



# Introduction to Intellectual Property Rights and Patenting

Mark Pecen

# Mark Pecen – Who am I?



- **Semi-retired senior technology executive** in the wireless technology industry, helping companies in Europe, Canada and the U.S. to optimise their economic value creation
  - **Pioneer in wireless technology and inventor on more than 100 fundamental patents** in wireless communication, networking and computing, and is a graduate of the University of Pennsylvania, Wharton School of Business and the School of Engineering and Applied Sciences
  - **Served on over 20 advisory and governance boards** for public and private companies
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- Investor and advisor to several technology companies and advisor to the Canadian government and European Union in the areas of ICT research and technology standardization and intellectual property strategy
  - Recent chairman and founding member of the European Telecommunication Standards Institute (ETSI) Technical Committee Cyber working group for Quantum Safe Cryptography (Cyber QSC) in Sophia Antipolis, FRANCE
  - Retired senior executive at BlackBerry, Ltd. - founded the Advanced Technology Research Centre
  - Previously with Motorola - awarded the title of Distinguished Innovator and Science Advisory Board member for role in developing technology and standards for wireless communication

# Quick Overview: Intellectual Property – What is it?



**Legal concept** protecting creations of the mind: discoveries, inventions, literary and artistic works, symbols, names, images, designs

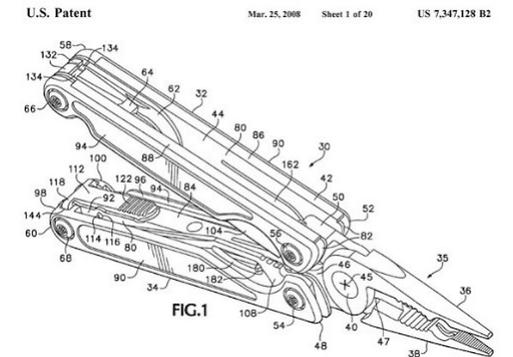
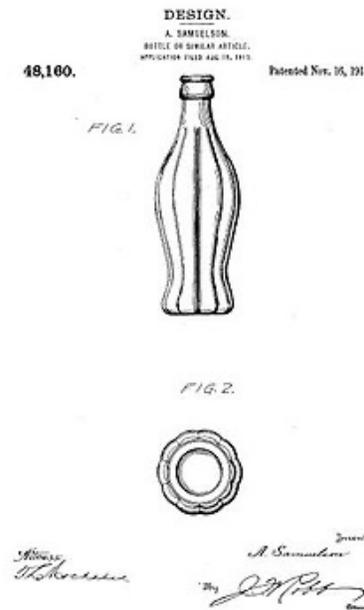
# Quick Overview: Two Categories of IP

## 1. Protect the form or expression of the creation:

- **Industrial Designs (Design Patents in the US)\***
- Trademarks / Trade Names
- Copyright

