strategic business alliance between InterDigital (IP licensing company) and Texas Instruments (semiconductor chip manufacturer) is analyzed by comparing to Qualcomm's (IP licensing company + semiconductor chip manufacturer) LTE patent portfolio for LTE OFDM/MIMO standards in number of patents, technology coverage, and quality by Essentiality Index.

InterDigital+TI's combined LTE patent portfolio for OFDM/MIMO standards shows that the InterDigital+TI strategic alliance could be a strong competitor to Qualcomm in LTE baseband chip and IPR licensing market.

Fig 9.1 Technology Coverage Comparison

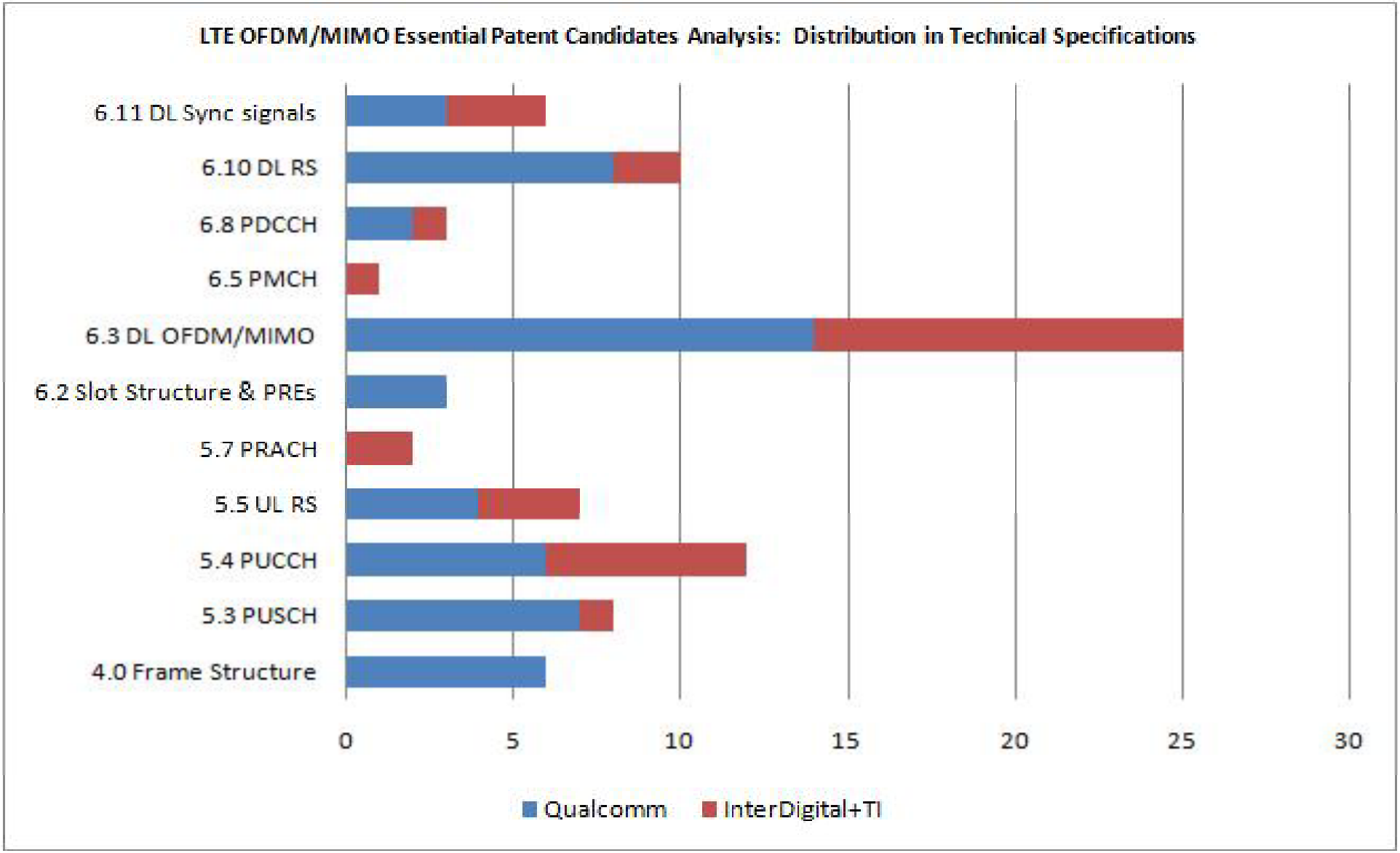
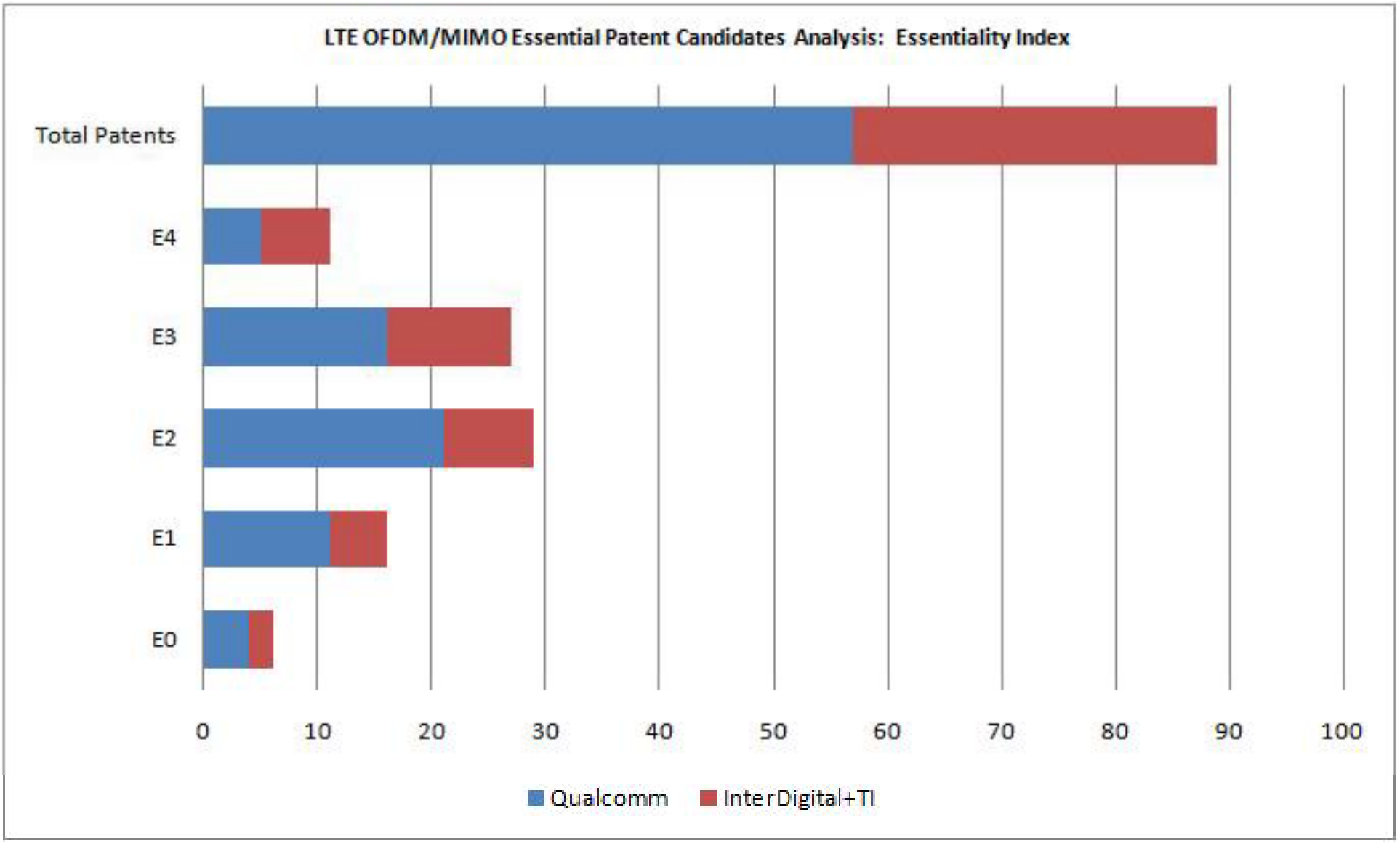


