Next Generation Process

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Agenda

- Why the fuzz about the buzz? – their promises
- What’s behind the buzz? – component technology!
- What’s the catch? – best practices for using components!
- Our heritage
- Essential Unified Process
- Next Generation Process

Buzz

- Service Oriented Architecture
- Enterprise Service Bus
- Reusable Component Library
- Asset Based Development
- Model Driven Architecture (MDA)
- Enterprise Architecture
- Product Line Engineering
- Controlled Outsourcing
- Legacy Reengineering
- Aspect-Oriented Software Development
- Agile Development
- Active Software
- etc. etc.

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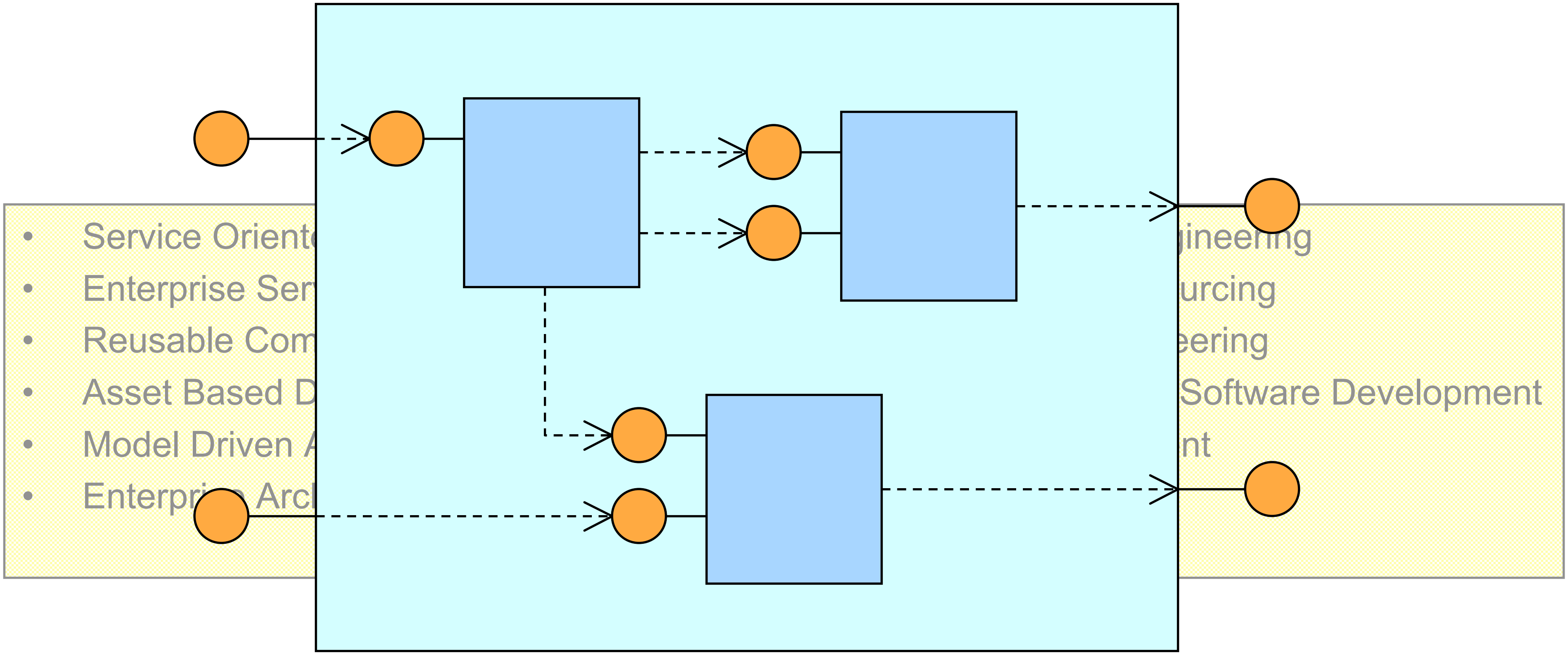
What is behind the buzz?

- Component technology



- Service Oriente
- Enterprise Ser
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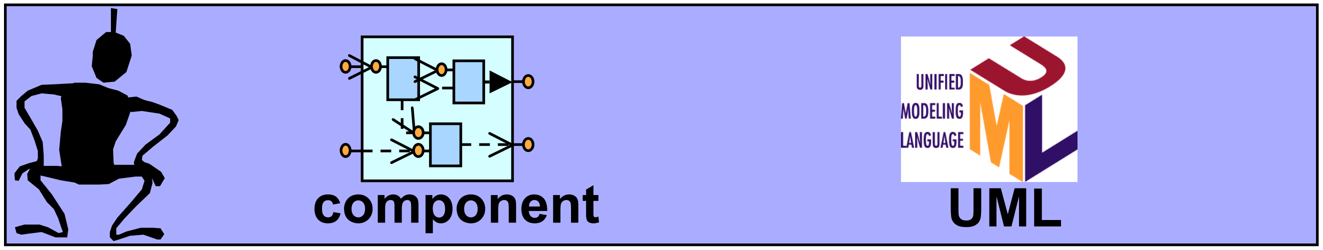
However, there are many component technologies!

