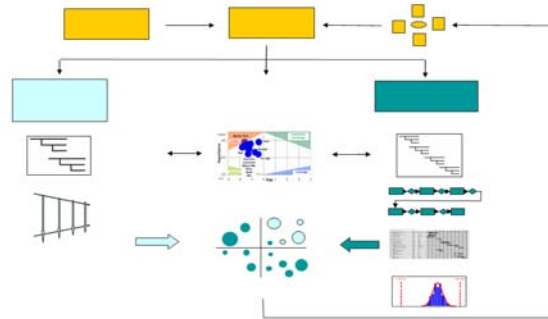


World Class Innovation Module I



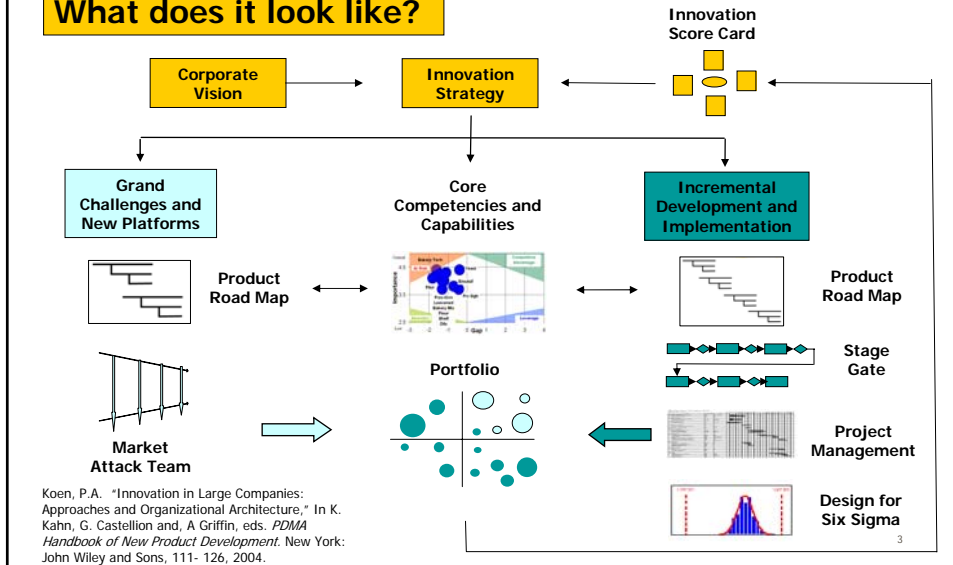
Peter A. Koen, Ph.D.
Associate Professor
Email: pkoen@stevens.edu

Agenda

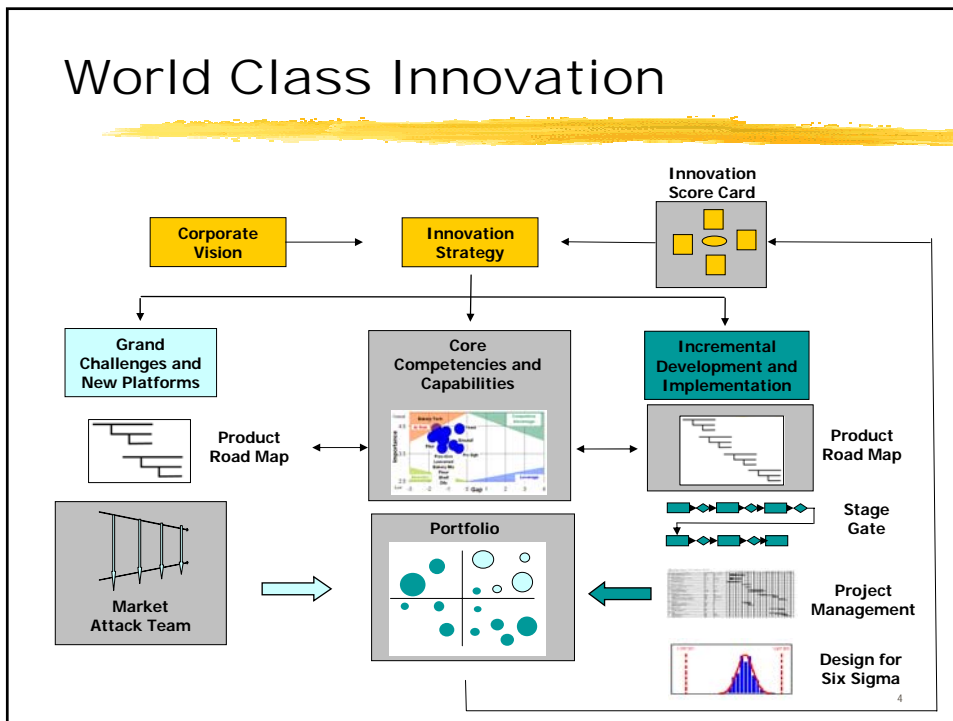
- **World Class Innovation**
 - What it looks like?
 - Value
 - Key Elements

