

# The Balancing Act Of Productification

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## 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.

### Distribution

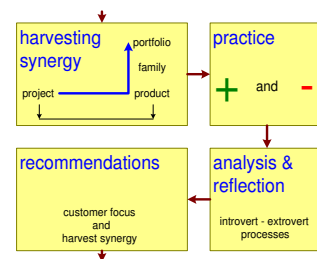
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draft

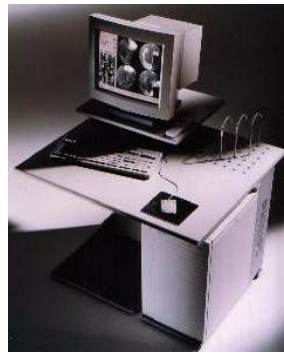
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# The Health Care Equipment Domain



MRI scanner

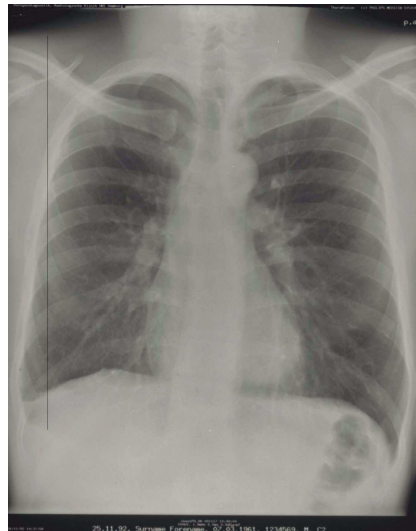
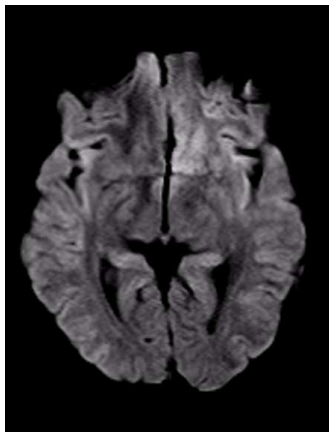


workstation



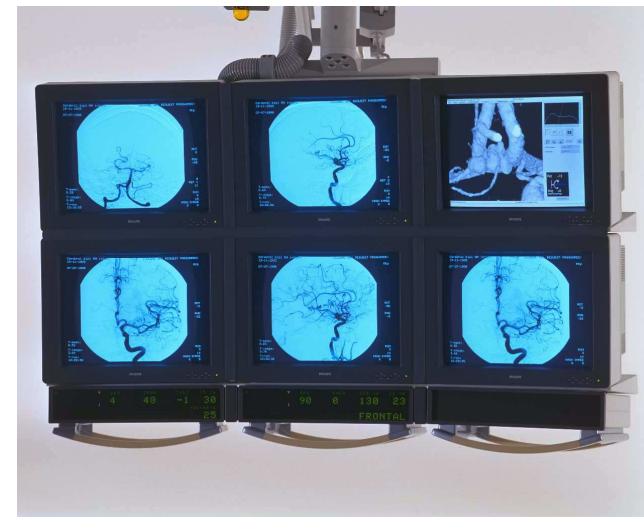
thorax

MRI image



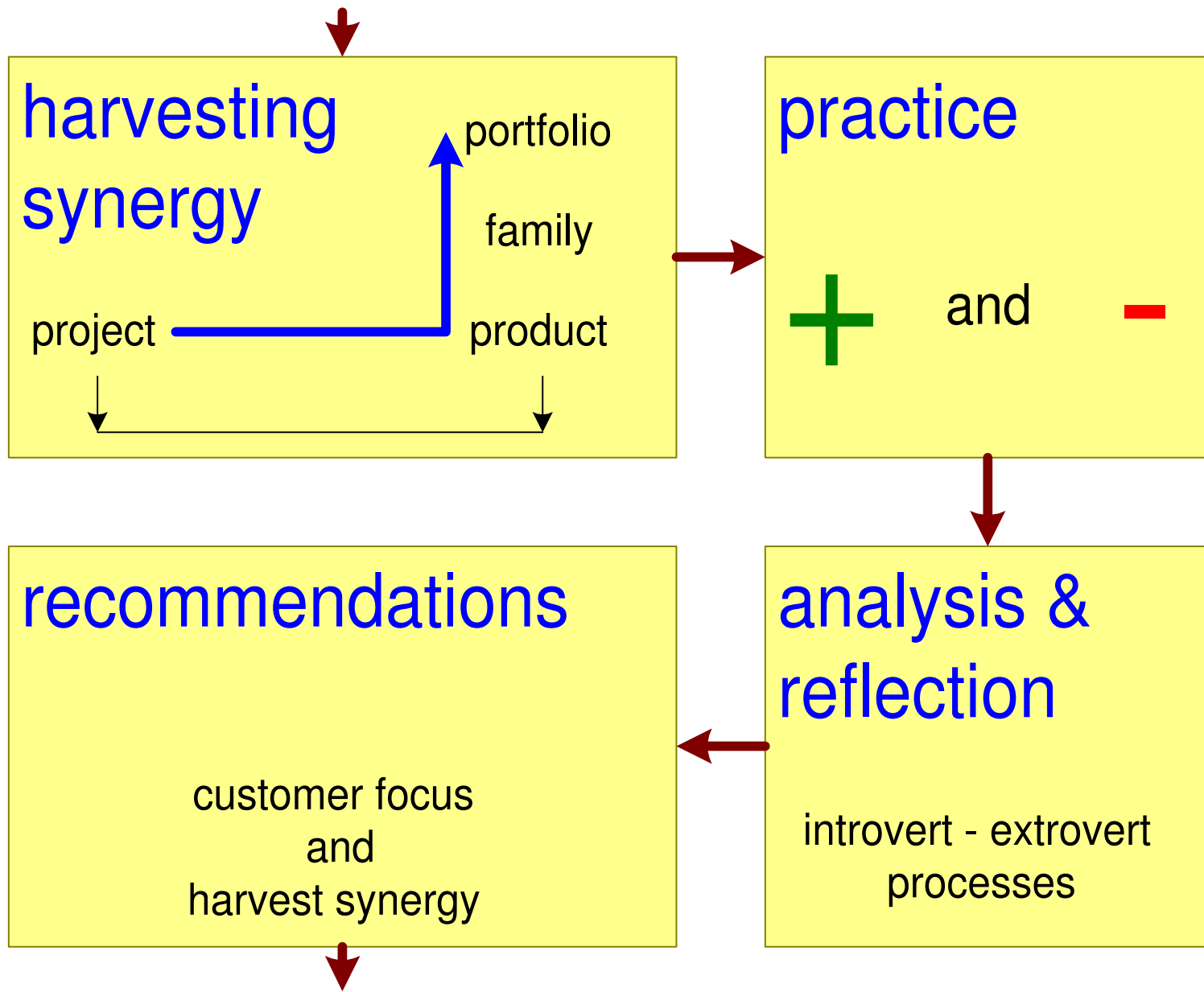
Cardio-Vascular  
X-ray

virtual  
endoscopy



all photos courtesy of Philips HealthCare

# Figure Of Contents™



# Projects versus Products

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project



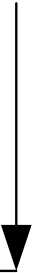
unique  
customer specific

*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

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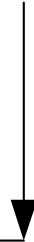
project



