Meta-Process

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Topics

1. Process Models

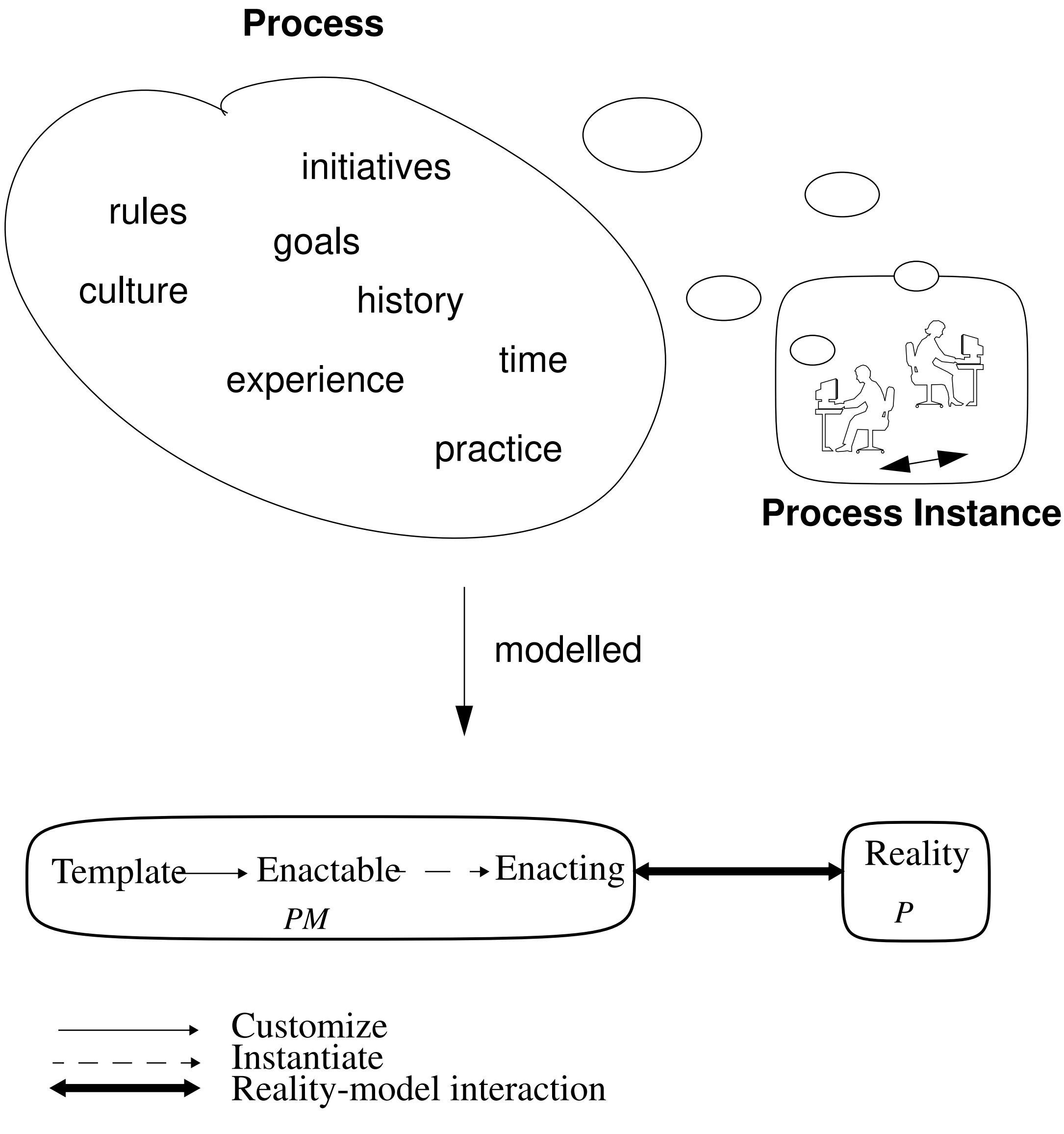
2. Changing PMs

3. Promoter Reference Model

4. Empirical verification

5. Implementation verification

Process, Process Instance, Process Models



Inconsistencies arise if modelling
is inadequate or out of date

Reasons for Change

Improvement

Faults in the process

Missing steps

Assumptions have become invalid

Dynamics of the environment
(politics, people, technologies)

If generic, will need customizing

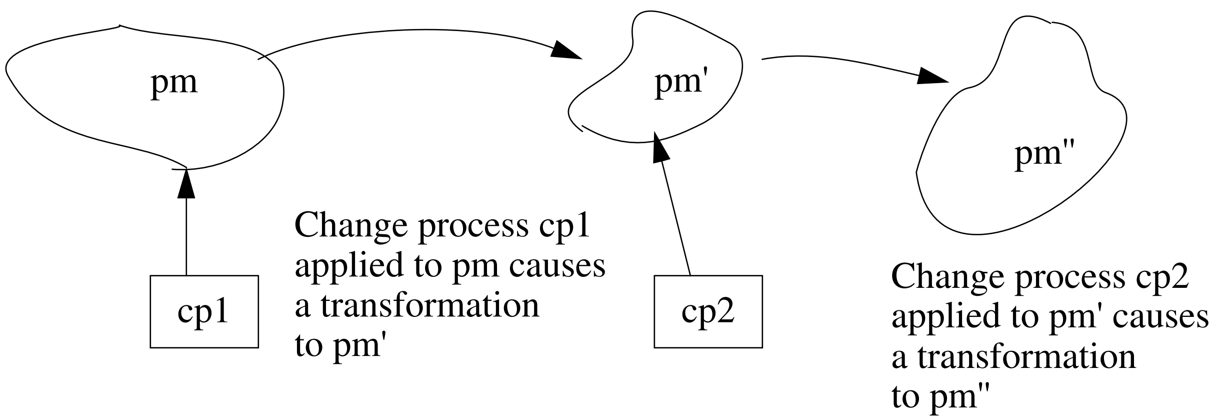
May need to be refined

Corrective/perfective/adaptive

Refinement of definition

We do not want to invent entirely new change processes for each

Change Process



What have cp1 and cp2 in common?

Meta-Process: a process to change a process

: a process to manage inconsistencies

MP and Quality Improvement

Instance focused:

- Capability Maturity Method
- SPICE
- AMI

Model focused:

- PRISM
- Quality Improvement Paradigm
- Process Life Cycle

Requirements

for a Meta-Process

Simplicity

Genericity

Extensibility

Flexibility

Robustness

Interface
Management

Integration

Requirements (cont)