World Class Innovation

What does it look like?



World Class Innovation



World Class Innovation

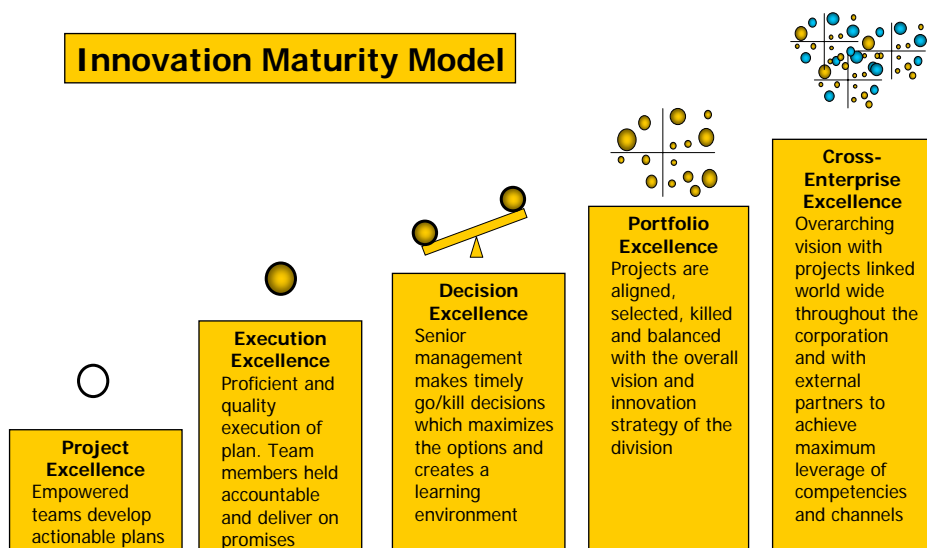
What it feels like

- **Innovation management Process (No Silo's exist)**
 - Is seen as an enterprise initiative which is ingrained in culture
 - R&D may own the process – but the entire enterprise must embrace it
- **Organization**
 - Experienced employees are used to develop new platforms and enhance core competencies and capabilities
- **Senior Management Decision Making**
 - Decisions are based on fully developed platform, product and technology strategy
 - Portfolio decisions made based on pipeline and skill mix
- **Innovation Productivity**
 - Little wasted R&D
 - High percentage of sales generated from new products and platforms

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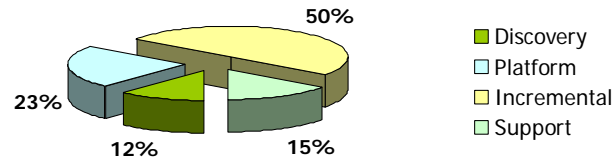
World Class Innovation

