Global Information Systems:

Framework (2)

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Contents

- Introduction
- A Framework for Global Information Systems
  - Process Framework
  - Project Lifecycle
  - Dimensions
- Discussion

Assumptions

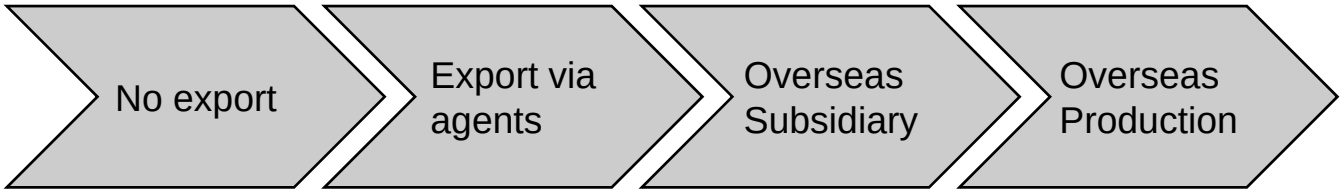
- Scenario: Global Software Development
  - Multiple developers in different locations
  - Developing software for various markets
  - Distributed development, distributed distribution
- Process Framework
  - Detailed discussion of process parts
- Assumption: Usage of development models

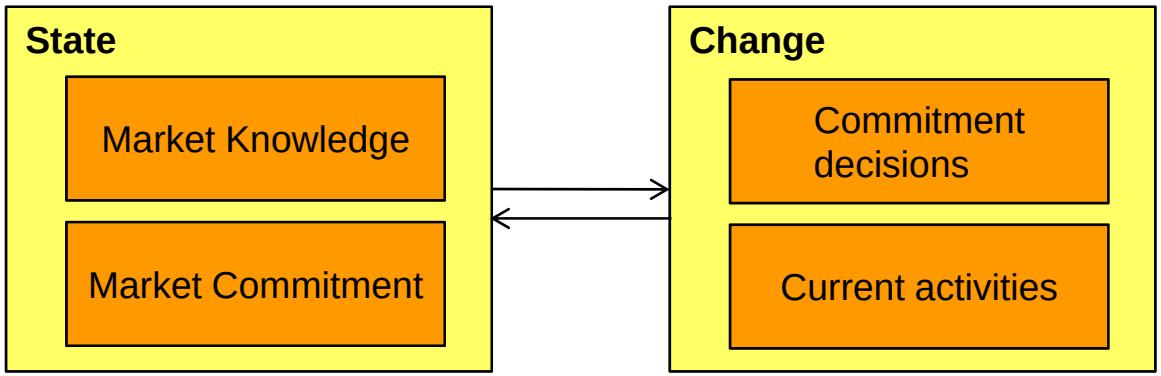
Potential views

- Internationalization (Management, strategy)
- Outsourcing / offshoring (Management, strategy)
- System development methods / process view (Information Systems)
- Network view (multiple perspectives)
- Specific views
  - Culture
  - Coordination
  - …

Uppsala Model: From 1977…

- Stage model to explain the internationalization process of organizations: Johanson & Vahlne, 1977, 1990, 2009
- Explaining the stages of internationalization



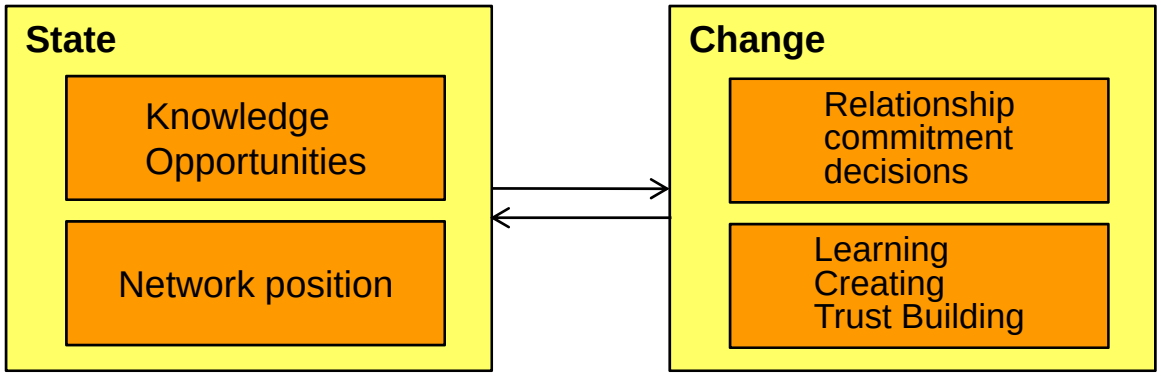


- Market entrance? Psychic distance?
  - "Born Globals"

