

Interorganizational Business Process Management

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- **Chapter 1: The Basics**
 - Intra- and Inter-organizational processes
- **Chapter 2: The Concepts**
 - Framework, ingredients (CF, Tx, QoS, Dyn)
- **Chapter 3: The Technologies**
 - SOC, extension, architecture
- **Chapter 4: Further On**
 - Project, developments, conclusion

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Chapter 1 The Basics

- Intra-Organizational BPM
- Inter-Organizational BPM

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Intra-Organizational Business Process Management

The Bare Basics

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Workflow Management

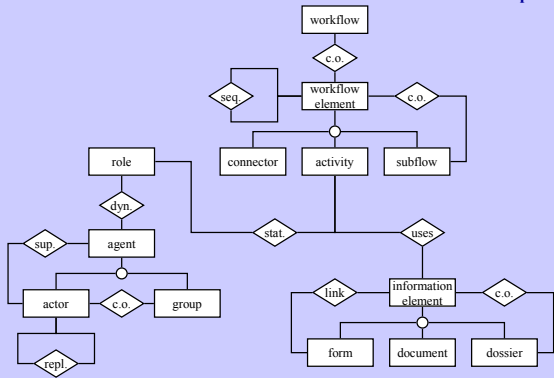
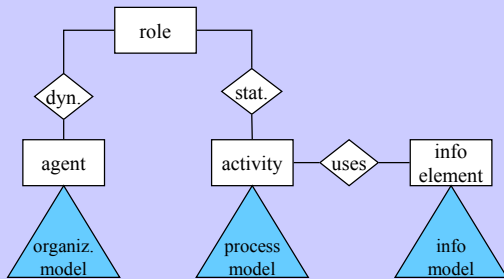
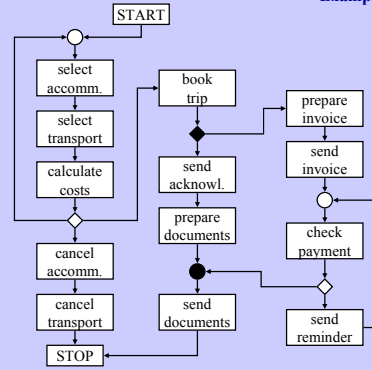
- WFM = Information Logistics
- Getting
 - the right information (documents)
 - at the right time
 - to the right person
- Emphasis
 - on structure of work processes (workflows)
 - not on contents of work activities (biz functions)
- WFM ~ BPM

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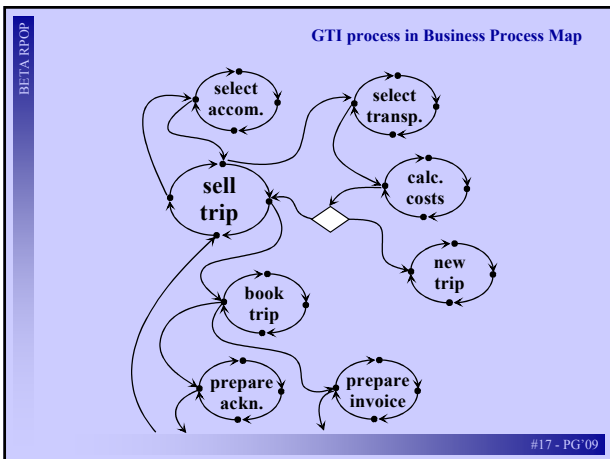
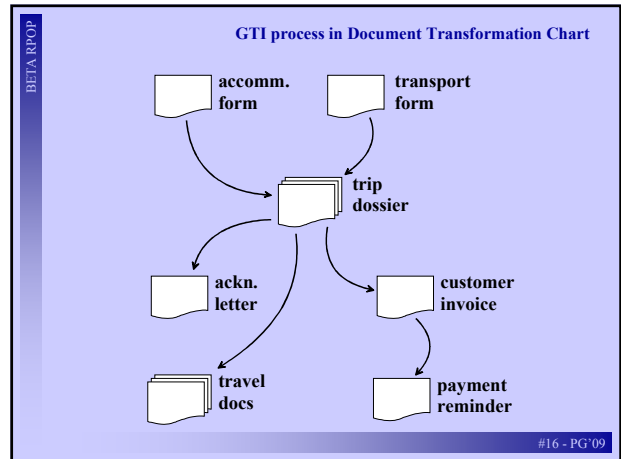
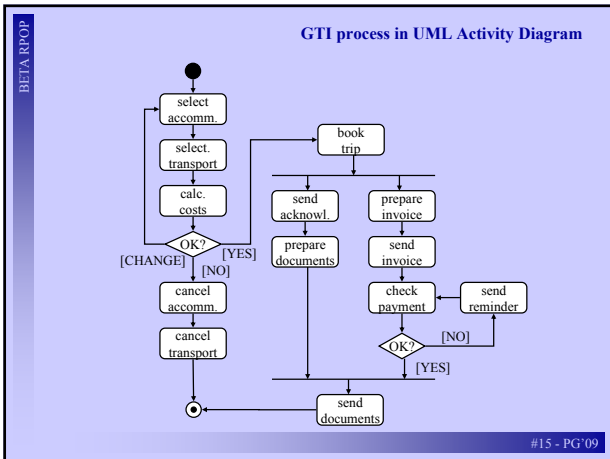
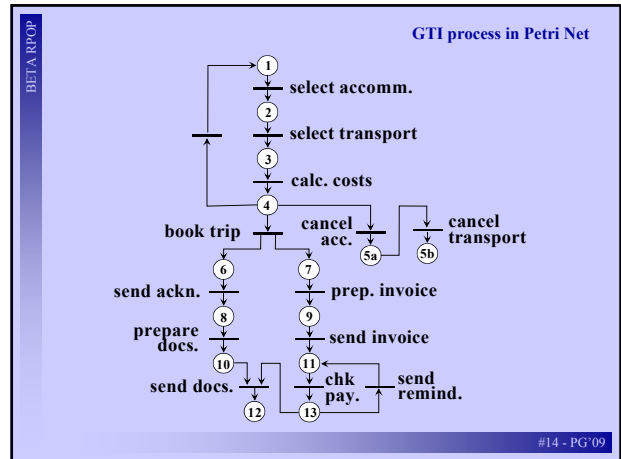
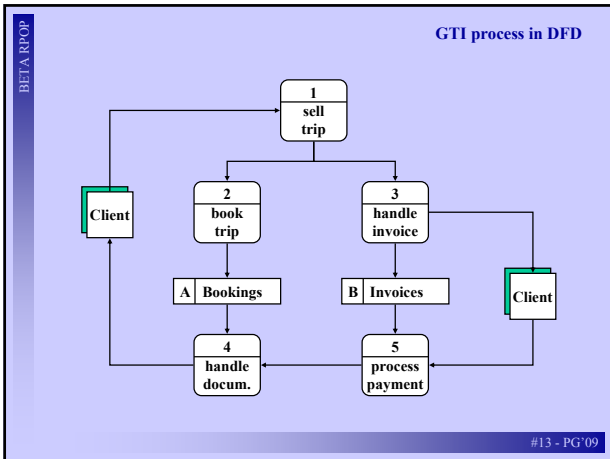
- Routing of information/documents
- Allocation of tasks to actors
- Scheduling of tasks in time
- Scheduling of scarce resources
- Monitoring flow of work
- Handling exceptional situations
- Providing management information



