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ICT Innovation – Spring 2016
MSc in Computer Science and MEng Telecom. Engineering
EIT Masters ITA, S&P,SDE

Lecture 02 – Product Planning and Opportunities Identification
Prof. Fabio Massacci

Product Development Process

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Planning → Concept Development → System-Level Design → Detail Design → Testing and Refinement → Production Ramp-Up

Four Phases of Product Development

The product planning phase precedes the product development process

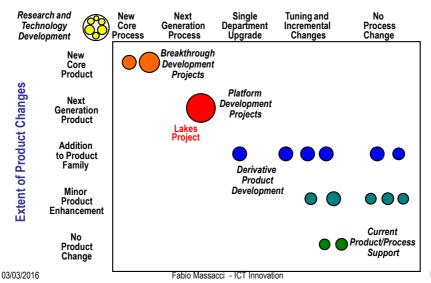## Opportunities begin the Planning Process

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- **Only makes sense for large organizations with**
  - Several product platforms
  - Several product lines
  - Several products
- **If you just sell a single tool don't need much "structure"**
  - either is brand new or it is a change of what you have
- **If you have many things then there are conceptual differences**

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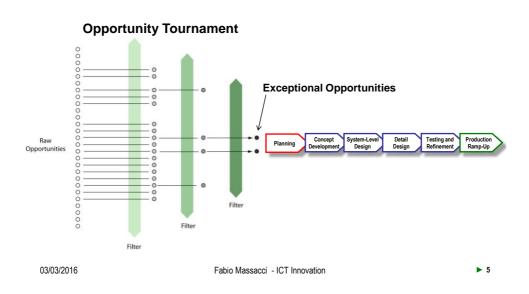
Product-Process Change Matrix
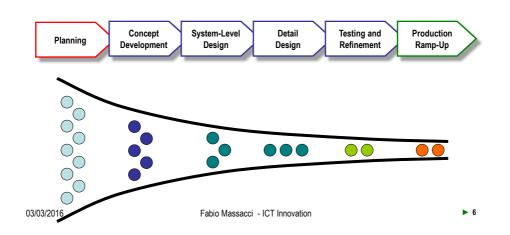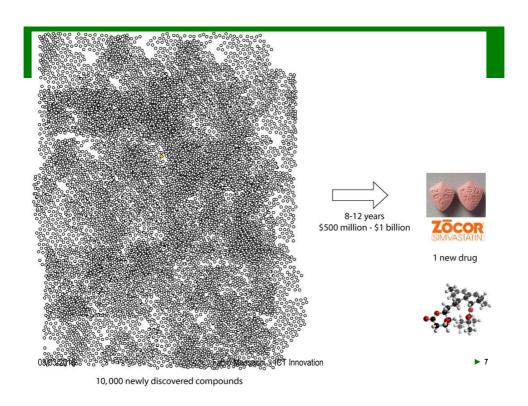
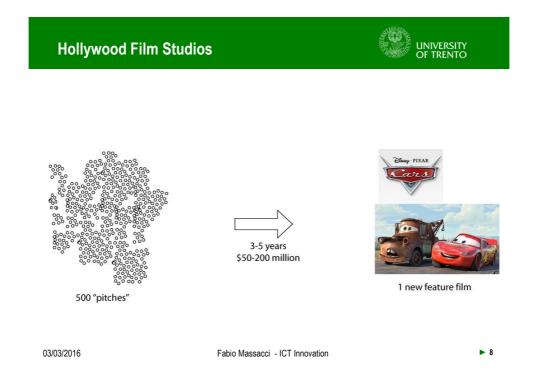UNIVERSITY OF TRENTO

Extent of Production Process Changes

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Selecting Opportunities

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Opportunity Tournament

Exceptional Opportunities

Raw Opportunities

Planning | Concept Development | System-Level Design | Detail Design | Testing and Refinement | Production Ramp-Up

