New trends in product development

Prof. Henrique Rozenfeld
How to define new trends on product development?

• Comprehensive systematic literature review
• Delphi research supported by a team of specialists
• World wide survey in companies, universities, associations and other institutions
• Systematization of MANY case studies
• Support of product development communities
• Combination of previous methods
Personal insights into product development

Prof. Henrique Rozenfeld
• Basics

• Product development dimensions

• Trends
Product Development is not a task of engineering

Traditional vision

- Strategical planning
- High Mgt marketing
- Engineering

New Scope

- Develop products
- People of different areas
- Production
Business process vision

Product development is a business process

Strategical planning → Develop products → Production

People of different areas
Product Development Definition

In accordance to the company’s requirement

**Product Development Process**

- Technology and market requirement
- Attending market requirements
- Production, product / process monitoring and product taking back

**Artifacts**

- Business process
- Order fulfillment
- Customer service
- Technical support

**Products / services**
Similar and complementary terms

**Product Development Process**

- New product development
- Design
- System Engineering

**Synonyms**
- Complementary

**Research & Development**
- Product lifecycle management
Definition of Business Process

Group of activities carried out in a logic sequence to obtain products (goods and services) valuable for a specific group of customers.

Product Development Process
Definition of Project

Temporary endeavor undertaken to create a unique product or service. It has a definite beginning and a definite end (PMBOK).

But product are developed by projects (and complex products by programs)
Characteristics of Processes and Projects

**Processes**
- Continuous and repetitive
- Goals are periodically actualized

**Projects**
- Temporary and unique
- Unique goals
Deployment of the reference process in development projects for each product

NPD is a process that develops the artifacts by projects !!
Summary

- Basics
- Product development dimensions
- Trends
Elements of a business process

- Strategy
- Metrics
- Activity
- Information
- Methods
- ICT
- Resources
- Organization / People
- Customers
- Product
Dimensions for analyzing product development

- Strategy
- Metrics
- Activity
- Methods
- Scope
- Organization / People
- Product
- Customers / Market
- Information
- ICT
- How to implement
Summary

- Basics
- Product development dimensions
- Trends
Dimensions for analyzing product development

- **Strategy** (15)
- **Metrics** (3)
- **Activity** (3)
- **Methods** (12)
- **Scope** (7)
- **ICT** (16)
- **Product** (10)
- **Customers / Market** (2)
- **Information** (3)
- **How to implement** (6)
- **Organization / People** (16)

93 trends
Scope

1. World wide
2. Distributed
3. Research & development as separated but integrated process
4. Integration of supply chain creation
5. Integrated with PLM Approach
6. Support process: configuration management
7. Support process: business process management (BPM)
8. Vision of knowledge areas
Characteristics of product development

- Knowledge-based
- Human network-based
- Collaborative
- Distributed

Companies:
- Company A
- Company B
- Company C (engineering service)
- Company D (prototyping)
- Company F
Research & development as separated but integrated process

Research & Development

Product development

Pre

Development

Post

Strategic planning

• Portfolio management
• Project planning
• Informational design
• Conceptual design
• Detailing design (product, process, factory planning, resources, prototyping)
• Production preparation (value chain definition)
• Product launch (value chain definition)

Product/Process monitoring and take back

Robust?
PLM embraces following business process …
General Vision of the Reference Model for Product Development

Product Development

Pre-
- Product Strategic Planning

Development
- Gates
- Project Planning
- Informational Design
- Conceptual Design
- Detailled Design
- Production Preparation
- Product Launch

Post-
- Product and Process Monitoring
- Product end of life management

Support Processes

Engineering Change Management

Product Development Process Improvement
Production preparation and product launch

**Production preparation**

- Production process
- Suppliers and logistics
- Maintenance

**Product launch**

- Sell and Distribution
- Customer support
- Marketing advertisement

Scope

(Supply Chain)
PLM embraces following business process …

Research & Development

Operational Processes

Product development

Support Processes

Configuration Management

Business Process Management

Product/Process monitoring and take back
PLM embraces following business process ...

Research & Development

Operational Processes

Support Processes

Product development

Configuration Management

Business Process Management

Product/Process monitoring and take back
Product and process monitoring
Product take back

Research & Development

Product development

Pre Development

Recycling

Remanufacturing

Product’s Discard

Reuse

Treatment and Final Disposal