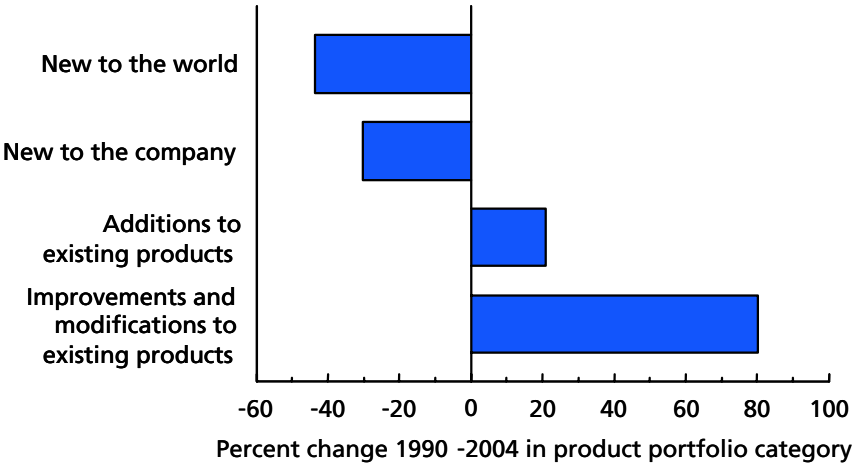
Flexible Product Development:

Building Agility for Changing Markets

By Preston G. Smith CMC

Why You Should Attend

The world of new product development is becoming more turbulent: customers are pickier, markets shift as competitors adopt new business models, and new product technologies appear at a dizzying rate. Meanwhile, astoundingly, new products are becoming more boring as management apparently sticks close to what has worked in the past. This is what the data show. Consider the figure below, which illustrates how new-product portfolios in a broad array of industries have shifted from truly innovative products to me-too ones over a fourteen-year period.



Source of data: Robert G. Cooper, "Your NPD Portfolio May Be Harmful to Your Business's Health," *Visions*, 29(2):22–26 (April 2005). Figure from *Flexible Product Development: Building Agility for Changing Markets* by Preston G. Smith, 2007.

What is wrong with this picture? It suggests that we have lost the ability to change as quickly as the new-product environment is changing.

This workshop aims at restoring our ability to make changes during development without being too disruptive. This is important because other contemporary methodologies—Six Sigma, lean, and phased development (including Stage-Gate®) encourage a plan-your-work, work-your-plan mentality. While such an approach has merit, it also has the unfortunate side effect of creating rigor mortis during development, as the figure above suggests.

What You Will Learn

You will learn how to introduce flexibility into product development so that you can embrace change, that is, make changes relatively late in the development cycle without undue disruption. In a chaotic world, change then becomes your friend rather than a feared evil. A bonus is that flexibility allows you to introduce the latest ideas into your products in midstream to delight your customers and bedevil your competitors.

This workshop provides a balanced package for implementing flexibility in your organization:

- Consideration of the strengths and weaknesses of each tool so that you appreciate when, where and how to apply and adapt it for maximum advantage (this is critical, as some of the tools can be costly if misapplied)
- A running case study of a project in flux so that you gain hands-on practice in applying the techniques discussed and observe how others apply them
- As an inspiring analogy, seeing how agile software developers have greatly enhanced the flexibility of their development systems (although there is much we can learn from the agilists, certain special characteristics of the software medium restrict agile practices to software)
- Examples of how others have applied and adapted the tools and approaches
- Understanding—and fully appreciating the importance of—certain underlying values of the flexible environment, so that you can cultivate and enhance them
- A comprehensive set of approaches for initiating the organizational changes needed, including resolving the apparent paradoxes involved, such as working top-down versus bottom-up