Intra-Organizational Business Process Management

Specifying Processes

- data flow based ?
- token based ?
- event based ?
- document based ?
- communication based ?



- The 'perfect' choice**
- Choice depends on
 - nature of business process
 - level of detail
 - intended audience
 - Combination of techniques for
 - different abstraction levels
 - different aspects
 - Consistency with BPMS environment
 - 'independent' modeling tools
 - BPMS-specific tools and details
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Inter-Organizational Business Process Management

The Background

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- Intra-organizational BPM uses automated support for business process management *within* organization boundaries
- Inter-organizational BPM (IBPM) uses automated support for business processes management *across* organization boundaries
 - e.g. for eBusiness
- Both forms can be coupled or integrated to get complete process support in virtual organizations

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Increasing Relevance of IBPM

- Concentration on core business competence
 - Dynamic business process outsourcing
 - Asymmetric (business level client/server)
 - Horizontal and vertical markets
 - E.g. financial and logistics markets (*XF*)
- Combination of highly specialized functions
 - Dynamic cooperative business networks
 - Symmetric (peer-to-peer business level)
 - Usually vertical markets
 - E.g. automotive and construction markets (*XW*)

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Supporting IBPM

- Efficiency
 - Setup of integration
 - Enactment of integrated process
- Effectiveness
 - Functional complete
 - Interoperable in market
- Flexibility
 - Adapted to dynamic market
 - Fit for evolving requirements

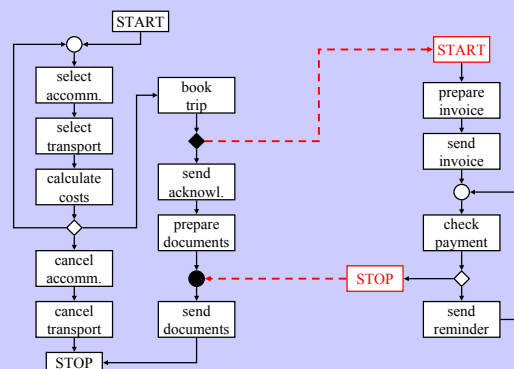
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Interorganizational business process

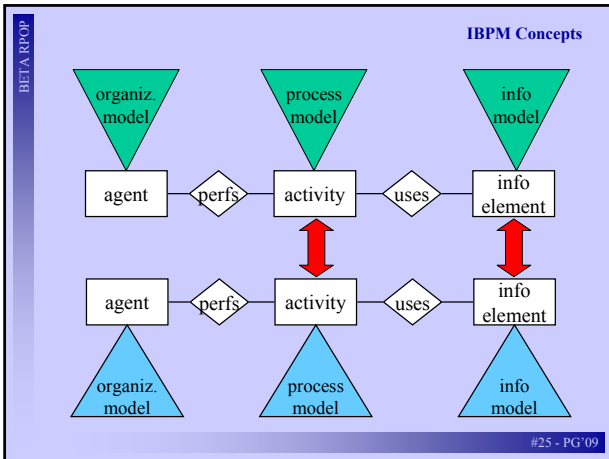
An interorganizational business process is a business process enacted by two or more autonomous organizations, of which at least one organization exposes the explicit control flow structure of a non-trivial process to the other organization(s).

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Example IBP



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- BETA RPOOP
- IBPM Aspects (1)
- Distribution
 - distributed process definition
 - distributed process enactment
 - Heterogeneity
 - different process/data standards
 - different software/hardware platforms
 - Autonomy
 - local decisions w.r.t. workflow enactment
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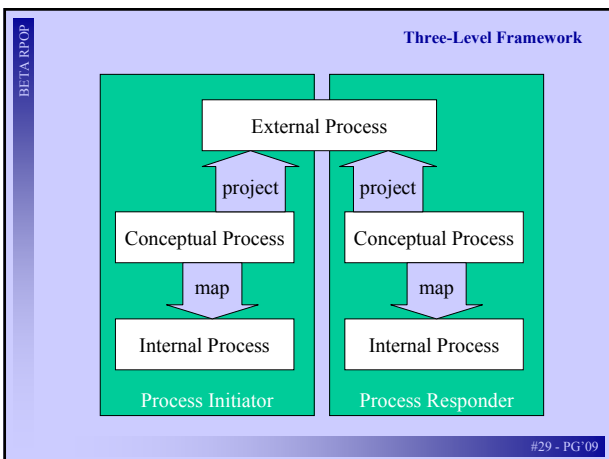
- BETA RPOOP
- IBPM Aspects (2)
- Encapsulation (abstraction)
 - hiding of private details (competition)
 - hiding of uninteresting details (service)
 - Standardization
 - process structures
 - data structures
 - interaction protocols
 - abstraction for right level
 - bilateral or market segments
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BETA RPOOP