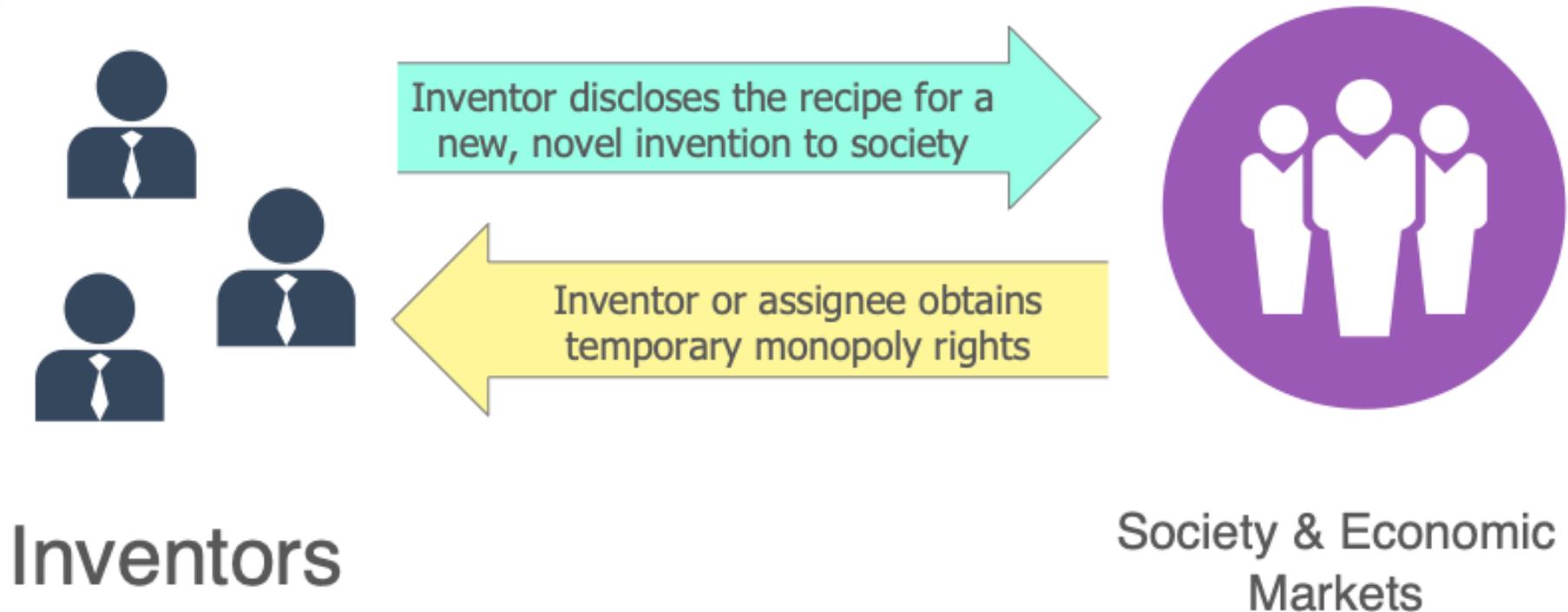
## 2. Protect the essential aspects of the IP (technical solution):

- **Patents (Utility Patents in the US)\***
- **Utility Models\***
- **Integrated Circuit Layouts\***
- Geographic Indication of Source (e.g. only a fermented drink from the region of Champagne can be called "Champagne")

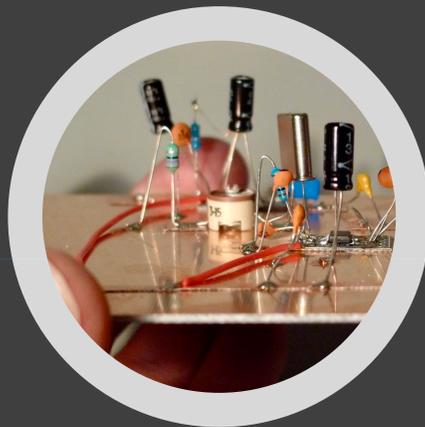


# Why do patents exist?

Previous to widespread use of patenting, inventors would hide their work from others, limiting economic value creation



- In exchange for teaching the world at large how to implement a particular useful, new invention, the inventor or assignee is granted the right to temporarily exclude others from fabricating, distributing, selling or using a particular patented invention – typically for 20 years in the case of a utility patent



# Patent incentives to society

- Patent system was set up to encourage people to disclose their inventions, rather than keep them as trade secrets
- System is supposed to generate more overall innovation and compensate inventors for their innovations



# Why are Patents Important?

## **Patents are a kind of currency.**

- For large companies, patents can be swapped with competitors to neutralize large financial liabilities in the event that a competitor's patent covers their company's product or technology offering
- Of course, successful large companies must engage in continuous efforts to protect their intellectual property, or they quickly become targets of IP theft