for a Meta-Process

User Support

Economic benefit

Strategy

Implementable

Enactable

Adaptable

Testing domain

Feedback mechanism

Change mechanism

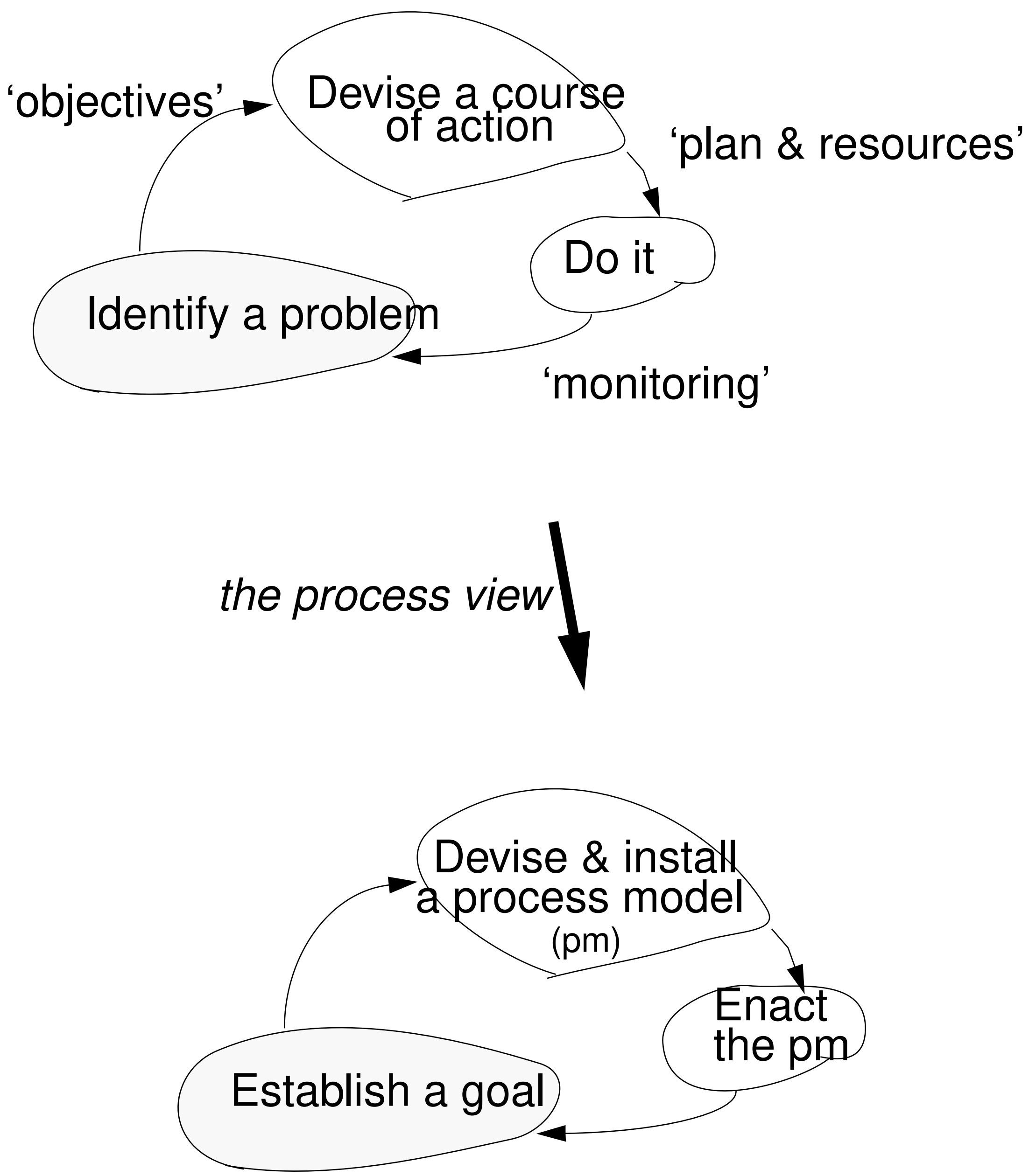
The Core Issue

"Given a *desired* state of affairs and an *existing* state of affairs, the task of the adaptive organism is to find the difference between these two states and then to find the correlating process that will erase the difference"

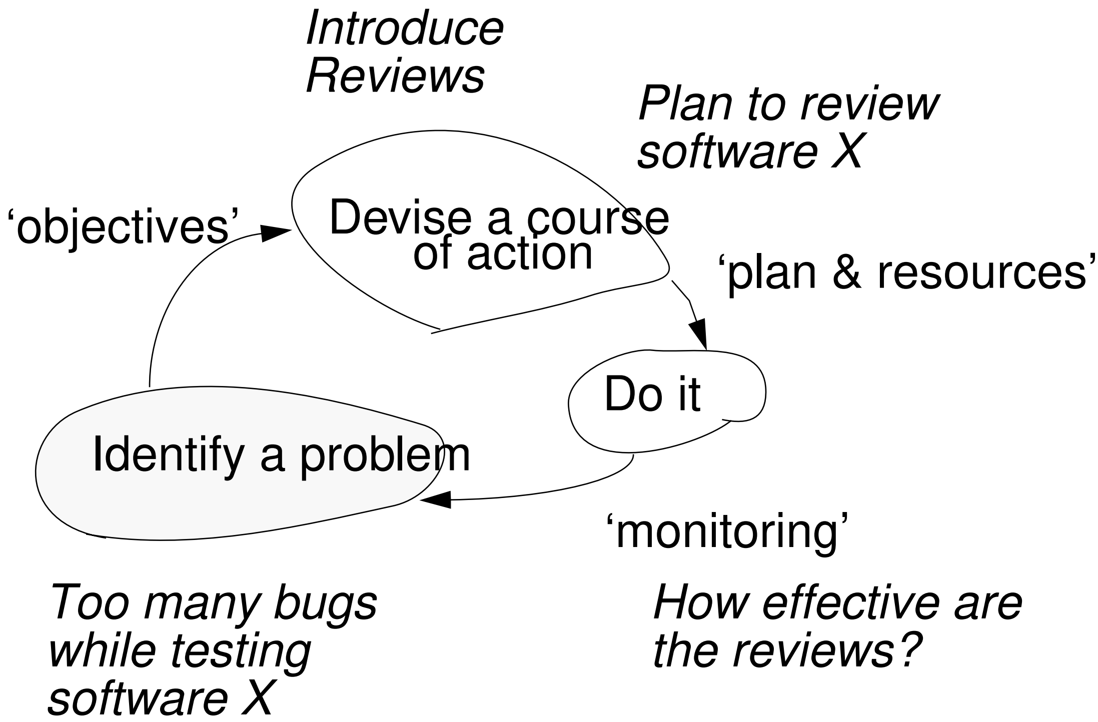
Difference = inconsistency = 'need' or 'opportunity'

Herbert Simon 'Sciences of the Artificial' MIT Press 1965

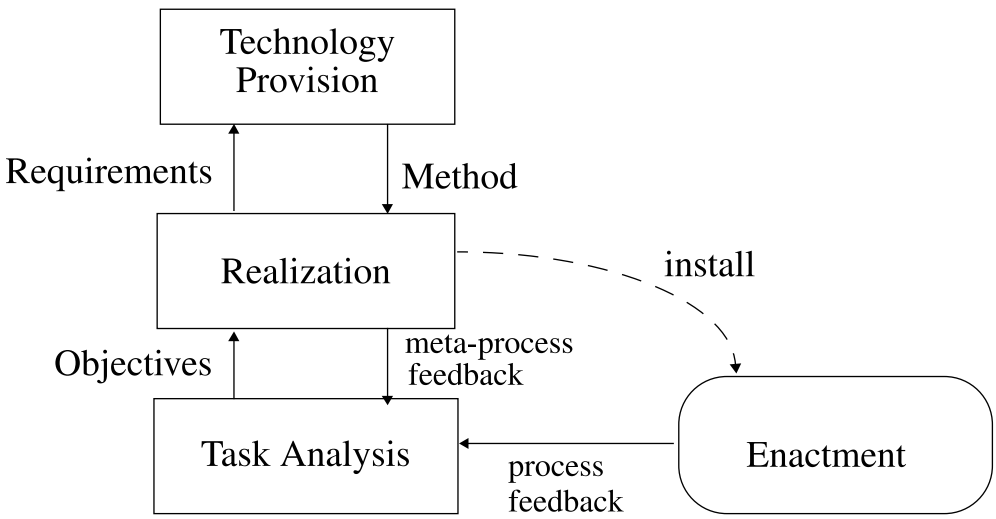
The Problem-Solving Process



Example

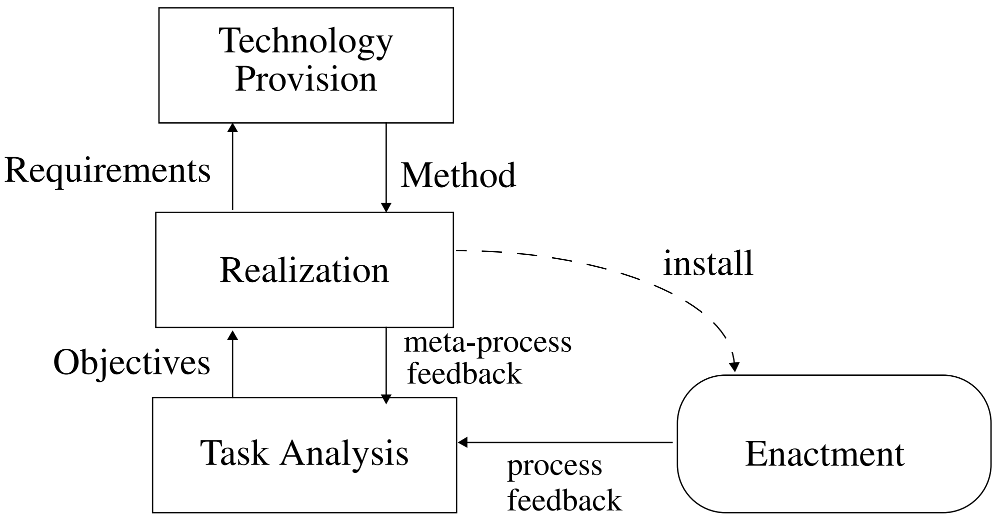

Introduce
Reviews
Plan to review
software X
'objectives'
Devise a course
of action
'plan & resources'
Do it
Identify a problem
'monitoring'
Too many bugs
while testing
software X
How effective are
the reviews?