Fig 9.2 Patent Quality Comparison



10. Licensing Issues: Pool or Bilateral

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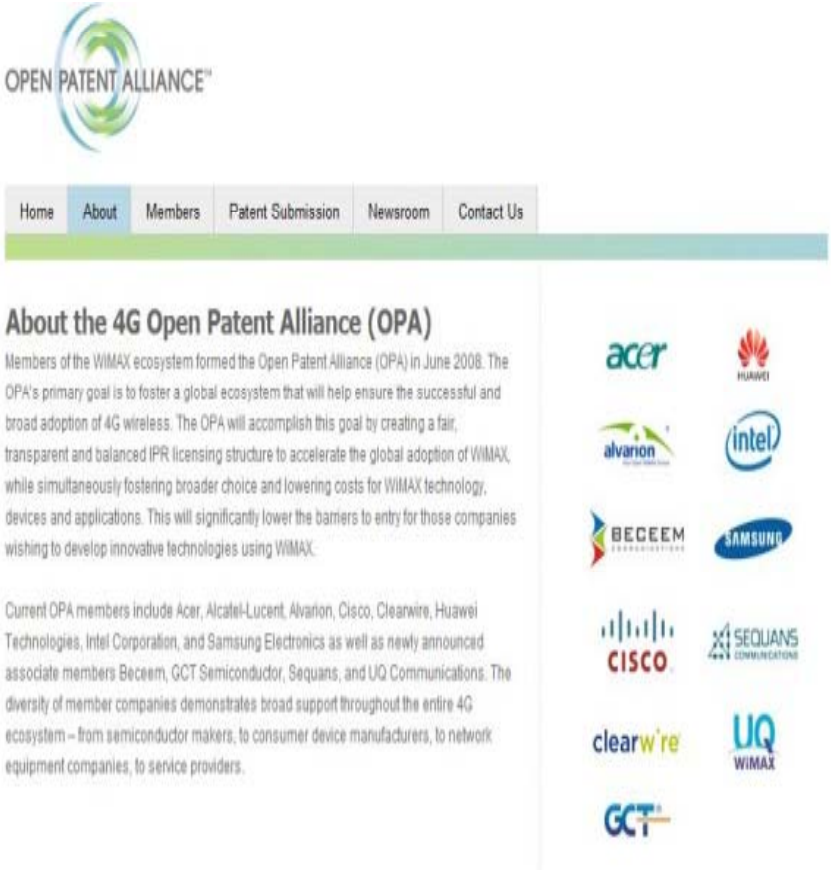
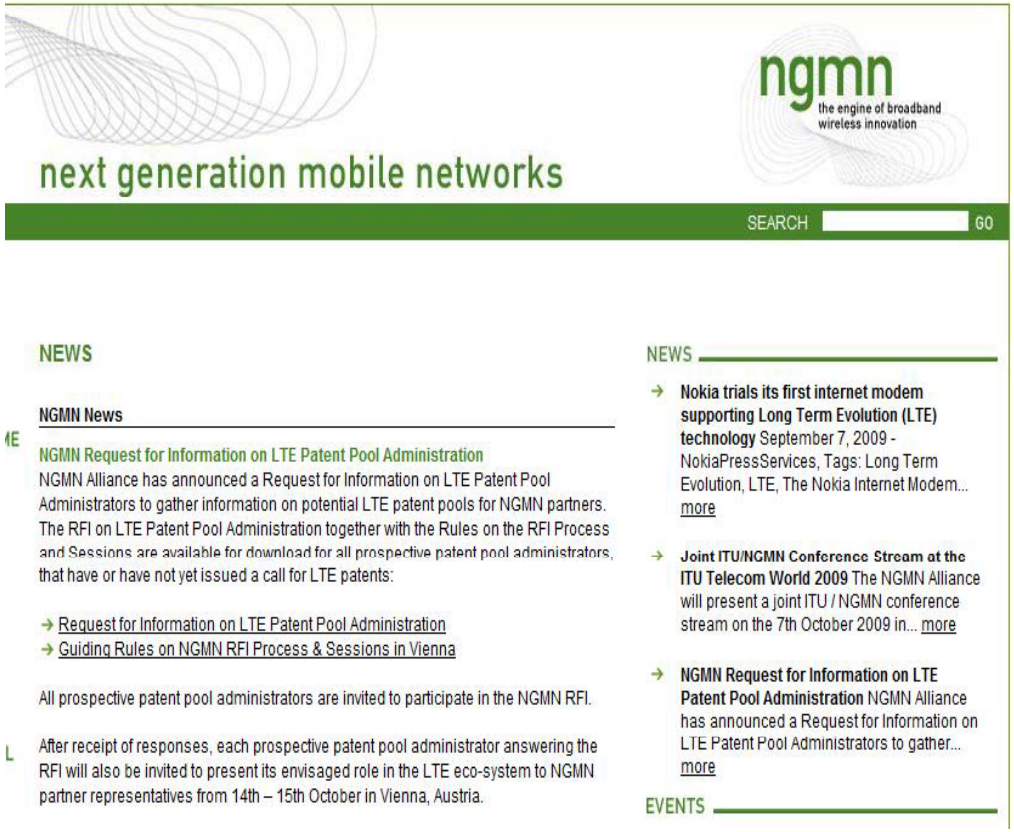
Royalties and FRAND (Fair, Reasonable and Non Discriminatory)
OPA (Open Patent Alliance): WiMAX Patent Pool
NGMN (Next Generation Mobile Network): issued a RFI on LTE patent pool Administration.