# Why are Patents Important?

**For small and medium-sized companies, patents are a different kind of currency...**

- Having patents typically raises the value of small and medium-sized companies to investors and potential acquirers
- Smaller companies get the protection they need from competitors copying their successful products – protects their revenue stream and helps to create a culture of excellence
- Patents provide strategic optionality for the future



# Patent rights are territorial

- Patents are issued by patent offices in their respective countries and grant exclusionary rights **only** within the geographic jurisdiction of the country's patent office
- The World Intellectual Property Organization (WIPO) provides the ability to file global patent disclosure documents. **There is no such thing as a global patent.**
- The European Patent Office (EPO) has the authority to grant patents within the countries comprising the European Union
  - Once a European Patent is granted, it needs to be “activated” in order to give the holder patent rights
  - Activation of a European Patent is done on a country-by-country basis and must be done for each country in which patent protection is desired



# Patentability

Novelty is key

Scope of protection and requirements are highly dependent on national laws. Nevertheless, there are some general, universal principles:

- **Novelty:** new in view of the prior art
- **Inventiveness:** non-obvious, involving an inventive step with respect to the prior art
- **Industrial Application:** applicable to a product or process; it cannot be a mere mental act or thought experiment, i.e. an idea is not necessarily an invention

Patent laws usually require sufficient disclosure so that someone skilled in the art such as an average technician can implement the invention, thereby reducing it to practice.

Patent offices usually conduct an examination on each patent application to check whether the conditions for patentability are met.



# Exclusions from Patentability

Not everything new is patentable!

**Most legal systems and international treaties exclude the following items from patentability:**

- **Discoveries** of materials or substances already existing in nature
- **Scientific theories** or **mathematical methods**
- **Plants and animals** other than microorganisms, and essential biological processes for the production of plants and animals.
- **Schemes, rules or methods**, such as those for doing business, performing **purely mental acts** or playing games – an exception is the business method patent permitted in the United States
- **Aesthetic creations**



# Patent Rights Protect the Owner

Strictly an exclusionary right

The only right a patent gives to the holder is the **right to exclude** others from manufacturing, copying, selling, importing or using an invention without the owner's permission

A patent holder may choose to **sell / issue a license** to another party, enabling that party to manufacture, copy, sell, import or use the patent holder's technology without legal enforcement against the licensee

*I need to file a US patent as soon as I arrive to the lab, so I will have a tool to defend ourselves if our competitors stole our invention*



Roy Lichtenstein

# Patents and Business

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- Many highly successful companies build the patenting process into their value chain
- Whether a company integrates patenting and licensing depends on:
  - Available resources
  - Amount of liability from competitors
- Large companies usually invest heavily in patenting and licensing
- It's also appropriate for small companies to invest in patenting technologies that are key to their products or services and to budget for this activity



# Qualcomm: typical integration into value chain





# Many parallel value chains possible

- Frequently, a small company develops a technology and creates a patent portfolio around it
- The small company needs a partner for larger-scale implementation of their technology
- Their patent portfolio helps protect their technology from infringement and may also serve as an incentive for a partner to share

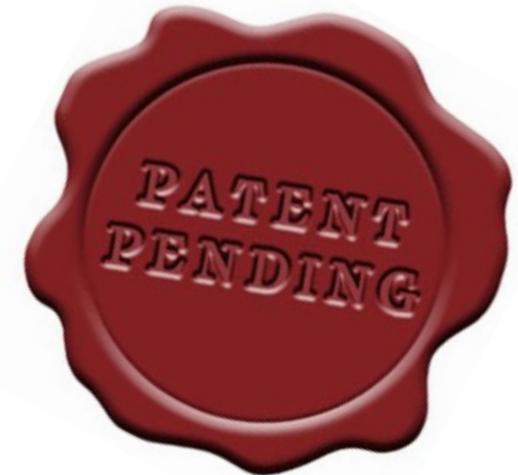
# Patent Portfolios



- A **grouping** of patents
- A general portfolio may comprise all the firm's patents, but a useful way to view the general portfolio is that it comprises multiple **smaller portfolios of like inventions**
- It is generally true that having a patent portfolio comprising a single patent supports insufficient protection, because it may be practical to fund an invalidation campaign against a single patent, depending on how high the stakes might be to a competitor
- A practical patent portfolio for a given area should contain between **5 and 30 patents**
- Fewer than 5 to 8 patents in the same area may be a bit risky, but having more than 30 in the same portfolio is usually not needed