Innovation Maturity Model



Portfolio

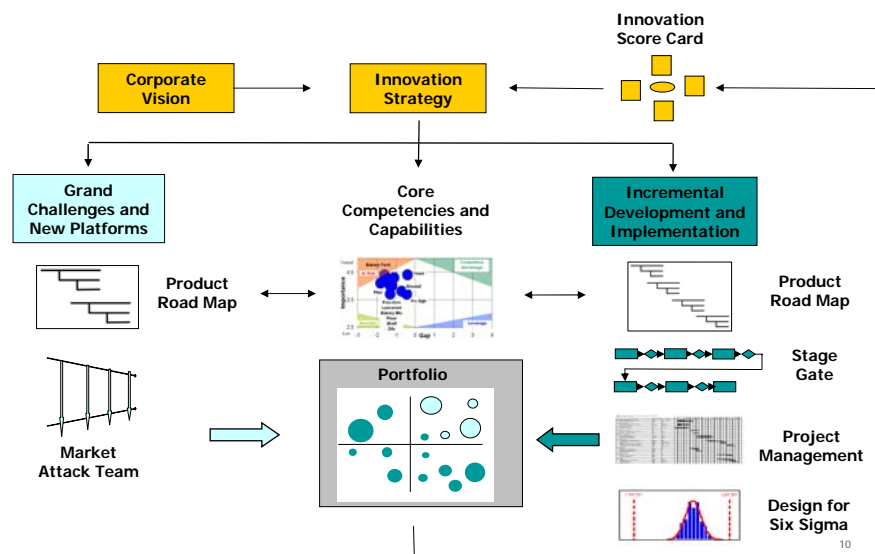
“Typical” profile for highly innovative companies



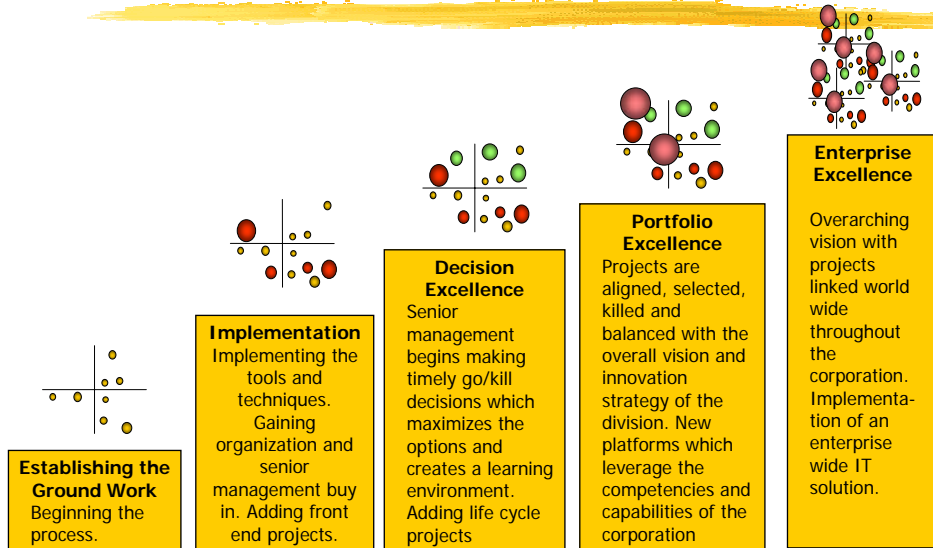
Best Practice

- New and revised platforms, built on the competencies and capabilities of the company, form the major revenue generator of Best in Class companies

