Abstract

Many companies struggle how to benefit from similarities between projects, systems or products. We see that project oriented companies try to benefit from similarities by creating products that perform often used functions. Companies delivering catalogue products try to benefit from similarities between products by standardizing components or platforms internally. In practice all these attempts are only partially successful; practice turns out to be more difficult than theory.

We will illustrate the balancing act with examples from Health Care.
The Health Care Equipment Domain

all photos courtesy of Philips HealthCare
Projects versus Products

project

unique
customer specific

tailored to customer needs
tender-contract-execution
cost \(\sim project\) hours

investment by customer

product

catalogue
generic

"one size fits all"
mass production
economy of scale

investment in product design
Examples from Health Care

- project
  - unique
  - customer specific
- product
  - catalogue
  - generic

new hospital
Hospital Information System
Radiology Information System
Picture Archive and Communication Systems

MRI scanner
X-ray systems
Ultra Sound Systems
Radio Therapy systems
Convergence of Projects and Products

harvest and use
standardized components/products

configuration and customization
customer specific at customer site

project
unique
customer specific

catalogue
generic

product

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BAOPevolution
Products versus Family

- Products
  - Catalogue
    - Customer generic
    - Application specific
  - Generic superset
    - Common architecture
- Family

Cardio Vascular X-ray systems
MRI scanners
Many Hierarchical Layers

- **portfolio**
- **business**
- **product family**
- **products**

**HealthCare**
- **X-ray systems**
  - cardio/vasc.
  - URF
  - RAD

**MRI scanners**
- 0.5T
- 1.5T
- 3T
- card.
- vasc.
Internal Supply Chain

Health Care Imaging Equipment

CT scanners
MRI scanners

X-ray product groups
- cardio
- vasc.
- URF
- RAD

X-ray component suppliers
- Imaging
- X-ray generation

common digital infrastructure supplier
- HIS
- RIS
- viewing
- archiving
- communication
Technical versus Clinical

- MRI scanners
- CT scanners
- X-ray systems
- Nuclear Medicin
- Ultra sound

Oncology
Cardiology
Gynecology
Pediatrics

clinical synergy
technical synergy
Practice

harvesting synergy

practice

+ and -

recommendations

customer focus and harvest synergy

analysis & reflection

introvert - extrovert processes

project

portfolio

family

product
Three Decades of Synergy Drive

- perceived potential synergy
- realized synergy
Experiences with reuse, from counterproductive to effective

**bad**
- longer time to market
- high investments
- lots of maintenance
- poor quality
- poor reliability
- diversity is opposed
- lot of know how required
- predictable too late
- dependability
- knowledge dilution
- lack of market focus
- interference
- but integration required

**good**
- reduced time to market
- reduced investment
- reduced (shared) maintenance cost
- improved quality
- improved reliability
- easier diversity management
- understanding of one base system
- improved predictability
- larger purchasing power
- means to consolidate knowledge
- increase added value
- enables parallel developments
- free feature propagation
### Successful examples of reuse

<table>
<thead>
<tr>
<th>homogeneous domain</th>
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<tbody>
<tr>
<td>cath lab</td>
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<tr>
<td>MRI</td>
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<tr>
<td>television</td>
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<tr>
<td>waferstepper</td>
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<table>
<thead>
<tr>
<th>hardware dominated</th>
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<tr>
<td>car</td>
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<td>airplane</td>
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<td>shaver</td>
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<td>television</td>
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<th>limited scope</th>
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<tr>
<td>audio codec</td>
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<td>compression library</td>
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<td>streaming library</td>
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Limits of successful reuse

struggle with integration/convergence with other domains

TV: digital networks and media
cath lab: US imaging, MRI

poor/slow response on paradigm shifts

TV: LCD screens
cath lab: image based acquisition control

software maintenance, configurations, integration, release

MRI: integration and test
wafersteppers: number of configurations

how to innovate?
Simplified process view

Strategy process

Customer oriented process (sales, service, production)

Product creation process

People, process and technology management process

Value

Customer

Supplying business
Tension between processes

- **Supplying business value**
  - **People, process and technology**
  - **Strategy**
  - **Process**

- **Customer oriented**
  - **Short term; cashflow!**
  - **Mid term; cashflow next year!**
  - **Long term know how (soft) assets**

- **Product creation**

- **Feedback**

**Version:** March 6, 2013
Platform strategy adds one layer

- Strategy
- Customer oriented
- Value
- Product creation
- Component or platform creation
- People, process and technology
- Long term assets
- Know how (soft) assets
- Short term; cashflow!
- Mid term; cashflow next year!
- Next year!

Gerrit Muller

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March 6, 2013
RSPprocessDecompositionPlusAnnotated
## Sources of Failure in Generic Developments

<table>
<thead>
<tr>
<th>Technical</th>
<th>Process/People/Organization</th>
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<tbody>
<tr>
<td>• Too generic</td>
<td>• Forced cooperation</td>
</tr>
<tr>
<td>• Innovation stops</td>
<td>• Time platform feature to market</td>
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<tr>
<td>(stable interfaces)</td>
<td>• Unrealistic expectations</td>
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<tr>
<td>• Vulnerability</td>
<td>• Distance platform developer to customer</td>
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<td></td>
<td>• No marketing ownership</td>
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<tr>
<td></td>
<td>• Bureaucratic process (no flexibility)</td>
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<td></td>
<td>• New employees, knowledge dilution</td>
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<td></td>
<td>• Underestimation of platform support</td>
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<td></td>
<td>• Overstretching of product scope</td>
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<td></td>
<td>• Nonmanagement, organizational scope increase</td>
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<td></td>
<td>• Underestimation of integration</td>
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<td></td>
<td>• Component/platform determines business policy</td>
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<td>• Subcritical investment</td>
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Recommendations

harvesting synergy

practice

+ and -

recommendations

customer focus and harvest synergy

analysis & reflection

introvert - extrovert processes
Beware of Introvert Bias

- customer
- strategy
- supplying business
- customer oriented
- product creation
- value
- component or platform creation
- people, process and technology
- clinical extrovert
- technical introvert
Models for Generic Development

- **lead customer**
  - direct feedback too specific?

- **carrier product**
  - product feedback product specific?

- **platform**
  - feedback problem too generic

- **technology push**
  - no feedback

**customer**

- **supplying business**
  - policy and planning
  - customer oriented process (sales, service, production)
  - Product Creation Process
  - create generic components
  - people and technology management process
Harvesting **synergy** is long term **must**:
economical and competitive.

If synergy is **introvert** drive only,
then **customer**, **sales**, and **marketing**
will **not ask** for it, **nor pay** for it.

Maintain the old competence

(**customer focus**, **dedication**, and **responsiveness**)

while developing new competence

(harvesting synergy).