# Patent Prosecution

- Patent prosecution is the formal legal procedure of protecting an invention, from the filing of a patent application to its issuance
  - Drafting of specification part
  - Drafting of claims
  - Producing drawings
  - Filing
  - Responding to patent office notices (office actions)
  - Amending claims
  - Filing continuations
  - Paying issuance fees
  - Paying maintenance fees



# Patent Timelines

- Patent rights usually last 20 years from the first effective filing date (the priority date)
- Different countries may require more rigorous examination, e.g. EU, and therefore tend to take more time to issue patents
- The US Patent and Trademark Office (USPTO), in recent history, tends to grant patents that meet qualifications in about 4 years
- The European Patent Office (EPO) historically issues qualified patents in 5 to 8 years

# Public Disclosure

- In most countries, **once an inventor has publicly disclosed an unpatented invention, it no longer qualifies for patenting**, and becomes prior art for inventions in the same field
- In the US, **an applicant has 12 months** in which to file for a patent subsequent to any public disclosure of the invention
- **Patent offices also publicly disclose patent applications**, whether or not a patent is granted



## Good Rules Regarding Disclosure

- File for a patent first
- Disclose to public later, *ex*: publish your book, paper, lecture, hold meetings with external partners, etc.



# A utility patent protects the underlying technology

May be applied to many products or even different industries

(54) **METHOD FOR ENABLING RECEIPT OF A PACKET-SWITCHED PAGE BY A MOBILE STATION**

(75) Inventors: **Mark Edward Pecen**, Rolling Meadows, IL (US); **Marcia Otting**, Mundelein, IL (US)

(73) Assignee: **Motorola, Inc.**, Schaumburg, IL (US)

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

(21) Appl. No.: **10/000,566**

(22) Filed: **Oct. 23, 2001**

(65) **Prior Publication Data**  
US 2002/0037720 A1 Mar. 28, 2002

**Related U.S. Application Data**

(62) Division of application No. 09/539,826, filed on Mar. 31, 2000.

(51) **Int. Cl.<sup>7</sup>** ..... **H04Q 7/20**

(52) **U.S. Cl.** ..... **455/426; 455/436; 455/552; 455/553; 455/434; 455/517; 370/314; 370/338; 370/352; 370/466**

(58) **Field of Search** ..... 455/426, 434, 455/513, 553, 516, 517, 466; 370/338, 352, 353, 354, 355, 356, 466

(56) **References Cited**

**U.S. PATENT DOCUMENTS**  
4,794,635 A \* 12/1988 Bess ..... 379/60

4,845,491 A \* 7/1989 Fucendo et al. .... 340/825,44  
4,984,247 A \* 1/1991 Kaufmann et al. .... 375/1  
6,157,836 A \* 12/2000 Cashman ..... 455/436  
6,370,390 B1 \* 4/2002 Saha et al. .... 455/466  
6,393,295 B1 \* 5/2002 Butler et al. .... 455/458  
6,463,054 B1 \* 10/2002 Mazar et al. .... 370/352  
6,463,055 B1 \* 10/2002 Lapier et al. .... 370/353  
6,470,024 B1 \* 10/2002 Haralainen et al. .... 370/459

**OTHER PUBLICATIONS**  
Global System for Mobile Communications Digital Cellular Telecommunications System (Phase 2+) General Packet Radio Service (GPRS) Service Description Stage 2 (GSM 03.60 version 6.5.0 Release 1997), 169 Pages.

