

The Business of Innovation

Turning Knowledge into Money

“R&D: Research turns money into knowledge. Development turns knowledge into money.”

The Briefing

Whether you want to sell a discovery into industry, develop it into a business yourself, or are considering a move into industry, it's important to know how industrial companies approach product development. This briefing describes the business and financial framework for industrial product development to show you what it takes to turn a scientific discovery into a profitable product, and why industrial product development differs from scientific research.

Objective and Audience:

Researchers interested in entrepreneurial pursuits will learn the economics that drive technology investment and the basic steps for developing a technology into a product with economic value. Students or faculty intending to pursue careers in industry will gain an understanding of what to expect in moving into the industrial environment. In particular, attendees will learn the investment economics of industrial product development, the elements of business value for a new technology or product, and what motivates business managers.

Takeaways

Attendees will learn the basic differences between scientific research and industrial product development:

- How financial returns drive business decisions
- The steps from technology to product to market application
- Why development schedules carry so much importance in industry
- How production economics impact business success

Outline

1. Product development is a financial investment
2. A value proposition clarifies market applications
3. The value proposition drives the product definition
4. Producibility and quality are critical to business economics
5. Competition drives schedule pressure in industry.

About the speaker

John Farnbach is Principal of Silver Streak Partners LLC, helping companies improve the business impact of product innovation. He works with leadership teams to create an enterprise wide new product operation that produces higher returns, reduces fire fighting, and fits their culture and vision. John holds a Ph.D. (EE) and has 35 years' experience in product development at large and small companies in a variety of industries.

The Business of Product Innovation

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Business Success

- ◆ More than awesome technology
 - Strong market vision
 - Product development to convert ideas to products
 - Competitive production/delivery processes
 - Sales channels to reach your customers

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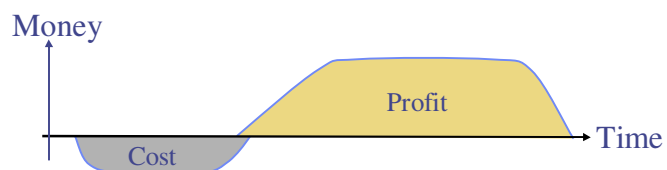
What drives returns?

- ◆ Value Proposition
- ◆ Producibility & Quality
- ◆ Time to Market

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Product Development

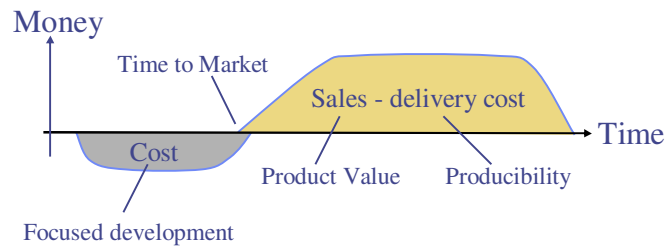
- ◆ Driven by Return on Investment



$$\text{ROI} = \text{Profit} / \text{Cost}$$

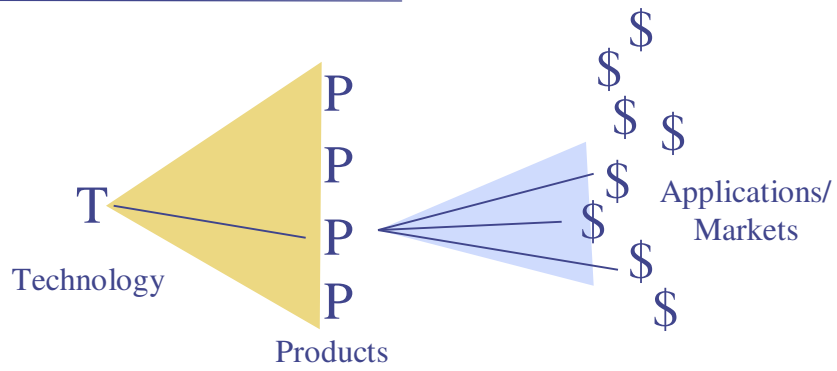
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ROI Drivers



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Business Value



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Value Proposition

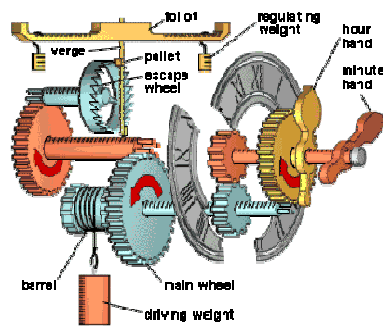
- ◆ In customer's terms:
 - User benefits
 - Cost of ownership
 - Ease of use
 - Ease of purchase
- ◆ *Always* relative to competition!