unique  
customer specific

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

product



catalogue  
generic

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

product



unique  
customer specific

catalogue  
generic

# Products versus Family

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product



catalogue  
customer generic  
application specific

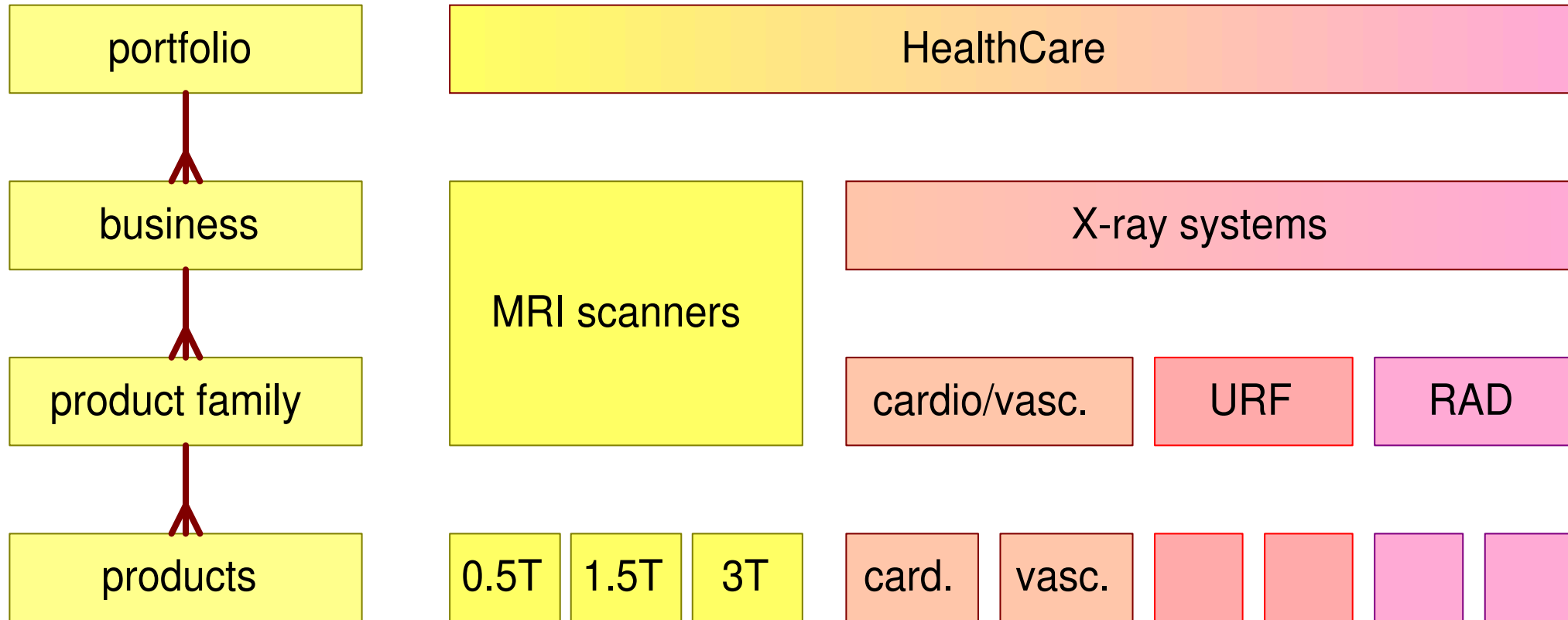
product  
family



generic superset  
common architecture

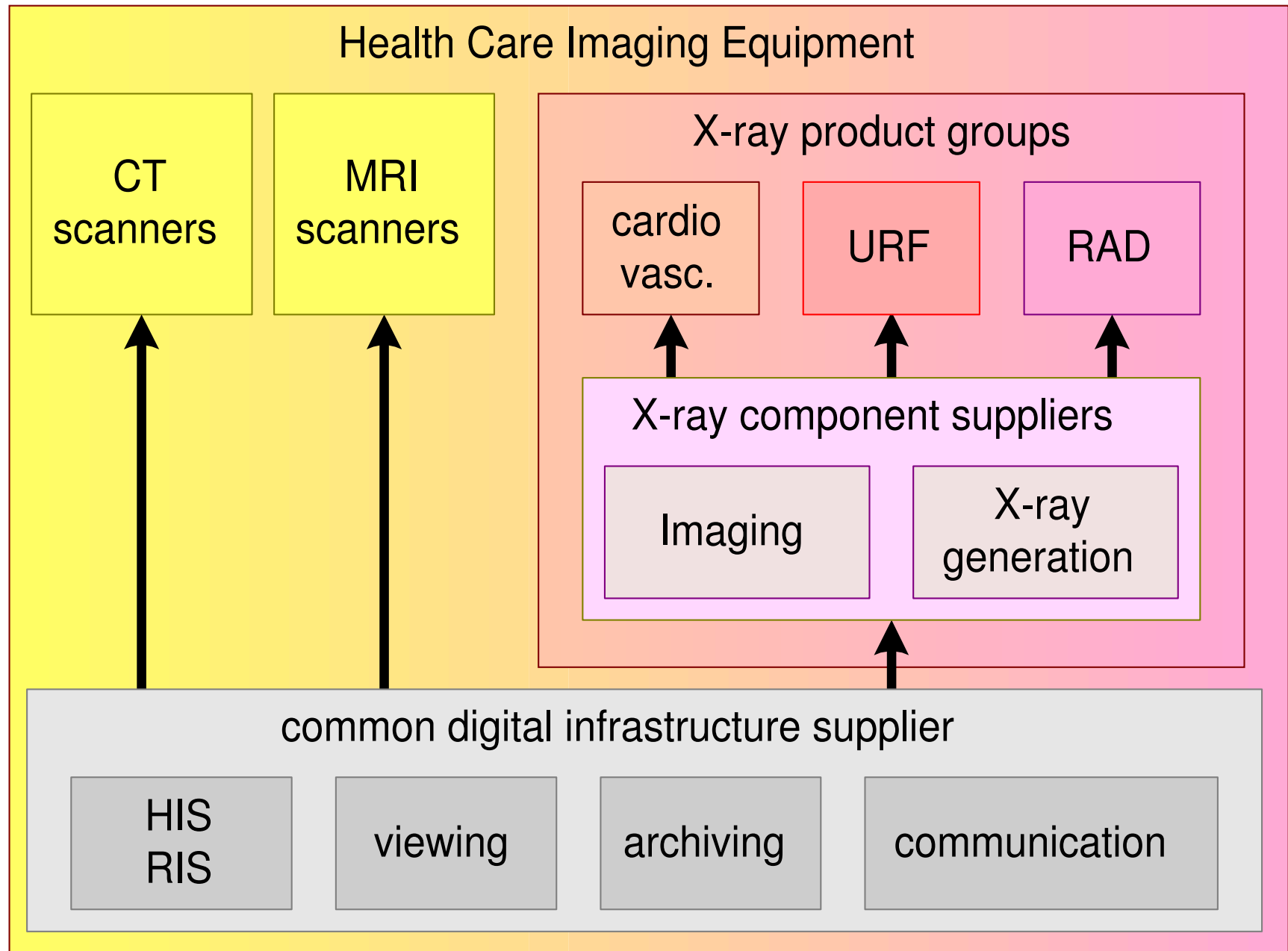
Cardio Vascular X-ray systems  
MRI scanners

