

Intellectual Property Considerations

UNC COMP 523

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Thanks to David Kaminsky for several slides [@dlkaminsky](https://twitter.com/dlkaminsky)

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Agenda

- Why did Dr. Stotts ask me to talk to you?
- What is intellectual property (IP)?
- Why is IP valuable?
- IP & open software: not at war
- So what does this mean to me?



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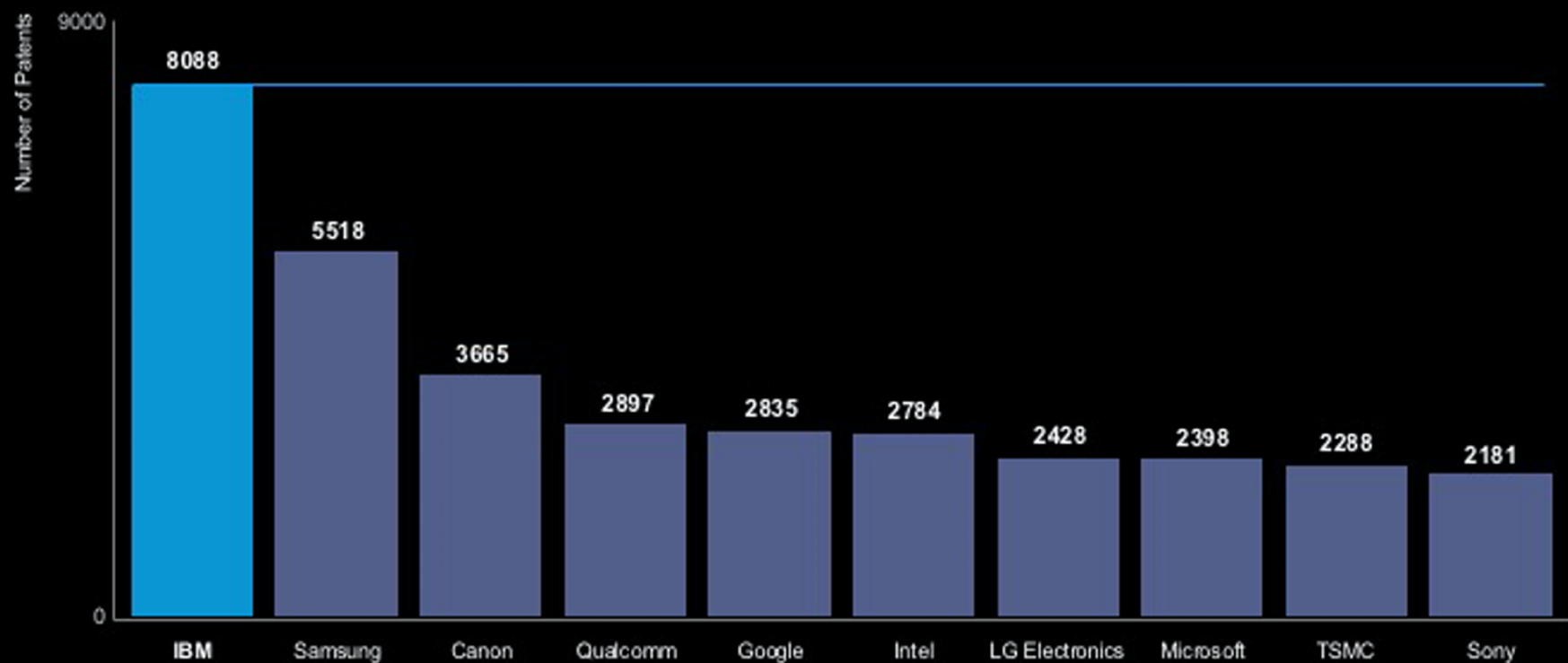


Why did Dr. Stotts ask me to talk to you?

- Because I work on IP solutions worldwide



2016 patents: Top 10 companies



Source: FI CLAMS Patent Services

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Let's collaborate!

Contact bamiller@us.ibm.com

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* as of February 15, 2018

** includes Research Professional Interest Communities (PICs)

What's All This About “Master Inventor”?

- An IBM Master Inventor is a technical resource who
 - Has mastered the invention & patent process as practiced by IBM
 - Contributes to IBM’s intellectual property over a sustained period
 - Is recognized by the technical community as a leader in the creative endeavor of invention
 - Shares their mastery of the process through mentoring

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What is Intellectual Property?