World Class Innovation

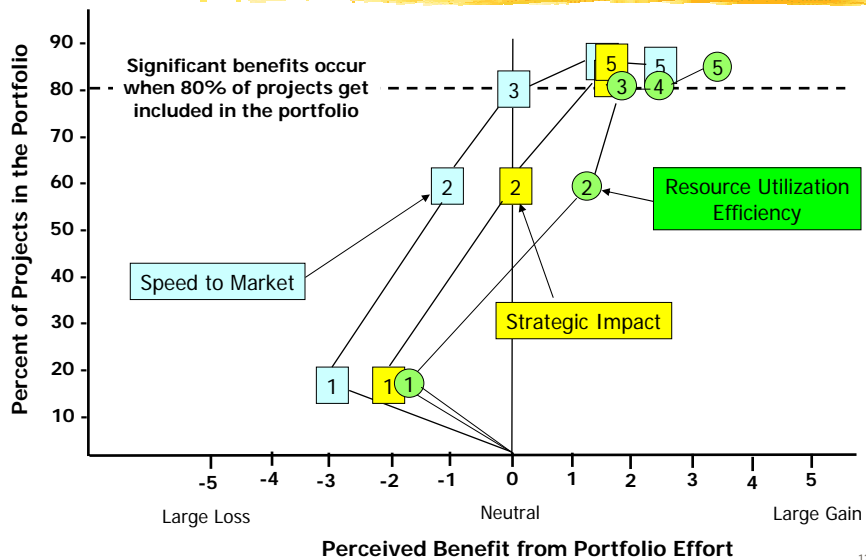


Portfolio Maturity Model



Connor, Paul "Spiral-Up Implementation of NPD Portfolio and Pipeline Management" In P. Belliveau, A Griffin and S. Sorermeyer, eds. *PDMA Toolbook for New Product Development*. New York: John Wiley and Sons, 461 - 491, 2004.

Maturity Level



Portfolio Best Practices

- **Best in class companies consider portfolio management to be critical**
 - Portfolio reinforces strategy (**Strategy**)
 - Have established, explicit and formal methods (**Governance**)
 - Clearly defined rules, which are consistently applied, across all projects and which management agrees too
 - Assigns the right people to the right projects (**Capacity Management**)
 - Prevents people resource overload
 - Create a learning environment (**Information Transparency**)
 - The right projects are stopped for the right reasons without killing the people on the stopped projects
 - Use multiple portfolio methods (**Data and Decision Architecture**)
 - Financial, scoring, strategic and bubble

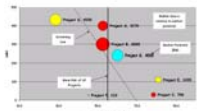
Financial/Scoring

Item	1	2	3	4	5
Item 1	1	2	3	4	5
Item 2	2	3	4	5	1
Item 3	3	4	5	1	2
Item 4	4	5	1	2	3
Item 5	5	1	2	3	4

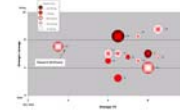
Strategic

Item	1	2	3	4	5
Item 1	1	2	3	4	5
Item 2	2	3	4	5	1
Item 3	3	4	5	1	2
Item 4	4	5	1	2	3
Item 5	5	1	2	3	4

Project Risk

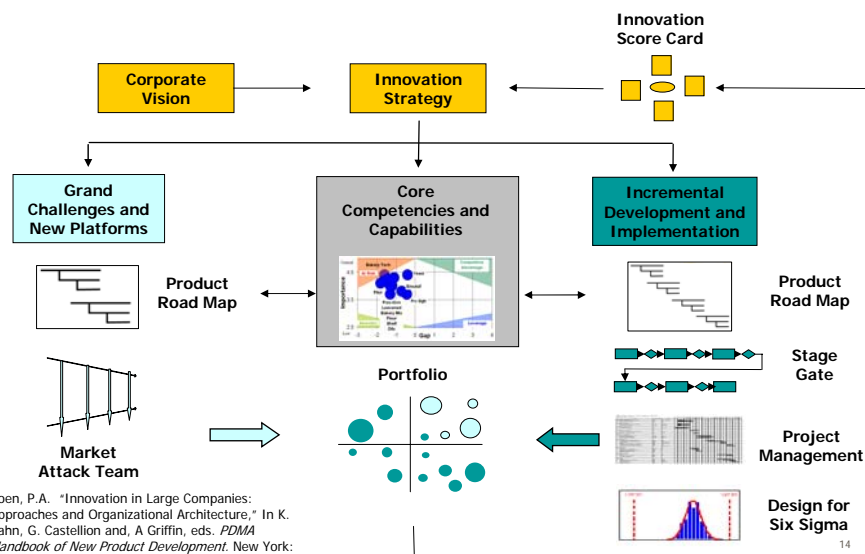


Capacity Management



Cooper, R. G., Edgett, S. J. and Kleinschmidt, E. J., "New Product Portfolio Management: Practices and Performance," Journal of Product Innovation Management, 16: 333 – 351, 1999.