Chapter 2 The Concepts

- Three-Layer Framework
- IO Control Flow
- IO Tx and QoS
- Dynamism

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BETA RPOOP

XO Control Flow

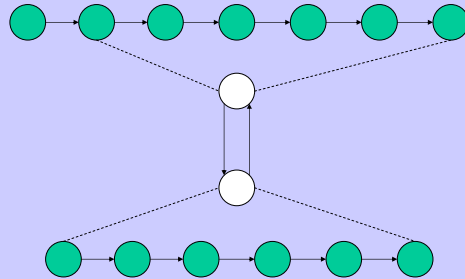
Ingredient Number 1

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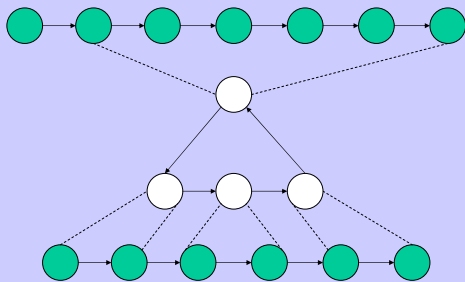
Control flow interface levels

- Black box
 - Initiator sees no details of responder
- Glass box
 - Initiator sees details of responder
- Half-open box
 - Initiator can control details of responder
- Open box
 - Initiator is controlled by responder

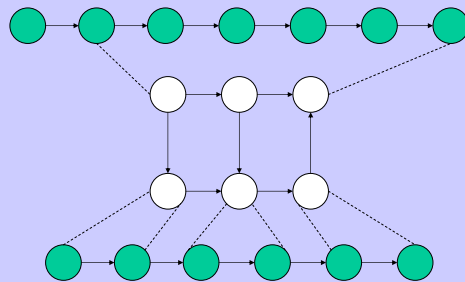
Black Box Process



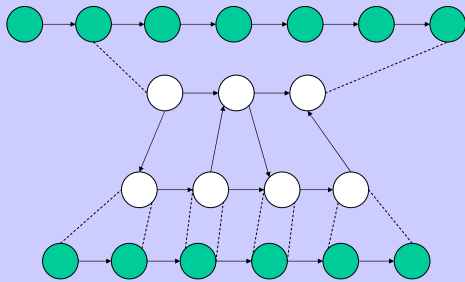
Glass Box Process



Half-Open Box Process



Open Box Process



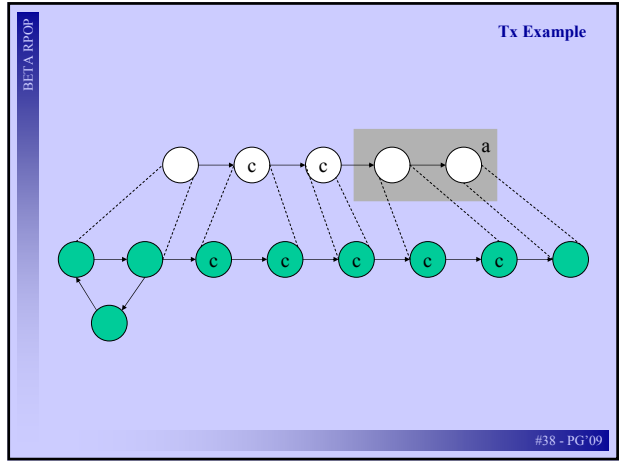
XO Tx and QoS

Ingredients Number 2 and 3

Transactional processes

- Three-level model ⇒ multi-level Tx model
 - E.g. WIDE Tx model, XTC BTF
- Long-running, multi-phase processes ⇒ multi-phase Tx model
 - E.g. XTC BTF
- Business process structure and semantics ⇒ flexible Tx semantics
 - E.g. atomicity criteria, XTC ATC

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QoS Agreements

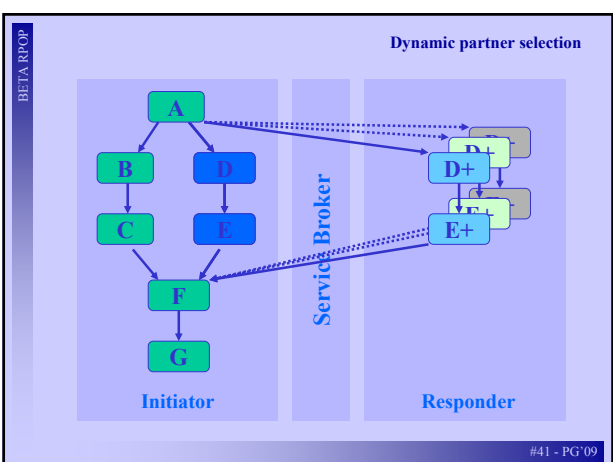
- QoS dimensions:
 - Execution times
 - Reaction/wait times
 - Availability of resources
 - Quality/precision of results
- Electronic contracting
 - Contract structure
 - Contract specification language
 - Organizational and legal embedding

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Dynamism

Ingredient Number 4

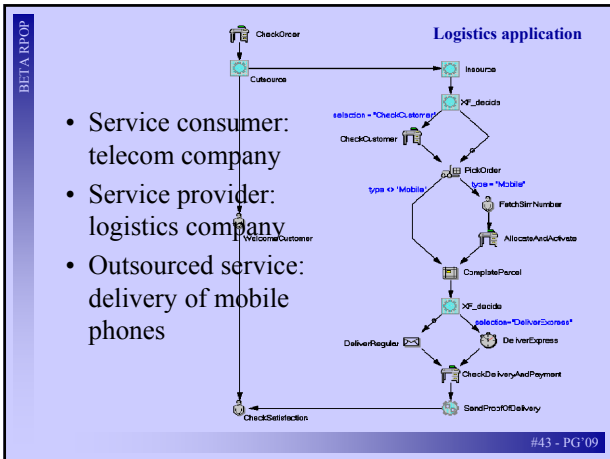
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Dynamic IBPM (DIBPM)

A dynamic interorganizational business process is an interorganizational business process that is formed dynamically by the (automatic) integration of the subprocesses of the involved organizations. Here dynamically means that during process enactment, collaborator organizations are found by searching business process market places and the subprocesses are integrated with the running processes.