PROMOTER Reference Model



An Application of PRM

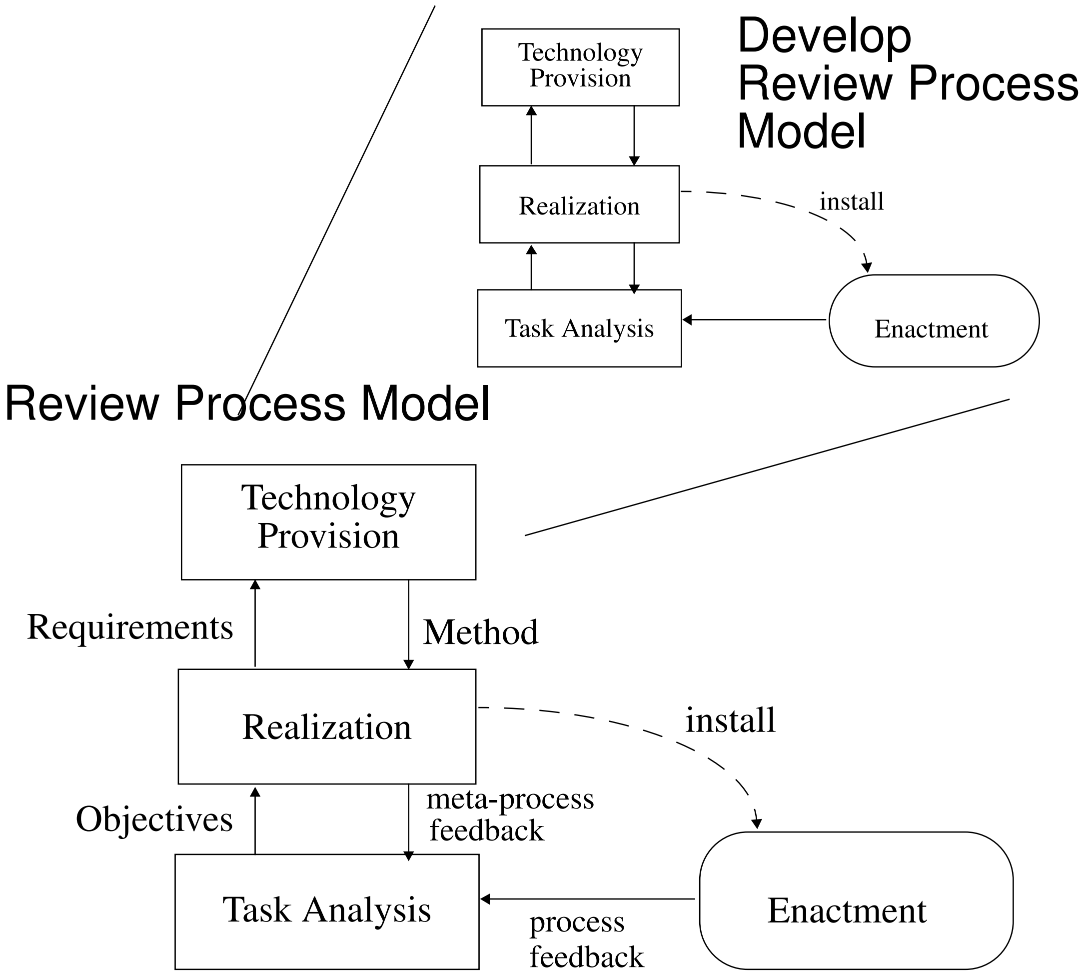
Review Process Model



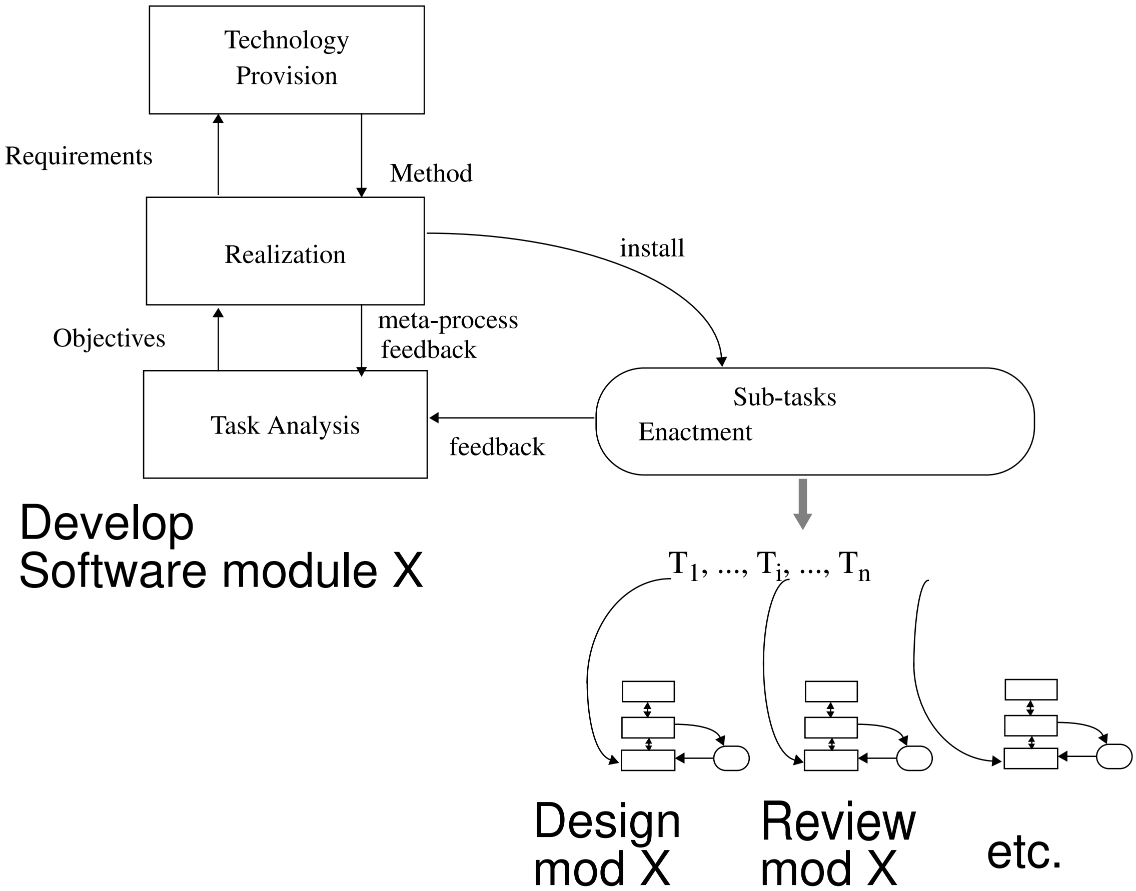
Review
Software module X