Business rationale for investment

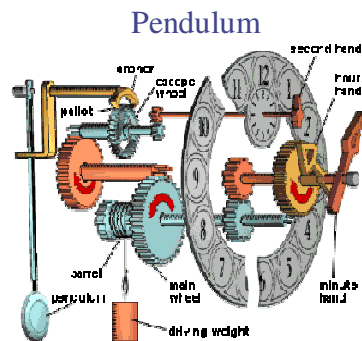
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Mechanical Clocks

- ◆ It's the 17th Century....



Verge & Foliot



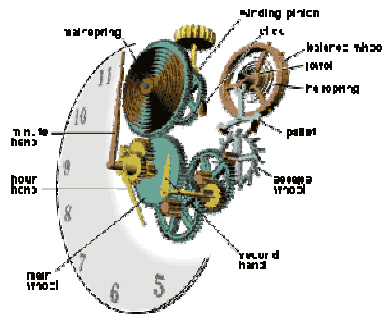
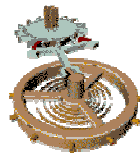
Pendulum

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A New Technology

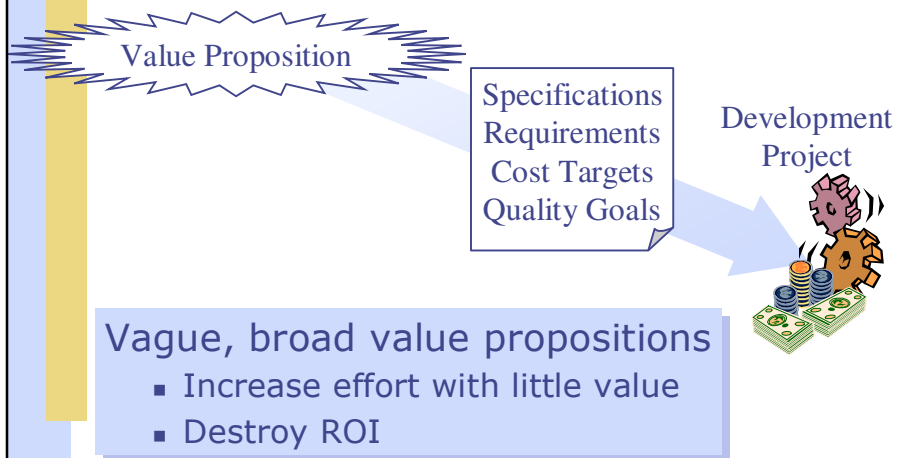
1675 - Chris Huygens calls from R&D...

The Gravity-less Pendulum



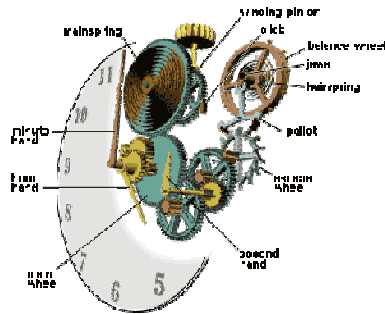
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Value Drives Development



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Product Value



Teamwork: developers, marketers, technologists

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Producibility & Quality

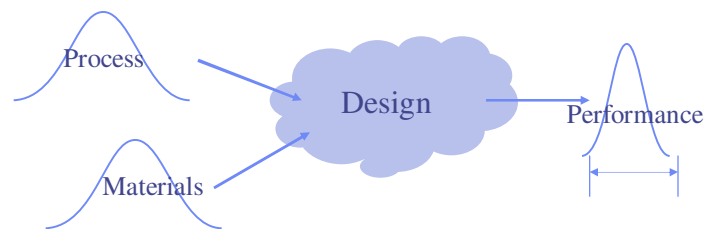
- ◆ Designing a product you can deliver economically
 - Repeatable, dependable deliveries
 - At target volume & cost
- ◆ Design determines delivery costs
 - Manufacturing and support cost