Workshop Outline

- **Understanding Flexibility**
  - DEALING WITH CHANGE
  - HOW MUCH FLEXIBILITY?
    - The Cost of Change
    - Managing the Convergence of Flexibility
    - The Downsides of Flexibility
  - THE ROOTS: AGILE SOFTWARE DEVELOPMENT
    - Extreme Programming
    - The XP Values
    - Does XP Work?
  - MOVING FROM SOFTWARE TO OTHER PRODUCTS
  - THE PROJECT ANALYZER
- **Customers and Product Requirements**
  - THE FALLACY OF "FROZEN" REQUIREMENTS
    - Requirements Evolution versus Scope Creep
  - THE VALUE OF CUSTOMER FEEDBACK
    - The MacCormack and Boehm Studies
    - The Overspecification Trap
    - The Principles of Iteration and Customer Feedback
    - Lowering the Cost of Iteration
  - SPECIFY AT A HIGHER LEVEL
    - Product Vision

        - Personas
        - Use Cases
        - User Stories
    - ANTICIPATE CUSTOMER NEEDS
        - Get into the Customer Experience
        - Lead Users
    - CUSTOMER FEEDBACK CAN LEAD YOU ASTRAY
        - Expert Customers
        - Dig below Customer Desires
        - Internal Customers
- **Modular Product Architectures**
    - MODULAR VERSUS INTEGRAL ARCHITECTURES
        - Advantages and Disadvantages of Modularity
        - Modularity Objectives
    - EXAMPLES OF ARCHITECTURAL CHOICES
        - CD-ROM Drive
    - ARCHITECTURAL APPROACHES
        - Reduce Coupling
        - Isolate Volatility
        - Provide for Growth
        - Align with Organizational Boundaries
    - FOUR STEPS IN DESIGNING AN ARCHITECTURE
    - ARCHITECTURAL DECISIONS
        - Interfaces
        - Providing for Growth
    - ARCHITECTURE AT THE DESIGN LEVEL
- **Experimentation**
    - KINDS OF EXPERIMENTS
    - THE VALUE OF FAILURE
    - EXPLORATION AS EXPERIMENTATION
        - Planning Step
        - Construction Step
        - The Run Step
        - Assessment Step
    - FRONT-LOADED PROTOTYPING
        - Traditional Versus Front-Loaded Strategies
        - Enabling Technologies
        - The Front-Loaded Style
        - Front-Loading Considerations
    - TESTING
- **Set-Based Design**
    - WHAT IS SET-BASED DESIGN?
        - A Focus on Constraints
        - Supporting Technical Reports
    - BENEFITS FOR FLEXIBILITY
    - MANAGING SET-BASED DESIGN
    - DELAYING DECISIONS
        - Progressive Decisions

- THE DIFFICULTIES
- **Development Teams and People Factors**
  - Teams and Flexibility
  - HAVING THE "RIGHT" PEOPLE
    - Useful Experience
    - Mastery Levels
    - Great Teams from Average Individuals
  - DESIRABLE PEOPLE QUALITIES
    - Skills
    - Dedication
    - Commitment
    - Generalists
  - TEAM QUALITIES
    - Self-Organizing
    - Cross-Functional
    - Adequate Authority
    - Co-Located
    - Partially Co-Located
    - Electronic Communication
- **Decision Making**
  - IMPROVING DECISION-MAKING FLEXIBILITY
    - The Last Responsible Moment
    - Applying the Last Responsible Moment Responsibly
  - PEOPLE AND DECSIONS
    - Reaching Consensus
  - UNCERTAINTY AND DECISIONS
    - Reducing Uncertainty
  - DECISION TREES
    - The Value of Perfect Information
    - Decision Trees in Practice
  - REAL OPTIONS THINKING
- **Project Management**
  - FLEXIBLE VERSUS MAINSTREAM PROJECT MANAGEMENT
    - The Project Plan Is Not the Guide
    - Redefining Project Completion
    - Reorienting Quality
    - Individuals over Processes
    - The Role of Tacit Knowledge
  - THE ROLE OF A FLEXIBLE PROJECT MANAGER
    - Out in the Team Space
    - Supporting and Protecting the Troops
    - Clarifying and Enforcing the Product Vision
  - PROJECT PLANNING
    - Planning Versus Anticipation
    - Rolling-wave Planning
    - Loose-tight Planning
  - TIMEBOXING