Support for
Review Process
of module X

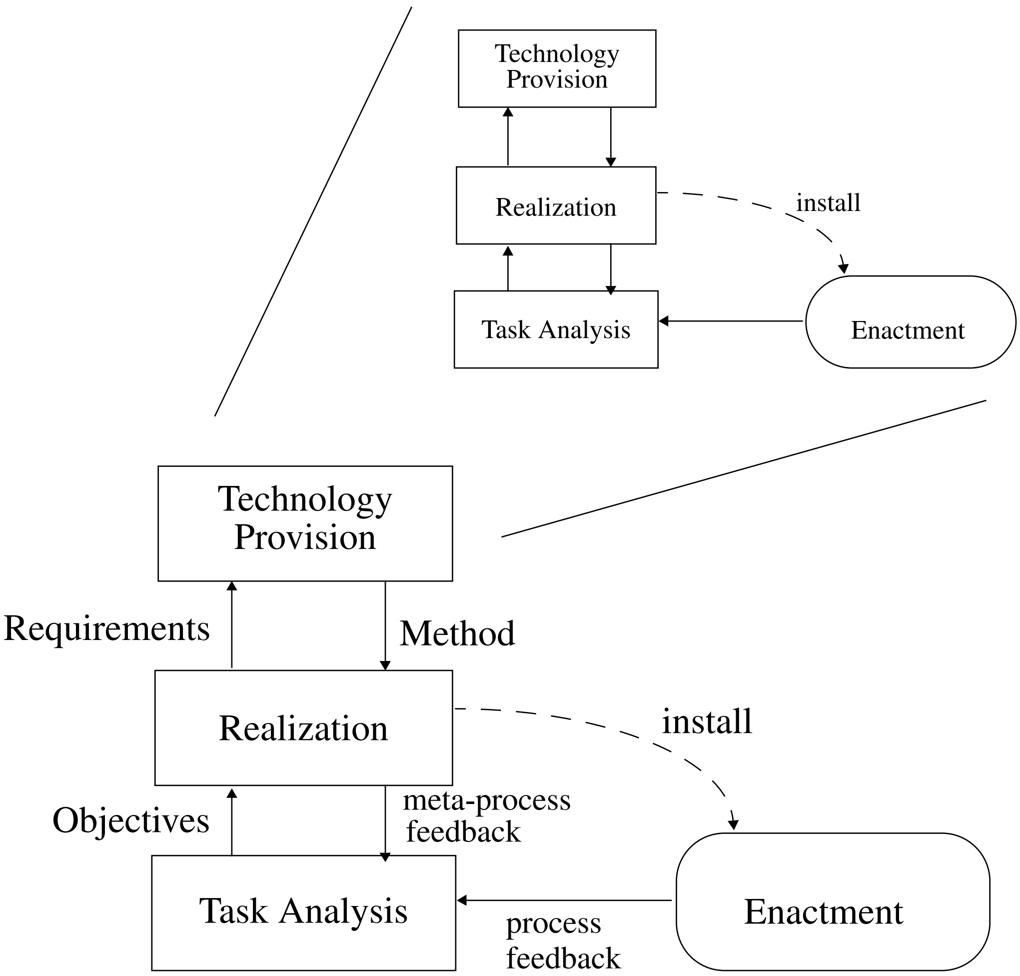
Where does Process Model come from?



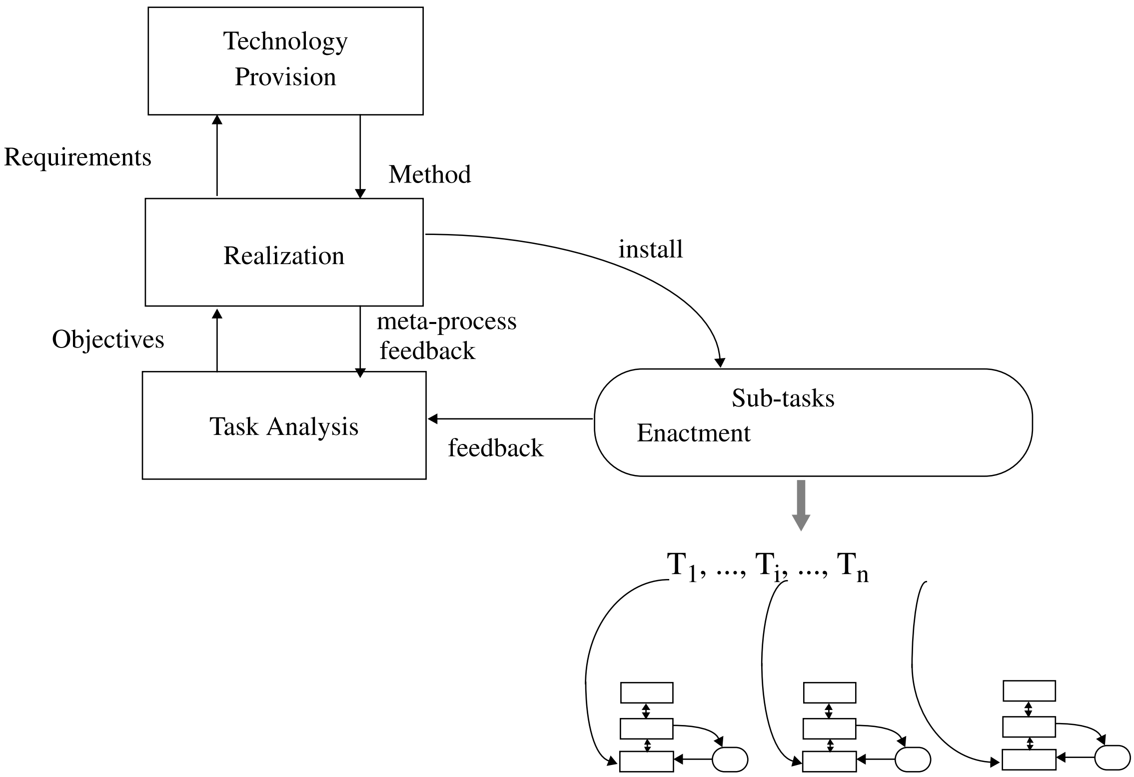
What about large problems?