- J2EE, .NET, etc
- Need vendor independent languages to talk about components, i.e. software building blocks
- There is one -- The Unified Modeling Language -- UML



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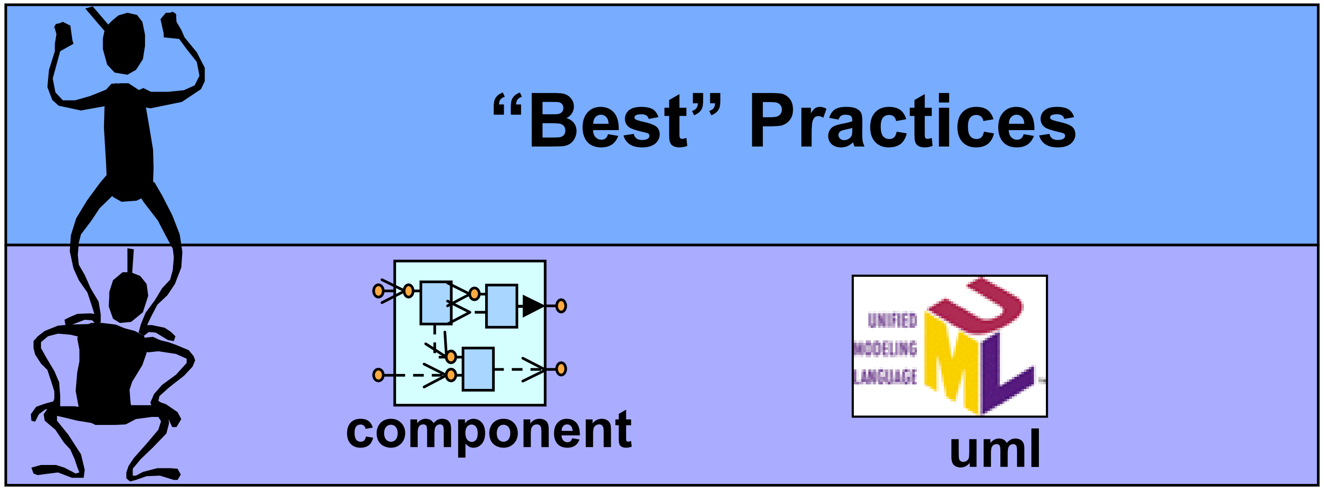
Component technology and UML is not enough!

UML can be used in many different ways. We want a good way.

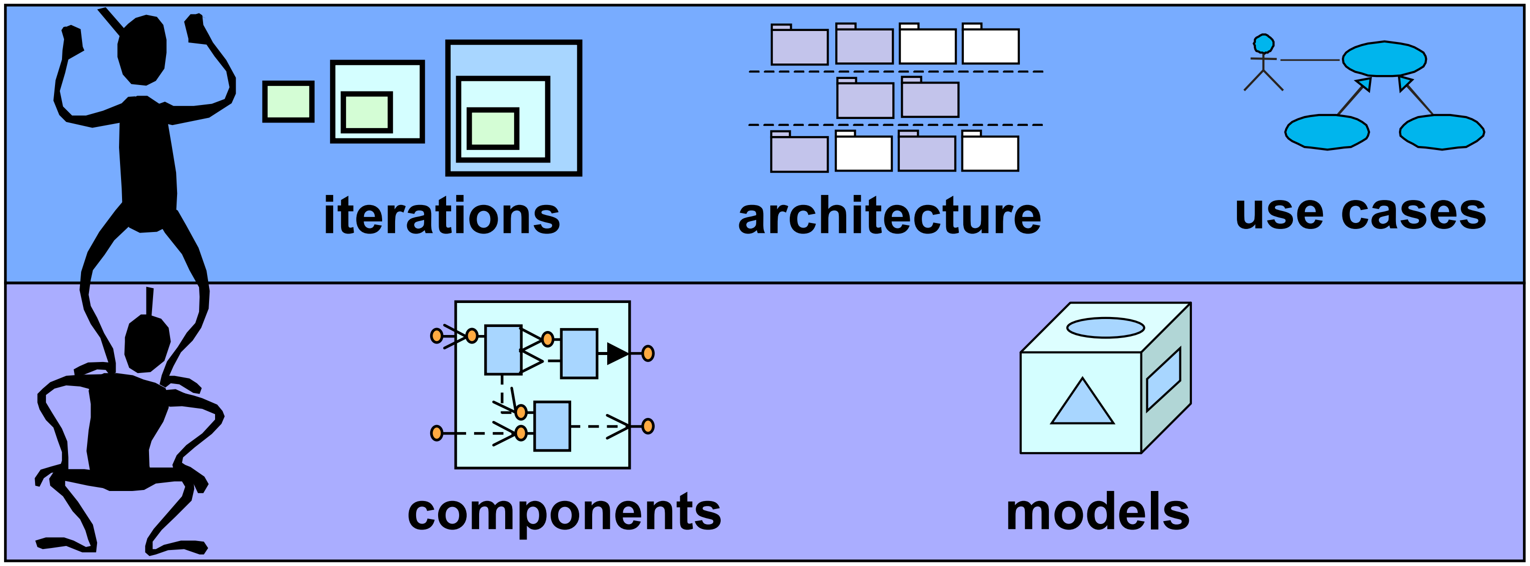
- *How* to identify the right components in the first place?
- *How* to manage the development of components?