- Trade secrets
- **Patents**
- Defensive publications
- Trademarks
- Copyrights



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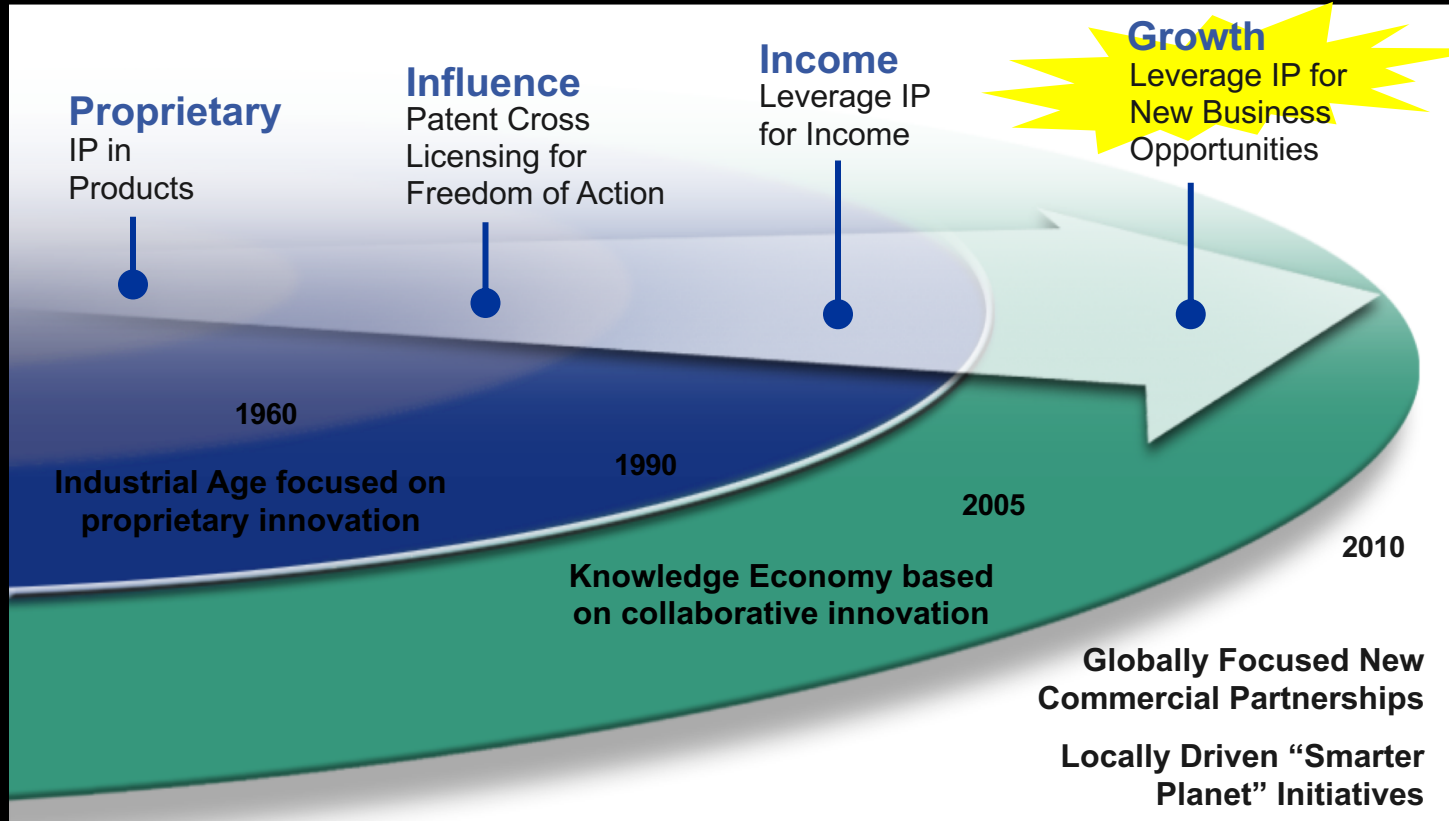


IP Value

Business objective	IP value dimension
Freedom of action	Cross-licensing potential
Proprietary competitive advantage	Product differentiation
Technology leadership	Industry collaboration potential
Innovation leadership	Invention quantity Fundamental innovation Charismatic innovation
IP-based income	License potential Assignment potential

Leveraging IP for Business Value

An Evolving Proposition



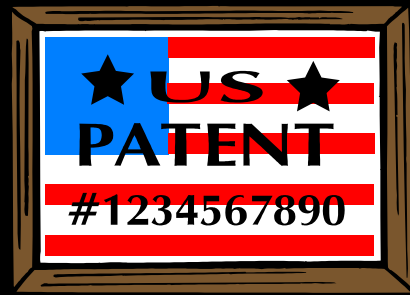
Freedom of Action: Competitive or Technical Advantage Characteristics

- Significant feature in a product or service
- Technical innovation that a party wishes to exercise solely by themselves for a period of time for a market advantage
- Process or manufacturing technique that offers a competitive advantage
- Significant increment in an existing business area
- Significant increment in a potential new business area
- Represents a solution to a well-known significant technical problem
- Represents a technical development of a product line
- The invention is a new unique technology
 - Or an improvement over the few substitute technologies active in the market
- Related to establishing a “standard”



What is a Patent?

