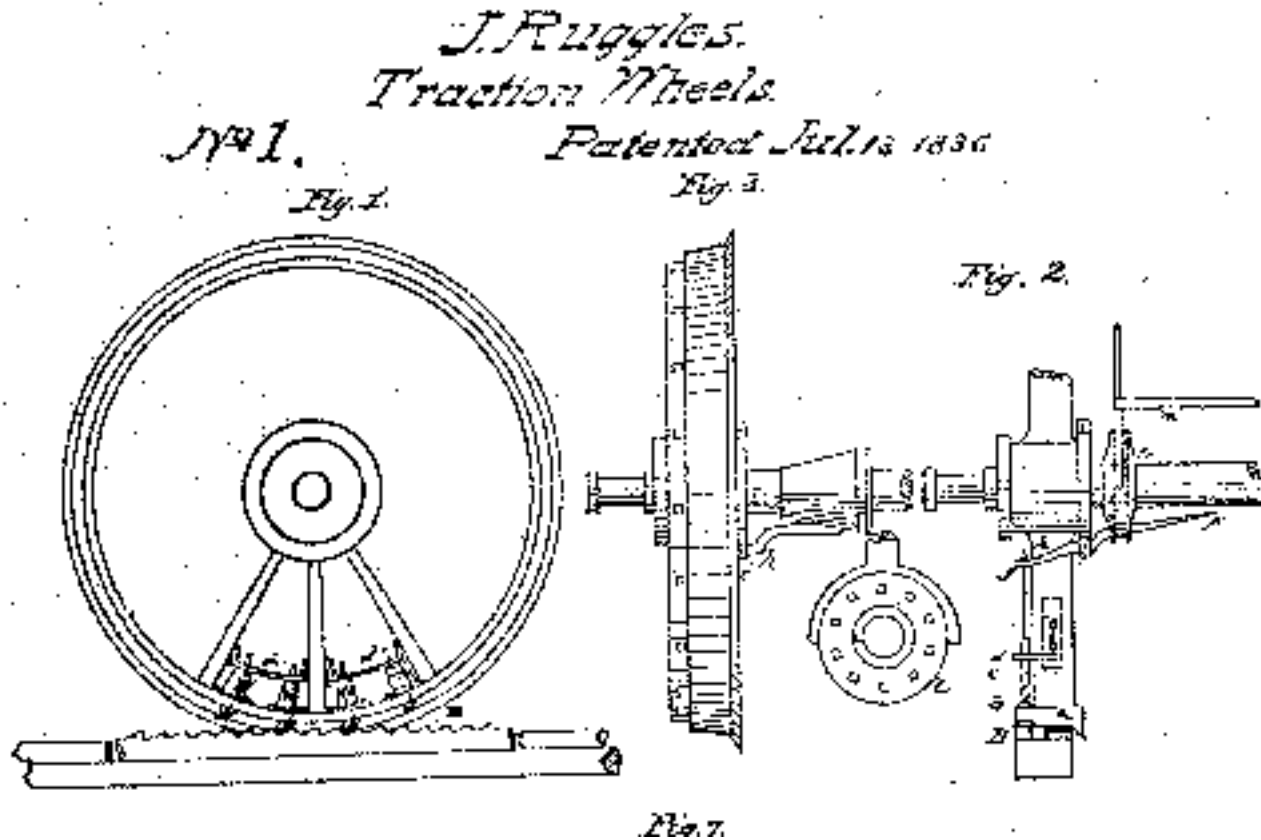


Intellectual Property Generation



The problems we are trying to solve here:

1. **Disguised IP** – Where is the IP in this product?

Need to find it. If we can't find any, **why** are we doing this?

2. **Weak IP** - Poorly documented, can't protect or **transfer** IP.

If it is not properly documented, it is not really “property”.

3. **IP Scramble** - Writing patent applications the **day before** we visit a customer.

4. **IP Burden** - **Excessive** time/paper/cost to generate and maintain IP.
Is it more trouble than it is worth?

*OK, but what **is** IP?*

What is “Intellectual Property”?

Assets:
Things you **own** that are of **value**.

Intangible Assets:
Things you own that you **can't touch**.