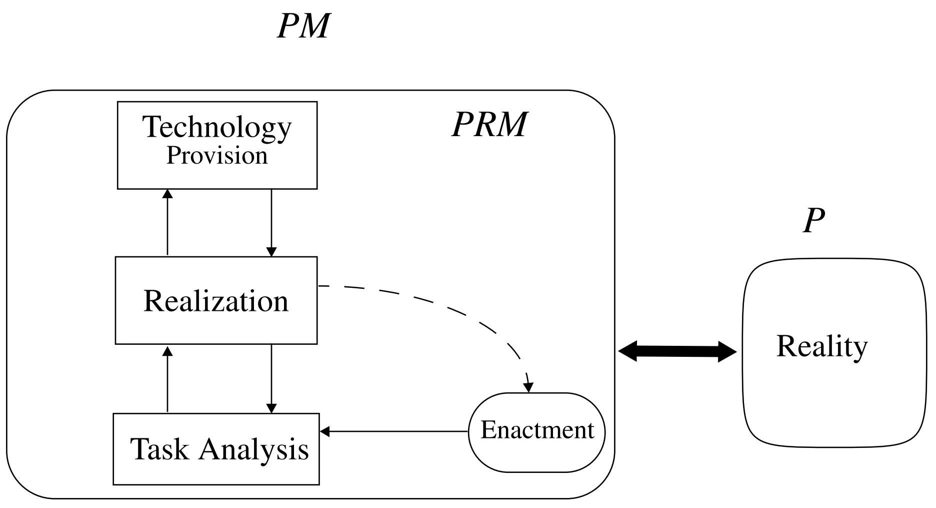
Dealing with Complex Methods

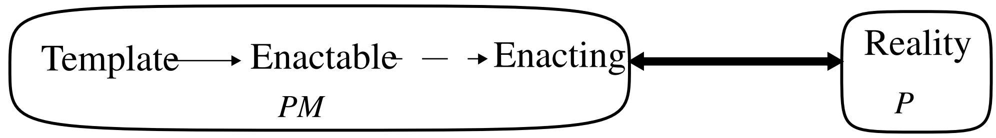


Dealing with Complex Problems

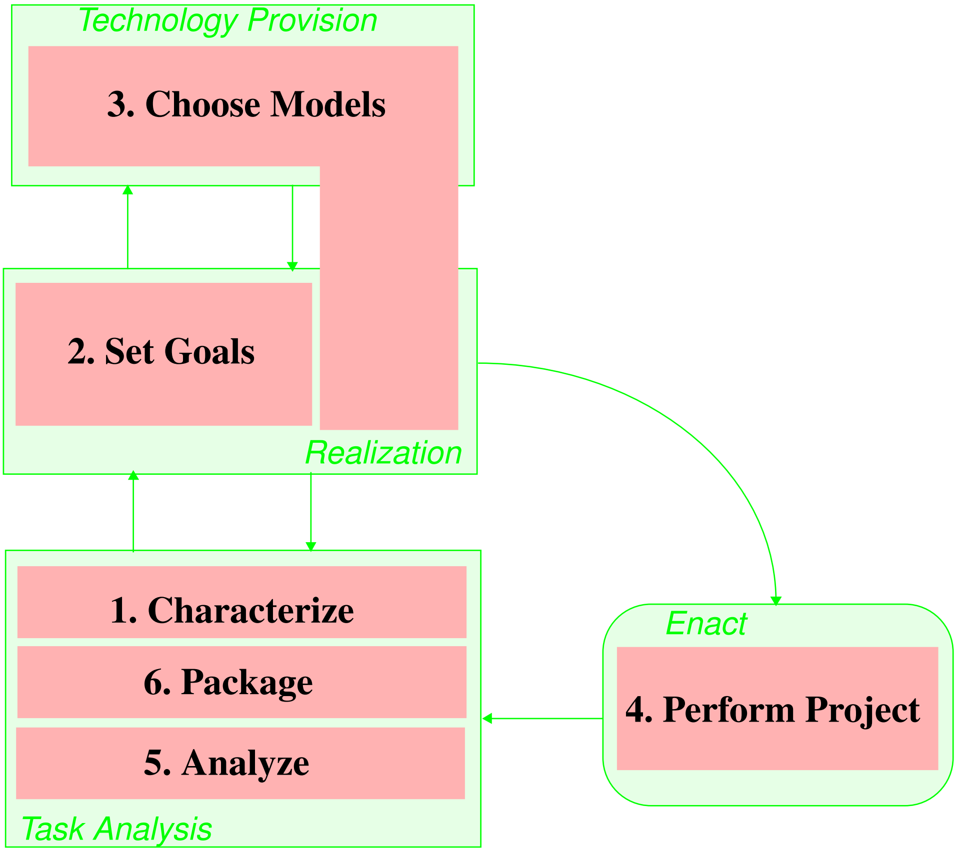


Combined models

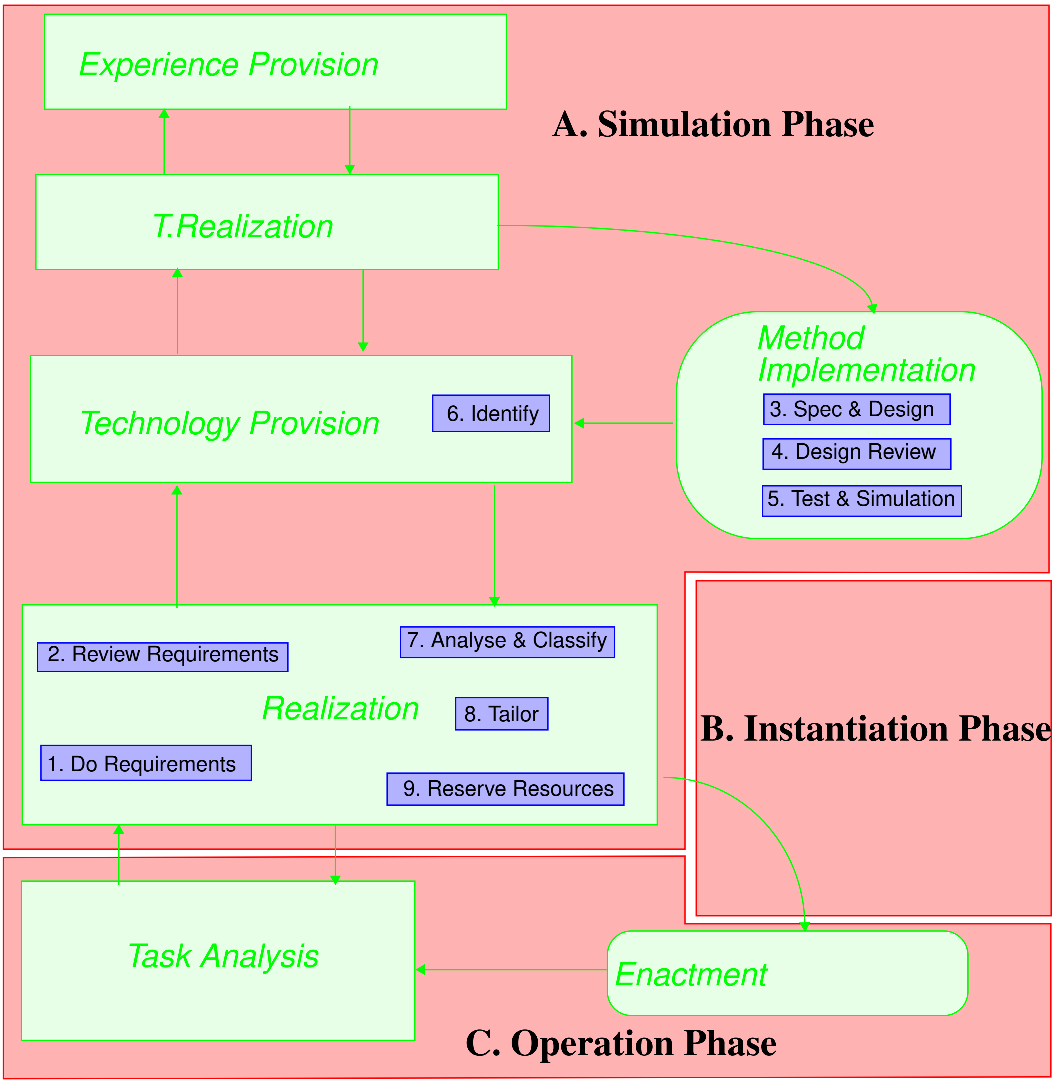




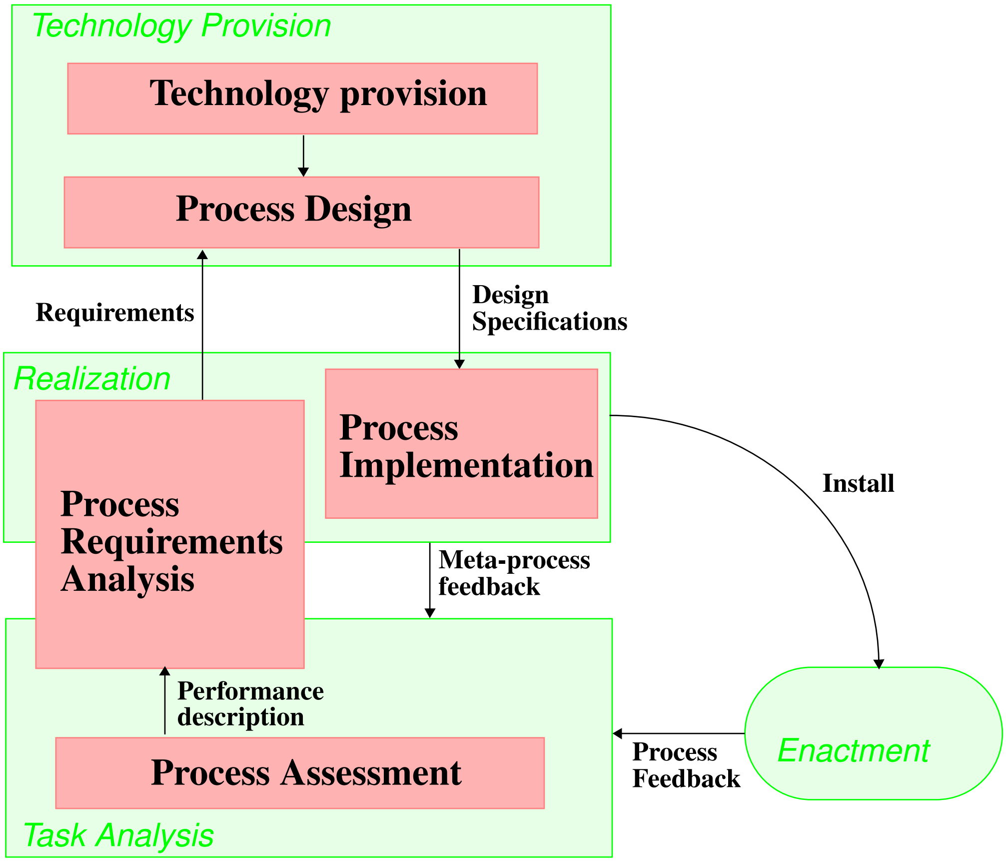
Empirical Validation: QIP



Empirical Validation: PRISM

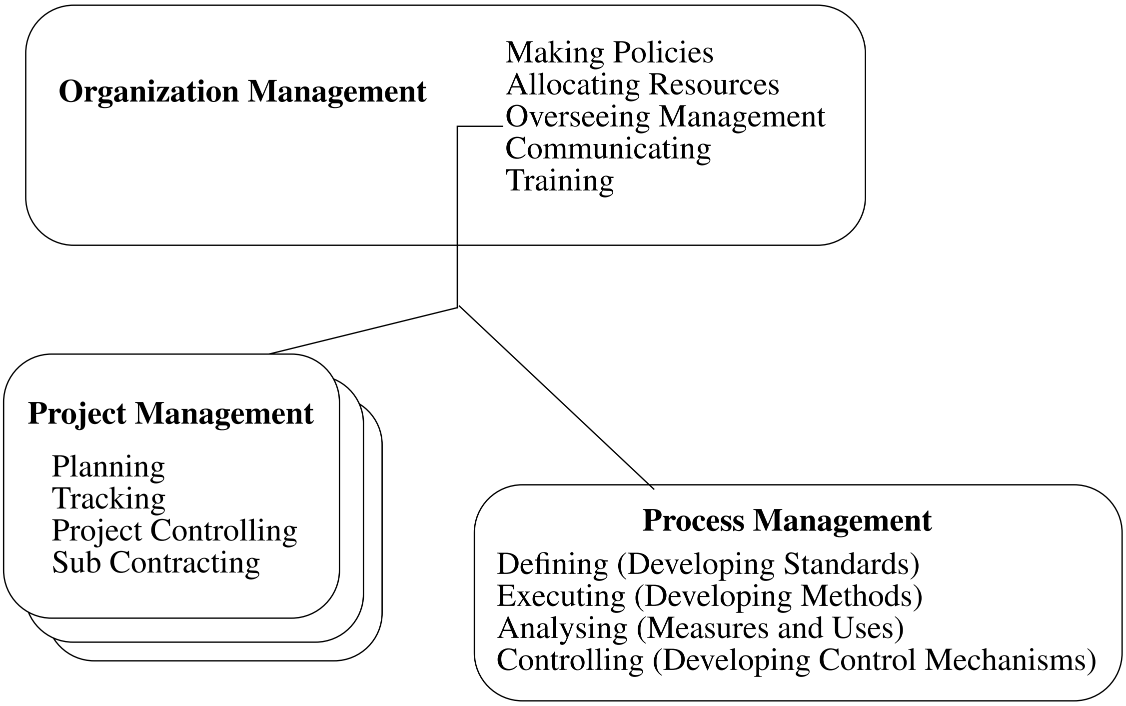


Empirical Validation: Process Life-Cycle



Validation by Implementation as CMM

(empirical + implmentation)



Humphrey's Process Maturity Framework

Objective-method decomposition