# Many Hierarchical Layers

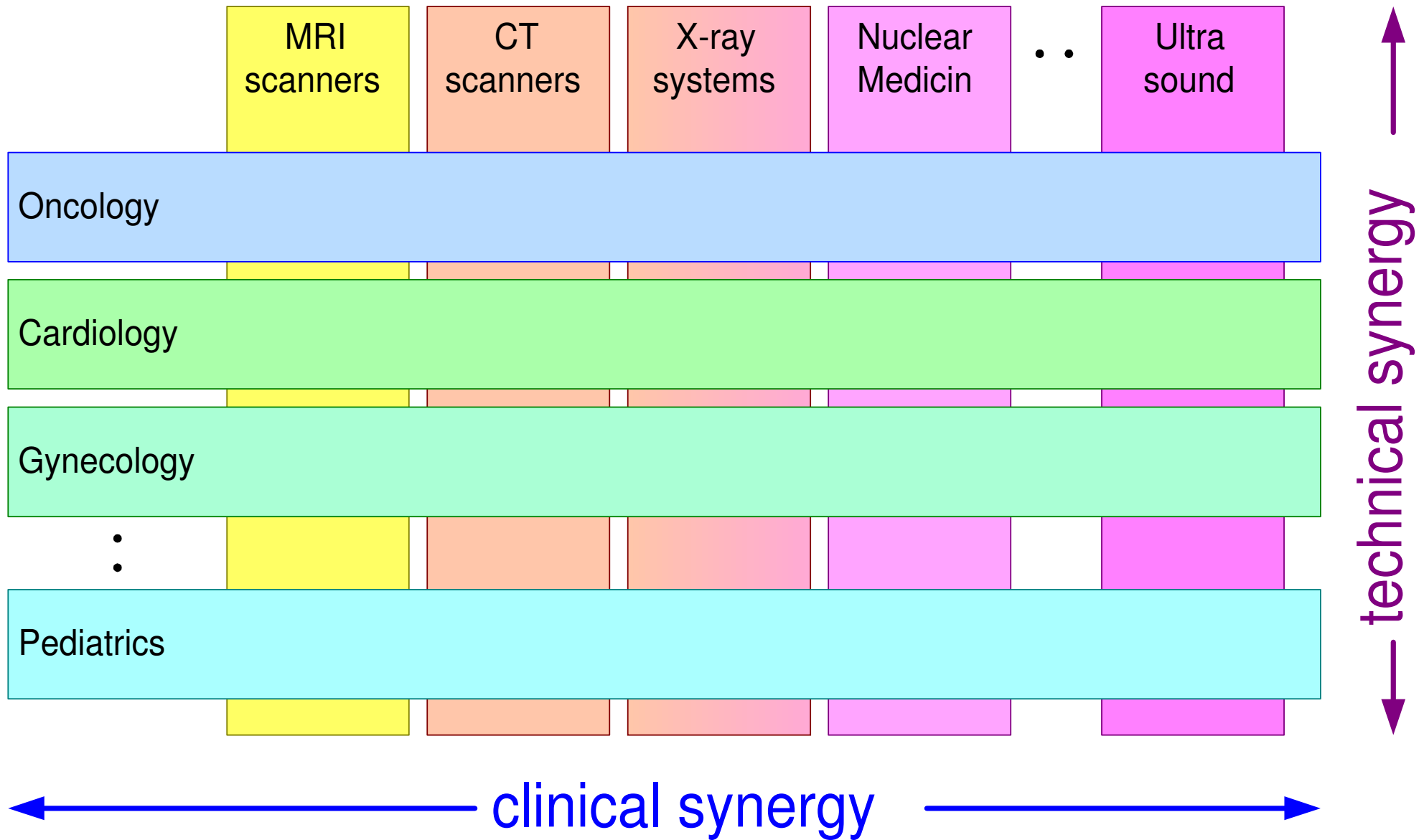




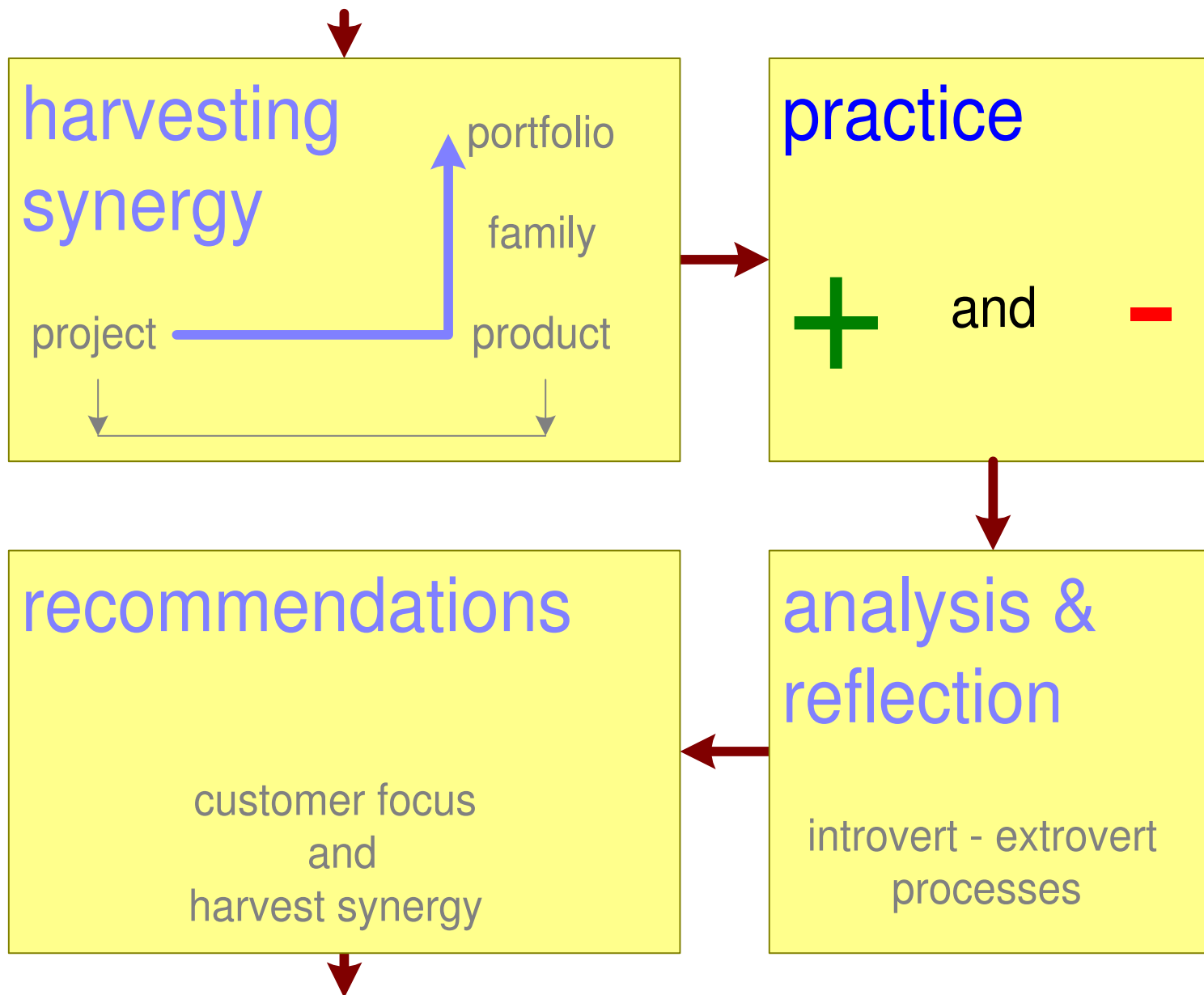
# Internal Supply Chain



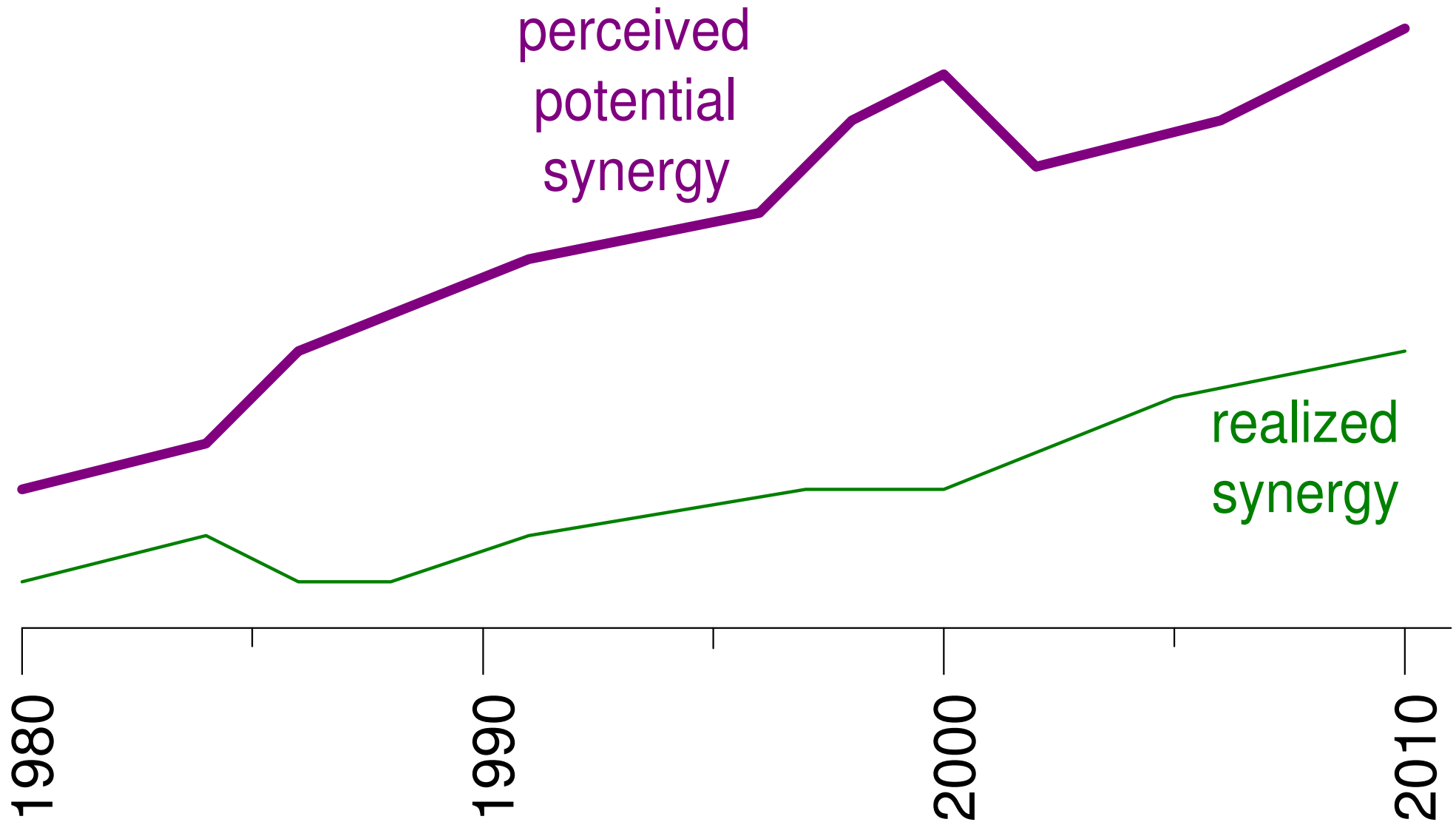
# Technical versus Clinical



# Practice



# Three Decades of Synergy Drive



## 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