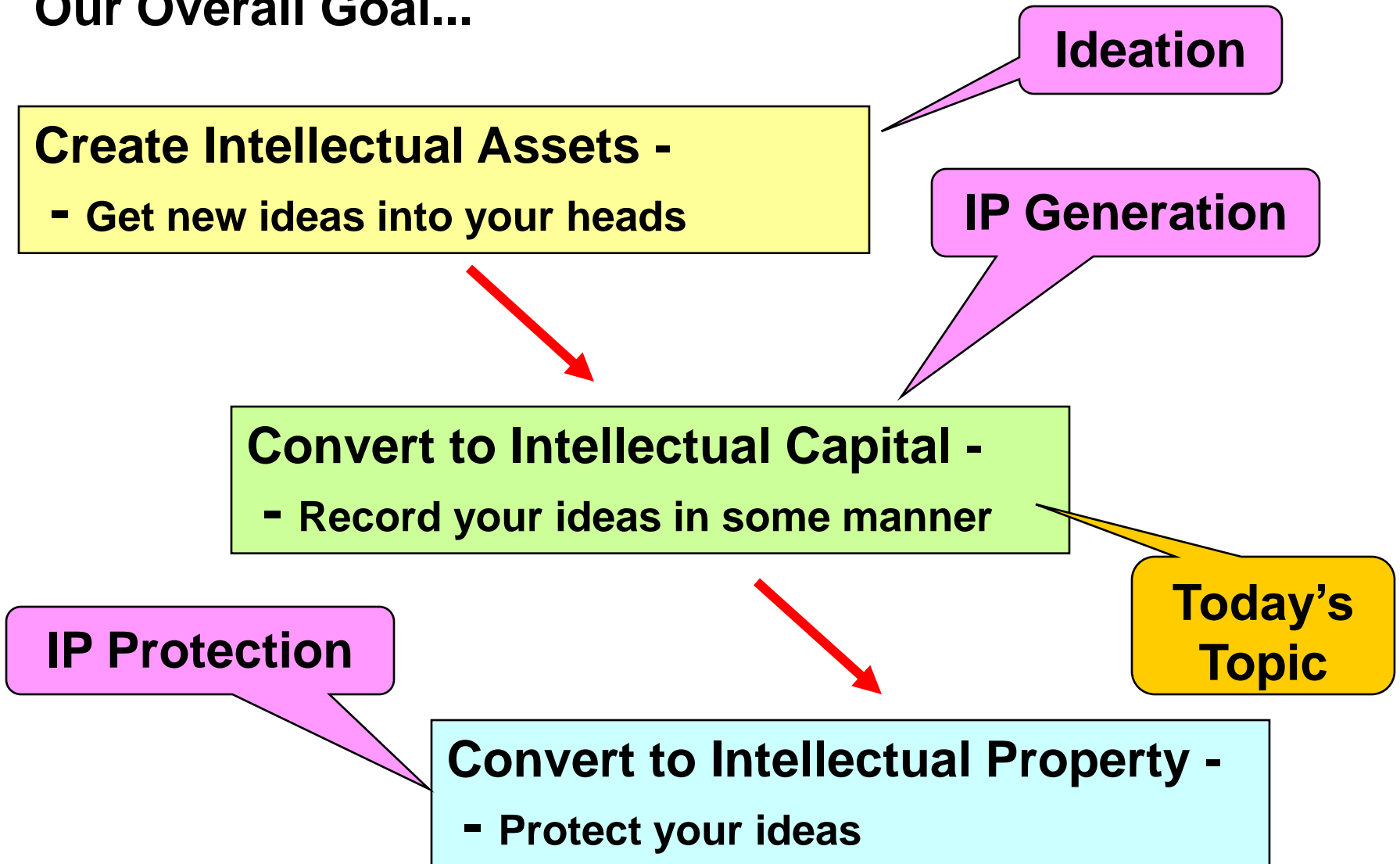
Tangible Assets:
Things you own that you **can touch**.

Intellectual Assets:
Knowledge that can be converted to **value**.

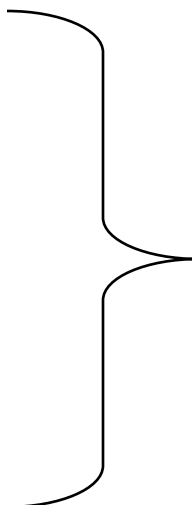
Intellectual Capital:
Knowledge that has been **recorded**.

Intellectual Property:
Knowledge to which you have **exclusive rights**.