Uppsala Model: …to 2009

- Focus on
  - Opportunities
  - Networks (interaction)
- Knowledge development
- Relationship commitment & trust

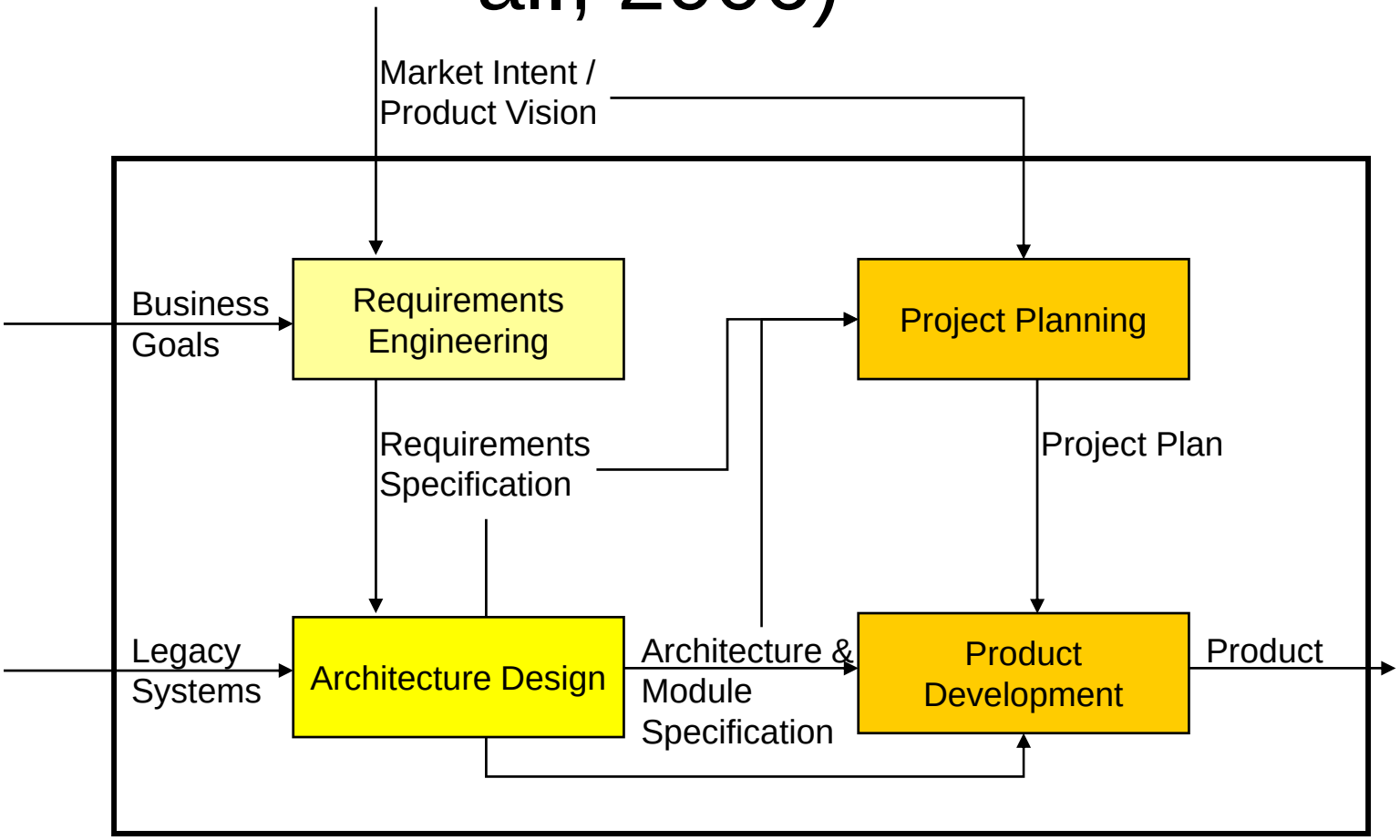
- Starting point for business development
- Not specific to IS Development



Further approaches…

- Network theory
  - TJTSE50 Global Networked Business Models!