\* cited by examiner

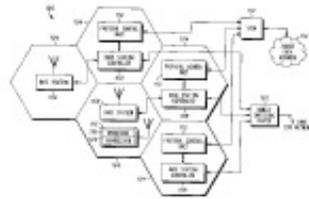
**Primary Examiner—Vivian Chin**  
**Assistant Examiner—Marcos Milord**  
(74) **Attorney, Agent, or Firm—David S. Nowakowicz, Roland K. Bowler II**

(57) **ABSTRACT**  
A mechanism for notifying a mobile station of receipt of a packet-switched paging message in a GSM communication system. A base station controller (108) sends the packet-switched paging message to the mobile station (116) along a main dedicated control channel in response to the mobile station being capable of operating in a dual transfer mode and being currently engaged in circuit-switch voice inter-change activity, resulting in a simultaneous voice and data transmission in dual transfer mode.

**11 Claims, 3 Drawing Sheets**

Number	US6714781
B2	
Publication type	Grant
Application	US
10/000,566	
Publication date	Mar 30, 2004
Filing date	Oct 23, 2001
Priority date	Mar 31, 2000
Fee status	Paid

Inventors Mark Edward Pecen, Marcia Otting  
Original Assignee Motorola, Inc.



# Where to File?

Consider where you do business, competition, ability of courts to remedy infringement

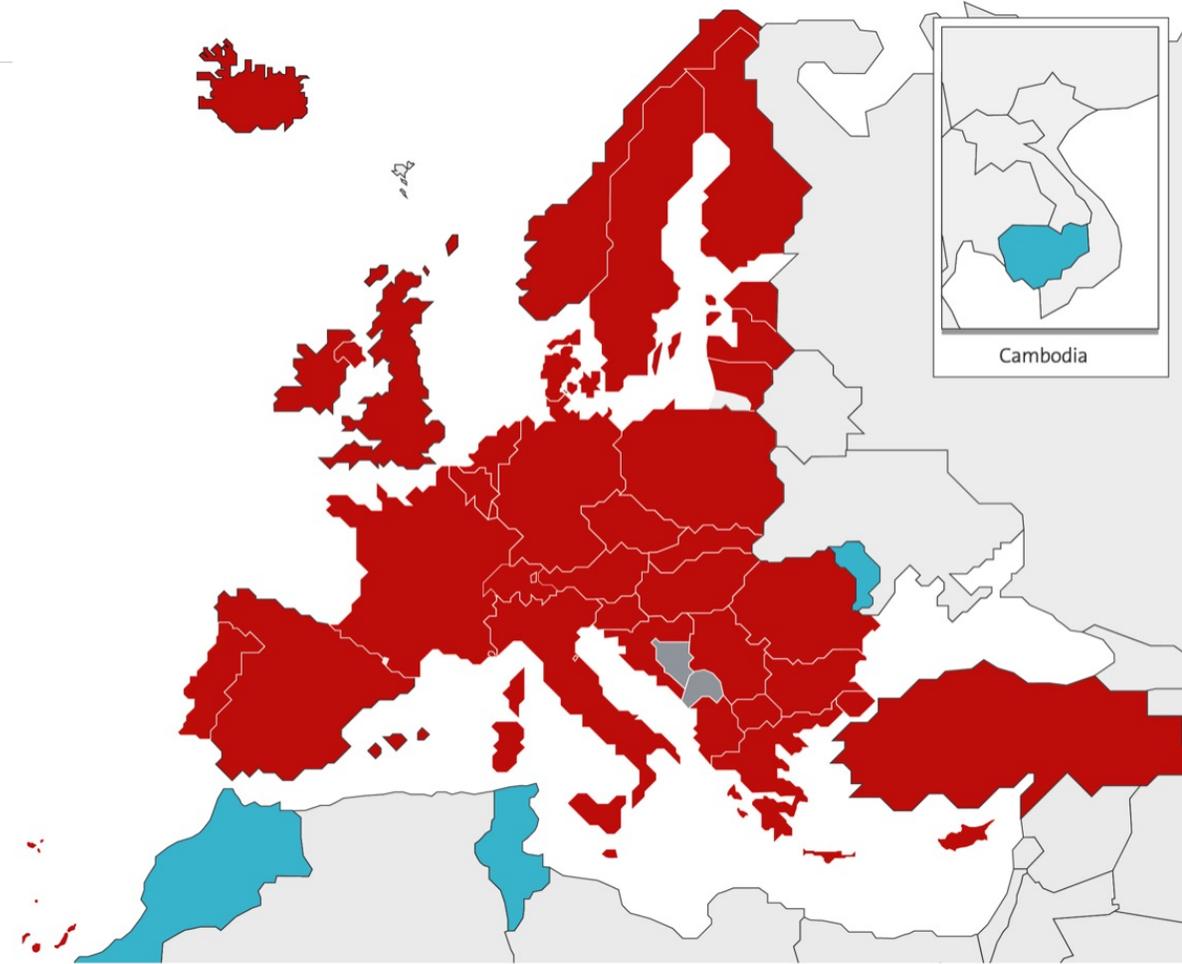
- Patent prosecution can be an expensive procedure and costs vary in the countries where the patents are filed
- Consideration should be given to:
  - Where the firm is doing business, or intends to do business geographically in the future
  - Geographic areas occupied by competitors
  - Enforceability of patents in certain countries