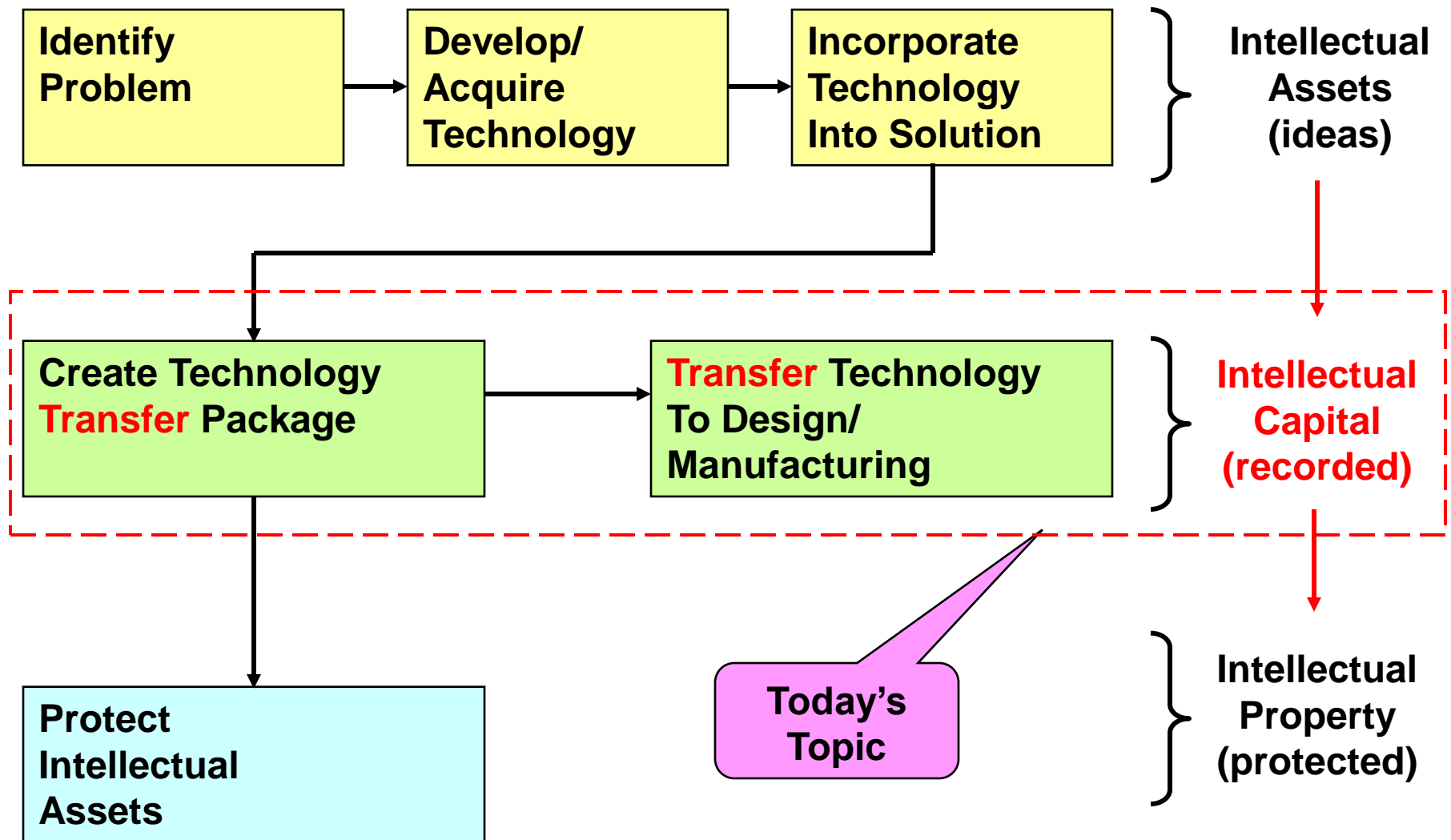
Our Overall Goal...



First, let's revisit “intellectual property”:

- ~ It is **everything** that you know
 - ~ That **adds value** to your product/service/business, **and**
 - ~ That others **don't** know,
 - ~ Or are **not allowed** to use,
 - ~ Without your **permission**.
- 
- This
makes it
“*property*”**

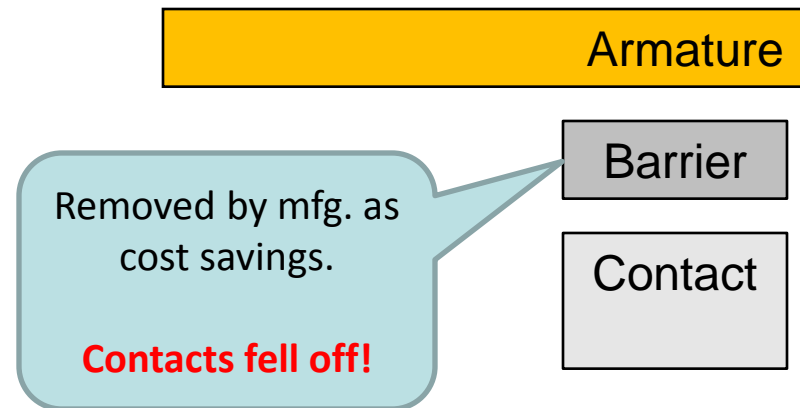
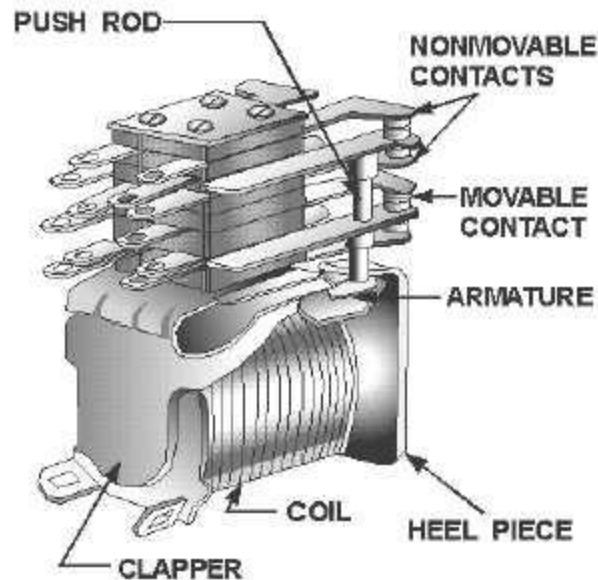
Technology Development - The Big Picture...