- Grant of a property right to the owner of the patent
- Property right conferred is *exclusionary*
 - Excludes others from making, using, offering for sale, or importing a product that practices the invention (in the US)
- Three types: utility, design, and plant
 - Many/most technology/software patents are utility patents
 - Utility patents cover *new and useful processes, machines, articles of manufacture, composition of matter, or any new and useful improvement thereof*
- Patent term is generally 20 years from earliest filing date
 - Periodic maintenance fees must be paid or patent lapses



What Can be Patented?

- Processes, machines, manufacture, composition of matter
 - Process: process (!), act, or method
 - Computer programs that implement processes and methods
 - Machines: “ordinary dictionary meaning” – things that transmit forces, motion, energy
 - Manufacture: object constructed by application of a manufacturing process
 - Composition of matter: chemical compounds or mixtures
- Unpatentable subject matter
 - Mathematical formulas, laws of nature, physical phenomena
 - Abstract ideas
 - But machines or processes using such items *are* patentable



How Can I Tell if Something Might be Patentable?

- Must be patentable subject matter
- Must be “new or novel” (not done before)
 - Generally, not publicly disclosed prior to application
 - Refined by the “statutory bar”
 - *Inventor* has 1 year after public disclosure to seek patent protection
 - Special considerations for inventions “long used” internally
 - Ask an attorney or Master Inventor if in doubt
- Must be Useful
 - Substantial and credible use
 - Operative – must operate to perform the intended/stated purpose
- Must be Non-obvious
 - Must not be apparent to *one of ordinary skill in the relevant arts*
 - **You** have **more than ordinary skill** in computing



How Can I Tell if I should seek a Patent?

Business value tests

- Licensing Value
 - Other vendors likely to practice this invention
 - Industry- or market-wide problem
- Defensive Value
 - Other vendors likely to have similar inventions in their portfolio
 - Cross-licensing opportunities, protecting freedom of action
- Detectability
 - Can you tell when someone practices the invention?
 - The harder to detect/decide, the lower the potential licensing value
- Of interest to key competitors



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Let's start with a story...

Your life's dream is to open your own restaurant. You hone your skills in culinary school until finally you think you're ready.

You save money until finally you can open your dream restaurant in the city's perfect location.

The first few nights, the restaurant is crowded, and customers love your food.

But then...



Keeping Open, Open. That's what patents do!

The only viable parking belongs to a competing restaurant. The owner won't let your customers park, or they charge your customers unreasonable rates and their own customers nothing.

You need your own lot to let your customers park. Maybe even allow all customers to park in either lot under fair terms.

Patents are property rights – intellectual property

Patent owners can use those property rights to ensure that they can compete freely, based on features, functions, speed to market, etc.

How?

- Cross-licensing with other patent owners
- Dissuading bad actors from attacking open source
- Pledging patents to good causes



I just want to build cool software, why are you bothering me with this?

From an intellectual property owner's perspective, protecting open is everyone's job. Identifying critical innovations is essential.

Like real estate, not all patents are created equal. To ensure key areas remain open, collaborators need broad rights in those spaces – especially in new & emerging areas.

Establishing intellectual property rights can help to keep the playing field open!



Okay, what do I need to do?

You are pushing the innovation boundary, making code more functional, faster, more scalable, more robust, more...

How you accomplish these goals define the size and boundaries of your “parking lots”.

You can trade parking with others, but only if you have something to trade.