We need software development "best" practices



Foundation Practices

- The three most important practices are
  - Iterative development
  - Use cases driven development
  - Architecture-centric



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Building on our heritage

Late ’60s

Ericsson Approach

‘87 –’96

Objectory Process

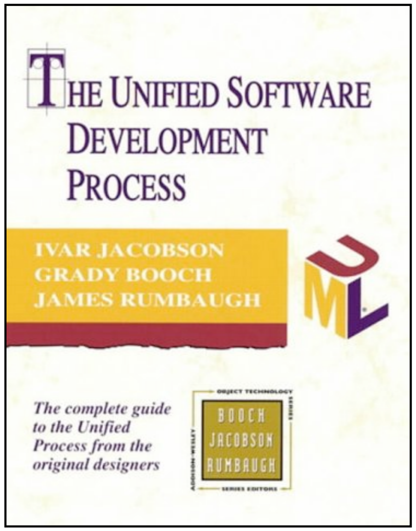
‘97 –’98

The Unified Process

‘99 –’05

IBM Rational Unified Process

Really Good Software



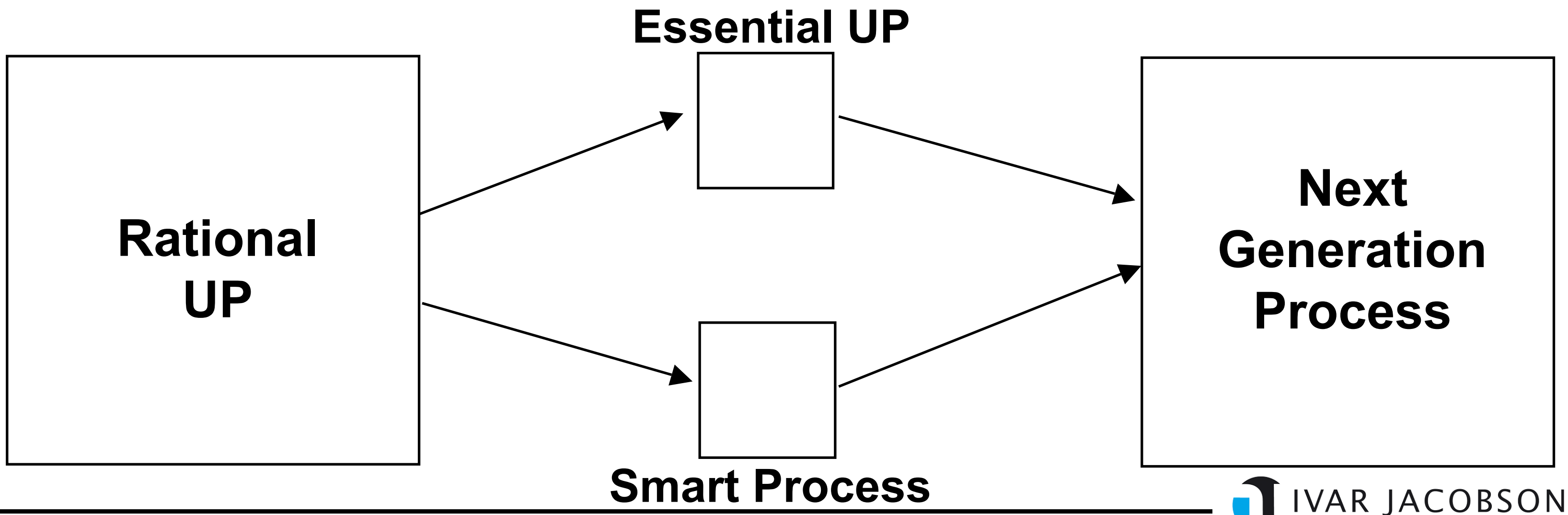
THE UNIFIED SOFTWARE DEVELOPMENT PROCESS

IVAR JACOBSON
GRADY BOOCH
JAMES RUMBAUGH

The complete guide to the Unified Process from the original designers

However, there are challenges with UP based methods

- RUP provides a rich knowledge-base
- RUP requires substantial investments in tools, training and mentoring
  - Works fine for larger organizations and projects
- There are two paths to simplify:
  - Finding the Essential Unified Process
  - Building a Smart Process with the help of Intelligent Agents



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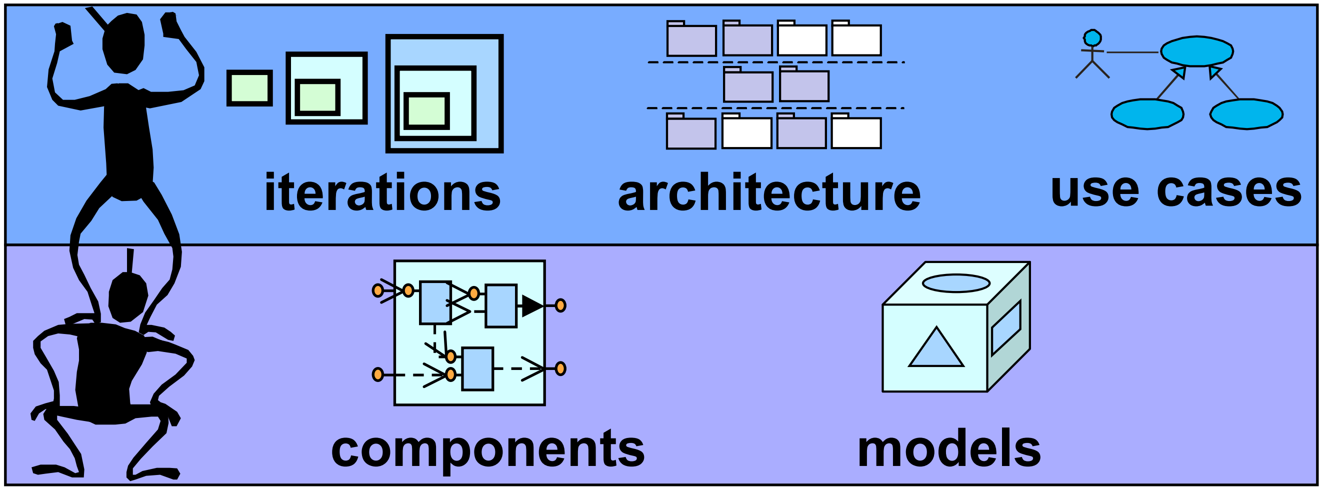
Essential Unified Process is the Essence