Anecdote example of intellectual asset development (what's in your head) with *no* intellectual capital creation (write it down):

Recall that **intellectual capital creation** includes:

- Create Technology Transfer Package **and**
- Transfer Technology to Design/Manufacturing



Intellectual Property **Generation** Process:

- **Purpose**

- ~ Provide *sustainable* competitive advantage (we can - forever).
- ~ Limits competitors' offerings (they can't - ever).

- **Desired Strengths**

- ~ Supports intangible *asset based* growth (vs. tangible asset).
- ~ Stimulates an “*innovation mentality*”.
- ~ Foundation for *internal* technology transfer.

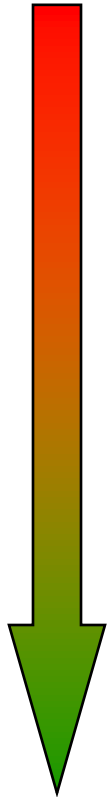
**Key
element**

- **Potential Weaknesses**

- ~ Needs novel, non-obvious inventions = high-grade raw materials.
- ~ Needs useful, profitable inventions = valid value proposition.
- ~ Needs purpose, direction, priorities = strategic focus.

Common Forms of Intellectual Property

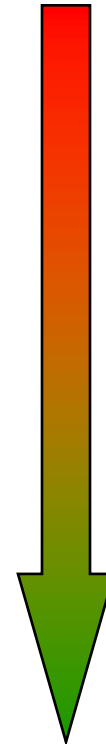
Less Formal



More Formal

1. Engineering “Notebooks”
2. Invention Disclosures
3. Defensive Publications
4. Trade Secrets
5. Copyrights
6. Trademarks
7. Provisional Patents
8. Patents

Lower Legal Protection



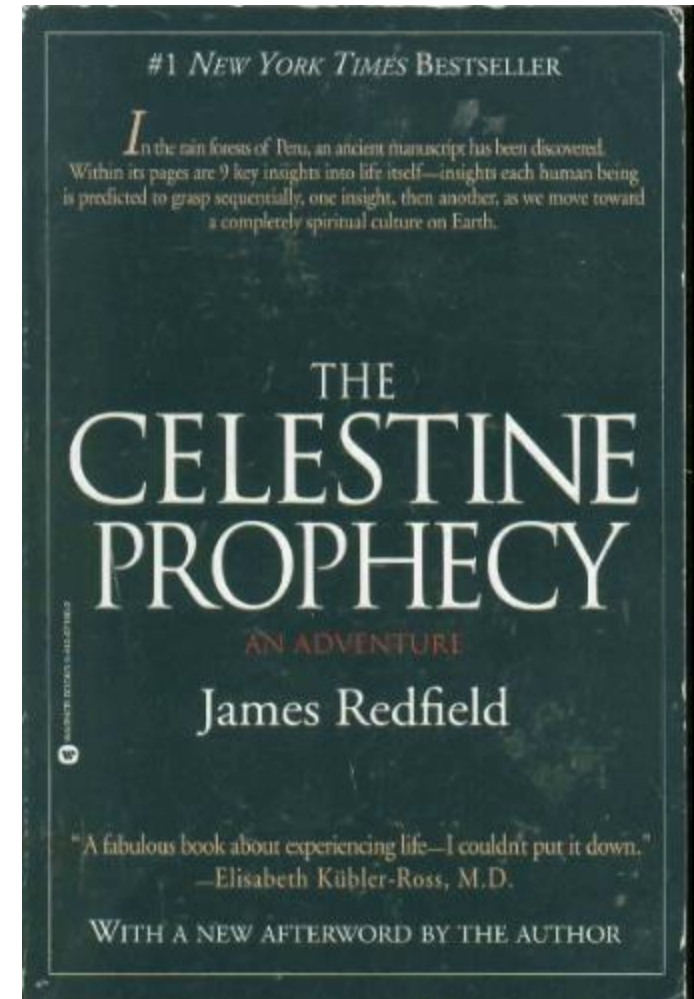
Higher Legal Protection

1. Engineering Notebook

- Record significant events in the progress of technology development.
- Must be in legally recognized form of documentation:
 - Pages sequenced,
 - Date stamped,
 - Signed by inventor,
 - Pages bound together in a book.
- Note: “Digital” notebooks are allowable.
- Or: Write up your results as Word, Excel, etc., and then e-mail them to yourself and another worker, and save the e-mail.
- The purpose is to prove you had an idea/result on a particular date,
- But protection is not black-or-white, “proof” is *all relative*.