Filter
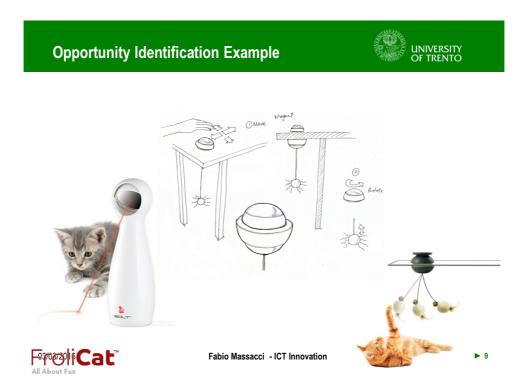
Filter

Filter

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Project Down selection:
The PD Process Funnel

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Planning | Concept Development | System-Level Design | Detail Design | Testing and Refinement | Production Ramp-Up

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3

8-12 years
$500 million - $1 billion

1 new drug

10,000 newly discovered compounds

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Hollywood Film Studios

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500 "pitches"

3-5 years
$50-200 million

1 new feature film

4

Opportunity Identification Example

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FroliCat
All About Fun

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FroliCat Sway Opportunity Funnel

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1 mission statement

1 PD process

1 product launch

50 opportunities

7 selected

3 explored

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Where do opportunities come from?

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internally generated — 46 %

customer — 23 %

competitive product — 11 %

sales force — 5 %

university — 4 %

independent inventor — 4 %

distribution partner — 3 %

other partner company — 2 %

supplier — 2 %

Source: Terwiesch and Ulrich survey of 524 managers in diverse service and product industries, October 2006.

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What drives the quality of the opportunities?

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Opportunity Creation Process

Identifying Opportunities Externally

Exceptional Opportunities

Generating Opportunities Internally

Quality of Creation Process

Raw Opportunities

Quality Hurdle

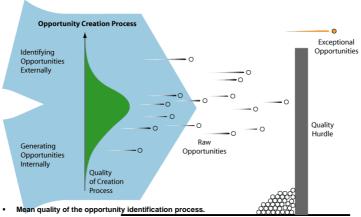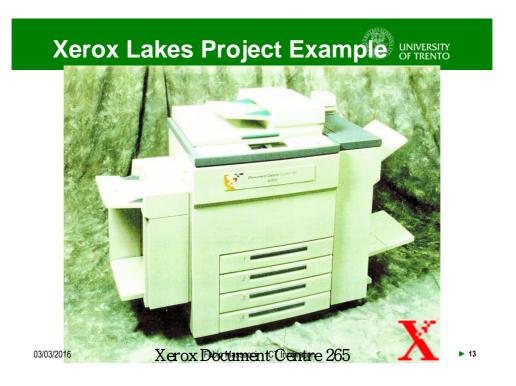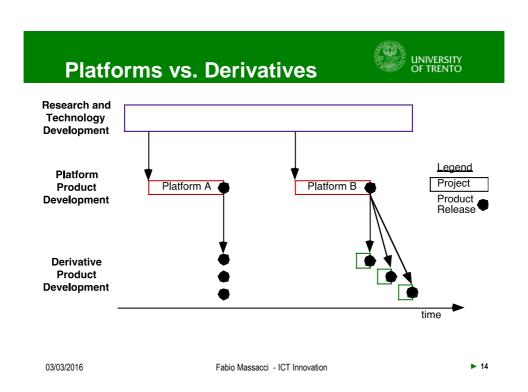- **Mean quality of the opportunity identification process.**
- **Variance in quality of the opportunity identification process.**
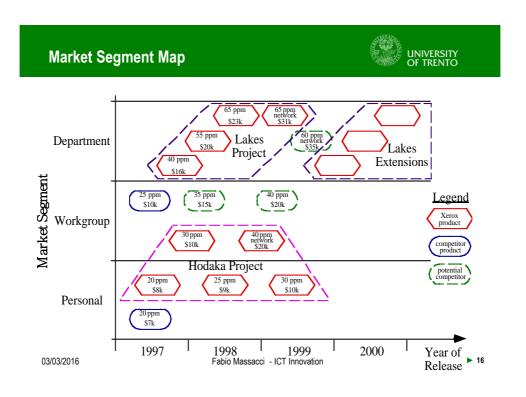- **Number of "draws" from the opportunity identification process.**