- Foundation practices are the essence of UP
  - Common to all sizes and types of successful projects
- Don't make assumptions about size, type of product, platform or organization – the essence is standard
- Practices are not mandatory, but significantly increase chances of success

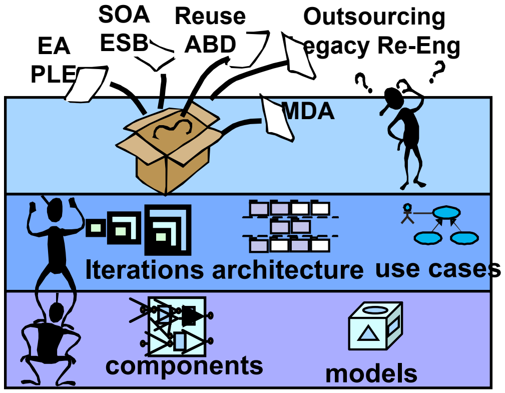


What is special

- Balances Explicit and Tacit Knowledge
- Allows separation and composition of practices and other concerns
- Dramatically new user experience inspired by the game industry
- Encourages the spirit of agility
- Redress weaknesses of UP
- Enables moving to a smart process

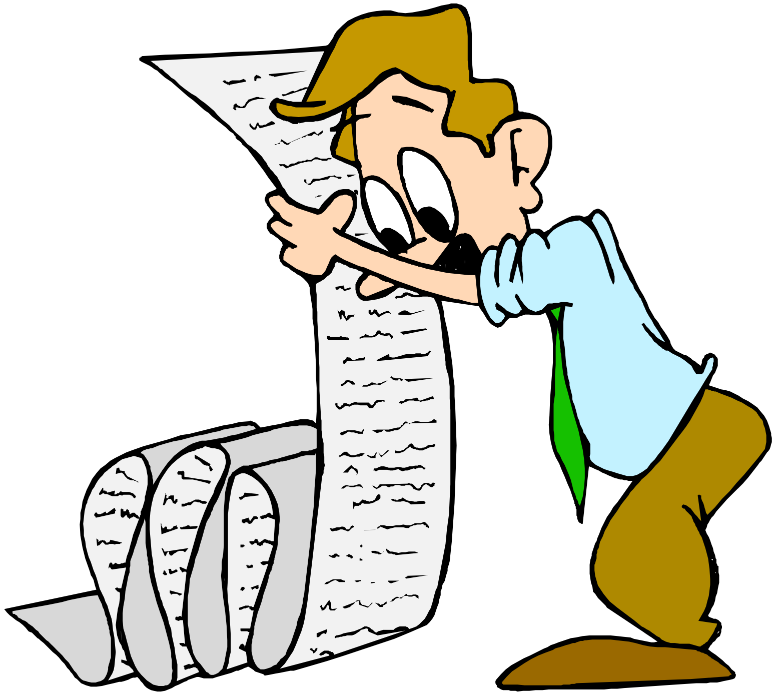
Allows separation and composition of process concerns

- There are many practices and will be more
  - UX, business-driven development, SOA, MDA, TDD, CMMI
  - Practices (not packages) are the building blocks of process
- Practices should be described separately and used separately
  - A soup of tangled practices make the process hard to learn and use
  - Practices are cross-cutting concerns that affect multiple process elements
  - e.g. you shouldn't need to understand modeling to apply use cases
- Placeholders are the Pandora's box of UP
  - You shouldn't need to learn about something you don't need
  - e.g. a web developer probably doesn't need to understand architecture
  - You add more process only when you need it
  - People are afraid to skip or remove things!



Improves the user experience dramatically

- A refreshing new way of interacting with the process: easy and fun to use
- No long scrolling HTML text which nobody bothers to read



- Use familiar metaphors
  - Card games
  - Wiki's
  - Blogs & Vlogs
  - Feeds
  - Virtual humans & VR
  - Skins

Each card is a piece of bite-size information that contains only ***essential*** *content & refers to more detailed content*

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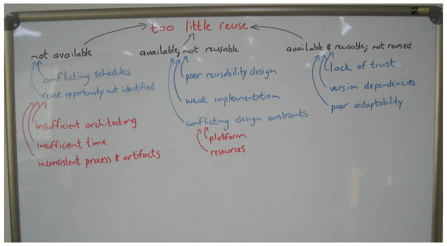
Encourages the spirit of agility

> *"Process descriptions don't need to be lengthy, they just need to describe the vocabulary essence of what people do, what is produced, the sequence in which things are done and how the process can be observed by management or customers who are not actually inside the development team. Since there are lots of publications available, there is no need write a massive document."*
>
> *- Dave Thomas*

- YES! YES! YES!
- But merely compacting the process does not necessarily make it more agile
- Agility is about social engineering
  - People, attitude & culture



☜ **template**

- Process description should reflect the ***spirit of agility***
- Tailoring the process should be an integral part of the team process
  - E.g. team wiki, not a separate specialist activity