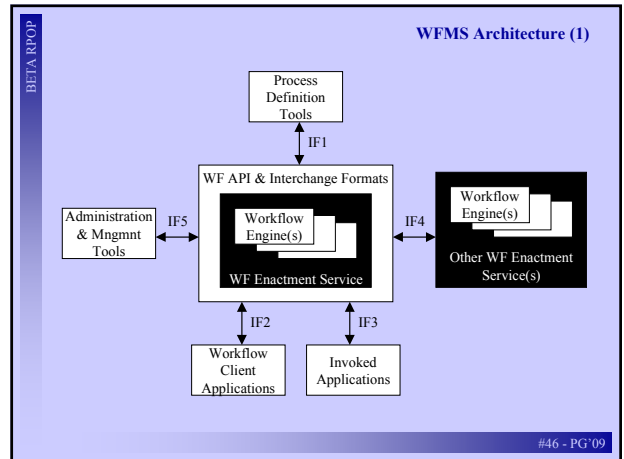
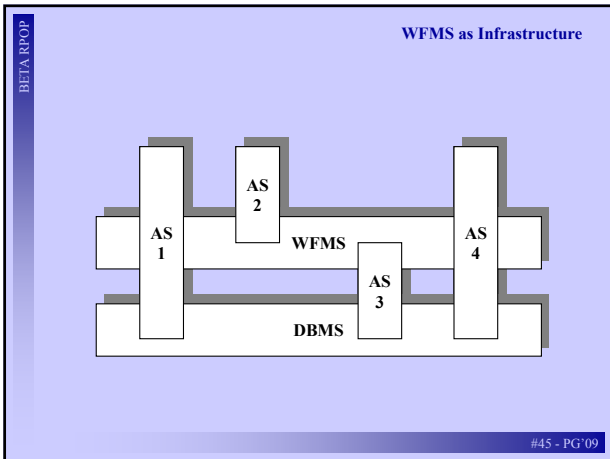
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Chapter 3 The Technologies

- CrossFlow Technology
- SOC Technology
- BPWS Model
- Architecture Blueprint

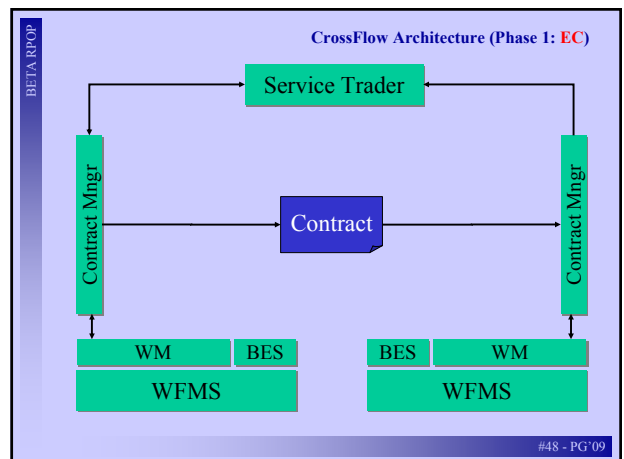
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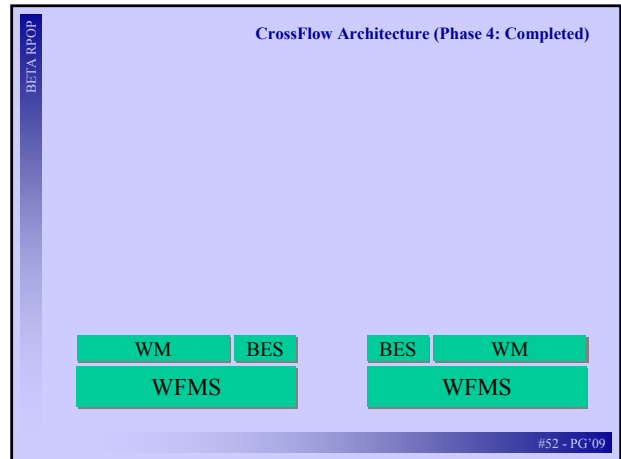
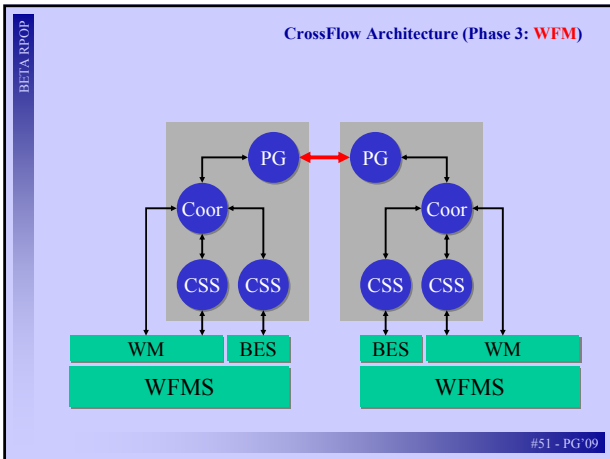
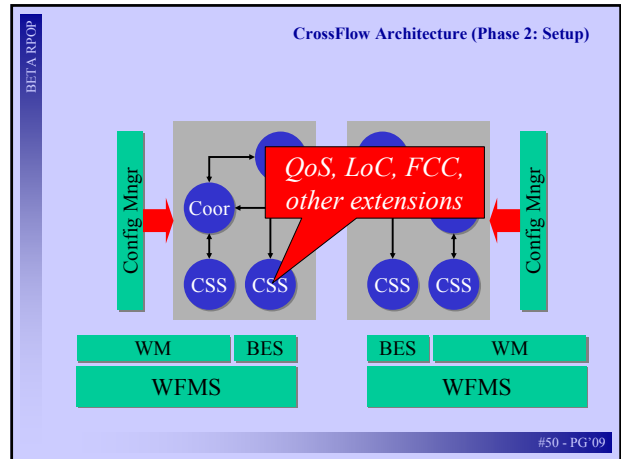
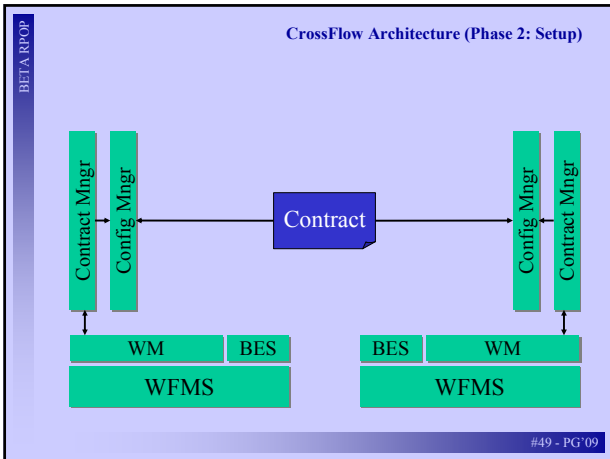