        - Expectations Management
    - PROJECT RISK MANAGEMENT
        - Integrated Versus Intrinsic Risk Management
        - Risk Management and Iterative Development
        - Managing Unknown Risks
    - PROJECT METRICS
        - Strategic Versus Tactical Metrics
        - A Flexibility Index
        - Burndown Chart
        - Team Mood
        - Sharing and Acting on Metrics
    - PROJECT RETROSPECTIVES
- **Product Development Processes**
    - EMERGENT PROCESSES
        - Standardize at Low Levels
        - Build, Do Not Scale Down, Processes
    - THE ESSENTIALS OF FLEXIBLE PROCESSES
        - Iterative and Incremental Innovation
        - Balancing Anticipation and Adaptation
        - Tacit Knowledge
    - BALANCING STRUCTURE WITH FLEXIBILITY[6]
        - Balancing Opposing Risks
        - Shifting the Balance
    - BOTTLENECKS AND QUEUES
        - The Myth of Capacity
    - USEFUL CONCEPTS FROM AGILE SOFTWARE DEVELOPMENT
        - Refactoring and Technical Debt
        - You Aren't Going To Need It
- **Implementing Flexibility**
    - FIVE PARADOXES
        - Top-down or Bottom-up?
        - Start Small or Start Big?
        - Start with a Piece or with the Whole Package
        - Gradual or Ambitious?
        - Exposed or Sheltered Project?
    - TRANSITIONS ARE THE CRUX OF IT
    - TOP-DOWN CHANGE
    - BOTTOM-UP CHANGE

Bonuses

After the workshop, you have ongoing support in implementing flexible development in your organization:

- The book *Flexible Product Development: Building Agility for Changing Markets* by Preston G. Smith, Jossey-Bass (a John Wiley & Sons imprint), 2007 parallels the presentation of the material in the class, providing a great deal of detail and source material. See http://flexibledevelopment.com/flexible-product-development.htm for more information

- Ongoing email and telephone support from the facilitator for participants in this workshop ("The workshop isn't over when it's over.")

About your Facilitator

Preston Smith began specializing in rapid product development in 1984 as an internal consultant, became an independent management consultant concentrating on time-to-market issues in 1986, and earned Certified Management Consultant (CMC) standing in 1990. He has led more than 100 workshops in over 25 countries worldwide on advanced product development topics and has taught product development courses at several universities. Companies that have attended his workshops include: Siemens, Motorola, Sony, Nokia, Medtronic, Nestle, Philips, Samsung, Chrysler, and Honeywell. Over a twenty-year period, he held engineering and management positions with North American Aviation (now part of Boeing), Pratt & Whitney Aircraft, IBM, Bell Laboratories (now Alcatel-Lucent), and General Motors Research Laboratories.

Preston is co-author of the popular book, *Developing Products in Half the Time*. Over 100,000 copies of this book are in use by managers in many industries. In addition, he has authored several handbook chapters and dozens of published articles on product development. Preston was book review editor for the *Journal of Product Innovation Management*. He holds a Ph.D. in engineering from Stanford University, and is a member of the Product Development and Management Association (PDMA), the Agile Project Leadership Network (APLN), and the Agile Alliance.

His interest in flexible product development began several years ago when he observed companies paralyzed by rigid development processes in fast-changing markets. He assembled these flexibility techniques while participating in the rapid prototyping community (keynote speaker at six rapid prototyping conferences) and more recently in the agile software development community, where he was keynote speaker at the 2004 Agile Development Conference and was a founder of the Agile Project Leadership Network (apln.org).