Domain of Organization Management | Domain of Project and Process Management

Produce quality profitable software

- Making Policies
- Allocating Resources
- *Overseeing Management*
  - Developing Software
  - *Improving Processes*
    - (Assessing level)
    - *Defining*
      - *Developing OSSP*
      - *Maintaining OSSP*
    - Executing
    - Analysing
    - Controlling
- Communications
- Training

*OSSP: Organization's Standard Software Process
Italics: Objectives and Methods illustrated

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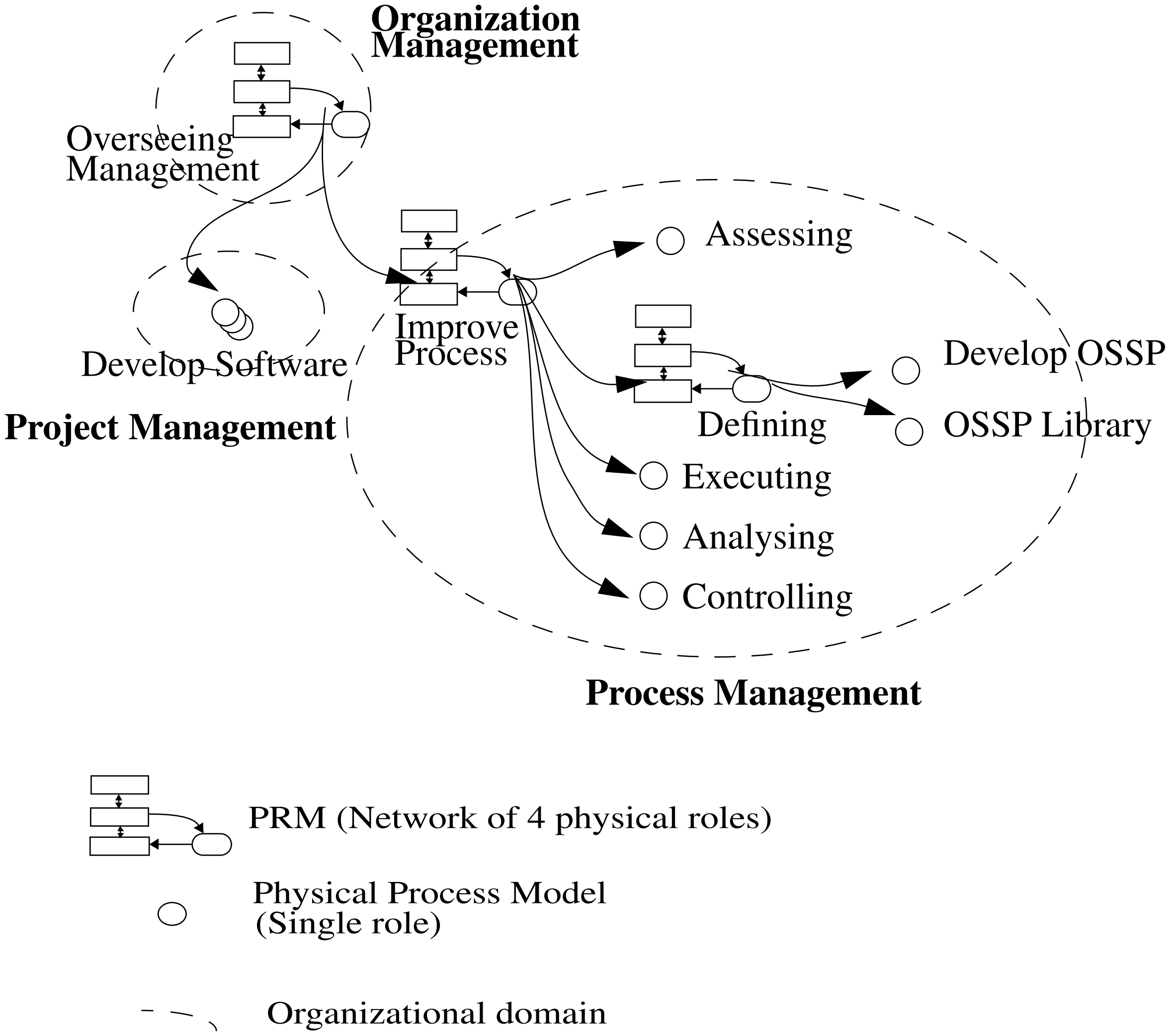
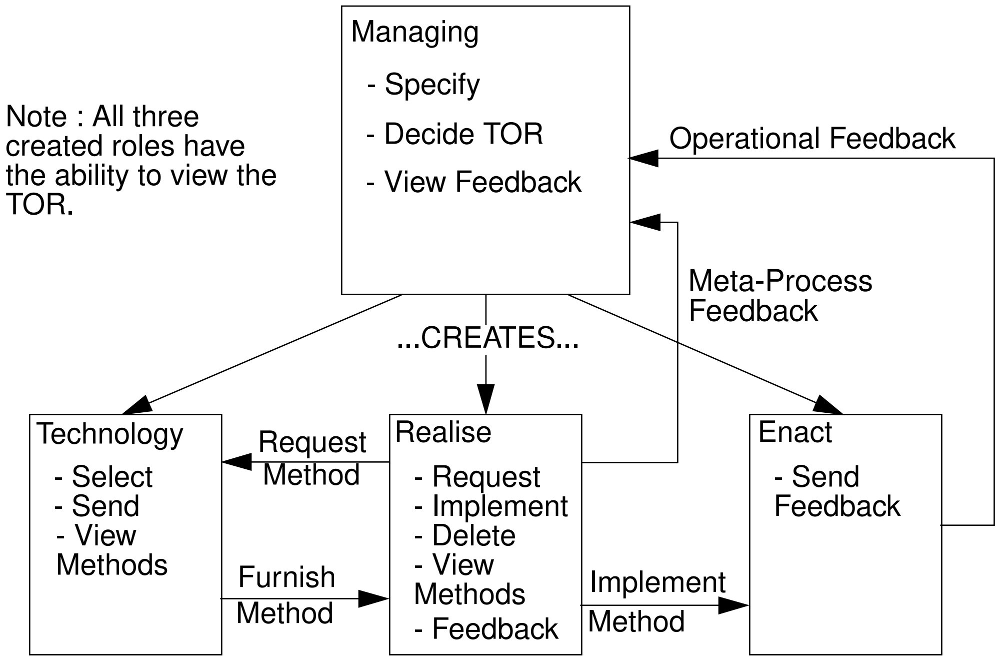
Implementation