10.1 LTE Royalty Rates

Qualcomm revealed that the company had put royalty rate at 3.25 % for LTE patent licensing.
Ref. http://www.telecomtiger.com/Corporate_fullstory.aspx?passfrom=corporate&storyid=6478&section=S162

Nokia expects Nokia's rate for devices that deploy LTE as the only wireless communication standard to be in a range of 1.5 % from the sales price of an end-user device. To avoid unfavorable effects of royalty stacking, Nokia will not charge royalties higher than 2.0 % from the sales price of an end-user device for IPR that is essential to wireless communication standards irrespective of the number of wireless standards deployed in such a device.
Ref. http://www.nokia.com/press/ipr-information/statement/nokia-licensing-policy-on-long-term-evolution-and-service-architecture-evolution-essential-patents

Ericsson said all of its LTE agreements will be made according to Ericsson's proportional share of the standard IPR that relates to the relevant product category. Ericsson likewise honors the same industry practice by ensuring a maximum cumulative rate on LTE technology not exceeding a single-digit rate. Ericsson´s fair royalty rate for LTE is therefore expected to be around 1.5 % for handsets.
Ref. http://www.telecomseurope.net/content/ericsson-licenses-lte-technology
http://www.ericsson.com/technology/licensing_programs/

Nortel will charge about 1 % of sales for use of its LTE patents, which is less than the 1.5 % rate another manufacturer has announced, Danny Locklear, Nortel's director of global wireless marketing.
Ref. http://www.itworldcanada.com/a/Daily-News/eb183512-5a9a-433f-ba1a-cbe6cf69dc31.html

Huawei believes it will hold 15-20% of all essential patents relate to LTE standard, therefore, a royalty rate with some flexibility, but not to exceed 1.5 %, is expected.
Ref. http://www.huawei.com/ipr2.do

Motorola expects that its essential patent royalty rate for LTE systems and equipment (e.g. infrastructure and subscriber handsets) will be approximately 2.25 %.
Ref. http://www.motorola.com/content.jsp?globalObjectId=8827

11. NPE Issues: Evolution of IP business?

By the definition of Wikipedia (http://en.wikipedia.org/wiki/Patent_troll), "non-practicing entity" (NPE) is a patent owner who does not manufacture or use the patented invention, but rather than abandoning the right to exclude, an NPE seeks to enforce its right through the negotiation of licenses and litigation.

