



## 2008 Best Practices Recap

### Trends for 2008-2010 – What changes will affect how we develop products?

1. Growing the business through innovation is the #1 challenge as identified by IRI's 2007 annual R&D trends survey.
  2. Accelerating innovation and balancing long and short term R&D objectives were the next most important challenges.
  3. Attracting and retaining talent has been increasing in importance to NPD success.
  4. Open innovation and collaboration are gaining increasing support to offset budget, time and technical hurdles.
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### Case Studies of Leading Innovators

1. Expand your definition of innovation. See Doblin's "Ten Types of Innovation"
  2. Lessons from Apple and Tennant –
    - a. There is no system but need passionate people and supportive culture
    - b. Network/Open innovation model – Kill NIH
    - c. Focus on needs of the user – not only what they are asking for.
    - d. Ignore what the markets wants today – follow your instincts – Is your company too data driven?
    - e. Fail wisely – keep learning.
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## Clockwise Thinking-A Field Guide for the Innovative Field Leader

1. Counter-clockwise thinking consists of the knowledge loop whereby we evaluate reality with our knowledge and confirm what we already know. Limited learning takes place.
  2. Clockwise thinking consists of the insight loop where we start with our imagination and test our idea by performing some action against reality and then formulating the feedback into some acquired knowledge.
  3. Thinking clockwise is an iterative process that involves discovery and learning and leads to creativity and innovation.
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## Politics of Creativity-Questions of Power And Passion in R&D Today

1. "Research has shown new product development to have several peculiarities. Among these, it is a process characterized by organizational politics.... Abundant anecdotes tell us of defective rule design. Some anecdotes address how deviant rule-following is in fact what keeps business running." Olin and Wickenberg (2001) "Rule Breaking in New Product Development – Crime or Necessity?" Creativity and Innovation Journal, #10

### 2. Examples of Political Skill

- # 1 question the "sacred cows" without destroying them
  - Safety
  - Peer reviews
  - The Board Room
  - "make it safe to be creative"
- #2 differentiate between connections and relationships
  - Social networks
  - Open Innovation
  - Global market
  - "over-connected and under-related"



3. How does one learn which rules are OK to break in your organization?

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**StoryTech - A controlled imagination process**

1. A technique to permit easy construction of virtual realities by animating inanimate objects. What would your product say if it could talk? You want to listen to the voice of the product.
2. Telling stories gets you outside the box.
3. Knowledge management fails because you don't have context!

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**Outsourcing R&D-Why's and How's: Open Innovation & COINS**

1. Open Innovation is a burgeoning new capability to access ideas with limited boundaries. It is based on the book Wisdom of Crowds. It is also called crowd sourcing, open source science and prize-based innovation.
2. The seeker broadcasts the problem to a diverse global universe of solvers offers a payment for a successful solution. The seeker owns the rights to the solution. Innocentive has dealt successfully with confidentiality, ownership and IP transfer. They have a 35% solve rate.
3. Breakthrough ideas come from unexpected people and places. Most radical innovation takes place in the interface between disciplines.



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## Design for....Everything!

1. "Only 13 percent of the American public believes that in general 'technology products are easy to use'." Shifts in Industrial Design – Jeremy Myerson
2. What are the Attributes of Design? In *Creating Breakthrough Products*, Craig Vogel and Jonathan Cagan identify seven classes of attributes that can create value by contributing to a product's usefulness, usability, and desirability -- all of which create an experience that fulfills a consumer's fantasy.
  - Emotion: The perceptual experience that a consumer has when using a product. It can include a sense of adventure, independence, security, or sensuality.
  - Aesthetics: A focus on sensory perception, including the visual form, tactile interactions, and auditory, olfactory, and gustatory signals.
  - Product Identity: A statement about individuality and personality, expressing uniqueness, timeliness of style, and appropriateness in the context.
  - Impact: The social or environmental effects, which are connected with the customer's personal value system and can often help build brand loyalty.
  - Ergonomics: A product's basic usability reflects its ease of use from both a physical and a cognitive perspective. It must also be safe and comfortable.
  - Core Technology: The ability to function properly and perform to expectations. It must be reliable enough to work consistently.
  - Quality: The durability, precision, and accuracy of manufacturing processes, material composition, and methods of attachment must all meet the customer's expectations.