1. Engineering Notebook

- Sometimes it can be difficult to figure out exactly what to write.
- **Suggestion:** Use *What question am I trying to answer today* format.
 - At the **start** of every day, start a new notebook page and write:
 - “The **question** I am trying to answer today is (blah – blah – blah...)”.
 - Then summarize your progress at the **end** of the day.
- Not just for IP!



Common Forms of Intellectual Property

1. Engineering “Notebooks”
2. **Invention Disclosures**
3. Defensive Publications
4. Trade Secrets
5. Copyrights
6. Trademarks
7. Provisional Patents
8. Patents

2. Invention Disclosures

- Formal document per some defined format.
- Signed, dated, and **witnessed**.
- Contains sections such as:
 - Title of the invention,
 - Identification of contributor(s) (whose idea is it?),
 - Concise description of the invention (how does it work?),
 - Potential commercial applications (who cares?),
 - Advantages of invention over currently available technology,
 - Public disclosure plans (when will you show other people?)
- Here a [link](#) to the MU invention disclosure form.

2. Invention Disclosures

- Signed, dated, and **witnessed**.
- Standard for usually says something like:
- Witnessed and **understood** by: _____
- If your witness **does not understand** something in the disclosure:
 - Either you didn't describe the invention properly,
 - Or you didn't fully understand the invention yourself.
- So, you should **revise** the disclosure until the witness understands the invention by just reading the document.
- The witness should not need you to verbally explain the invention.

Common Forms of Intellectual Property

1. Engineering “Notebooks”
2. Invention Disclosures
3. **Defensive Publications**
4. Trade Secrets
5. Copyrights
6. Trademarks
7. Provisional Patents
8. Patents

3. Defensive Publications

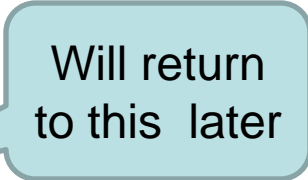
- Suppose you run an ideation session and you come up with 20 great new inventions...
- But **you** don't have the time/money to patent all of these ideas...
- But you don't want your **competitor** to patent them, either.
- You could document these inventions and put the documents in the public domain.
- This is a “defensive publication”.
- You can publish the document in any medium available to the public:
 - Technical journal,
 - Web site,
 - Etc...

3. Defensive Publications

- What's the benefit of a defensive publication?
 - Once you put the idea in the public domain,
 - You cannot patent the idea yourself,
 - But your competitor cannot patent it either!
 - So, you will not be prevented from using your own idea some day in the future.
- Some links to information on defensive publication:
 - [Maine & Asmus](#) - Developing a defensive publication strategy,
 - [IBM Technical Journals](#) – an example of defensive publication,
 - [Research Disclosure](#) - A defensive journal publisher.

Common Forms of Intellectual Property

1. Engineering “Notebooks”
2. Invention Disclosures
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4. Trade Secrets
5. Copyrights
6. Trademarks
7. Provisional Patents
8. **Patents**



Will return
to this later

Let's examine the patent concept...

The basic theory of the patent system is simple. It is that the state grants the inventor an exclusive monopoly for a limited time in his new invention in return for his disclosure of the invention ***so that the public at large will be able to practice the invention*** once the patent expires.

From: A Practical Guide to Patent Law - Brian C. Reid

The patent must fulfill the following legal criteria: (1) it must contain a sufficient written description to enable **“one of ordinary skill” in the art** to re-create the claimed invention without undue experimentation; and (2) it must set forth the **“best mode”** for carrying out the invention...

From: From Ideas to Assets - Walter G. Hanchuk

Purpose of a Patent

- Note that the original reason that the patent process was created was to ***stimulate invention***, not to stifle it,
- i.e., to let everyone have complete access to the technology after the inventors have had a brief monopoly to pay back their investment.
- This only works if inventors completely and accurately describe how the patent works.

Why Focus on Patents?

- A patent is a contract:
 - Government protects the inventor's monopoly.
 - Inventor must **teach** the public at large how to duplicate the invention.
- For us, whether the technology is taught to “the public at large” or to an **internal engineering group** is not important to us here.
- Whether the patent is issued, or even filed, **is not important** to us here.

*A properly prepared patent is, in essence, a **technology transfer document**, which we need **regardless of the particular approach we use to generate and protect IP.***

Bottom Line:

- According to the contract that you sign (patent application), if –
 - **Your** design/manufacturing engineers,
 - **Your** competitors,
 - **Anyone** “versed in the art”...
- Cannot **duplicate** your invention from your patent,
- Then it is **not** a valid patent...
- ***Because you haven't enabled technology transfer.***
- You have violated the contract!