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homogeneous domain

cath lab  
MRI  
television  
waferstepper

hardware dominated

car  
airplane  
shaver  
television

limited scope

audio codec  
compression library  
streaming library

# 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

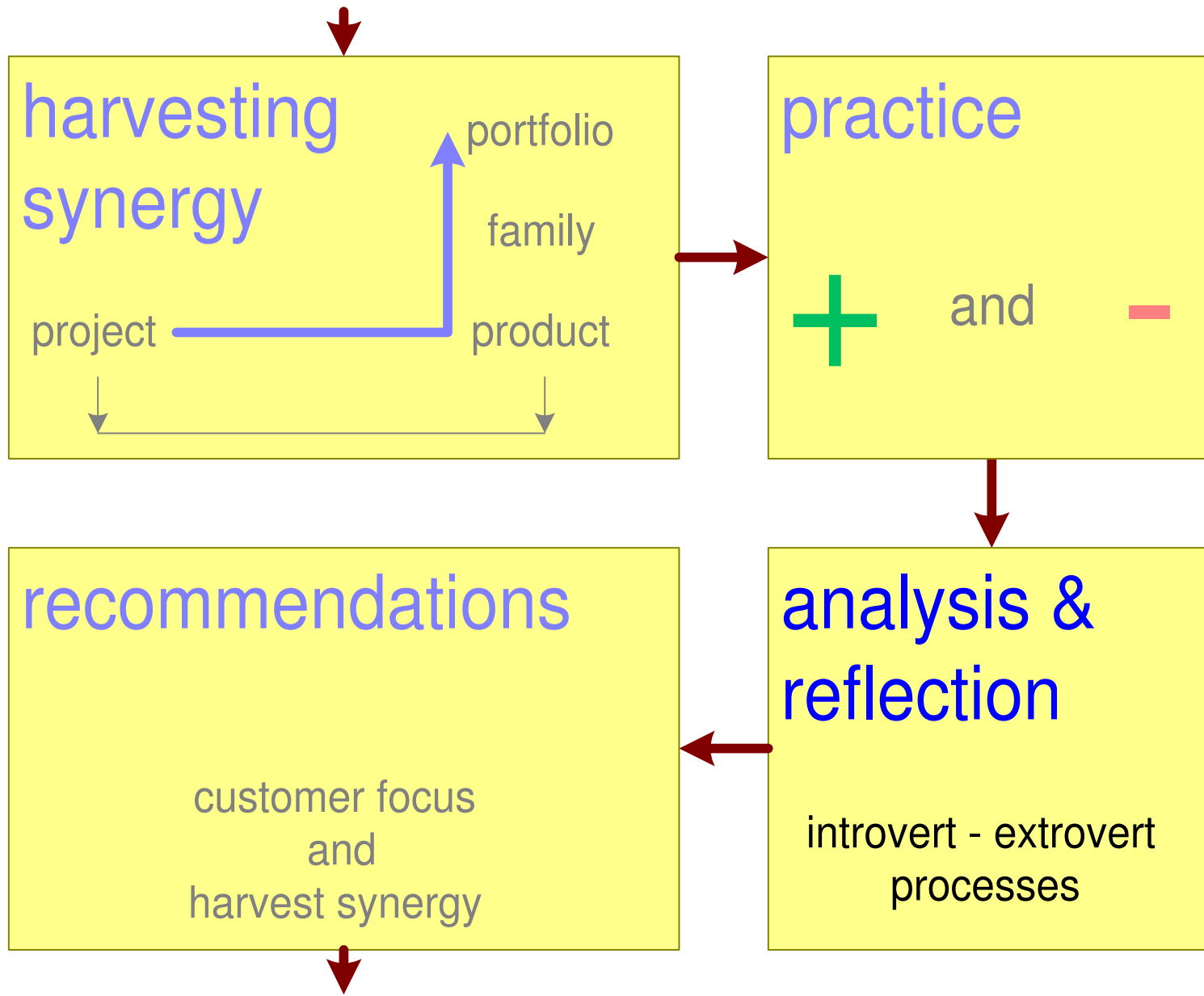
TV: LCD screens  
cath lab: image based acquisition control

software maintenance, configurations, integration, release

MRI: integration and test  
wafersteppers: number of configurations

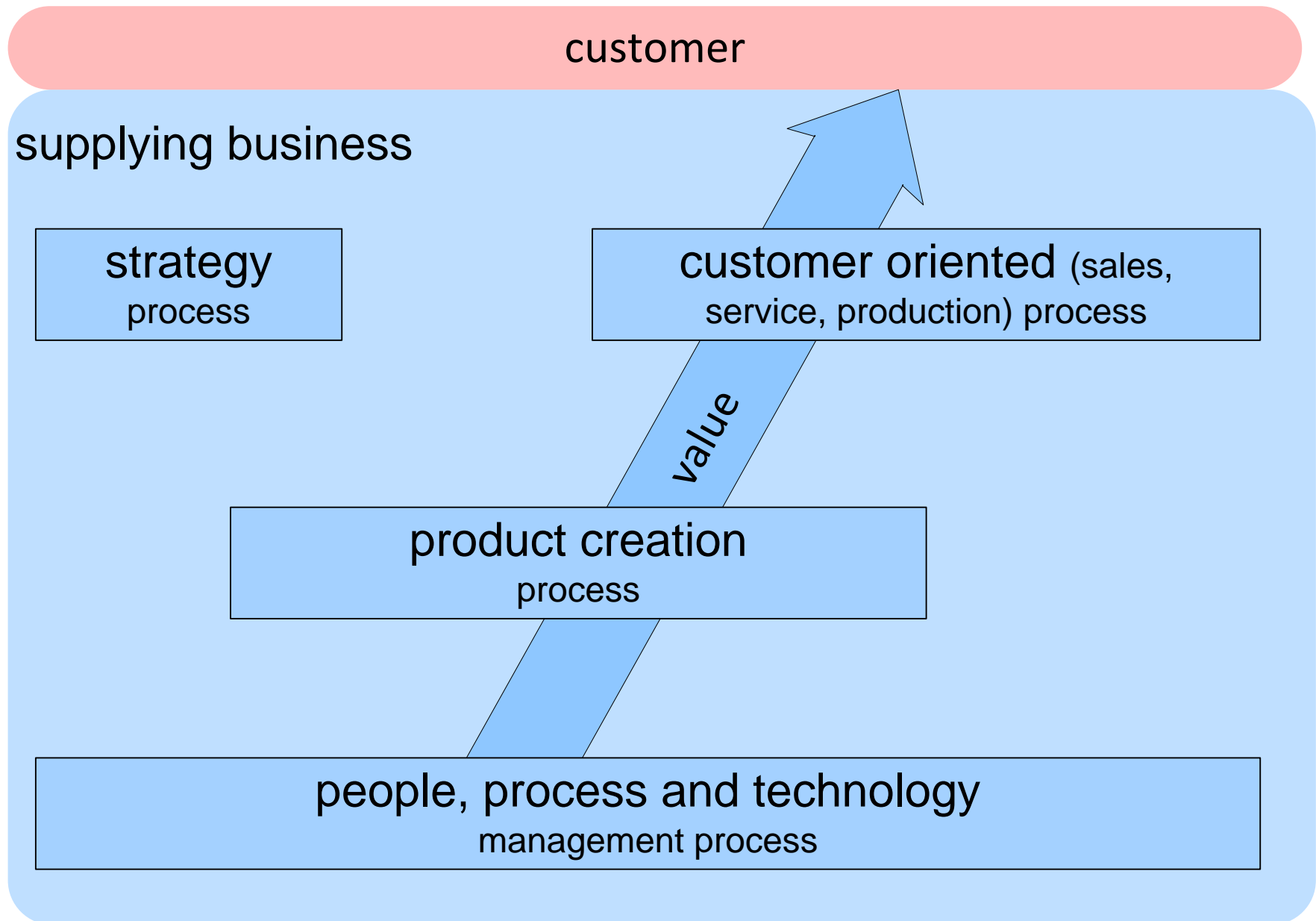
how to innovate?