World Class Innovation



Koen, P.A. "Innovation in Large Companies: Approaches and Organizational Architecture," In K. Kahn, G. Castellion and, A Griffin, eds. *PDMA Handbook of New Product Development*. New York: John Wiley and Sons, 111- 126, 2004.

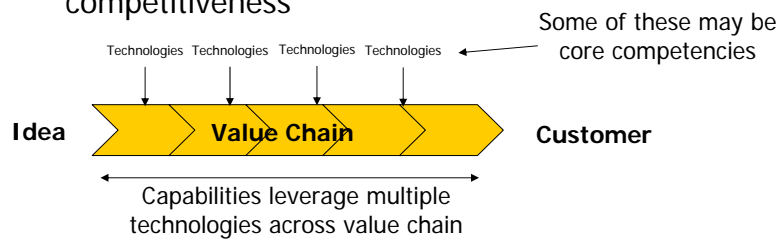
Definitions

■ Core Competence

- Key technological skills which form the foundation for a company's competitiveness

■ Core Capability

- Key processes which utilize multiple technologies which form the foundation of the company's competitiveness



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Core Competence/Capability

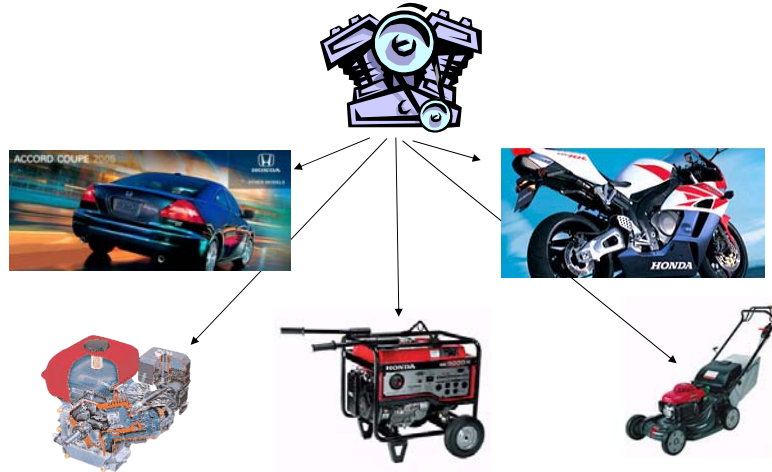
Test – What makes them Core?

- Skill or knowledge sets - not products or functions
- Long term platforms which leverage the customer's value chain
 - Competence Examples:
 - Honda: Engines; Sony: Electronic Miniaturization
 - Capabilities Examples:
 - GE: Ability to attain 5 sigma; Intel: Silicon microprocessor manufacturing skill
- Limited in number
- Unique to corporation (company must ensure that it maintains absolute preeminence)
- Essential to strategic vision of the corporation
- Provide long term competitive advantage