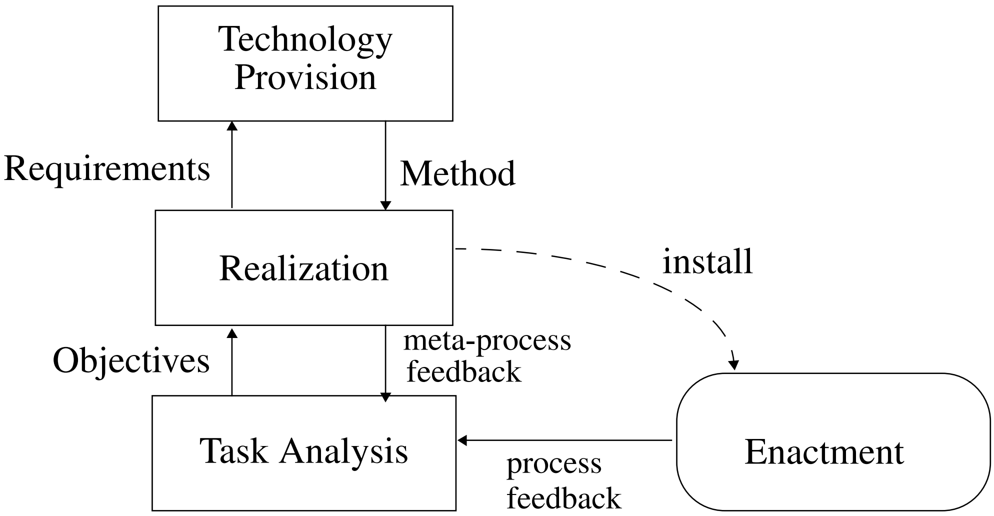
An Implementation of PRM



PRM Example - simple Banking

Technology

Banking Models



Make money
by Managing money

MdManaging

Running Bank Accounts
version 1

version 2

Simple Branch Mg

simBank example (1)

MdManaging role in simBank

This role | About P2E | About SimpleBanking

◇ Re–initialize this page

◈ **Prepare Terms of Reference**

Send

System Message: Terms of Reference created. Other P2E roles are now established. Users can pick them up via the Free End Manager.

simBank example (2)

MdManaging role in simBank

This role | About P2E | About SimpleBanking

- ◇ Re–initialize this page
- ◇ **Show the Simple Banking Report**
- ◈ **Prepare Terms of Reference**
- ◇ **Reset the model**
- ◇ **Kill this P2E process**

Send

simBank example (3)

Technology role in simBank

This role | About P2E | About SimpleBanking

simBank – 1
simBank – 2

Methods available : in this role

Select from one of the options

**Select the method and version
suitable for the Terms of Reference from MdManaging.**

articular example, the code for version 2 is in fact subclassed from the classes of version 1 therefore version 1 must be selected and installed before version2.

simBank example (4)

Realizing role in simBank

This role | About P2E | About SimpleBanking

Applying changes to individual roles

**ose a target role instance then a class definition (of simBank – version 1) which t
instance is to follow. All instances with the same role name will be changed.**

If there are no instances to change, just select the class definition 'None'.

Special instructions:Just select None

RoleInstance: Doing
Realizing
Technology
ClassDef: None

Roles changed so far:

Send

Meta-Process Implementations

simple Banking

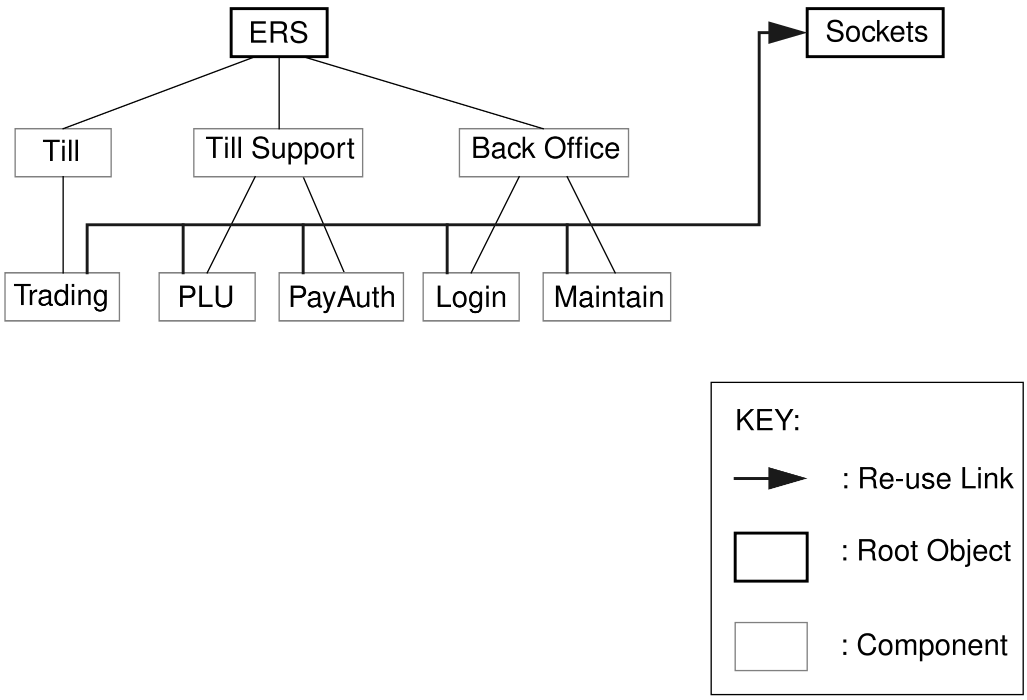
- Using a Meta-Process to manage evolution from PM version 1 to version 2
- Illustrates controlled evolution of process model instances
- Key position of feedback

Electronic Retail System

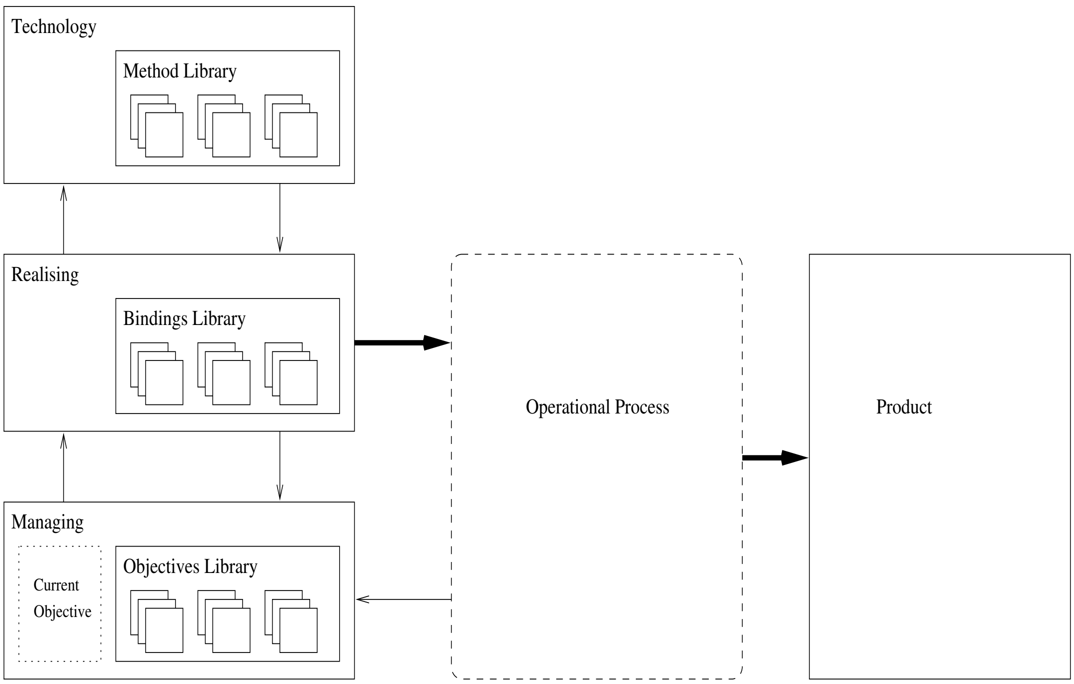
- Architecture for applying a Meta-Process to the development of large, and long-lived systems
- Design tree of Meta-Processes