Process Framework (Sangwan et al., 2006)



Decision points (Sangwan et al.,2006)

1. Initiate research
   - Developing new products / services
2. Initiate requirements definition and architecture design
3. Developing a product / service
   - Scope
   - Schedule
   - Investments
4. Releasing a product / service
5. Removing a product / service

Process Framework: The Open Unified Process

- Basis to structure the development of global information systems
- Framework for
- Adaptable f
  - E.g., a ods, plugins
- Goals (Eclip
  - Collaborate to are understanding
  - Balance competing priorities to maximize stakeholder value
  - Focus on the architecture early to minimize risks and organize development.
  - Evolve to continuously obtain feedback and improve
- http://www.eclipse.org/epf

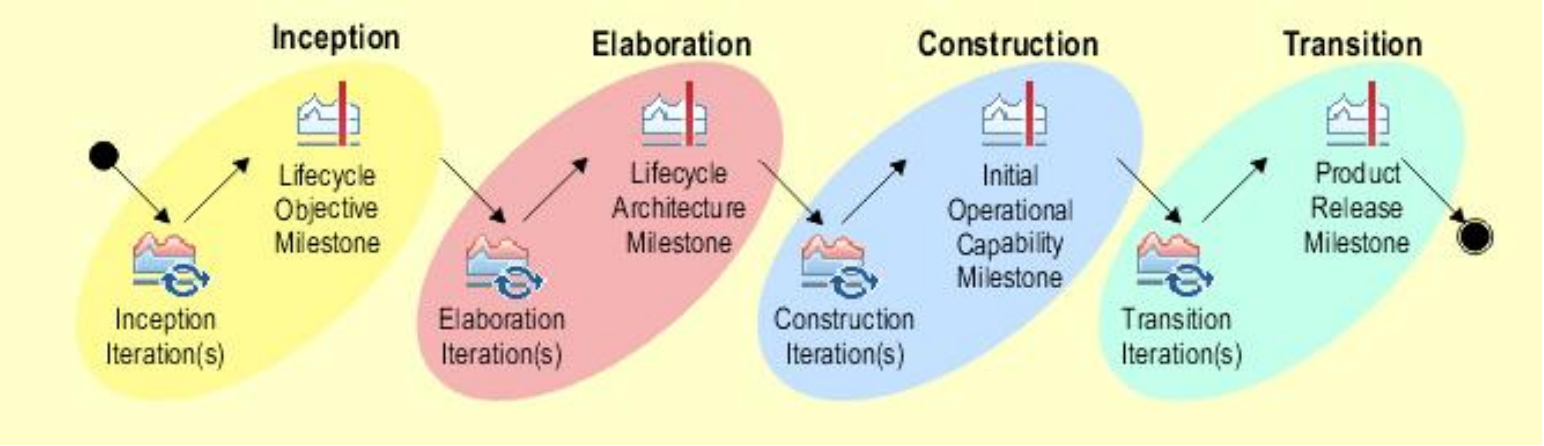
Remark: This is not a software engineering course, the framework is only used to structure processes and activities! Any other methodology could be used!

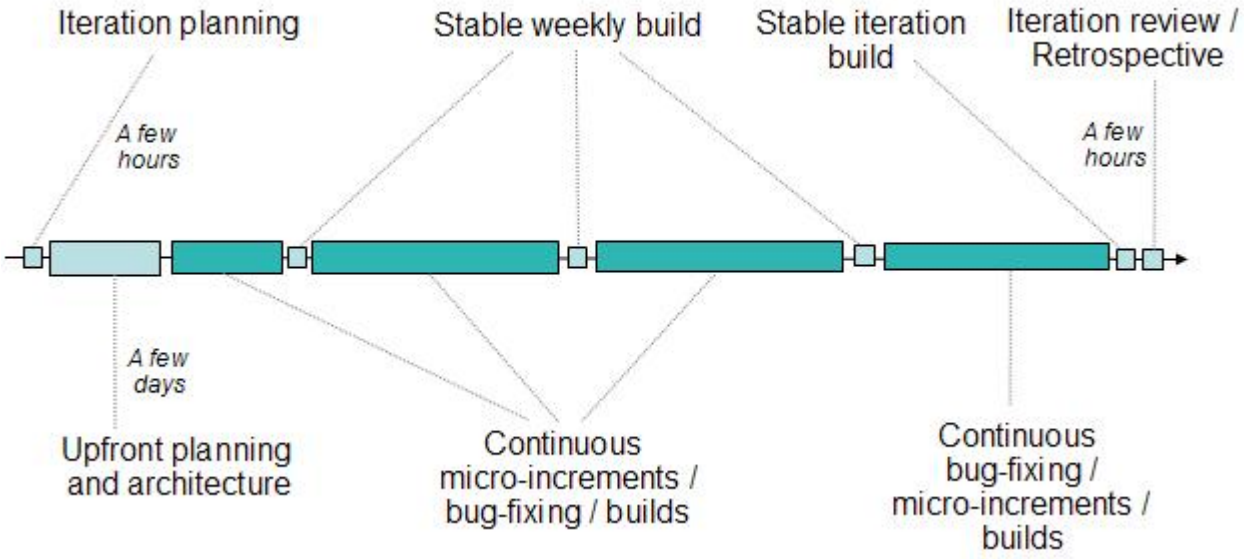
The Open Unified Process – Project Lifecycle