The “patent”, whether you actually file it or not,
is an essential internal technology transfer document, and...

Technology transfer is a key part of your job.

How do you know if you have properly transferred the technology?

Very simple working definition of **technology transfer**:

- Technology is transferred when the **recipient** can design and manufacture products incorporating the technology **independent** from the **source** of the technology.

Very simple **test** for technology transfer:

- If the recipient must **rely** on the technology **source** to design and manufacture products, then technology transfer is **not** complete.

If you fail the test, you have an IP generation problem.

What's the **engineer's** bottom line on patents?

- **Do not** think about patents as a means for establishing a monopoly on an idea. Let the attorneys worry about this.
- **Do** focus on patents as documents for effectively transferring technology.
- **Engineers** responsibility: Prepare documentation that teaches others how to implement technology without relying on the inventor.
- **Patent Attorney** responsibility: Convert this documentation into a format that protects IP (e.g., a patent).

Intellectual Property Generation Approach

Begin with the end in mind...

Engineers

Patent Attorneys

- De-couple ***IP generation*** from patent ***filing***.
- Be “IP conscious” from the ***initiation*** of a project.
- Use IP documentation to ***transfer*** technology.
- Use the ***patent format*** to structure and document IP.
- ***Build a patent*** step-by-step during project execution.
- ***Patents*** automatically fall out of projects.

What does this mean?

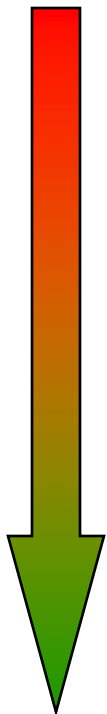
Build a patent step-by-step during project execution.

- The patent document can be formatted in a very logical structure which maps onto the product/technology **development process**.
- You can add to the patent document one section at a time as you develop a product or technology.
- At the end of the project, the documentation is completed.
- You are not rushing around trying to prepare the document at the end of the project.

For example...

What do we mean by “build a patent”?

Start of
Project



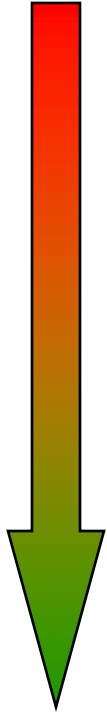
End of
Project

Patent Section	Purpose
<ul style="list-style-type: none">• Field of Use	<ul style="list-style-type: none">• What’s the problem?
<ul style="list-style-type: none">• Prior Art	<ul style="list-style-type: none">• What have others done?• Why is this inadequate?
<ul style="list-style-type: none">• Description of Invention	<ul style="list-style-type: none">• What is our solution?• Why is it better?
<ul style="list-style-type: none">• Claims	<ul style="list-style-type: none">• What part of the concept do we claim rights to?

By the end of the project,
the elements of the patent will be documented.

Patent construction roles and responsibilities:

Technologist




**Patent
Attorney**

Patent Section	Purpose
<ul style="list-style-type: none">• Field of Use	<ul style="list-style-type: none">• What's the problem?
<ul style="list-style-type: none">• Prior Art	<ul style="list-style-type: none">• What have others done?• Why is this inadequate?
<ul style="list-style-type: none">• Description of Invention	<ul style="list-style-type: none">• What is our solution?• Why is it better?
<ul style="list-style-type: none">• Claims	<ul style="list-style-type: none">• What part of the concept do we claim rights to?

At the end of the project, these descriptions can be “translated” into a patent.

Common Forms of Intellectual Property

1. Engineering “Notebooks”
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7. Provisional Patents
8. Patents



What's
this?

Provisional Patent – What Is It?

- The provisional patent “was designed to provide a lower-cost first patent filing” (USPTO).
- A provisional patent allows filing without any formal **patent claims** or any information disclosure (**prior art**) statement.
- These sections take time and money, since they typically require preparation by a patent attorney.
- It provides the means to establish an **early effective filing date** for a following a non-provisional (regular) patent application.
- It also allows the term "**Patent Pending**" to be applied.
- A provisional application for patent has a pendency lasting **12 months** from the date the provisional application is filed.

Provisional Patent – So What?

- In one sense, a provisional patent is kind of like an invention disclosure,
- Except that it is an invention disclosure filed with the USPTO,
- Thus providing a higher level of protection than an invention disclosure held by the inventor.
- In fact, the USPTO once had an on-line invention disclosure program,
- But it was abandoned in favor of the provisional patent program.

Provisional Patents:

- There are no official USPTO forms or electronic filing available for a provisional patent application.
- However, the USPTO does provide [instructions](#) for preparing and filing provisional patent.
- Basically, all you need to prepare is: “...a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.”
- You will need to accompany the application with a provisional patent cover [sheet](#) and a fee transmittal form and [instructions](#), which are provided by the USPTO.