# Analysis and Reflection

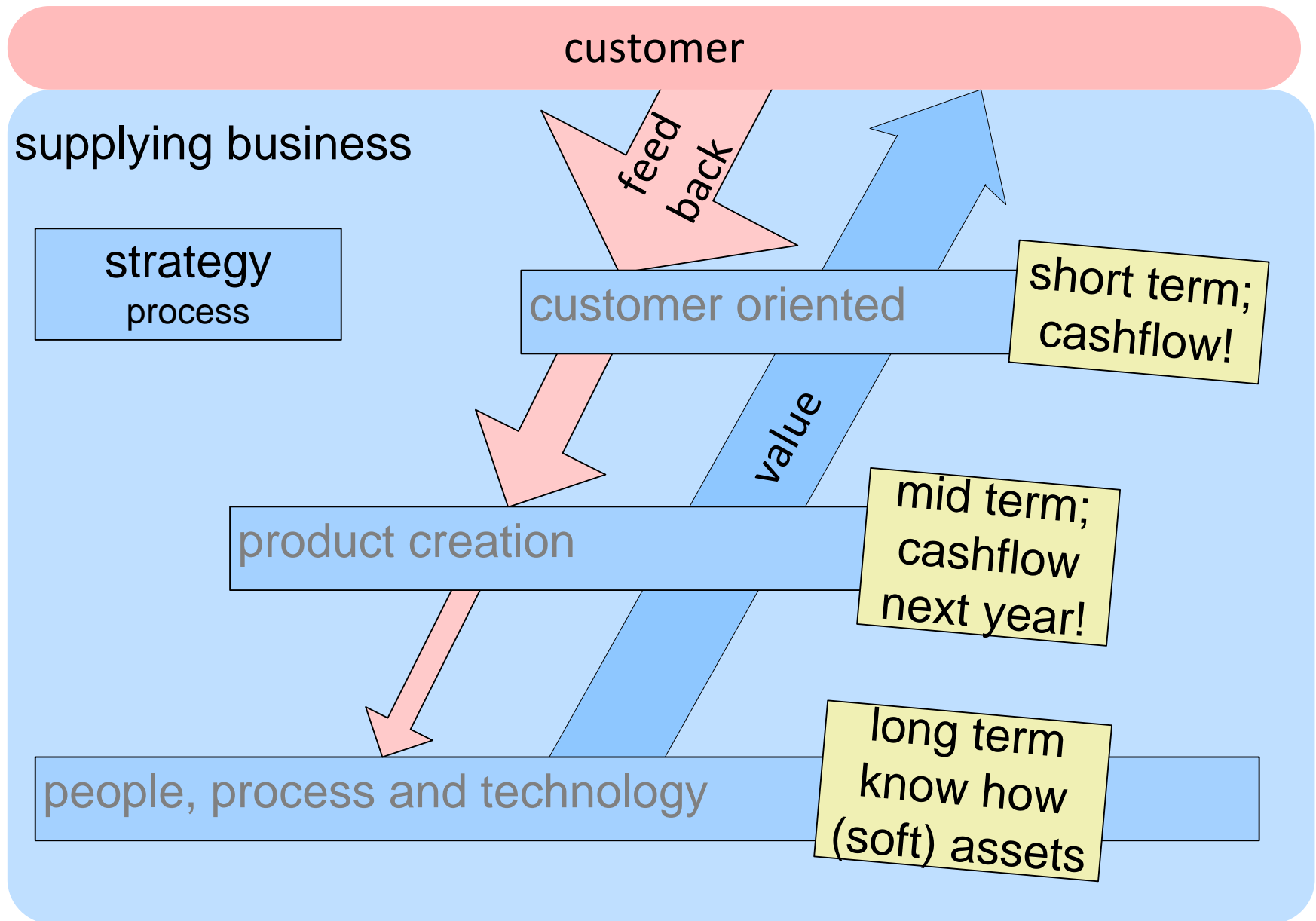




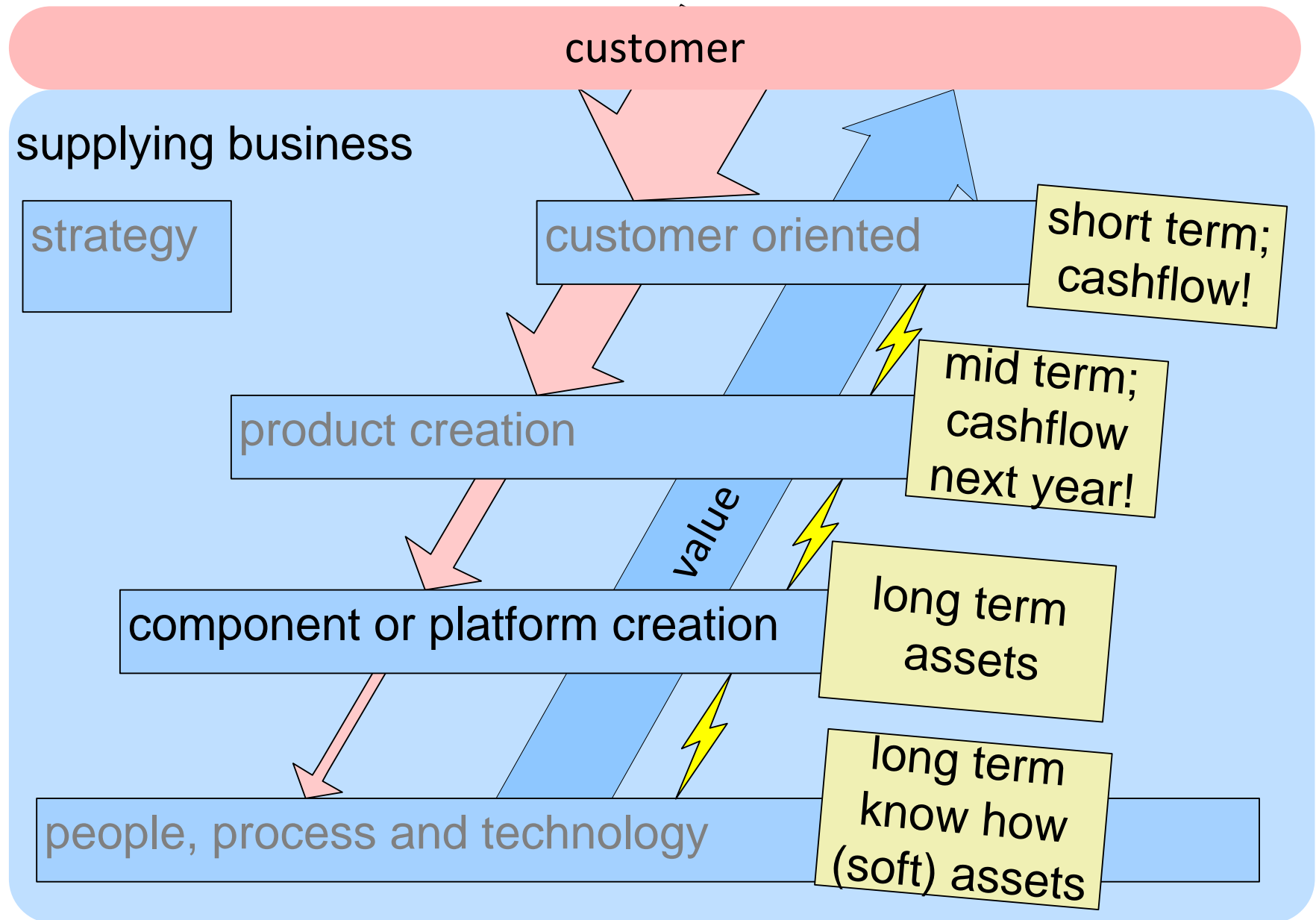
# Simplified process view



# Tension between processes



# Platform strategy adds one layer



# Sources of Failure in Generic Developments

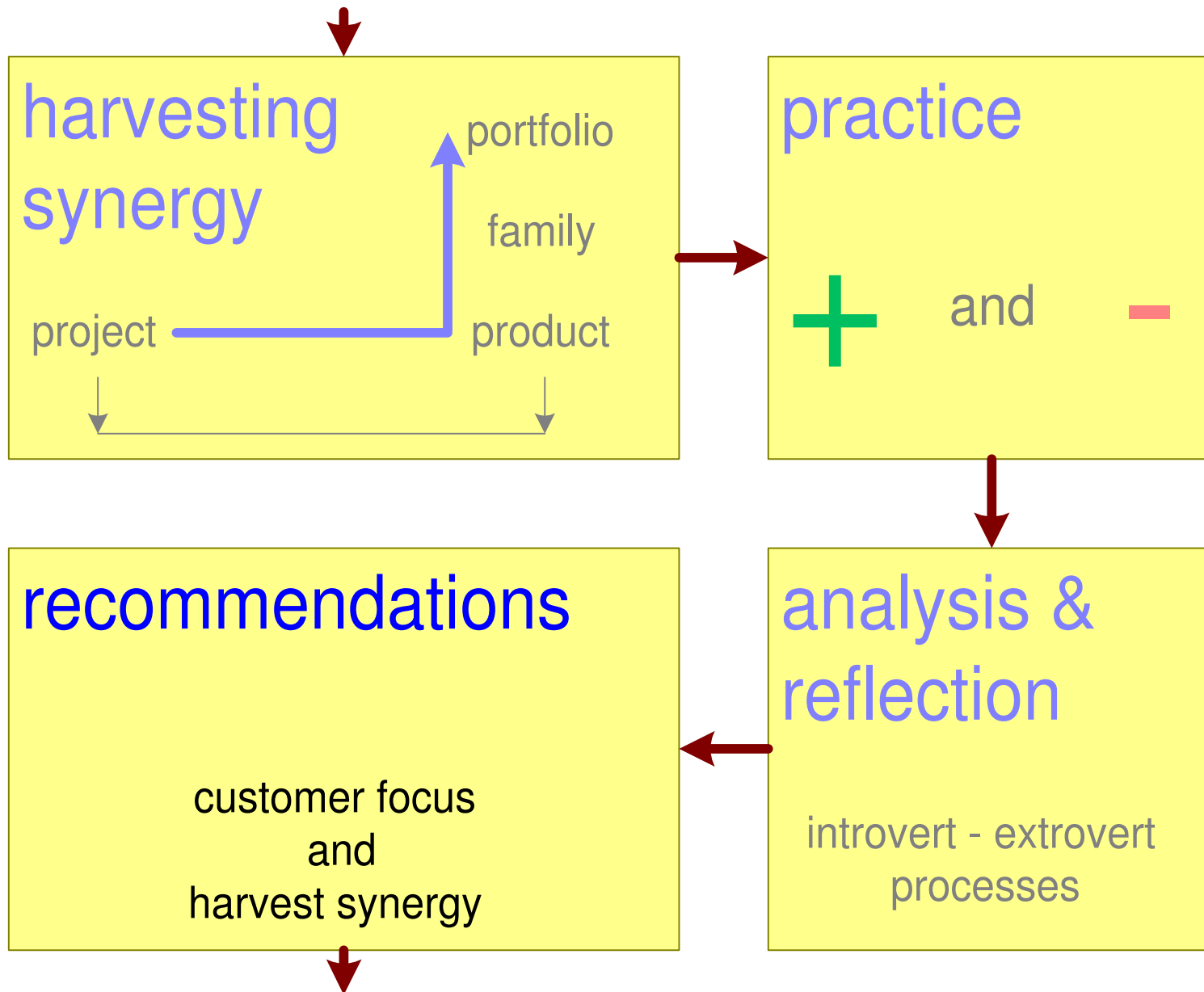
## *Technical*

- Too generic
- Innovation stops (stable interfaces)