# The New European Unitary Patent

Similar to the U.S. – one court to hear pan-European enforcement cases

- **The European Commission has introduced the concept of a “unitary” patent**
  - Something like a U.S. patent, in that there’s no need to activate the patent in the various countries of the EU
  - Once issued, the holder of a unitary patent can enforce the patent throughout the 27 European states plus other members of the treaty = 38 countries in total
  - Litigation can be heard by a single, unified patent court
  - The unified patent is in effect as of 20 January 2013, but litigation has not yet been heard
  - One needs to request unitary treatment when filing in EU



The 38 member states of the EPO, also including the two extension states and four validation states.

# Costs of Patenting

- Legal fees: a patent attorney who knows the technology in consideration
- Filing fees
  - Each country has its own schedule of filing fees
- Issuance fees
  - There is usually a fee to issue a granted patent
- Maintenance fees
  - Each country imposes a fee in order to keep the patent enforceable over the 20 year period
  - Fees occur at intervals over the 20 year period
  - These fees may vary widely among countries, and **can be substantial** amounts



# Cost-effective filing

- Provisional filing – not a patent, but a place-holder for your priority date
  - Inexpensive public disclosure that some countries allow
  - May take the form of a memorandum or patent specification with or without claims
  - **Applicant has 12 months** to promote this provisional to a full utility patent filing
- WIPO filing
  - WIPO is the U.N. intellectual property authority
  - Decisions are treaty binding in the 193 member countries
  - Not a global patent, but a global disclosure of invention with the intent of promoting to patent
  - **Applicant has 30 months** to promote the WIPO filing to a regular utility patent application

# Benefits to Engineers and Researchers

- **Patenting your inventions makes it much more likely that your work will be used by a broader segment of society**
- Protecting your intellectual property protects your company's revenue stream, corporate valuation and other financial aspects that help protect your employment, compensation and bonuses
- Being named as an inventor on patents is traditionally regarded as a prestigious position within the tech community



# Cautionary Tales: Shopify and Research in Motion

These two Canadian companies failed to file patents on their foundational technology – with costly results



# The Support Process for an Inventing Culture

Organizational elements needed for systematic, regular patenting for consistent value creation over time