Tailor terminology

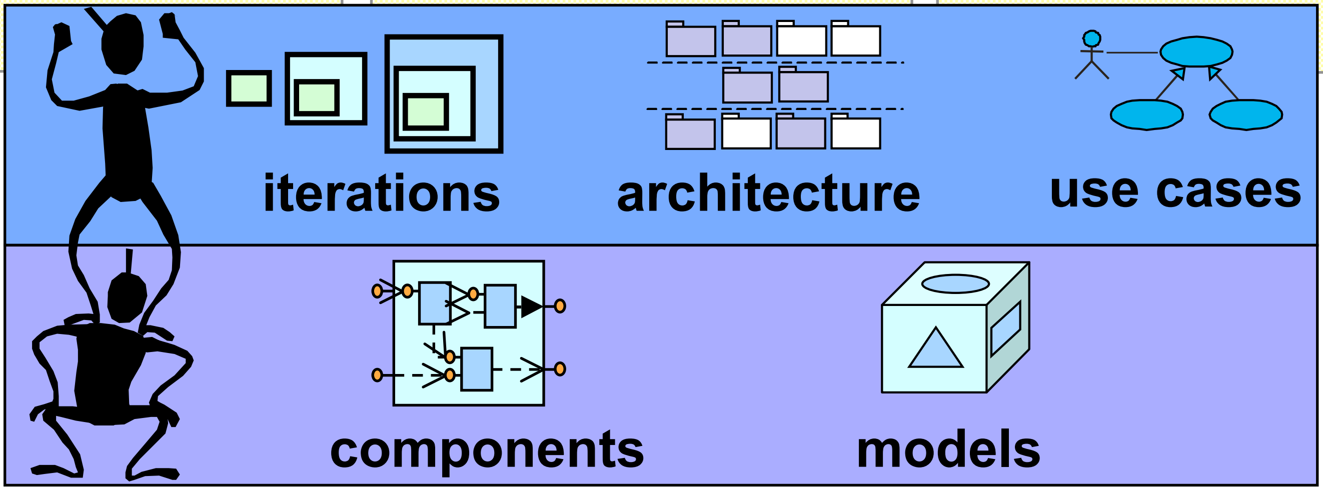
Essential Unified Process

Based on the core practices of the Unified Process

- ✓ Agile
- ✓ Lightweight
- ✓ Universal
- ✓ Easy to Use
- ✓ Extensible
- ✓ Scalable

- ✓ Free
- ✓ Open Source
- ✓ Adaptive
- ✓ Easy to Use

- ✓ Complete
- ✓ Sufficient
- ✓ Comprehensive
- ✓ Recursive



iterations

architecture

use cases

components

models

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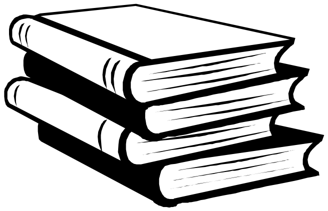
A next generation of software development process

1st Generation

tacit

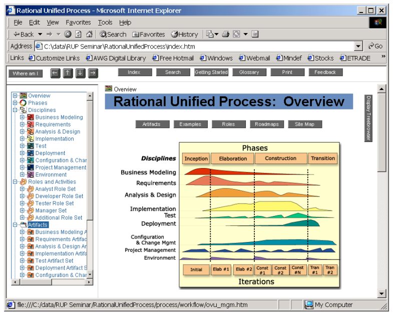


Ad Hoc Knowledge in textbooks

SA&SD,
OOSE, Booch,
OMT, XP

2nd Generation

explicit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Phases
Disciplines
Business Modeling
Requirements
Analysis & Design
Implementation
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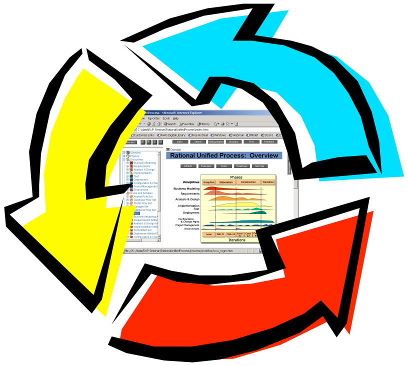
Structured Knowledge in an engineered PD

UP

3rd Generation

smart



Executable Knowledge in an active environment

Beyond UP
- structured knowledge
with Intelligent Agents
(e.g. WayPointer)

Smart Process

Imagine we can

- dramatically reduce the work to select, learn, apply and control the knowledge in UP
- deliver the knowledge you need, and only that knowledge, and in the context when you need it and not before.

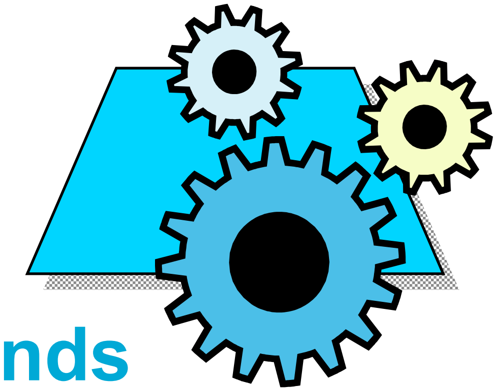
Then we get a *smart process*

- Smart process is big – the bigger the better – you only get as little as you need

Put the process under the hood
and not in your face
Invisible Process – yet ever present