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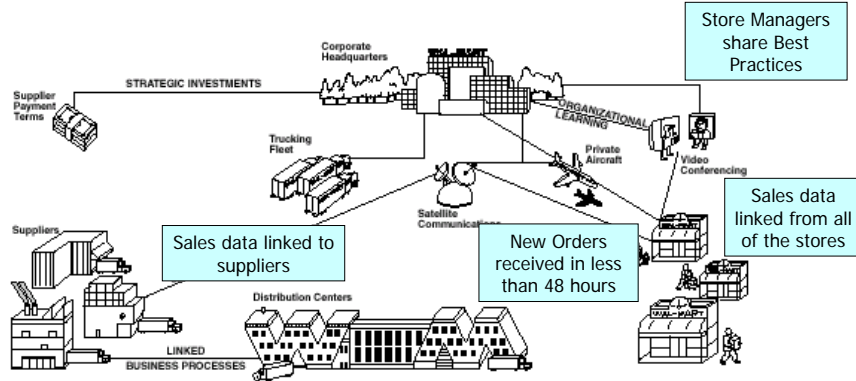
Core Competencies

Honda Engine Competencies



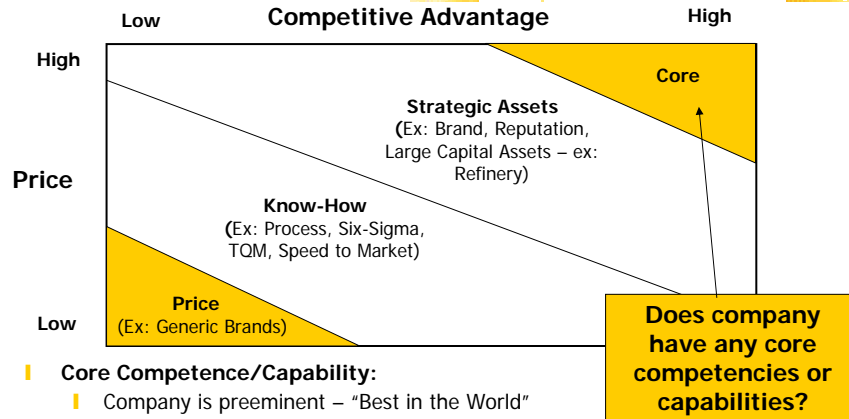
Core Capability

Wal-Mart: Inventory Replenishment



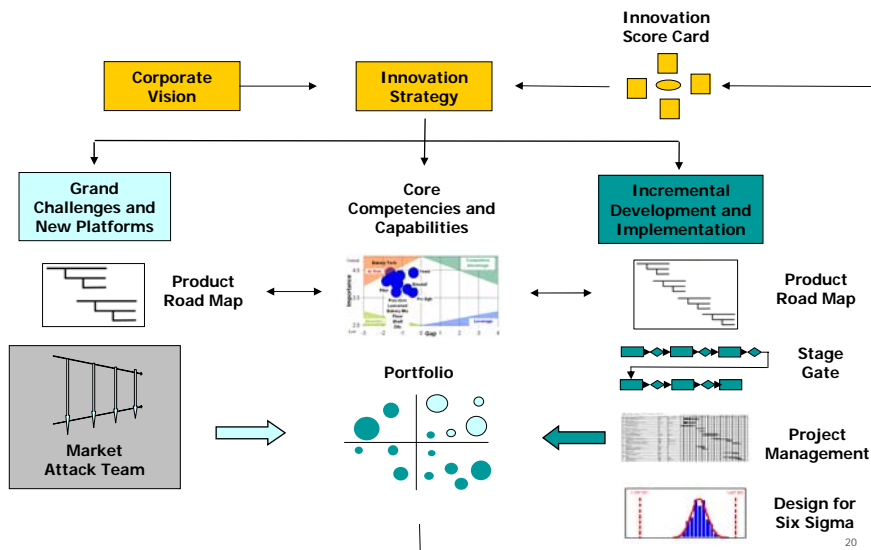
Includes the unique combination of competencies in: good payment terms to suppliers, a dedicated trucking fleet, satellite communications, company owned aircraft, videoconferencing.

Core Competencies/Capabilities



- █ **Core Competence/Capability:**
 - █ Company is preeminent – “Best in the World”
 - █ Skill or knowledge set – not product or function
 - █ Long term platform which leverages the customer value chain
 - █ Limited in number
 - █ Essential to the Strategic Vision
 - █ Provides long term competitive advantage

World Class Innovation



Why Attack Team?