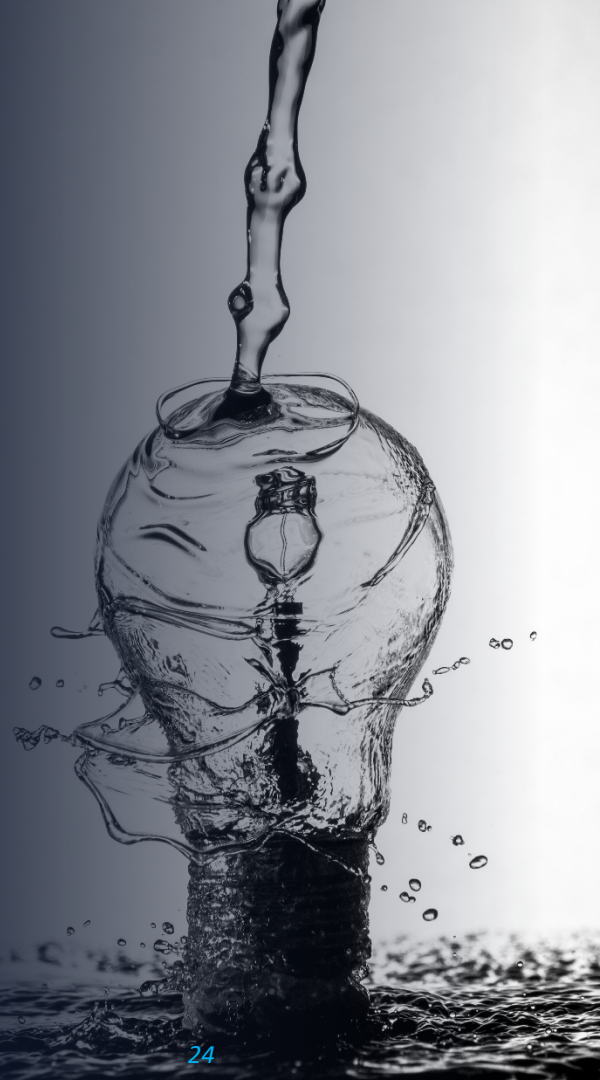
So what can I patent?

What should you disclose?

- Novel features going into a component
- Novel features that didn't make it into a release
- Features that might be added in the future
- Features that don't ship, but others might ship
- Other novel ideas related to a strategic interest
- Anything related to the five areas listed above...

It's not just developers

- Business/release managers understand market trends where your portfolio should evolve
- Testers quickly recognize product deficiencies – how your products could be improved



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I'm ready to go, now what?

Keep a record of what you do

Disclose novel ideas

- Title
- Background: The problem and existing solutions (“prior art”)
- Summary: In short, how does your solution work?
- Details: Details of how your invention works.



But how do I start? Let's bake some brownies!

1. Position a rack in the lower third of the oven and preheat the oven to 325°F.
2. Line the bottom and sides of the baking pan with parchment paper or foil, leaving an overhang on two opposite sides.
3. Combine the butter, sugar, cocoa, and salt in a medium heatproof bowl and set the bowl in a wide skillet of barely simmering water.
4. Stir from time to time until the butter is melted and the mixture is smooth and hot enough that you want to remove your finger fairly quickly after dipping it in to test.
5. Remove the bowl from the skillet and set aside briefly until the mixture is only warm, not hot.
6. Stir in the vanilla with a wooden spoon.
7. Add the eggs one at a time, stirring vigorously after each one.
8. When the batter looks thick, shiny, and well blended, add the flour and stir until you cannot see it any longer, then beat vigorously for 40 strokes with the wooden spoon or a rubber spatula.
9. Stir in the nuts, if using.
10. Spread evenly in the lined pan.
11. Bake until a toothpick plunged into the center emerges slightly moist with batter, 20 to 25 minutes.
12. Let cool completely on a rack.
13. Lift up the ends of the parchment or foil liner, and transfer the brownies to a cutting board.
14. Cut into 16 or 25 squares.

Brownies: <http://www.epicurious.com/recipes/food/views/best-cocoa-brownies-108346>



A recipe is a set of steps used to accomplish a task, in this case, making brownies.

Patents are like recipes

Now let's look at URL shortening (yes, that was an IBM patent)

A method of providing links to remotely located information comprising:

- 1) associating a shorthand link to a of uniform resource locator (URLs) by:
 - i) requesting the registration of a URL;
 - ii) selecting an unused shorthand key for the URL; and
 - iii) storing the {shorthand key, URL} pair in a database, where the shorthand key is an index
- 2) retrieving the URL by
 - i) receiving a shorthand link
 - ii) looking up the shorthand link in the database to find the URL
 - iii) returning the URL

And here's a test of completeness: if someone handed you this invention, and you were "reasonably skilled in the art", could you have implemented the invention?

- That is, if you're provided the recipe, can you make the brownies?



Common myths about patentability

“My solution is so simple that it’s obvious. Why bother patenting it?”

Don’t be so sure! If you believe your invention has value, and you are not aware of any others having/providing the same thing, then assume it has novelty and submit an invention disclosure.