CrossFlow Technology

An Early Prototype

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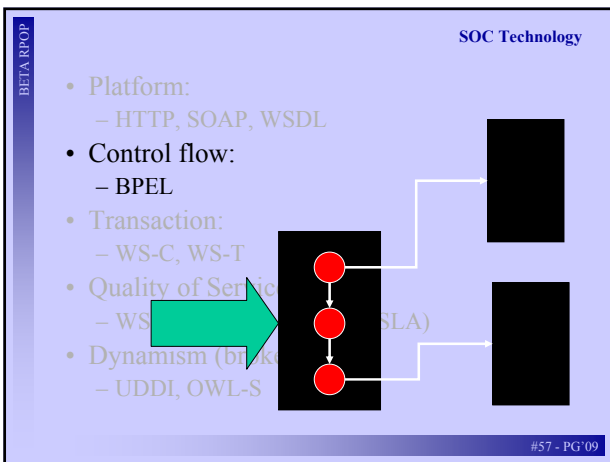
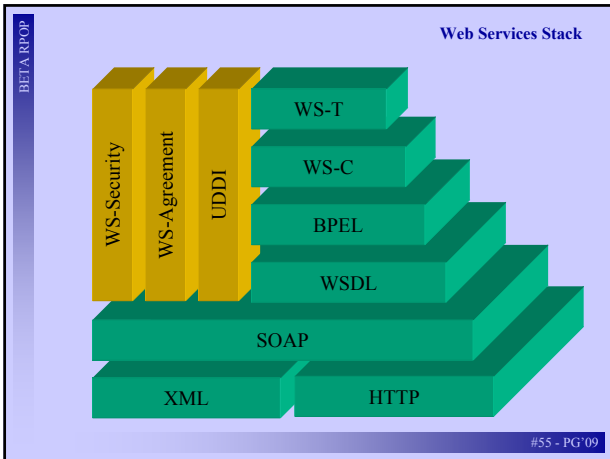
BETA RPOOP

SOC Technology

What is Out There ?

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- BETA RPOOP
- SOC Technology
- Communication:
 - HTTP, SOAP
 - Service specification:
 - WSDL
 - Control flow specification (orchestration):
 - BPEL
 - Coordination, Transaction & QoS
 - WS-C, WS-T & WS-A
 - Brokering (dynamism):
 - UDDI
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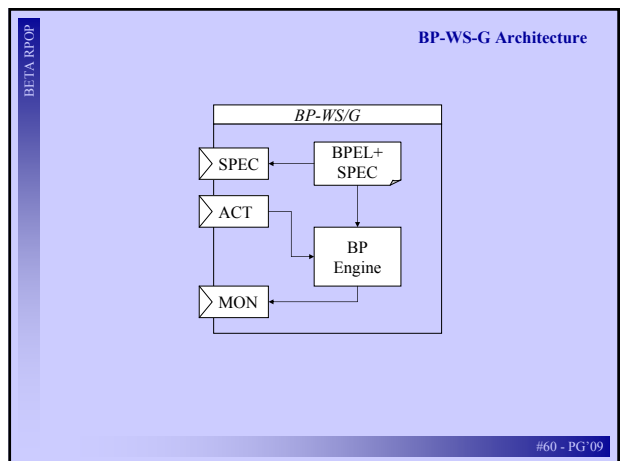
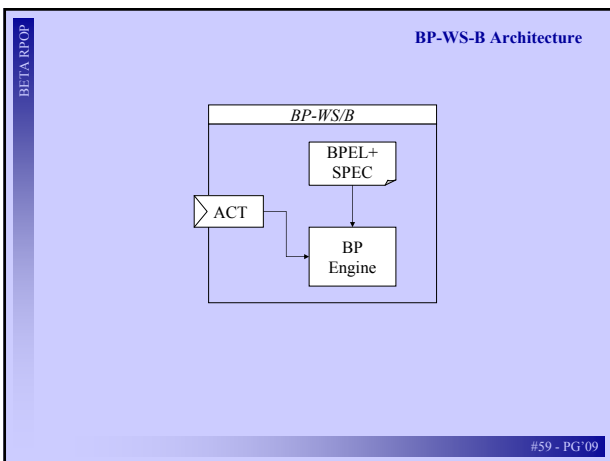