- Vulnerability

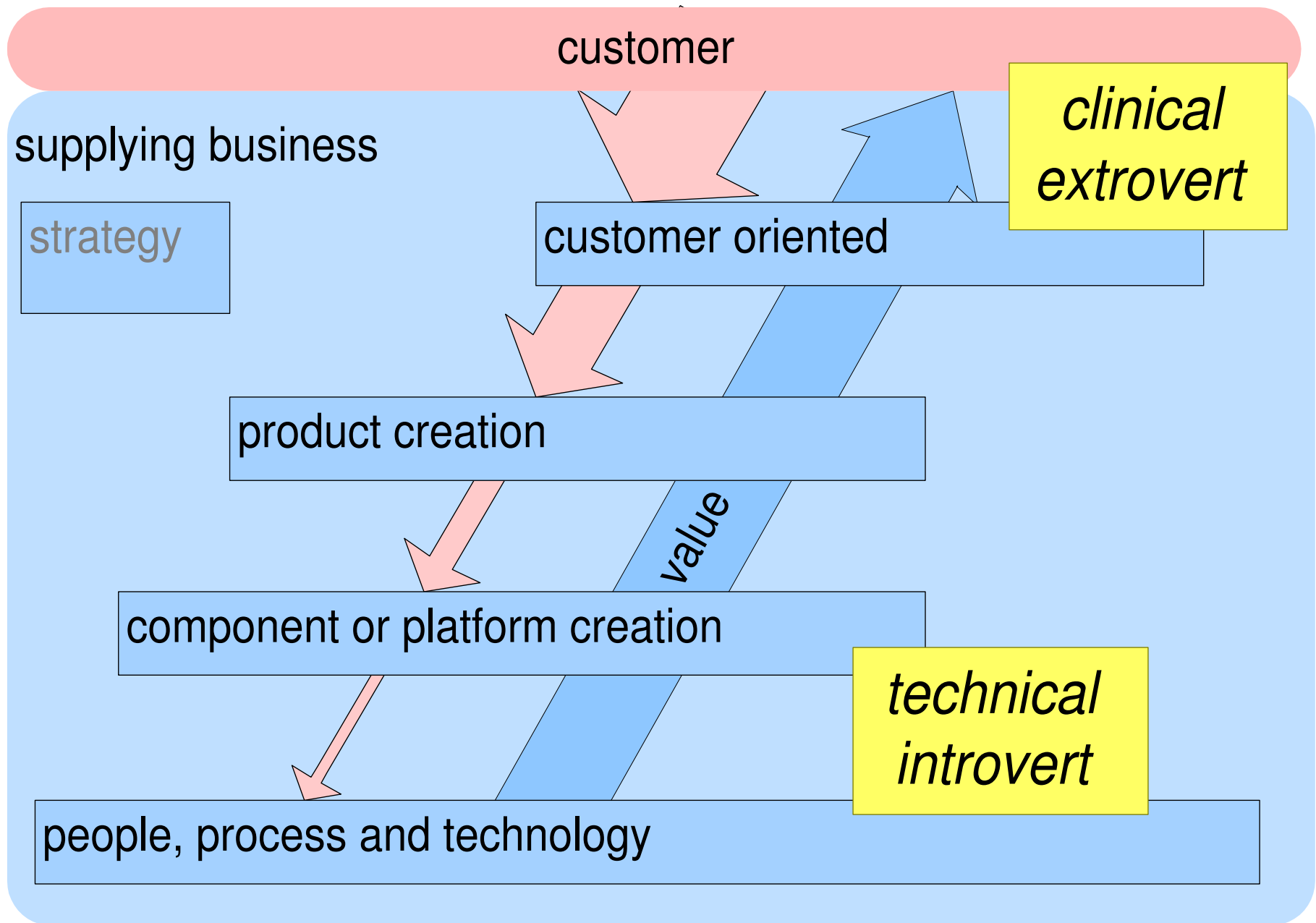
## *Process/People/Organization*

- Forced cooperation
- Time platform feature to market
- Unrealistic expectations
- Distance platform developer to customer
- No marketing ownership
- Bureaucratic process (no flexibility)
- New employees, knowledge dilution
- Underestimation of platform support