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## **Herding Cats! - Challenges of Leading Technical People**

1. Leaders of technical people must be:

- Credible to those managed
- Understand the organization's needs
- Able to act effectively with the people in two very different cultures, the technical and the business cultures
- Able to deal productively with constant conflict at the interface between two cultures
- Negotiate limits, milestones, decision points
- Recognize that the best contributors conduct both basic and applied research
- Recognize that your leadership style will be subject to the same impersonal, skeptical analysis that is used on everything else that your technical people work on

2. Different leadership styles are needed depending on the outcomes:

- Charismatic Leadership better for:
  - Technical quality in research
  - Profitability
- Initiating Structure better for:
  - Technical quality in development
  - Speed to market

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## Awareness, Cognition & Discovery

1. Everything begins with awareness.
  2. We need to see the world as it is and not as we are.
  3. Breakthrough products result when diverse and robust sensory input is collected in an unbiased fashion and processed logically and completely. Seeing the world as it is and not as we are is crucial to successful product development. Understanding our decision-making process and that of our customer is paramount. We will discuss ways to become more aware and intentional in how we search for unmet needs and investigate market opportunities. We will work to avoid the “mental messing around” that many of us typically use.
  4. We need to be aware of our inherent cognitive biases and how they cloud clear thinking: confirmation, bandwagon, vividness, egocentric, optimism, false consensus, information, endowment effect.
  5. Creativity, it has been said, consists largely of rearranging what we already know in order to find out what we don't know.
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## Product Lifecycle Management Tools

1. 74% of companies have a formal process.  
And yet...Only 52% of companies have a process that is really used.
2. Executives (Gatekeepers) need training on:
  - Purpose of process and why it matters
  - How to prepare for a Gate meeting
  - Function and value of scorecard criteria
  - How to behave at a Gate meeting
4. Critical Success factors. Keep it simple and flexible.



- Numbers of deliverables: 3-5 per stage
  - Number of supporting materials: 5-10 per stage
  - Reuse data as much as possible
  - Save people time, don't add to their overhead
  - There must be more than one process
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## Seeing the Future - Insights on Technology Road-mapping and Forecasting

1. Road-mapping integrates both business and technology contexts. It establishes a shared product-technology strategy.
  2. Road-mapping stimulates learning and improves cross-functional communication. It also improves time to market and time to money.
  3. Technology road-mapping and portfolio planning are tools that need to be used with much common sense and deep questioning.
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## Mind of an Inventor – Mark Kroll, Minnesota's Most Prolific Inventor

1. Take risks and expect to make lots of mistakes, because creativity is a numbers game.
2. Develop a network of colleagues, and schedule time for freewheeling, unstructured discussions.
3. Radical ideas come from different disciplines. Distant analogies lead to new ideas.



4. Extensive research has shown that when you're creative, your brain is using the same mental building blocks you use everyday-like when you figure out a way around a traffic jam.
5. Creativity happens not with one brilliant flash but in a new chain reaction of many tiny sparks while executing an idea.

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## Science of Market Development

1. *Market Development* is a *unique* marketing discipline that focuses on understanding the realizable potential of an opportunity and then strategically applying resources to fully address the barriers to achieving that potential.

### 2. Market Development Questions

Who is our perfect patient (or customer)? Why?

What is our Annual Revenue Potential? How is it defined?

What is the single biggest barrier to widespread adoption? How do we know?

What will be required for our market to "take off"?

What investments are needed to achieve those requirements?

When will our market slow down?

Could other indications, technologies, or markets be more attractive?

3. "Opportunity is missed by most people because it is dressed in overalls and looks like work." Thomas Edison.

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## Happiness and Creativity

1. We all want to be happy. Americans consider happiness more important to them than money, moral goodness, and even going to Heaven. Happiness is defined as a state of well-being characterized by emotions ranging from relief, contentment and satisfaction to intense joy and euphoria.
2. 1. Previous laboratory studies have demonstrated the causal relationship between emotion and creativity. Amabile's research in a real-world setting bears this out, with positive emotion tied to higher creativity and negative feelings linked to lower motivation and creativity. People have their best days and do their best work when they are allowed to make progress. "Big breakthroughs are great, but we found that even incremental progress evokes a powerfully positive inner work life,
3. People have their best days and do their best work when they are allowed to make progress. "Big breakthroughs are great, but we found that even incremental progress evokes a powerfully positive inner work life,
4. **Support employees' progress in their work every day.**
  - a. Set clear and meaningful goals for them;
  - b. provide direct help, versus hindrance;
  - c. offer adequate resources and time;
  - d. respond to successes and failures by drawing on the experience as a learning opportunity, not just a moment to praise or reprimand;
  - e. and establish a culture where people are treated with respect.
5. Happiness = Genetics (50% + Circumstances (10%) + Actions (40%)

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## Polaris Design Center – Tour and Presentation

1. Polaris is leveraging design enhancements, new technology, and engineering capabilities across different product platforms. Some interesting hybrid products may be coming out in the next few years. They are innovating by 'inventively recombining' ideas across product families and categories.
  2. They are using design to fuel peoples passion for motorcycles, ATV's and snowmobiles. It's not just about functionality and meeting needs. It's also about delight and fun and excitement.
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## Lean Product Development

1. Knowledge capture, documentation and retention are keys to continuous improvement in NPD. The knowledge should be available for future projects regardless of the people involved. Organizational learning as well as Individual learning needs to take place.
  2. Populating the best practices database should be a performance requirement of each individual and listed in their annual objectives.
  3. The 7 wastes of Lean are Relearning, Handoffs, task-switching, Delays, Extra Features, Defect and Partially Done Work.
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