Characteristics of a Smart Process

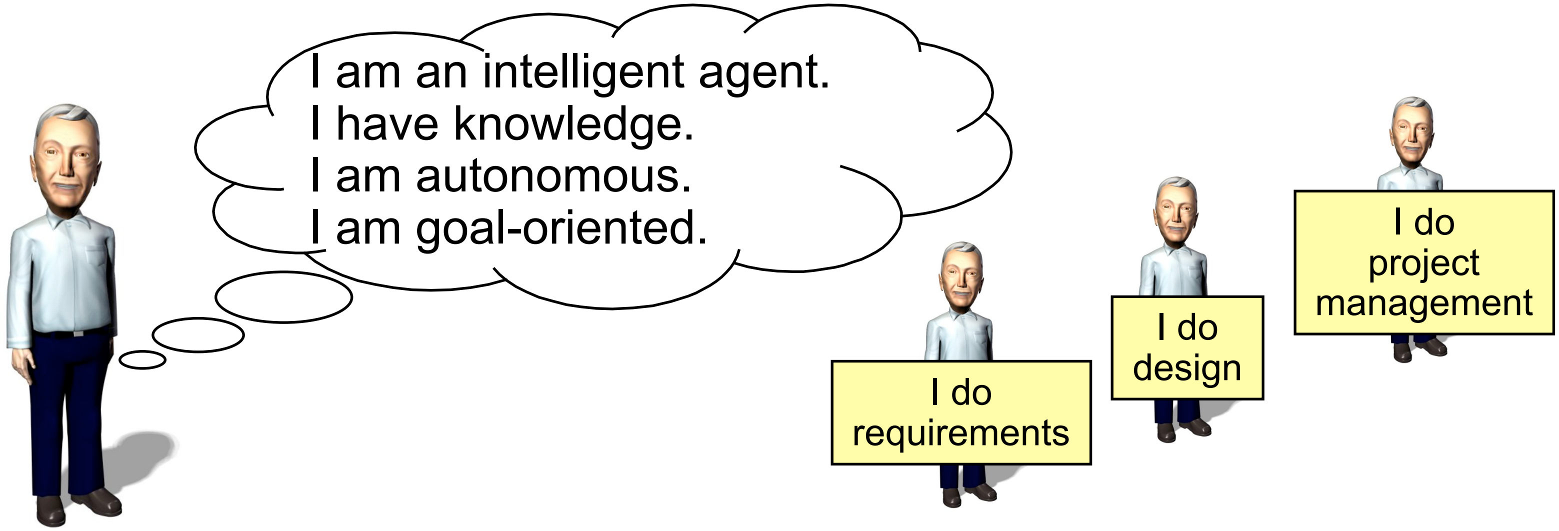
- Minimal training – learn as you go
- Make process invisible – yet very present
- Make it personal, make it light
  - Without sacrificing quality
- Give context-dependent, concrete advice
- Make people collaborate
- Let them focus on creative tasks instead of no-brain work



A process engine in the hands of each developer and the whole team.

Use Next Generation Technology: Intelligent Agents

- Characteristics of an intelligent agent:



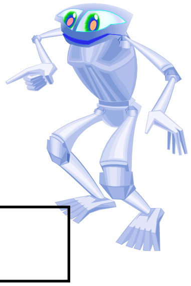
I am an intelligent agent.
I have knowledge.
I am autonomous.
I am goal-oriented.

I do requirements

I do design

I do project management

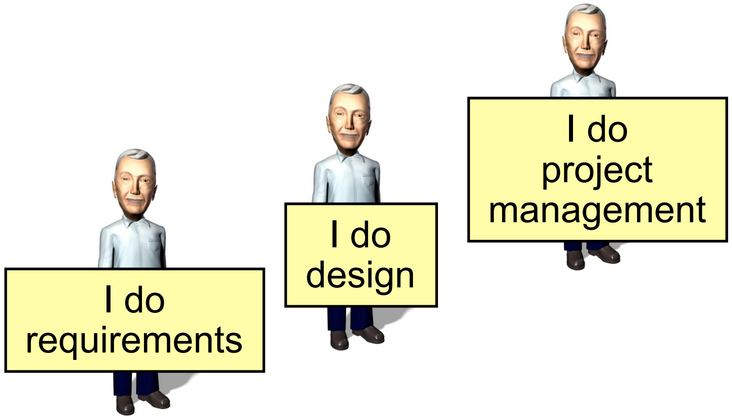
- Agents are proactive, adaptive and reactive
  - Think of intelligent agents as objects driven by rules



Cyber Ivar at www.jaczone.com

Intelligent Agents

- If XP talks about Pair Programming, then Intelligent Agents are:
  - Virtual Pair Programmers
  - Virtual Pair Analysts
  - Virtual Pair Designer
  - Virtual Pair Tester
  - Virtual Pair Project Managers
  - Etc.



- They function as Virtual mentors and Smart robots
  - Human and Virtual mentors are together more effective than either one alone
- They take care of important (maybe) but ”boring stuff”
  - CMMI
  - Six Sigma

NGP is Active

I do requirements

I do design

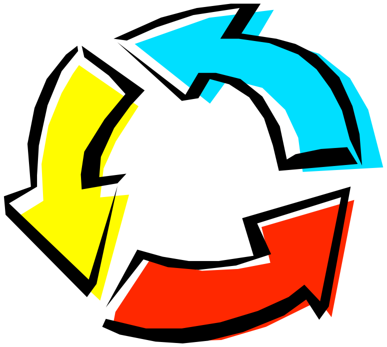
I do project management

I do Embedded System

I do Business System

Active Guidance

to help you draft the initial artifacts



Active Observation

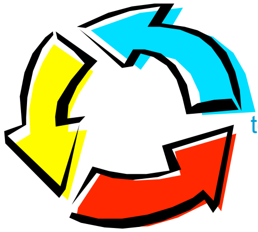
to help you selectively focus on risk areas and conduct rigorous check