- Inception. Do we agree on project scope and objectives, and whether or not the project should proceed?
- Elaboration. Do we agree on the executable architecture to be used for developing the application and do we find that the value delivered so far and the remaining risk is acceptable?
- Construction. Do we find that we have an application that is sufficiently close to being released that we should switch the primary focus of the team to tuning, polishing and ensuring successful deployment?
- Transition. Is the application ready to release?

[Source: http://www.epfwiki.net/wikis/openup/]

The Open Unified Process –





[Source: http://www.epfwiki.net/wikis/openup/]

The Open Unified Process – Disciplines

- Architecture
- Configuration and Change Management
- Development
- Project Management
- Requirements
- Test

[Source: http://www.epfwiki.net/wikis/openup/]

The Open Unified Process – Disciplines

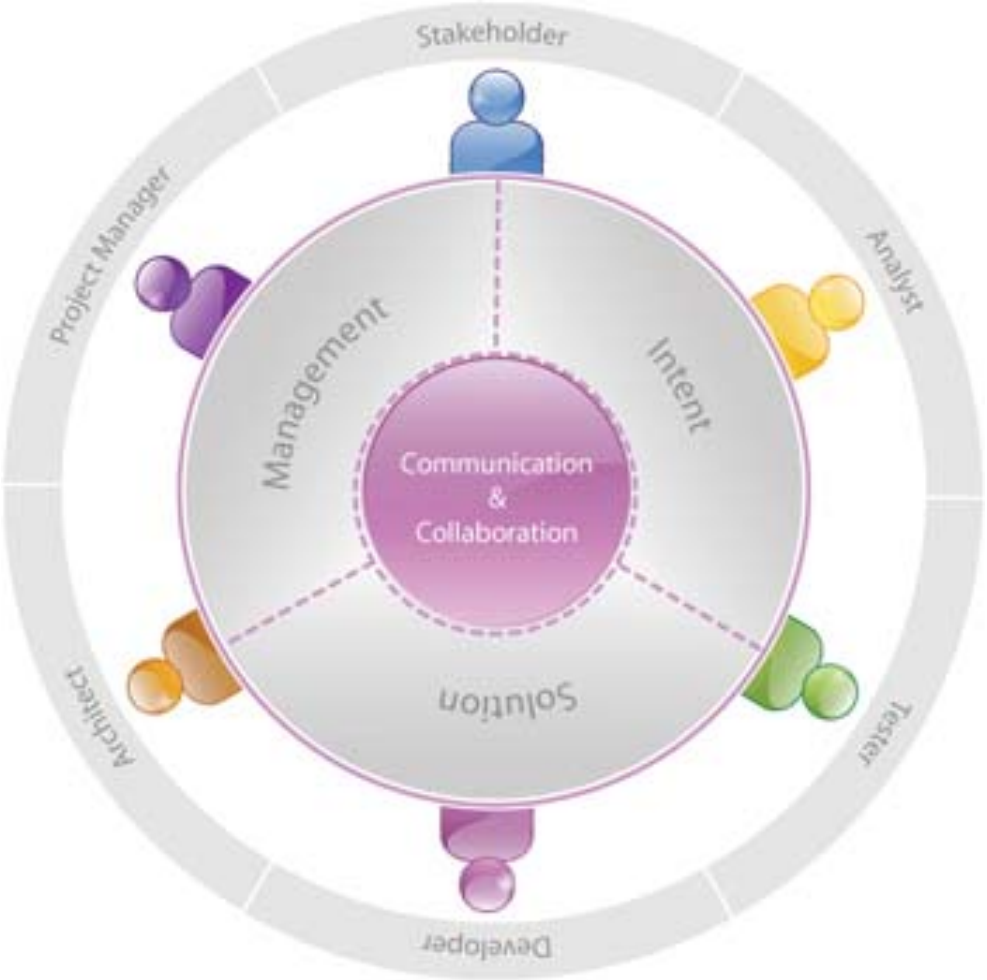
- Structured as *tasks*
- Leading to *work products*