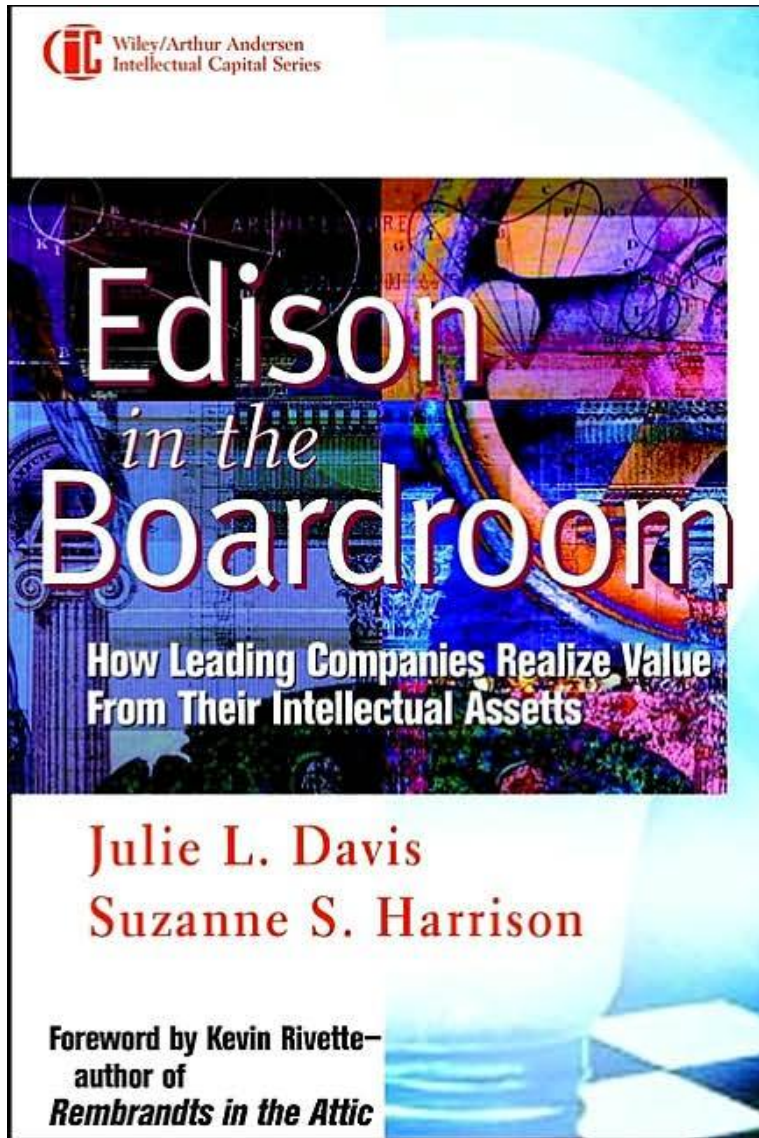
Provisional Patents:

- Here are some on-line services that guide you through writing a provisional patent application, and then file the application:
 - LegalZoom.com
 - 24HourPatent.com

Bonus Section!

Micro-Course on IP Strategy

- As mentioned, to the technologist, whether or not a patent is filed is immaterial.
- What is critical is that the technology be documented so that transfer to new products/processes is possible.
- But given that filing of patents can consume considerable amounts of time and money, engineering managers should have some strategy for how to use this tool.

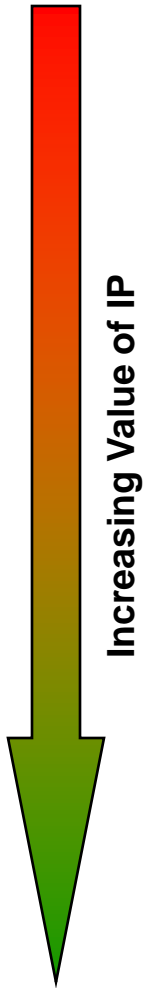


These authors provide an IP Value Hierarchy to identify strategies for generating IP.

Here it is in a nutshell...

IP Value Hierarchy - Strategies for Pursuing IP

1. Defensive
 - Prevent competitors from using IP,
 - Protect company from litigation.
2. Cost Control
 - Reduce cost of IP,
 - Maximize benefit of IP cost.
3. Profit Center
 - Derive profit from IP as fast and inexpensively as possible.
 - IP-as-product vs. IP-in-product.
4. Integrated
 - Embed IP development in day-to-day operations.
 - Become a “learning organization”.
5. Visionary
 - Use IP processes to help create the future of the corporation by re-defining the “rules of the game”.



What IP Level to Operate At?

- The level you choose to operate at is a **strategic business decision**
 - Level 1 may be good enough!
- But whatever your strategy is –
To get to any level requires passing through **preceding** stages – You can't jump over any level.
- So progress is **evolutionary**, not revolutionary.
- Further, you can't be part in one stage and part in another, unless you are in the process of transitioning.