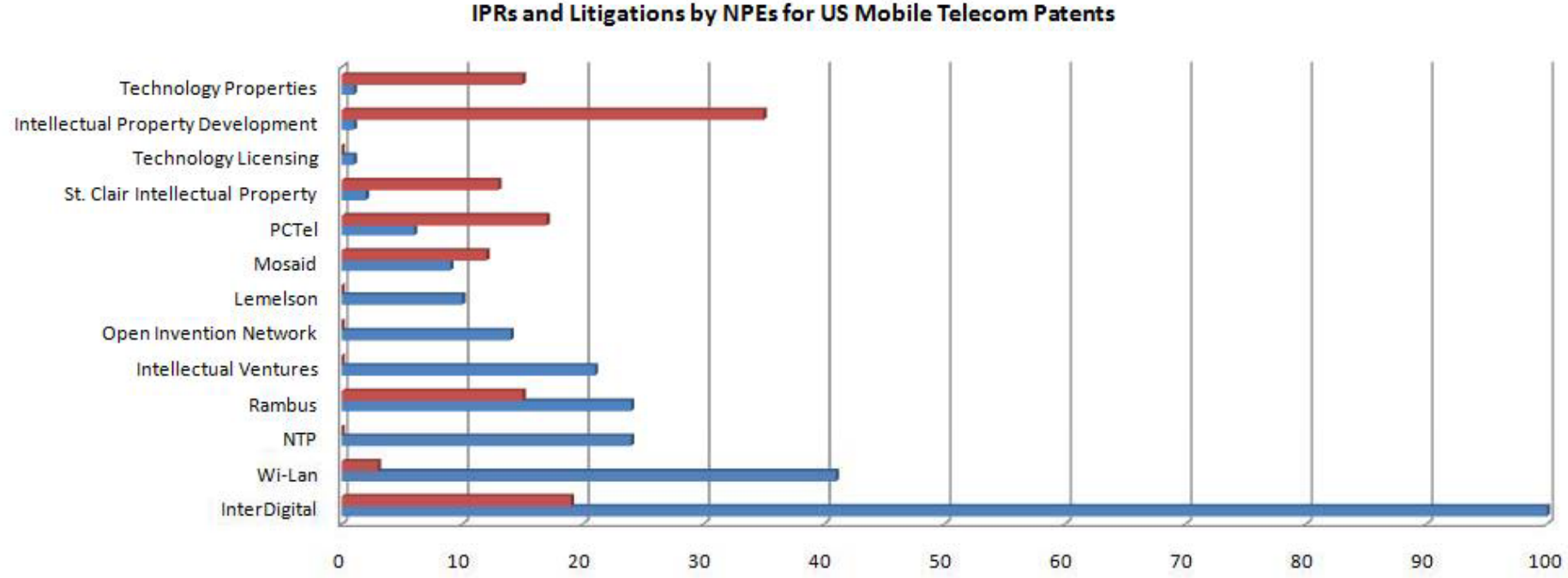
According to Patent Freedom (https://www.patentfreedom.com/), as of December 2008, there are about 220 NPEs and over 800 subsidiaries including such as Intellectual Ventures and InterDigital. NPEs hold more than 16,000 patent families and are involved in more than 2,200 lawsuits (12% of total patent litigations).

Nortel's Devolution to Non-Practicing Entity?
http://www.martinsuter.net/blog/2009/08/nortels-devolution-to-nonpracticing-entity.html

Mosaid Technologies eyeing Nortel patents from high-profile to the obscurehttp://www.news1130.com/news/business/more.jsp?content=b252452721

11.1 NPEs in Mobile Telecom

As of Oct. 30 2009, NPEs hold 907 patent families (4% of total patents) and are involved in 129 lawsuits (13% of total patent litigations).



	InterDigital	Wi-Lan	NTP	Rambus	Intellectual Ventures	Open Invention Network	Lemelson	Mosaid	PCTel	St. Clair Intellectual Property	Technology Licensing	Intellectual Property Development	Technology Properties
Litigations	19	3	0	15	0	0	0	12	17	13	0	35	15
Patents	753	41	24	24	21	14	10	9	6	2	1	1	1

11.2 Pro or Con for the NPEs

Personal Discussion with AIPLA Members

Q. NPE defenders argued that NPE is a natural evolution of IP business in the knowledge-based economy. NPE defenders insisted that the NPEs could be appreciated for the valuable secondary market they are creating. These intellectual investors recycle otherwise unused assets and make them part of the productive economy again (http://hallingblog.com/2009/09/18/in-defense-of-patent-trolls).

NPE opponents, however, said that the NPEs are hampering US innovation by abusing patent system and imposing heavy litigation cost and licensing fee burden to the companies. Recent written testimony before the Senate Judiciary Committee by Coalition of Patent Fairness (http://www.patentfairness.org/) revealed the negative role of NPEs in innovation promotion and job creation.

Are you pro of con?