- Architecture
  - Architecture Notebook
- Configuration and Change Management
- Development
  - Design
  - Build
  - Developer Test
  - Implementation

- Project Management
  - Iteration Plan
  - Project Plan
  - Work Items List
  - Risk List
- Requirements
  - Supporting Requirements Specification
  - Vision
  - Use Case
  - Glossary
  - Use-Case Model
- Test
  - Test Case
  - Test Log
  - Test Script

[Source: http://www.epfwiki.net/wikis/openup/]

The Open Unified Process – Roles



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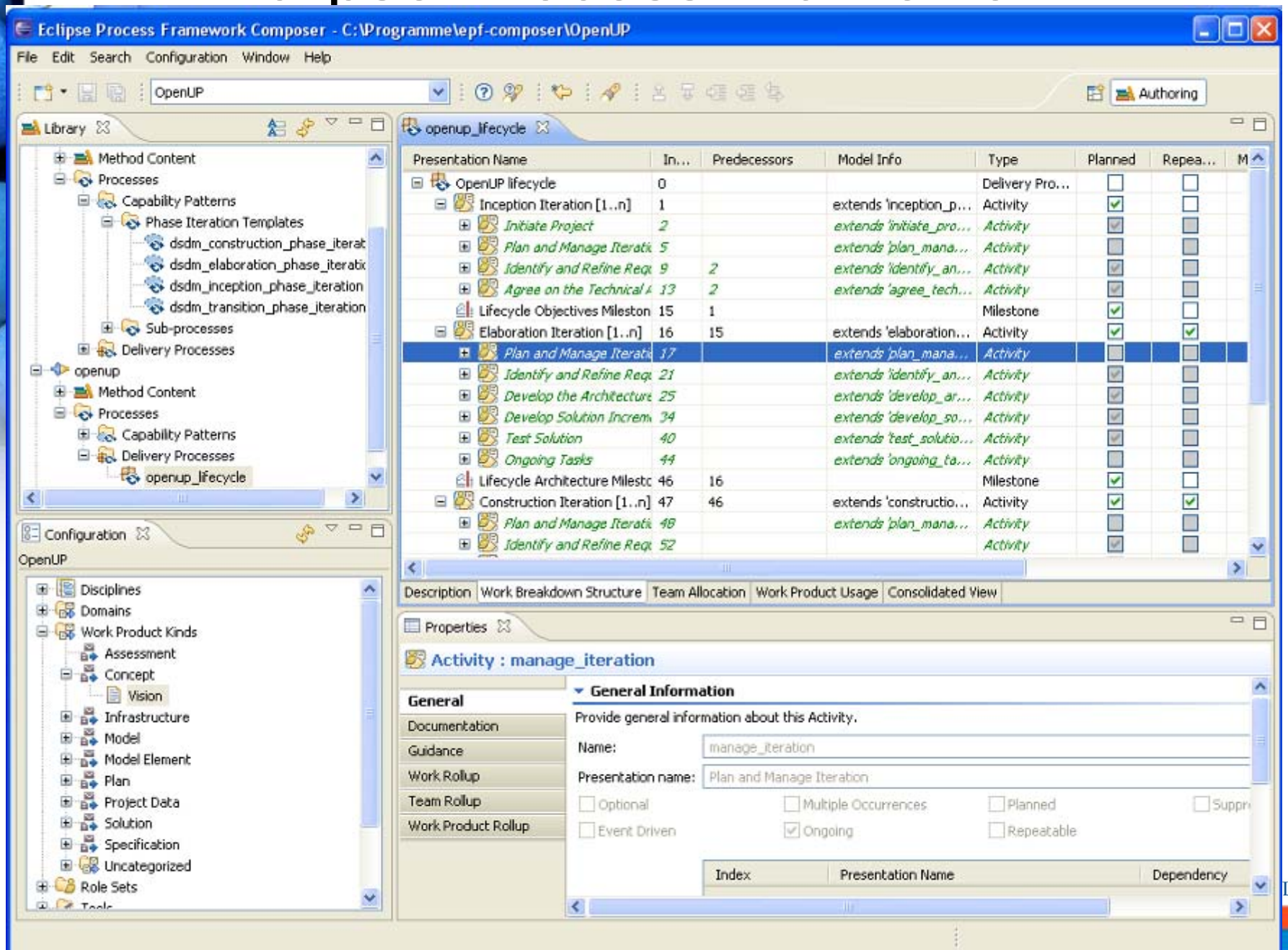
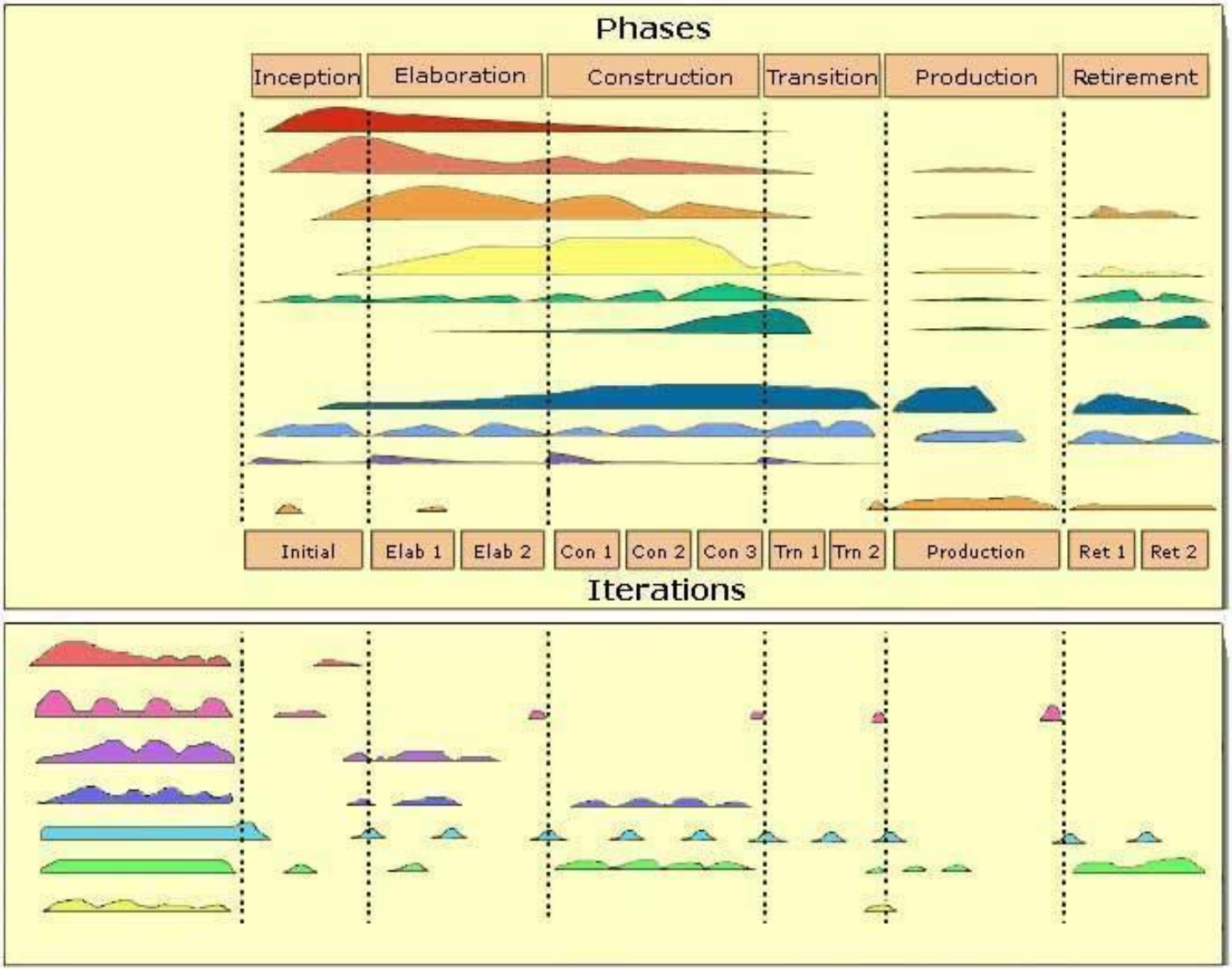
Eclipse Process Framework



Extensions: Enterprise Unified



Development Disciplines

Business Modeling

Requirements

Analysis & Design

Implementation

Test

Deployment

Support Disciplines

Configuration and Change Mgmt.