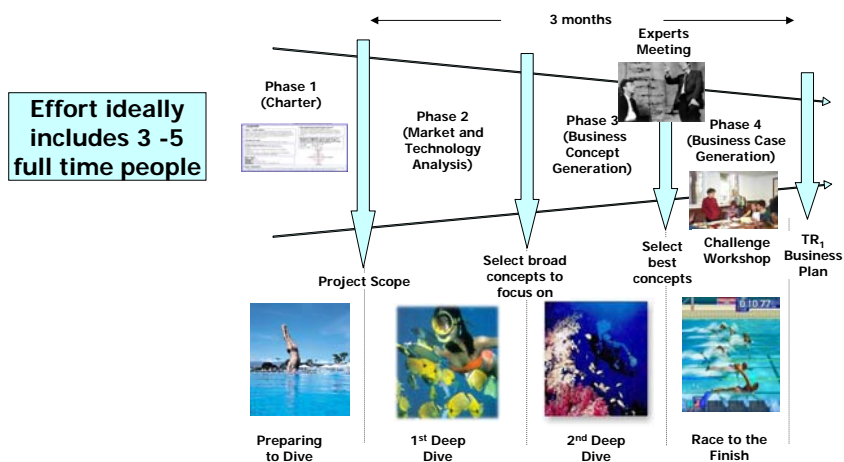
Attack Team approach enables World Class Innovation - Wisdom of the "Sages"

- **Business-Technology Interspersing**
- **Based on Market and Technology Trend Analysis**
 - Where the future opportunities come from
- **Science Based Core Competencies**
- **Aggressive Goals**
- **(External) Scientific Peer Review**
- **Focusing (in contrast to spreading too thin)**
 - Constancy of Purpose
- **Process Optimization which include:**
 - Complete Business Case, Management Oversight and involvement and fact based fast kills and metrics
- **Full time project team populated with members with demonstrated track record and company credibility**

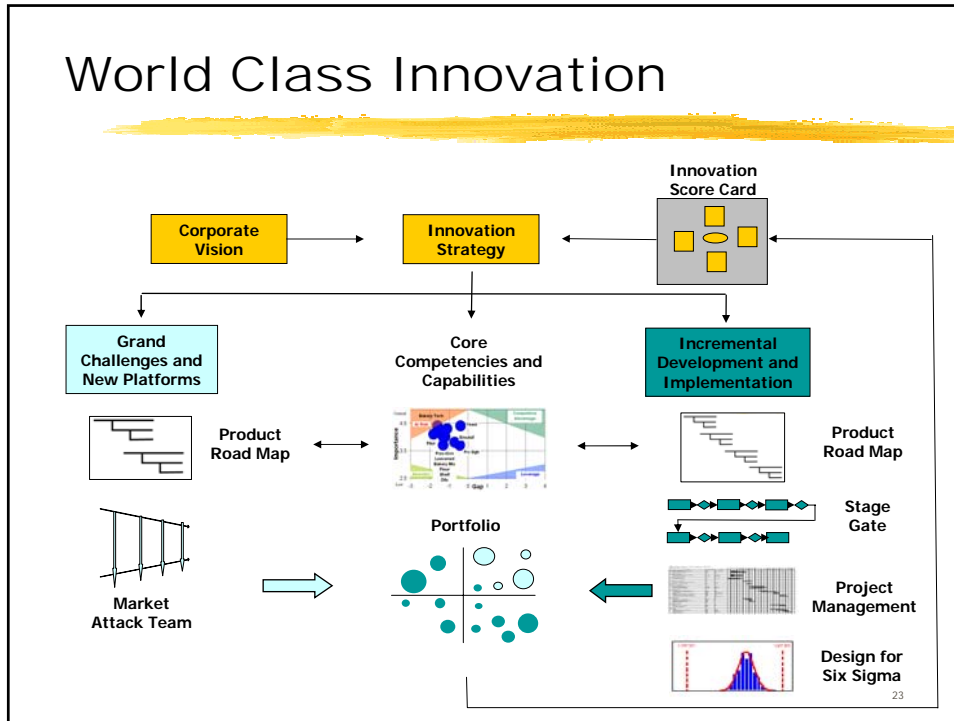
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Market Attack Team