- Overstretching of product scope
- Nonmanagement, organizational scope increase
- Underestimation of integration
- Component/platform determines business policy
- Subcritical investment

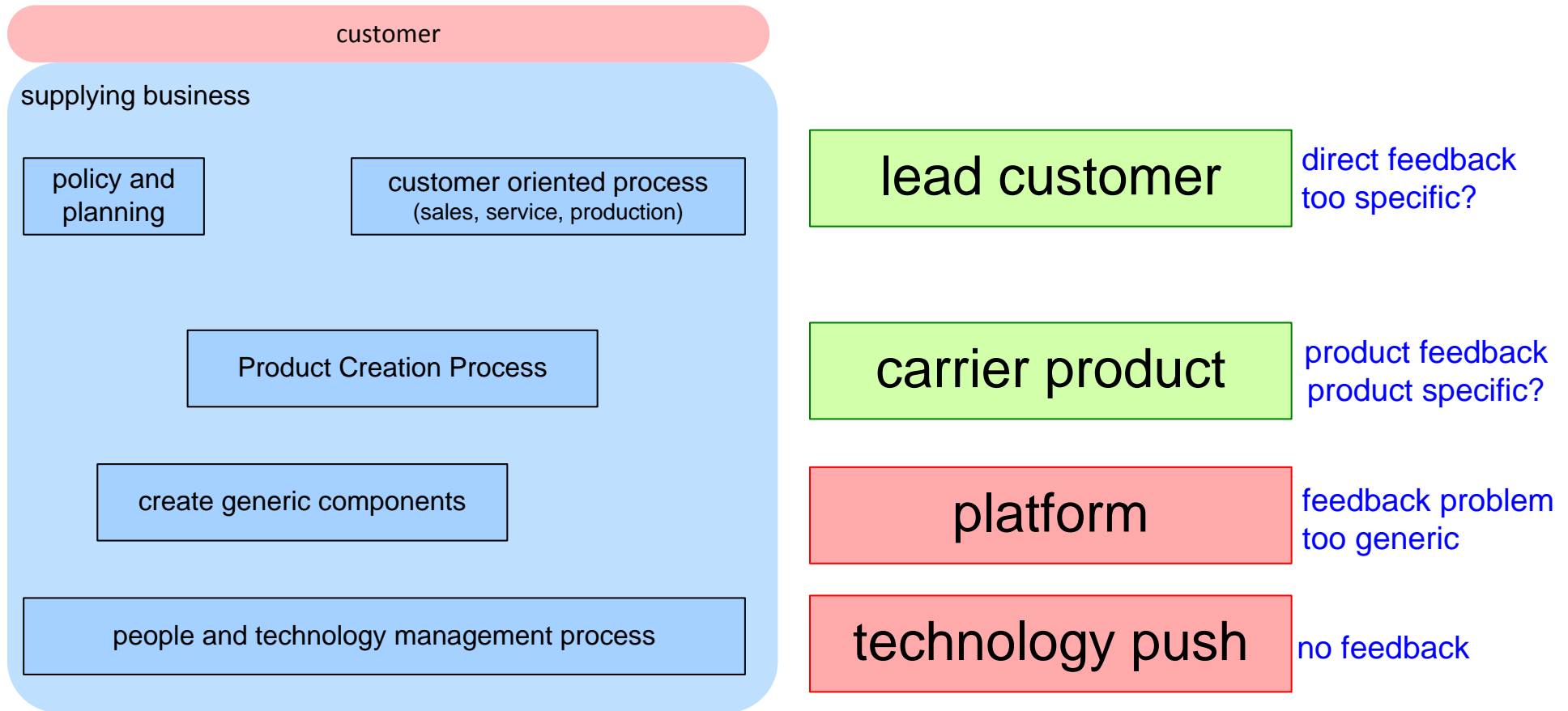
# Recommendations



# Beware of Introvert Bias



# Models for Generic Development



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).