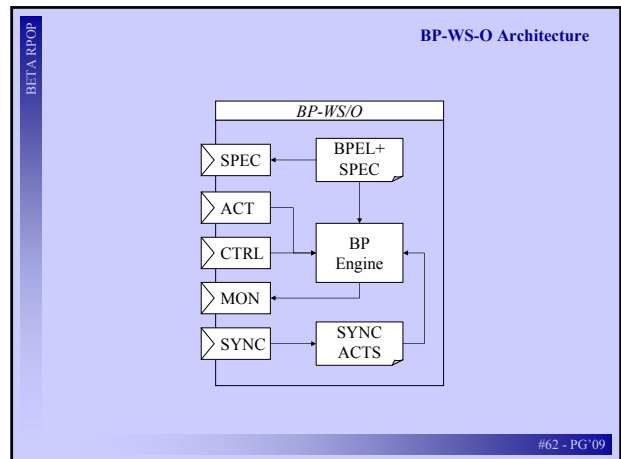
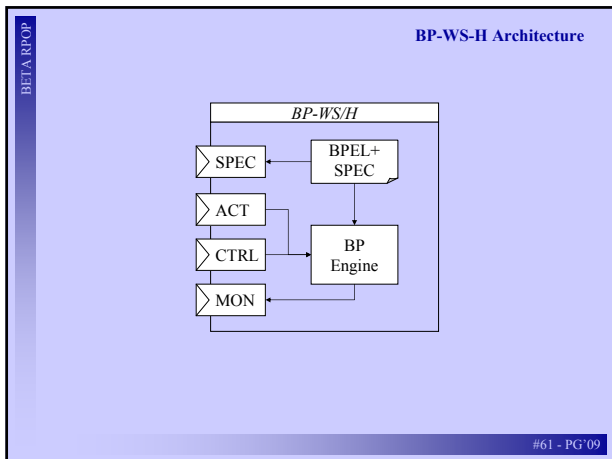
BETA RPOOP

BPWS

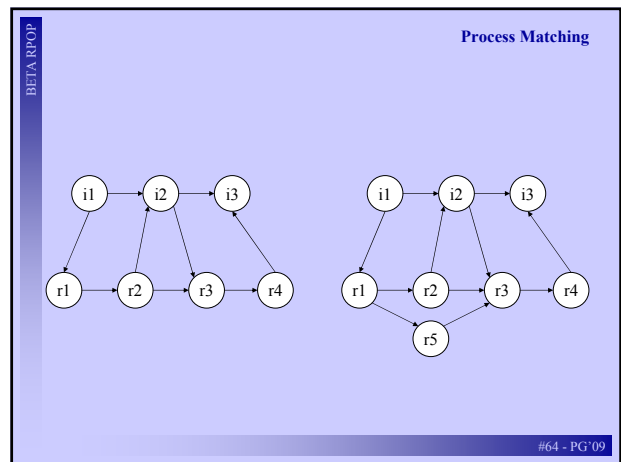
An Approach to SOC4DIBPM

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- BETA RPOOP
- Brokering aspects
- Name-based
 - Très, très simple
 - Attribute-based
 - Predefined attributes (matching space)
 - Name (of course), QoS, Tx
 - Semantics-based
 - Meaning of services (OWL-S)
 - Structure-based
 - Process matching
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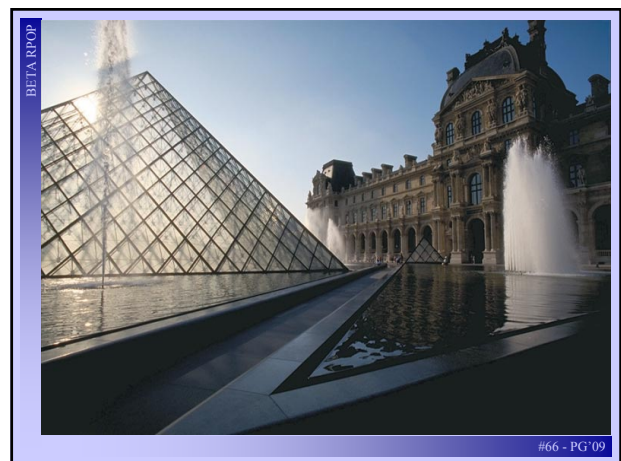


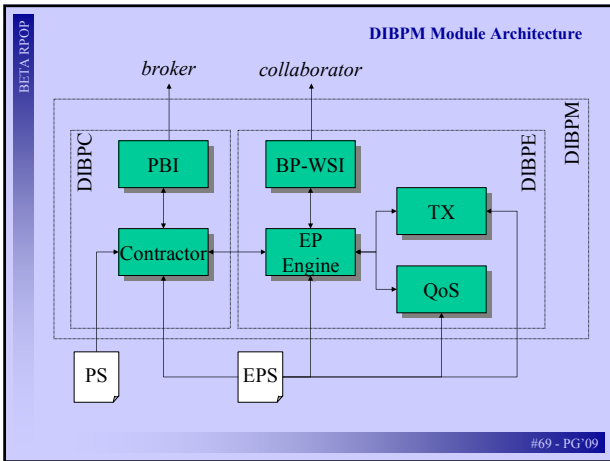
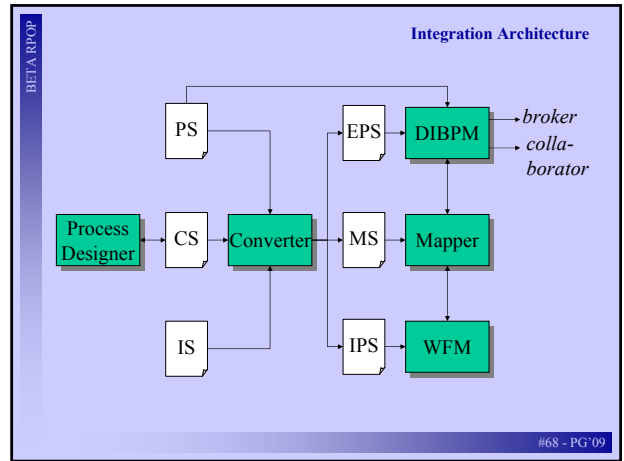
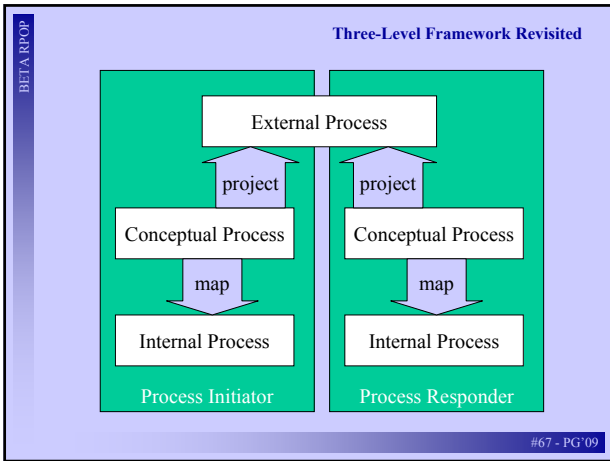
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An Architecture Blueprint