A1. This is personal opinion, not a position of the firm or particular clients. I was interested to hear Judge Michel quote some statistics the other day on patent litigation. It's essentially 'flat' in terms of number of cases filed and median damage awards. I agree that NPEs can be an annoyance to clients in specific cases, but I think they've been around for a long time. Continental Paper Bag Co. v. Eastern Paper Bag Co. 210 U.S. 405, (1907) announced the rule that one need not practice in order to enforce a patent. And correct me if I'm wrong, but wasn't Hazeltine Research a NPE? Zenith Radio Corp. v. Hazeltine Research Inc. 395 U.S. 100, (1969). eBay Inc. v. MercExchange, L.L.C., 547 U.S. 388, (2006) solved the big problem of being 'held up' by a NPE. It is after the NAS and FTC Patent Reform reports. Perhaps NPEs are not truly a recent or systemic problem. Would first-inventor-to-file plus effective oppositions provide an additional solution? Probably.
But if you want to deal with junk patents out there filed by those who are manipulating the system, maybe you want to keep the right to determine fraud in the hands of the judges -- who regularly decide who is a liar or a cheat and who is not.

11.2 Pro or Con for the NPEs -2

Personal Discussion with AIPLA Members

A2. As a personal, law-student-type opinion, not representative of my firm or clients, I favor the NPEs solely for the sake of intellectual consistency and justiciability. For example, what if an "NPE line" were drawn at: "persons not manufacturing a product or providing a service infringing the asserted patent"? Many "practicing" corporations own patents that may not _exactly_ read on what those corporations presently practice, although when the spec and claims were drafted the applicants believed the patent application disclosed and claimed the best mode of the invention. Those patents still are useful for discouraging competitors who otherwise would want to leverage the disclosed invention. Should the owners of those patents have to jump through an extra set of hoops regarding "NPE" status, before being able to assert their patents against a copyist? Or should the courts grant a presumption to companies that actually manufacture a product? Should the test for an NPE be "persons not manufacturing a product or providing a service"? Then what about Intellectual Ventures, which provides the service of monetizing patent ownership? In summary, trying to penalize "NPEs" by drawing a threshold for standing to litigate, either would subvert the genuine business value of many patents held by "practicing" entities, or would require the courts to pick and choose favored litigants.

A3. The increase in "NPE" activity can likely also be linked to (a) the increased cost of litigation and (b) the change in standards for declaratory judgment actions from one extreme to another extreme. Regarding (a), most independent inventors or small business cannot afford litigation so enforcing or monetizing via a third party (e.g, an NPE) is one of the only alternatives (contingent fee law firms perhaps being the other). We need litigation reform rather than more patent reform. Regarding (b), what are lawyers advising clients about how to approach potential licensees or infringers without triggering a DJ action? In the past, a fairly straightforward letter ("You should license my patents") wouldn't trigger a DJ action. Unclear what the standard is today. Acacia is often labeled a "patent troll"/NPE. However, look at comments from independent inventors who've done deals with them. http://www.ftc.gov/os/comments/iphearings/540872-00048.pdf It is dramatically more difficult to obtain a patent and also to monetize a patent compared to just a few years ago. The standards for declaratory judgment actions, doctrine of equivalents, obviousness, permanent injunctions, damages, willful infringement and more have changed- all decreasing the value of patents. Many think a good thing. Time will tell whether its just another Sarbanes-Oxley-like knee jerk reaction to some prior patent problems. Perhaps innovation will be the next bubble to pop. Until the courts/congress make resolving IP disputes & monetizing patents easier and safer for all involved, NPEs are likely the only option for many innovators.

Appendix. 4G IPR References

LTE Essential Patents Landscape 2Q 2009
http://www.slideshare.net/alexglee/3gpplteessential-patents2009q2brief

LTE IPR Analysis 3Q 2009
http://www.slideshare.net/alexglee/lteiprofdmmimo20093q

Global LTE Essential Patent Candidates
http://techipm-innovationfrontline.blogspot.com/2009/10/global-lte-essential-patent-candidates.html

Global Mobile WiMAX Patent Portfolios Analysis
http://techipm-innovationfrontline.blogspot.com/2009/10/global-4g-lte-mobile-wimax-patent_16.html

Thank You!

Questions?

If you have any questions
please contact
Dr. Alex G. Lee
at alexglee@techipm.com