- **Accuracy of discerning the best subset of opportunities generated.**
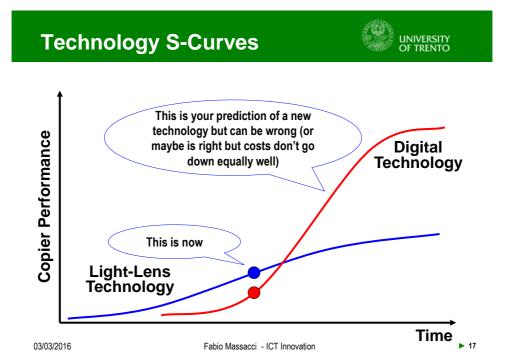
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Xerox Lakes Project Example

Xerox Document Centre 265

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Platforms vs. Derivatives

Research and Technology Development

Platform Product Development — Platform A — Platform B

Derivative Product Development

time

Legend
Project
Product Release

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A Product Plan

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New Platforms
Hodaka
Lakes

Derivatives
H-Net
L-Net

Improvements
595 | 6010 | 392 | 393

Fundamentally New
Astro

1996 | 1997 | 1998 | 1999 | 2000

Legend
Project
Product Release

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Market Segment Map

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Market Segment

Department
- 65 ppm $23k
- 65 ppm network $31k
- 55 ppm $20k
- 60 ppm network $35k
- 40 ppm $16k
- Lakes Project
- Lakes Extensions

Workgroup
- 25 ppm $10k
- 35 ppm $15k
- 40 ppm $20k
- 30 ppm $10k
- 40 ppm network $20k
- Hodaka Project

Personal
- 20 ppm $8k
- 25 ppm $9k
- 30 ppm $10k
- 20 ppm $7k

1997 | 1998 | 1999 | 2000 | Year of Release

Legend
- Xerox product
- competitor product
- potential competitor

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Technology S-Curves

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Aggregate Resource Planning

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Lakes Project Mission Statement

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- **Product Description**
  - Networkable, digital machine with copy, print, fax, and scan functions
- **Key Business Goals**
  - Support Xerox strategy of leadership in digital office equipment
  - Serve as platform for all future B&W digital products and solutions
  - Capture 50% of digital product sales in primary market
  - Environmentally friendly
  - First product introduction 4thQ 1997
- **Primary Market**
  - Office departments, mid-volume (40-65 ppm, above 42,000 avg. copies/mo.)
- **Secondary Markets**
  - Quick-print market, Small 'satellite' operations
- **Assumptions and Constraints**
  - New product platform
  - Digital imaging technology
  - Compatible with CentreWare software
  - Input devices manufactured in Canada, Output devices manufactured in Brazil, Image processing engine manufactured in both USA and Europe
- **Stakeholders**
  - Purchasers and Users, Manufacturing Operations, Service Operations, Distributors and Resellers
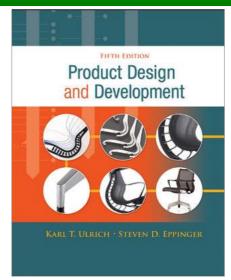
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Textbook

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Product Design and Development
Karl T. Ulrich and Steven D. Eppinger
5th edition, Irwin McGraw-Hill, 2012
1. Introduction
2. Development Processes and Organizations
3. **Opportunity Identification**
4. **Product Planning**
5. Identifying Customer Needs
6. Product Specifications
7. Concept Generation
8. Concept Selection
9. Concept Testing
10. Product Architecture
11. Industrial Design
12. Design for Environment
13. Design for Manufacturing
14. Prototyping
15. Robust Design
16. Patents and Intellectual Property
17. Product Development Economics
18. Managing Projects

FIFTH EDITION
Product Design and Development
KARL T. ULRICH · STEVEN D. EPPINGER

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