ERS version 1

Electronic Retail System

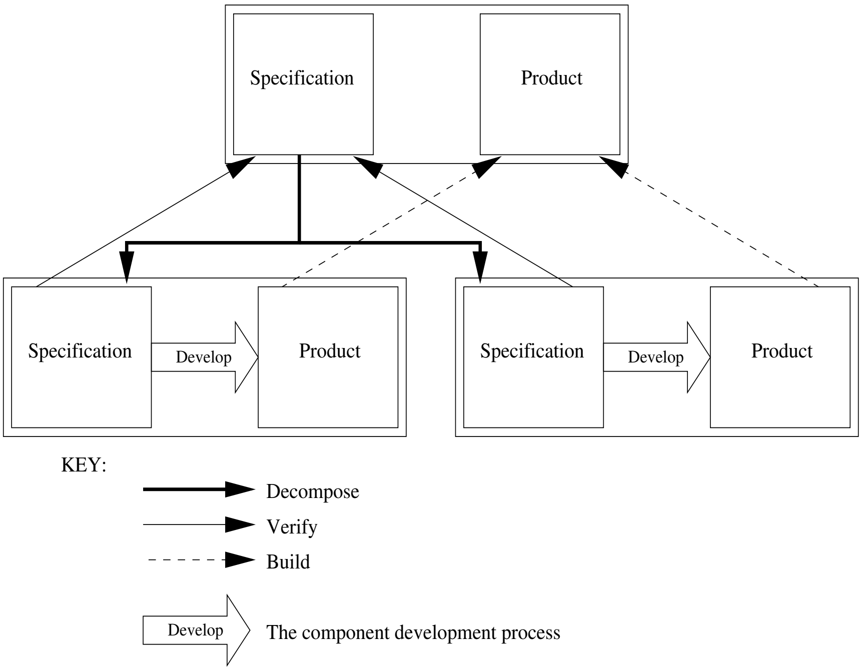


PRM with Resource Libraries

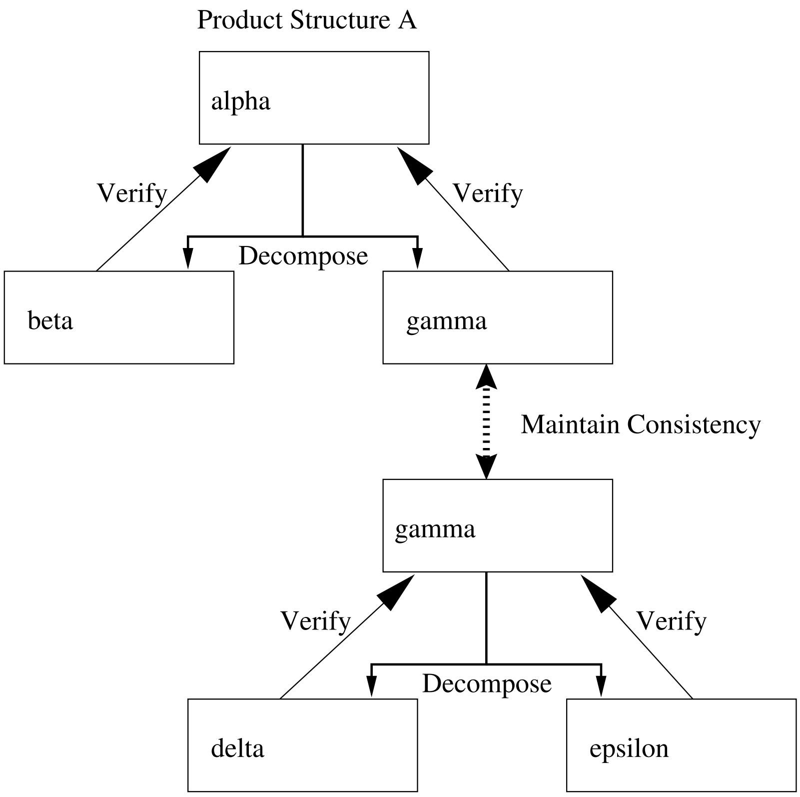


Product Structure

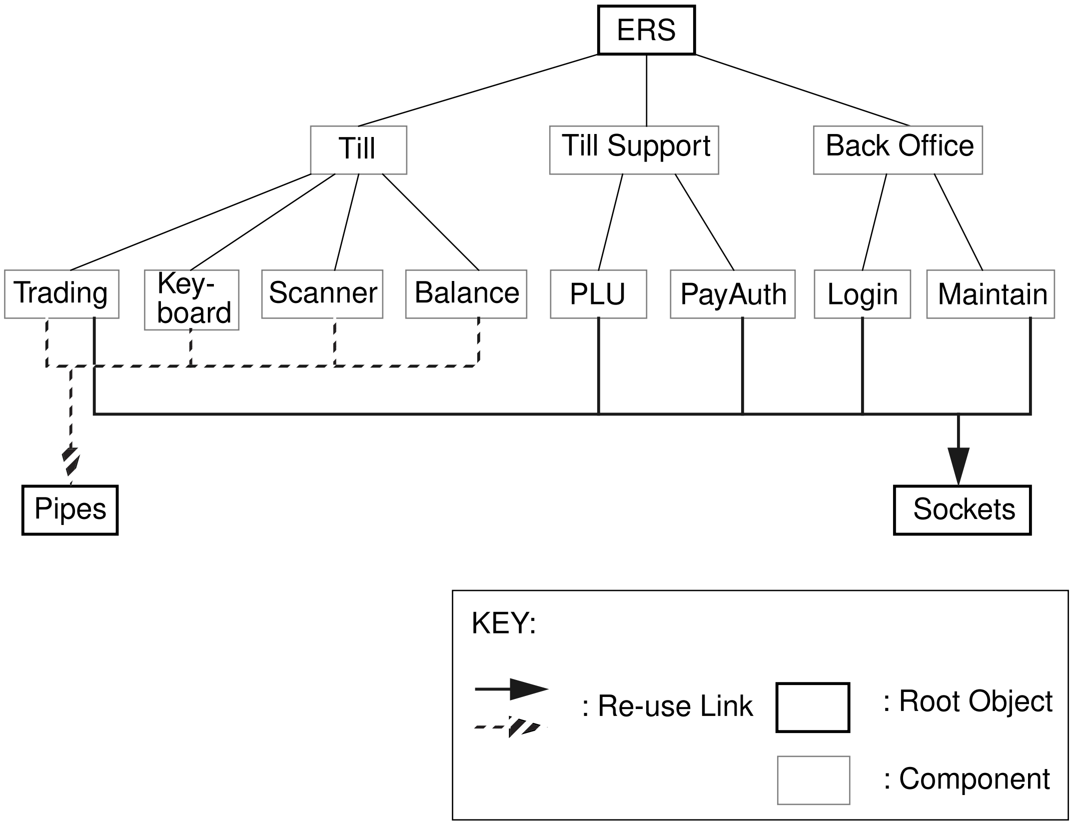
Decomposition and Composition



Re-use Link


Product Structure A
alpha
Verify
Verify
Decompose
beta
gamma
Maintain Consistency
gamma
Verify
Verify
Decompose
delta
epsilon

ERS version 2



The way forward

- Evidence of genericity

- Relate the PRM to the complexities of real world.

  Goals

  Methods

  Artefacts

- Re-think our ‘basic components’