Active Facilitation

to do the mundane tasks for you

Makes its use Active instead of Passive

- Teams need to select, learn, apply & change the process
  - These activities require different presentation & level of detail
  - There is no way to scale this problem with passive process
- Active process strikes the right balance by:
  - Understanding what is needed
  - Delivering only what is needed
  - Guiding & checking how it is applied
  - Understanding how the process was really used

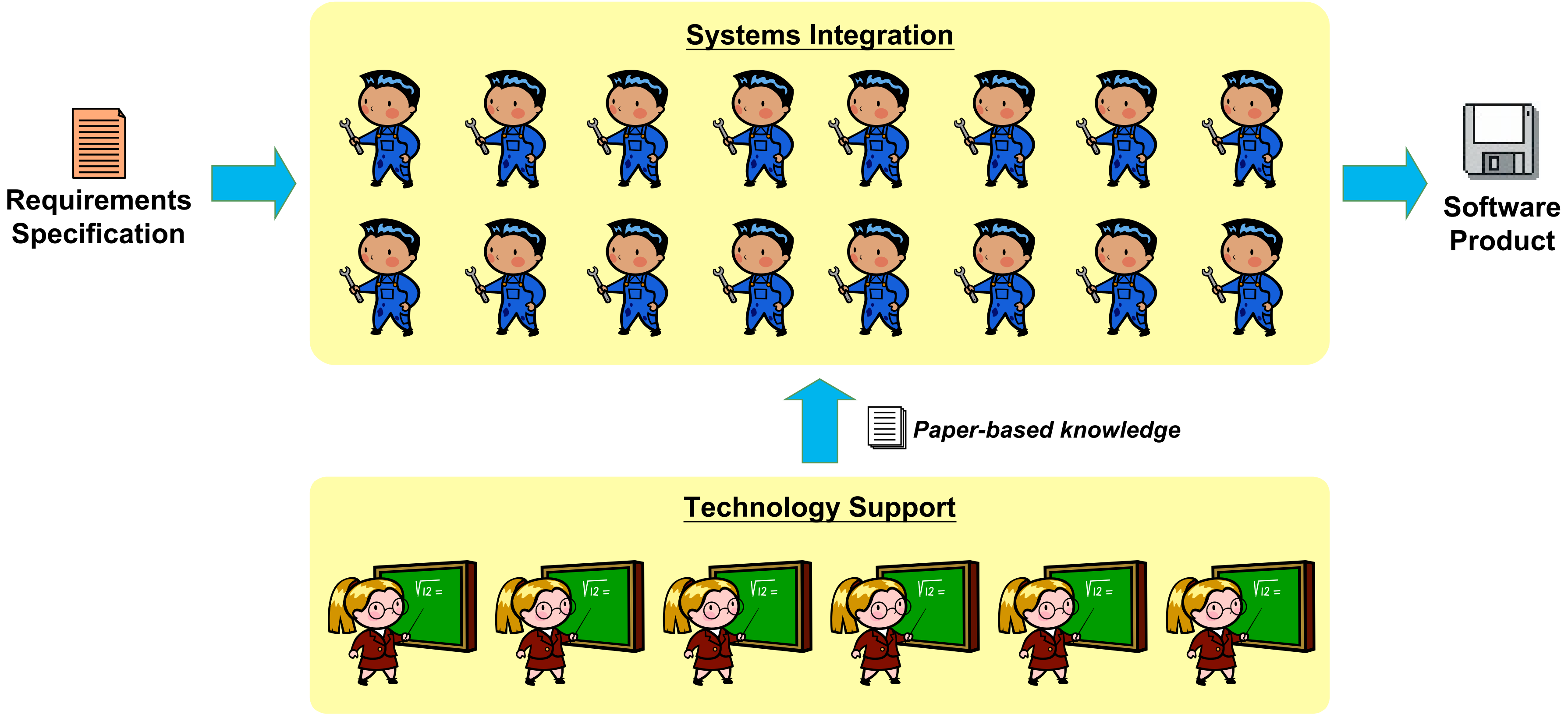


Active Guidance
to help you draft the initial artifacts

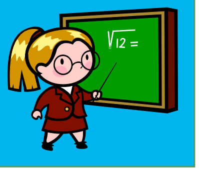
Active Observation
to help you selectively focus on risk areas and conduct rigorous check