The critical challenge in taking research to market

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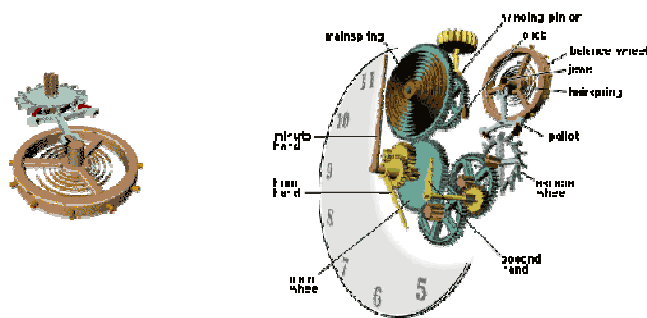
The Design Challenge

- ◆ Design for a *specific* manufacturing process
- ◆ Using cost-effective materials
- ◆ Insensitive to process, materials variations
- ◆ Quality impacts both producibility and value



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Producibility Issues



Teamwork: developers, manufacturing

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Time to Market

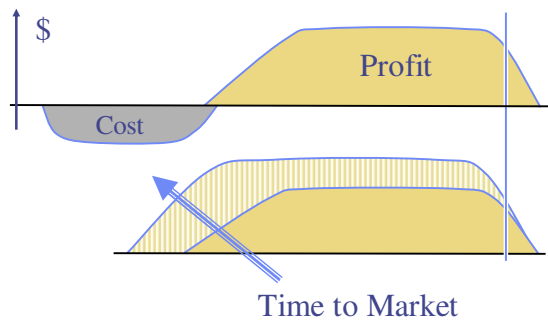


- ◆ TTM impacts
 - Revenue
 - Delivery cost

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Time to Market

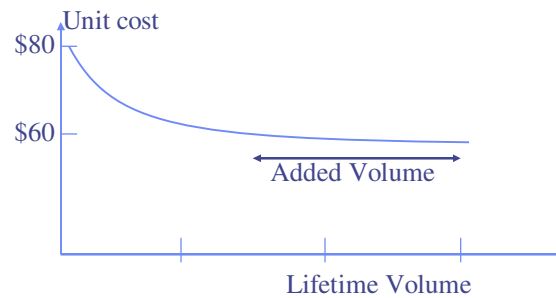
- ◆ Increased Sales



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Delivery Cost

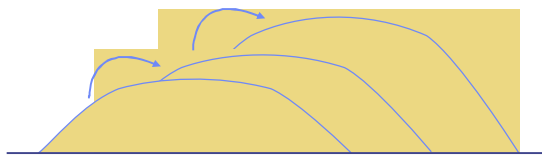
- ◆ Production learning curve
 - Increased sales at lowest delivery cost



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Dependable Schedules

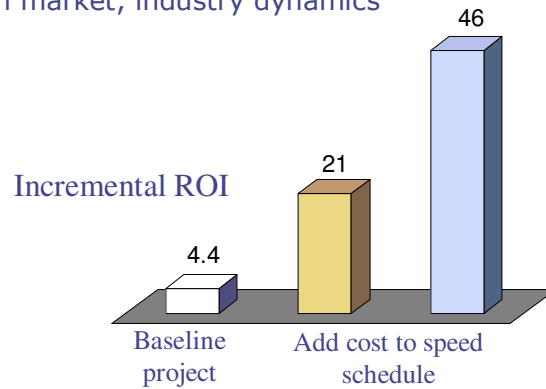
- ◆ Long term impact of dependable schedules
 - Build customer/investor confidence
 - Customers willing to engage sooner
 - Reinforcing cycle of market advantage



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Hard Value of TTM

- ◆ Impact on lifetime GM
 - Can be 1% - 3% **per week**
 - Depends on market, industry dynamics



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Business Returns

- ◆ Value Proposition
- ◆ Producibility & Quality
- ◆ Time to Market

Questions?

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