FIXING REFERENCE ARCHITECTURE

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CANON’S PRODUCTS & VISION

**Printing**
- Commercial printers
- Office printers
- Home printers

**Imaging**
- Network cameras
- Cameras

**Medical**
- Medical equipment

**Industrial and Others**
- OLED equipment
- Lithography equipment

**Revenue in 2021**
- EUR 27 billion
  - Commercial printers: 54%
  - Office printers: 18%
  - Home printers: 13%
  - Medical equipment: 15%

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CANON’S PRODUCTS & VISION

Four Growth Businesses

- **Printing**
  - Commercial printers
  - Office printers
  - Home printers

- **Imaging**
  - Network cameras
  - Cameras

- **Medical**
  - Medical equipment

- **Industrial and Others**
  - OLED equipment
  - Lithography equipment

Revenue in 2021

- **EUR 27 billion**
  - 54%
  - 18%
  - 13%
  - 15%
A COMPLETE PRODUCT PORTFOLIO

Digital presses
Up to 4000 A4/min

Large Format printers
Up to 3.2m wide

Information ➔ Graphics on paper ➔ ... on any flexible media ➔ ... on rigids

Print application examples

- Technical drawings
- Books
- Maps / posters
- Premium direct mail
- Signage
- Labels
- Packaging

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HOW DOES PRINTING WORK?

Printing is simple...

- Evaporation
  - Hot Air Impingement
- Absorption
- Oxidative drying
- Radiation drying
  - UV
  - IR / NIR
  - MW
  - RF
DRYING THE INK

... or maybe not?

Hot air
Different fixation technologies and realizations

- Specifically designed for the needs of the individual product or market segment
- ...several multi-disciplinary development teams
  - All identifying with their work
  - High development effort
  - Low number of same parts

Platform approach
- Framework set by Reference Architecture
- Cross site & cross product
OUR WAY TO THE PLATFORM
so far …

Challenges

• Technical: Finding scalable solutions satisfying the product needs

• Organizational: From several project teams at different sites devoted to “their” product to cross site teams committed to a platform and the products based upon it

Approach

• Implement new organizational structure

• Use structured methods to get to a common language, understanding and trust
  ► Functional views, independent from actual realizations
  ► Create System views, still independent from concrete realizations
  ► Capture reasoning for decisions to avoid misunderstandings

Reference Architecture

• Establish reference architecture as framework for the individual product architectures
  ► Guiding and constraining product architectures to ensure high synergy in
    • R&D
    • Manufacturing
    • Service
    • Use
  ► Premise: Deviations and additions must add value

• Based on prior knowledge and (future) market needs of all products
EXAMPLES

How to bring architecture and people together

**Pure functionality**

- IDEF0 (non-formal)
- Architect & Component Lead

![Diagram of system decomposition]

**System decomposition**

- Get clarity about interfaces and their owners

**Capturing reasoning**

- Reasoning Tree
  - Capturing far-reaching decisions and reasoning in the team

![Diagram of reasoning tree]

*Canon*
LEARNINGS

..so far

• As in many industries, we decided to use product platforms

• Technical solutions fitting the need of multiple project needs compromises (expected)

• Consequences of the necessary adaption in the organizational structure as a challenge
  ▶ Teams split cross-sites; members with different company cultural history and way of working
  ▶ At the same time great opportunities for creativity

• Structured approaches, e.g. Functional decompositions, ... help to bring people together (face-to-face, online, hybrid)