Active Facilitation
to do the mundane tasks for you

Traditional Technology Support

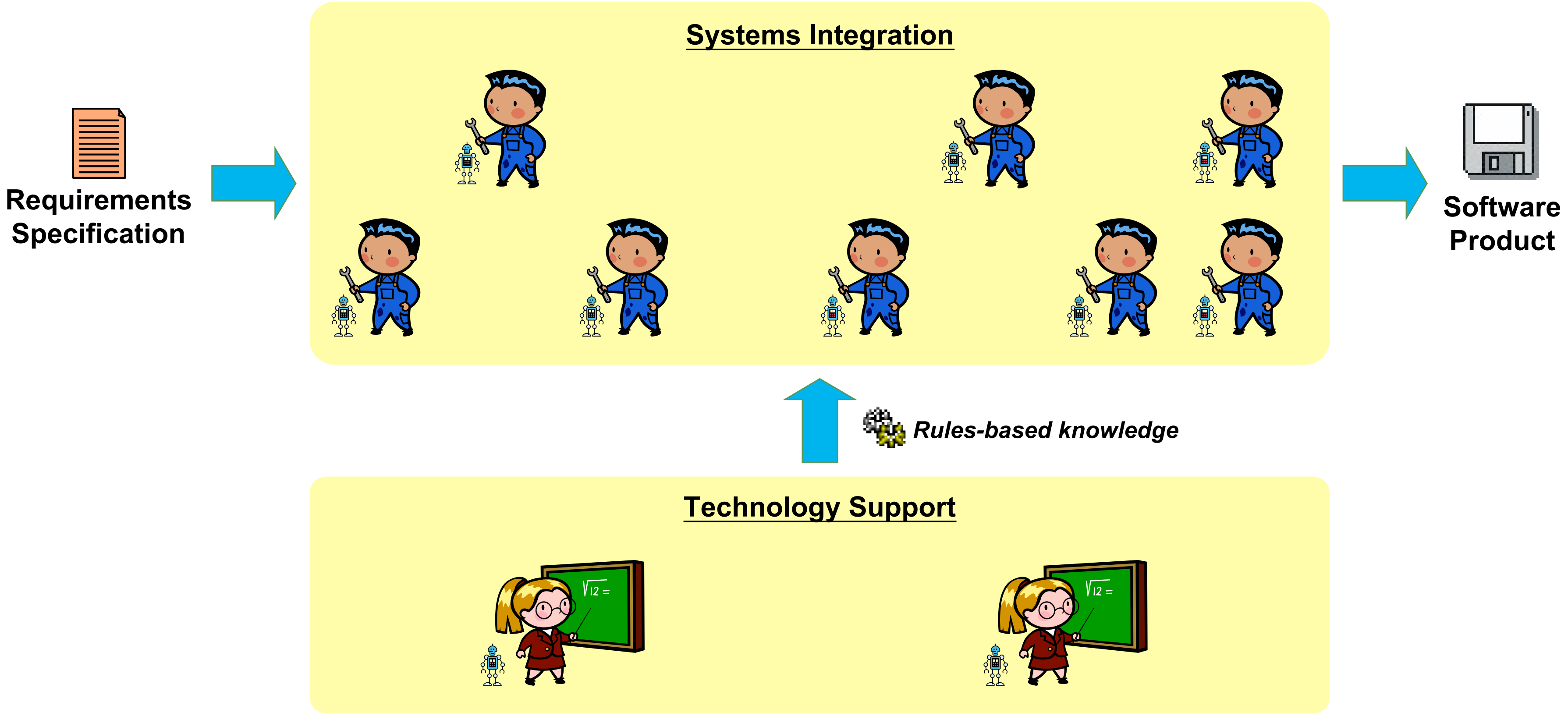


- Describe process
- Deliver training
- Provide guidance
- Review artifacts
- Evaluate quality



- Follow process
- Attend training
- Request guidance
- Rework feedback
- Maintain consistency

Advanced Technology Support



Requirements Specification

Systems Integration

Software Product

Rules-based knowledge

Technology Support

- Develop rules
- Minimal training
- Provide expertise

- Attend training
- Review guidance
- Approve rework

- Suggest process
- Follow process
- Provide guidance
- Review artifacts
- Automate rework
- Maintain consistency
- Evaluate quality

A Next Generation Process is More...

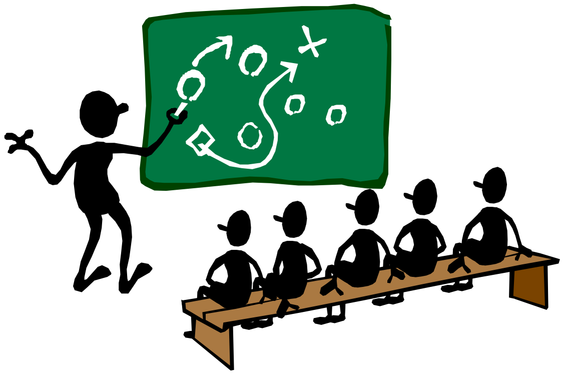
There will be 100s of ”best” practices

- Technical practices
  - Essentials such as the foundation practices (incl test first design, refactoring,...)
  - EA, PLE, SOA, MDA, UX, ...
- Social practices
  - Pair programming, workshops, PSP/TSP,...
- Project practices
  - CMMI, 6 sigma, governance
- Organizational practices
  - Portfolio managment
- Be able to describe & use practices seperately (concerns)

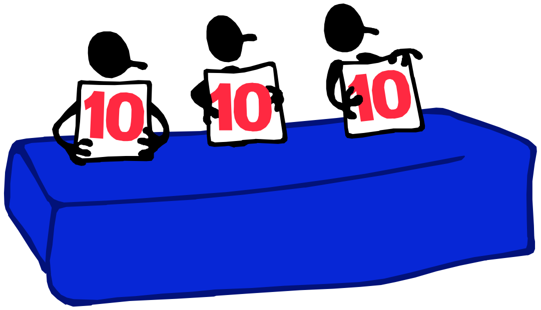
And much more!

NGP Benefits

Dramatic reductions in the cost of adoption

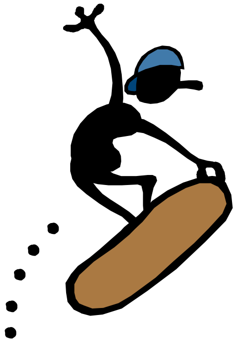


Increased productivity and quality



Increased team capability

More Fun!!!



From a Machine-Centric World
to a Human Centric World

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