Project Management

Environment

Operations & Support

Enterprise Disciplines

Enterprise Business Modeling

Portfolio Management

Enterprise Architecture

Strategic Reuse

People Management

Enterprise Administration

Software Process Improvement

Summary

- Unified Process as a basis for software development process
- Focus on different aspects of the lifecycle
  - E.g., risk management, communication
- Extension model for globally distributed processes and stakeholders

The Open Unified Process – Disciplines

- Architecture
  - Architecture Notebook
- Configuration and Change Management
- Development
  - Design
  - Build
  - Developer Test
  - Implementation
- Project Management
  - Iteration Plan
  - **Project Plan**
  - Work Items List
  - **Risk List**

- Requirements
  - Supporting Requirements Specification
  - Vision
  - Use Case
  - Glossary
  - Use-Case Model
- Test
  - Test Case
  - Test Log
  - Test Script

- *Roles*
- *Artefacts / Support*

[Source: http://www.epfwiki.net/wikis/openup/]

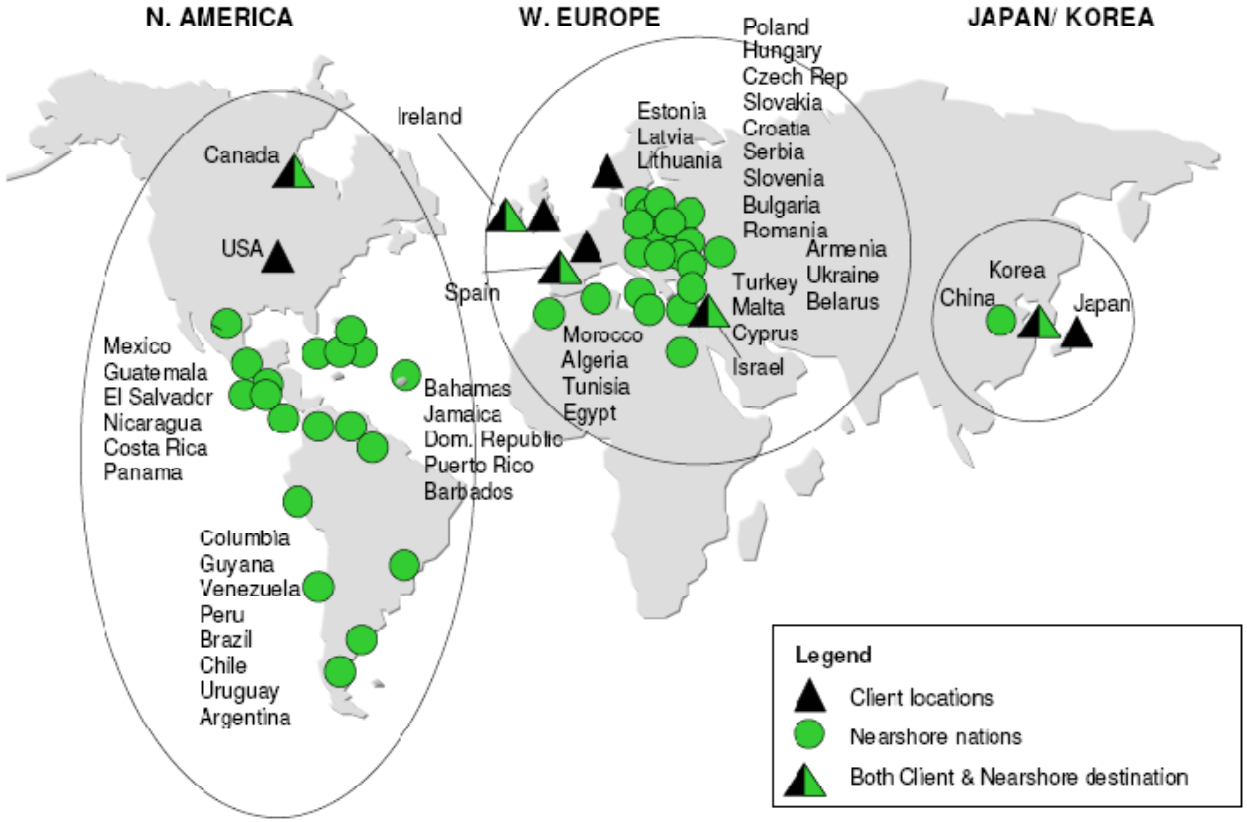
Project Planning

- Planning of the process
  - Distribution of actors / organization
  - Staff selection
  - Cost estimation
  - Schedule / workflow
  - Coordination activities
  - Communication tools
- Results
  - Project plan, workflow, …
  - Staff plan: roles / competencies / effort
  - Coordination planning
  - Supporting tools: Guidelines / rules / standards

Project Planning: Offshore vs. Nearshore

- “Offshoring”
  - Assigning (parts of) a knowledge-intensive development process to a geographically remote partner
  - Cost reduction
  - Accelerating the production process
- “Nearshoring”
  - Assigning (parts of) the development process to a geographically close partner
  - Possible advantages concerning distance, language, time, culture, politics, …

Project Planning: Offshore vs. Nearshore (Carmel. Abbott. 2006)



Project Planning: Offshore vs. Nearshore

- Need to analyze and estimate…
  - Coordination
  - Cultural misunderstandings
  - Communication cost
  - Team building / training cost
  - Mistakes / prolonged life cycle
- Findings for India (Carmel, Abbott, 2006)
  - Nearshore locations provide a politically stable atmosphere
  - India is a long way away
  - India is called “distant lands;” difficulties with long distance management and cultural differences
  - India is too difficult to manage remotely; too many time zones away. Cheaper, real-time communication relative to India.
  - Nearshore better for outsourcing business-critical work
  - Nearshore offers lower costs of communication, shipping and tariffs

Project Planning: Cost estimation (Sangwan et al., 2006)

- Calibrate cost estimation tool
- Estimate module sizes
- Allocate modules to development iterations