- **Regular Patent mining:** prospecting within your company for inventions that have yet to be patented
- **Team inventing vs. Individual Inventing** – inventing sessions
- **Evaluation of ideas:** peer review: you probably have more great ideas than you think you do! **Example: compressive sampling**



# Practical Criteria for Patenting

**Following are reasonable criteria that can be used as filters to help decide if an invention is worthy of a patent filing:**

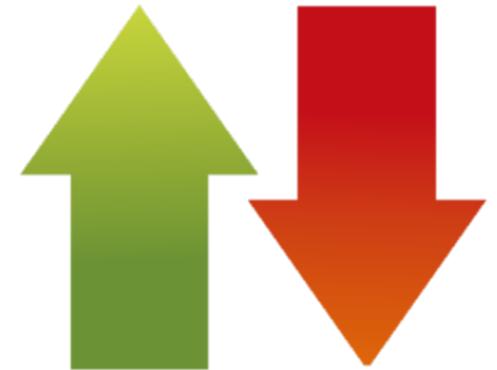
- ✓ **Novelty:** What is the closest prior art? How does the invention extend existing art?
- ✓ **Reduction to practice:** Does the invention teach how an apparatus is constructed, or how to implement a method? If you can describe the idea in detail so someone could build it, it could also be patentable.
- ✓ **Utility value:** Is the invention useful? Does it solve a real problem?
- ✓ **Business value:** Does the invention solve a problem incident to the firm's current or future business, or an adjacent area?
- ✓ **Detectability:** If the invention were implemented, e.g. in a competitor's product, a network, etc., how easy is it to detect infringement? Can you readily observe if the invention is being used by simple visual inspection, or do you need specialized analytics and equipment?
- ✓ **Claims-breadth:** Does the invention refer to a single, narrow idea or can it be broadly applied?
- ✓ **Possibility of standards contribution:** Is it something completely new that could be standardized in an existing standards body? Is the invention a potential fix for a problem in a standardized technology? Is it something you can see your competitors doing?

A good invention doesn't need to be groundbreaking to be patentable, just sufficiently novel compared to prior art  
Do what you are already doing – just document what you perceive as novel more along the way

# Examples of Successful (& Not) Patenting Efforts

An inventing culture in action

- **General Packet Radio Service (GPRS) and simultaneous voice and data service over cellular**
  - Successful : added a way to offer data service to cellular systems – was the foundation enabling the smartphone, and the way for users to receive and send mails while simultaneously on a voice call
- **Evolved EDGE – Enhanced GPRS data service**
  - Unsuccessful : The technology is published in the 3GPP standards, but deployment by manufacturers was so late that 4G was already available, making it irrelevant
- **Underlying technology for 3rd and 4th generation wireless**
  - Successful : made mobile communication available to almost anyone, where 1<sup>st</sup> and 2<sup>nd</sup> generation cellular were available mostly to business users
- **Adaptive Multi-Rate (AMR) voice coding**
  - Unsuccessful : although my team's codec worked, it was not selected for adoption in the 3GPP 3G and beyond standards
- **SMS Cell Broadcast**
  - Successful : used today by governments, including Canada and the U.S., to issue alerts for missing people (Amber alerts)
- **Remote SIM card (Subscriber Identity Module)**
  - Successful : Vehicle accident reporting via services like Onstar can use the SIM card in the phone of anyone in the car to reach the network



# Summary

- Patents provide **exclusionary rights** – right to exclude others from practicing your invention
- Patents are often viewed as a currency for sale, trade or licensing
- Because of their broad scope, patents are a preferred vehicle for technology companies to protect their interests
- Patents and licensing often function as separate parallel value chains in certain companies
- Patent portfolios should be deliberately constructed to protect a firm's key areas of business
- Patents are territorial – each country has its own scope of enforcement
- There is no such thing as a global patent
- Patent prosecution can be expensive – choose wisely the countries in which to file
- Consider first a WIPO filing, and consider promoting in 30 months