

Intellectual Property Protection Process

Metrics and Drivers

IP Protection Process Metrics

For selected key steps in the IP process (see next slide), the following measures are taken:

- Output counts - documents completed.
- Transfer ratio - how many documents get to the next step.
- Queue size - how many documents are at that step.
- Queue time - how long it takes a document to get through the step.

IP Protection Process Metrics

Output = documents completed:

- Completed invention disclosures
- Submitted patent applications
- Granted patents
- Documented trade secrets

Transfer ratio = (passed-dropped)/(passed + dropped):

- Accepted invention disclosures
- Submitted patent applications
- Granted patents

Queue size:

- Accepted invention disclosures waiting for protection decision
- Invention disclosures waiting for patent application/revision submitted
- Submitted patent applications waiting for filing decision

Queue Time:

- Time for protection decision on accepted invention disclosure
- Time to prepare patent application
- Time for USPTO patent decision

IP Metrics Drivers:

- Here are some common, easily obtained IP metrics:
 - ~ Invention disclosures
 - ~ Patent applications
 - ~ Patent grants
 - ~ etc...
- Measuring these presumes you'll make changes if you don't like the numbers.
- To make the changes, you must understand what drives the numbers.
- Here, we will examine these drivers.

- There are a number of factors that impact the count of invention disclosures, patent applications, and patents granted, i.e. the **rate of generation of IP**. Here, we will focus **only** on IP life cycle issues:
 - **IP Life Cycle:**
Time-related transitions that occur as IP is developed and incorporated into products.
- Rate of generation of IP depends on where you are in the IP life cycle.
- The IP life cycle is composed of two elements which have distinctive impacts on the rate of IP generation:
 - **Project execution** life cycle -
 - What phase is your technology development **activity** (project) in?
 - **Technology development** life cycle
 - What phase is the technology **itself** in?
- Both project execution and technology development phase impact rate.

First, we'll examine how **project execution phase** impacts rate of IP generation. We'll consider these aspects of IP.

- **Project Phase:** What phase in the life cycle is the *project* in?
- **Technology Development:** What type of development work is done in the phase?
- **Driving Question:** What technical issue are the IP generators addressing?
- **Type of IP:** What comes out of the IP generation activities?
- **Volume:** Number of separate documented novel ideas, i.e. the count of individual “items of IP” - invention disclosures, patent applications, patents granted. These are our IP metrics.
- **Likelihood:** Probability that an item of IP will actually be instantiated in a product that goes to market.
- **Breath:** The range of uses or applications that an item of IP could have.
- **Depth:** Potential incremental sales driven by an IP item in a typical use or application.

Project Execution Life Cycle



Project Phase	Technology Development				Product Development	
	Opportunity Search	Opportunity Identification	Opportunity Analysis	Opportunity Development	Product Design	Product Maintenance
Technology Development	Technology Study	Technology Exploration	Technology Feasibility	Technology Application	Technology Transfer	Technology Exploitation
Driving Question	Technical issues?	Technical solutions?	Technology works in lab?	Technology works in field?	Manufacturable @ cost?	Further cost reductions?
Type of IP	Generic solution	Technology specific	Application specific	Product specific	Mfg. process specific	Mfg. process specific
Volume	Low	Low	Medium	High	Medium	Low
Likelihood	Low	Low	Low	Medium	High	High
Breadth	High	High	Medium	Medium	Low	Low
Depth*	Independent	Independent	Independent	Independent	Independent	Independent

* Depth of IP (Potential incremental sales driven by an IP item in a typical use or application) is relatively independent of project phase.

So What?

- **Project execution** phase impacts several characteristics of the IP generated in each phase, including IP volume.
- Changing the portfolio mix of projects in various phases of execution impacts the characteristics, including overall volume, of IP generated.
- Moving the mix of projects in your portfolio toward the Opportunity Development phase (PreLaunch Phase C) tends to **increase** the IP count, and vice versa.

Next, we will consider the impact of the **technology development** life cycle on IP generation. We'll consider these aspects of technology life cycle.

- Life Cycle Phase: Where is the technology in its life cycle?
- Status: Relationship of technology to customers and markets.
- Purpose: What are researchers trying to do?
- Time to Product: Typical time before IP appears in products.
- Driving Inputs: Key information required to generate IP
- IP Volume: The relative number of invention disclosures, patent applications, and patents granted.

Technology Development Life Cycle



Advanced R&D (Technology Push)

- ~ Status: Customer follows technology
- ~ Purpose: Create customers
- ~ Time to product: 5-10 years
- ~ Driving inputs:
 - ~ Technology network
 - ~ Technology surveillance
- ~ **IP Volume: Medium**

Basic R&D (Technology Push)

- ~ Status: No market, no customer
- ~ Purpose: Create technology
- ~ Time to product: 10-25 years
- ~ Driving inputs:
 - ~ Funding source profile/direction
 - ~ Funding source value proposition
- ~ **IP Volume: Low**

Advanced Prod. Dev. (Market Pull)

- ~ Status: Technology follows market
- ~ Purpose: Create competitive advantage
- ~ Time to product: 1-2 years
- ~ Driving inputs:
 - ~ Market profile/direction
 - ~ Competitor's value proposition
- ~ **IP Volume: Medium**

Applied R&D (Market Pull)

- ~ Status: Technology follows customer
- ~ Purpose: Create markets
- ~ Time to product: 2-5 years
- ~ Driving inputs:
 - ~ Customer profile/direction
 - ~ Customer value proposition
- ~ **IP Volume: High**

So What?

- **Technology development** phase impacts the volume of IP generated.
- Changing the portfolio mix of projects utilizing technology in various phases of development impacts the overall volume of IP generated.
- Increasing the number of projects in your portfolio that utilize technologies in the Applied R&D phase tends to **increase** the IP count, and vice versa.

Summary

- Both project execution phase and technology development phase impacts the volume of IP generated.
- Projects in the Opportunity Development phase (phase C) which utilize technology in the Applied R&D phase tend to generate the highest volume of IP.
- Portfolios with significant numbers of projects outside of this IP sweet spot tend to generate lower volumes of IP.