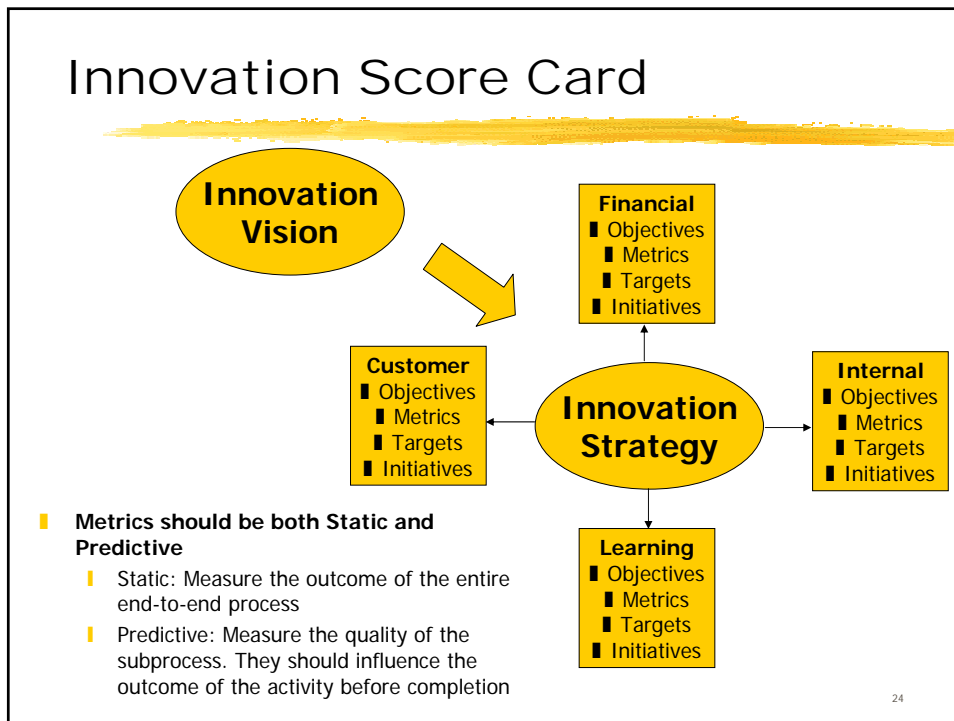
A process for rapidly developing actionable plans for large market opportunities



World Class Innovation



Innovation Score Card



Innovation Score Card

Examples of Customer Metrics

■ Static

- % of sales forecast error during the first year of product introduction
- % of "redo" during first year after the product is introduced
- Customer Acceptance/ Customer Satisfaction

■ Predictive

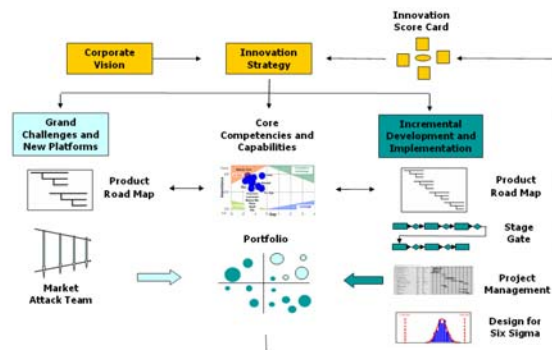
- % of R&D time spent with customers

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Conclusions

■ World Class Innovation

- Companies achieving world class innovation have:
 - 2X revenue from NPD
 - 1.6X more profitable



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