“My solution can’t be patentable, it’s only an incremental advancement.”

Size doesn’t matter! What matters is that your solution provides value and is novel. Many valuable patents have been granted for incremental advances. Often the simplest inventions are the most valuable. 35 USC 101 specifically permits patents for improvements to existing technologies.

“My solution isn’t patentable because I haven’t implemented it yet.”

Reduction to practice of an invention is generally not required. You just need to be able to describe how to implement it in a manner that others understand and can follow. I.e., Is it fully enabled by the manner in which you describe it? If so, then it meets 35 USC 112, 1st paragraph enablement requirements.

Run it by the experts, and see if it flies!

Common myths about patents and Open/Agile

“I’m working in Open, so I can’t get a patent”

Patents can be used to help ensure that open source work can thrive in a world where some entities will assert patents to reduce competition. Patents can help keep open open.

“We develop using Agile, so there is no time.”

Obviously Agile schedules are tight. There’s no arguing that time pressure exists. However, patenting is worthwhile, so if your project lead won’t permit time for patenting, SPEAK UP!

“With Agile, we get early customer feedback, so we can’t patent before we demo our work.”

In an ideal case, you could file a patent application before you show the work to customers. And for especially important inventions, it’s possible to file VERY quickly. Even for inventions that don’t quite rise to “especially important”, it might be possible to get a US patent, provided the application is filed within a year of showing it to a customer. So even if you are demoing to customers, you could still get important patent protection.

Recognizing Potentially Patentable Inventions in Your Work

Anyone can be an inventor! Recognizing inventions may just mean changing how you think about your job. To get started, answer the following questions:

- Am I solving a problem? What is the problem? How was it solved?
- To my knowledge, is the solution new?
- Would competitors run into the same problem and need to solve it?
- Are there other ways to solve the problem? What are the advantages to my solution?
- Can my solution be further enhanced to make it even more valuable?

Some examples of potential inventions:

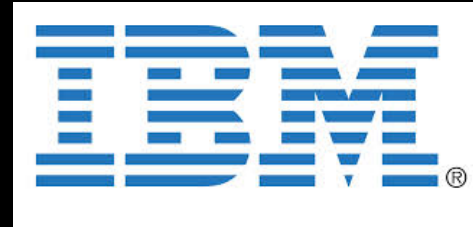
- Improves capability, performance, usability, security, serviceability
- Reduces cost
- Provided competitive advantage
- Provides novel solution to a customer requirement
- Improves development process (e.g., test methodology)



Resources

- World Intellectual Property Organization, “What is Intellectual Property?”
<http://www.wipo.int/about-ip/en/>
- United States Patent and Trademark Office <https://www.uspto.gov/> @uspto
- IBM Academy of Technology <https://www.ibm.com/blogs/academy-of-technology/>
- IBM Corp., Intellectual property and licensing
https://www.ibm.com/ibm/licensing/ip_management.html
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Discussion



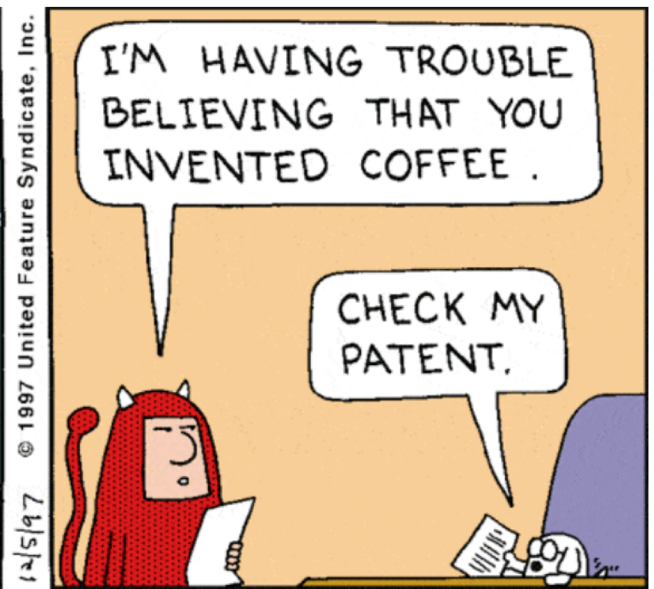
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MAY I ASK
YOU A
QUESTION?



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FOOL!



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OFFICE THAT I AM
ABOUT TO BEGIN.
THEY MIGHT WANT
TO INCREASE STAFF.



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TURN ON YOUR
COMPUTER.



I DON'T DO
HARDWARE.