*Getting More Practical
(at least a bit)*

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**Chapter 4
Further On**

- Example Project: CrossWork
- Current Develoments
- Conclusions

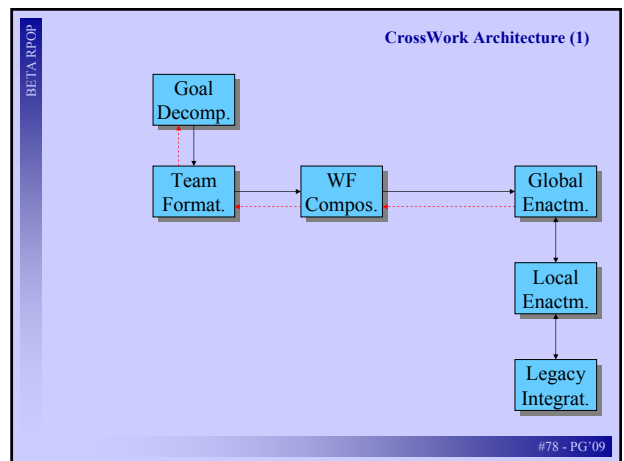
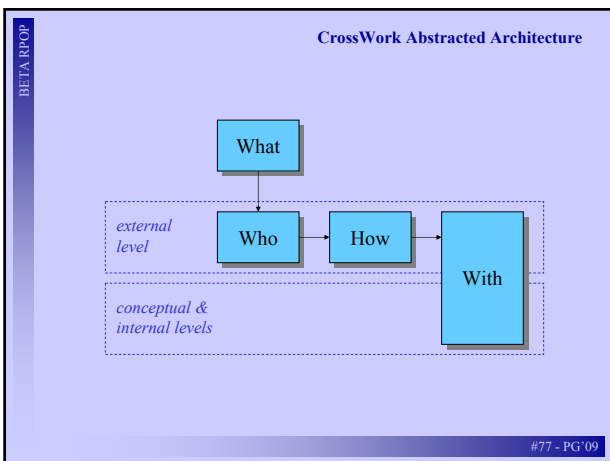
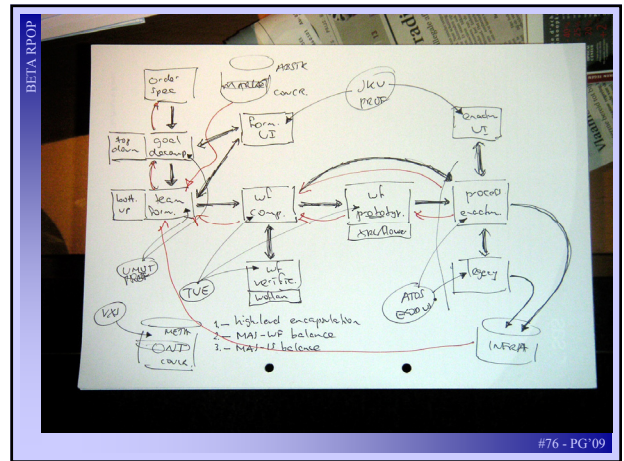
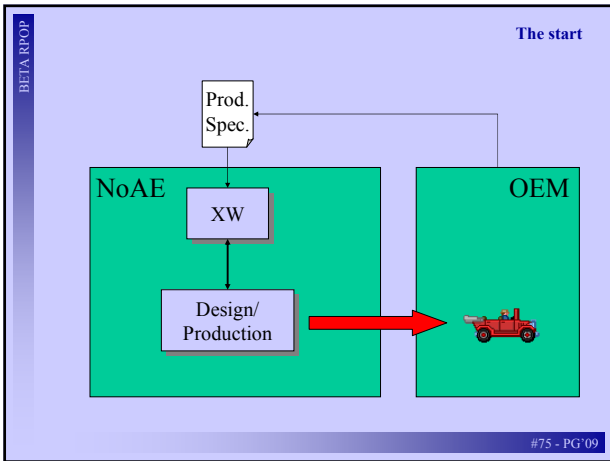
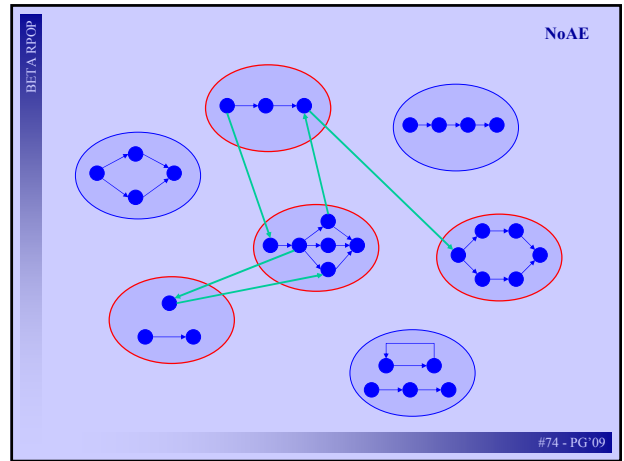
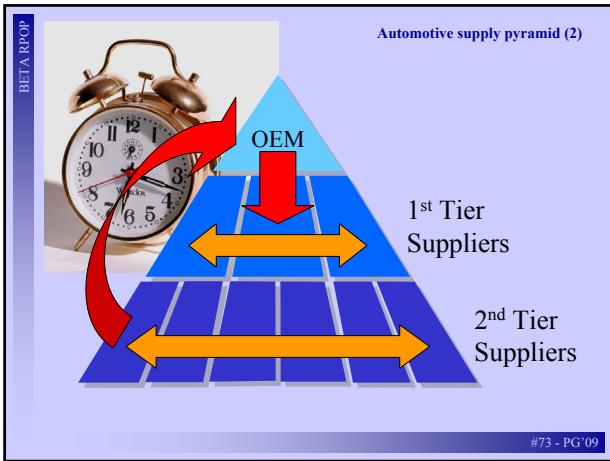
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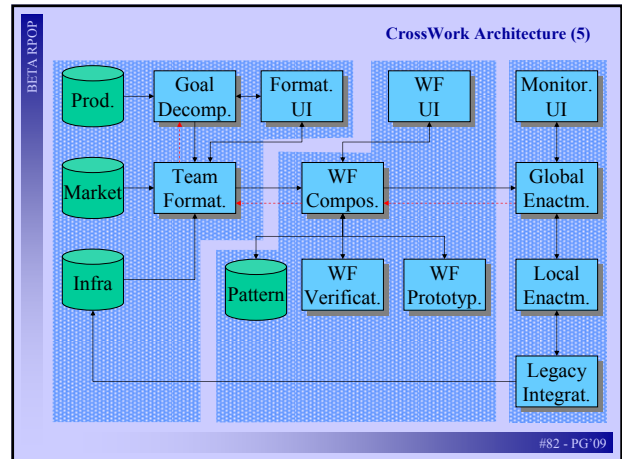
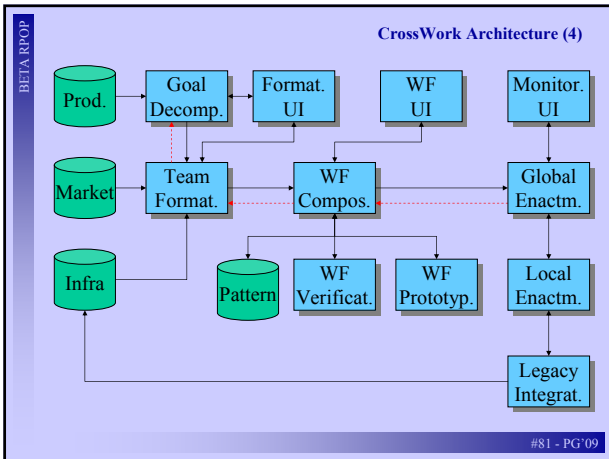
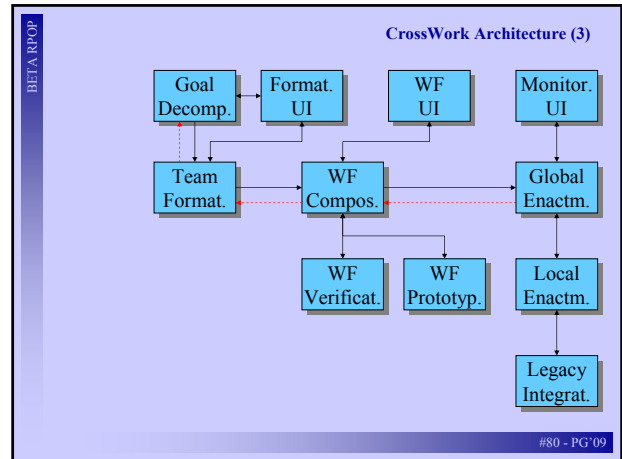
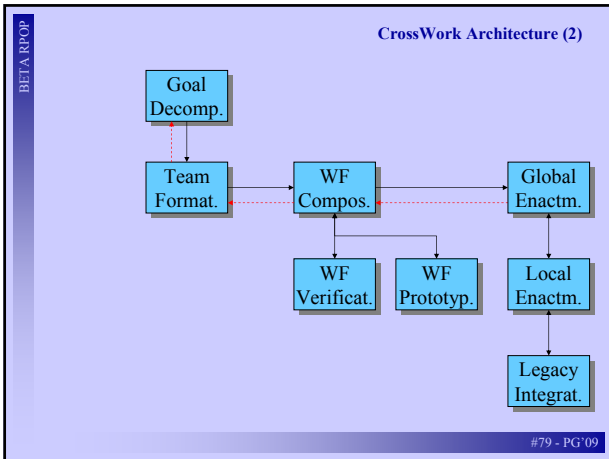
CrossWork

An Example Project in DIBPM

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BETA RPOOP

Current Developments and Conclusion

Let's be Brief and Clear

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- BETA RPOOP
- ### Current Developments in IOBPM
- Integration of slightly separated worlds:
 - (cross-organizational) workflow management
 - service-oriented computing
 - Attention for advanced aspects:
 - (cross-organizational) transaction management
 - quality of service management
 - service level agreements, contracts
 - process matching
 - semantic brokering (ontology engineering)
 - Application in advanced (hard) domains
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- (D)IBPM essential for efficient process management in (dynamic) e-business
- Necessary concepts currently being developed – based on WFM – but not yet standardized
- Standard technology currently based on Service Oriented Computing
- Other technology may be embedded, e.g., agent technology, semantic technology
- Link to legacy information systems important but difficult (interfaces, wrappers)
- Process specification and management not nearly as well standardized as data management