- Estimate code size for each iteration
- Estimate development time, effort and peak staff
  - Including coordination / communication effort
- Estimate iteration development time and average team staff size
- Estimate development schedule time
  - Including time differences
- Estimate development cost

Project Planning: Sample coordination activities

Instruments to monitor and control the development process (Boland, Fitzgerald, 2004)

- Single software manager and weekly task reports
  - Reducing coordination efforts
  - Tools to assign tasks properly
- Delivery reports
  - Awareness
  - Trust
- Quarterly synchronisation meetings
- Informal meetings and instruments

Project Planning: Risk Management

- Risk: The possibility of suffering a loss (Sangwan et al, 2006)
- Risk lifecycle
  - Identify
  - Analyze
  - Plan
  - Track
  - Control
  - Communicate
- Risk in GSD processes
  - Coordination
  - Architecture alignment
  - Uncertainty and change

Risk Management: Identifying risks

- Organizational aspects / coordination capability
  - Background and skills
  - Domain knowledge of teams
  - Communication / collaboration history
  - Organizational separation / integration
  - Shared culture / language
- Organizational stability

Risk Management: Avoiding risks

- Monitoring and control
- Skill improvement and training
- Unified tool structure
- Management communication
- Frequent builds / prototypes
- Frequent status meetings
- Cross-team reviews
- Contingency planning: If something goes wrong…

At the end of this phase, the following results should be ready:

- Project plan
  - Outsourcing / offshoring decisions and agreements
  - Cost planning
- Adapted process model
  - E.g., Global OpenUP
- Risk management
- Coordination planning (to be refined)

Summary

- Distributed development processes lead to new aspects regarding project planning
- A variety of decisions before the development process influence project success
  - Distribution of actors
  - Coordination activities
  - Management strategy
- Cost estimation must include influence factors
  - Not all factors can be estimated sufficiently in advance
  - Supporting instruments have to be taken into account
- Complex process, decision alternatives should be taken into account

Questions

- How does the Unified Process support global development processes?
- Which dimension of the UP have to be extended when working in a global context
- Which aspects are different in the project planning phase between in-house and off-shore development?
- How to estimate the costs for a global development project?
- Which supporting mechanisms can be used to improve coordination?
- Develop a risk profile for a GSD project.

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