So let's look a little closer at what you should be doing at each step...

Level 1 – Defensive

- Be “IP aware” of what you are developing (this lecture).
- Respect the IP rights of others (due diligence).
- Take stock of what you already own.
- Maintain your patents – don’t let the good ones lapse.
- Be willing to enforce patents, or don’t waste your time.

Level 2 – Cost Control

- Establish cross-functional IP committee.
- Organize patent portfolio based on business use.
- Establish invention disclosure screening process.
- Establish guidelines for patent filing and renewal.
- Regularly prune patents not aligned with business use.

Level 3 – Profit Center

- Obtain management buy-in for paradigm shift - IP-as-product vs. IP-in-product.
- Develop new paradigm IP screening criteria – Rapid value extraction.
- Create a pro-active licensing organization.
- Conduct royalty audits – cull low-value patents.
- Consider IP donations (tax write-offs).

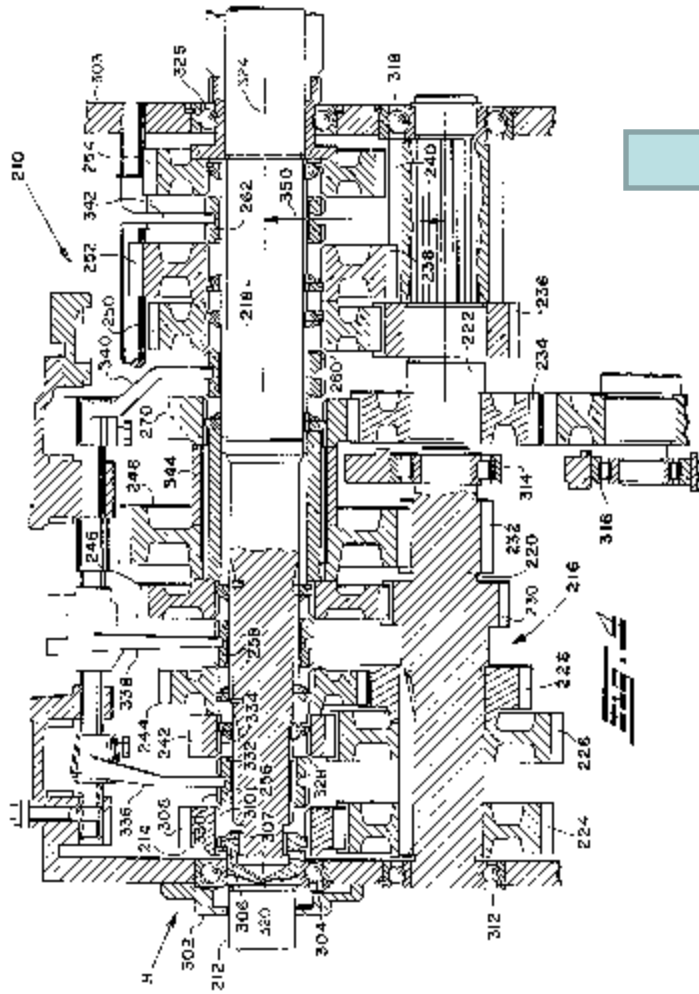
Level 4 – Integrated

- Align IP strategy with corporate strategy –
Strategic plan contains section on IP linked to other sections.
- Manage intellectual asset portfolio across multiple functions –
R&D, engineering, marketing, HR, finance, IT, etc...
- Conduct competitive assessment –
What do IP portfolios of competitors, suppliers, customers look like?
- Codify IP knowledge and share across all business units –
Everybody knows what everybody else knows.
- Focus on strategic value extraction –
IP portfolio impacts acquisition, divestiture, merger, joint ventures.

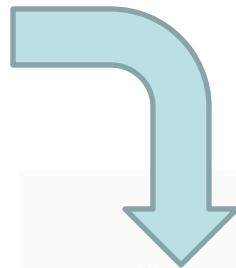
Level 5 – Visionary

- Identify/exploit industry trends to change the rules of the game.
IP-drives-innovation vs. innovation-drives –IP.
- Use intellectual assets to discover/invent unknown customer needs.
Invent the future.
- Create finance-based performance measurement and review system.
Reveal and strengthen links between:
 - Intangible assets and cash flow,
 - Inventions and profits.

Anecdotal example



How do I know the \$ value of this Eaton patent?



In other words...
How do I know if this Eaton patent is in this Eaton product?



What IP Level to Operate At?

- The level you choose to operate at is a **strategic business decision**
 - Level 1 may be good enough!
 - But Level 0 (just doin' stuff) probably won't work.
- But whatever your strategy is –
To get to any level requires passing through **preceding** stages – You can't jump over any level.
- So progress is **evolutionary**, not revolutionary.
- Further, you can't be part in one stage and part in another, unless you are in the process of transitioning.