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Dynamic Interorganizational Business Process Management

Paul Grefen
ICTA/IS/TM/TUE
Google (“Paul Grefen”)

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Overview

- **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: Now & Further**
 - 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 processes (AIS!)

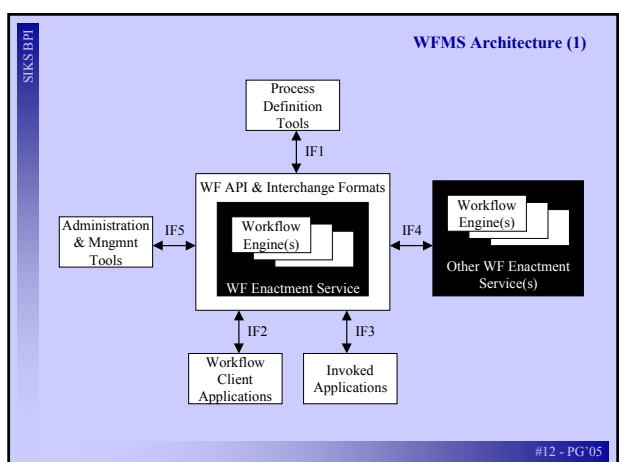
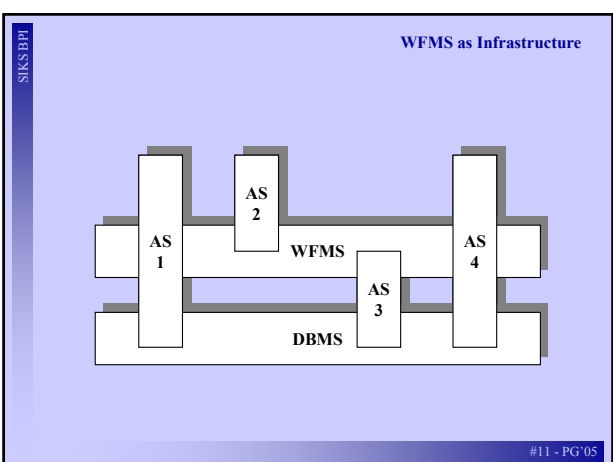
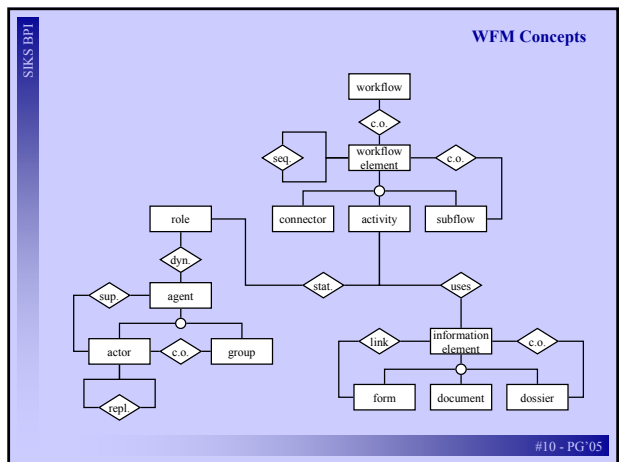
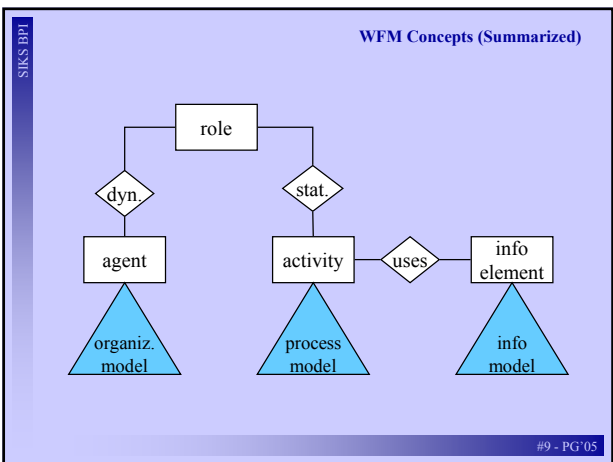
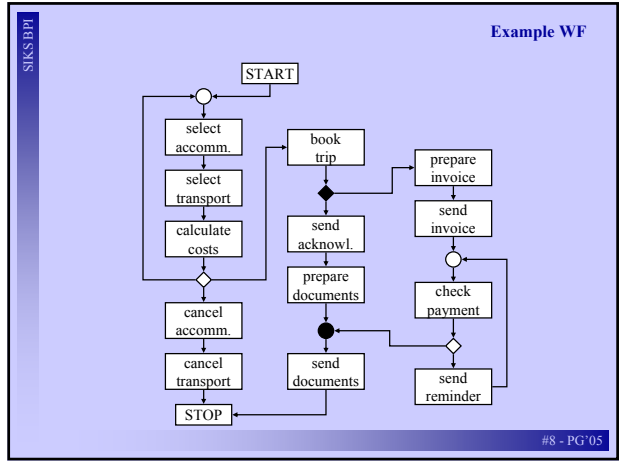
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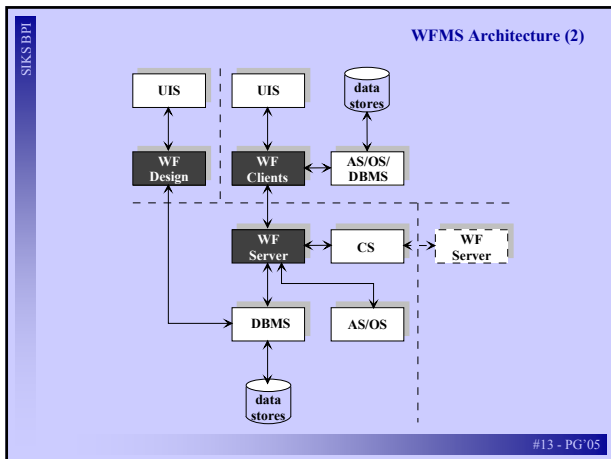


Workflow Management Aspects

- 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

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- WFM in eBusiness
- eBusiness context
 - competitiveness
 - efficient process execution
 - short response times
 - just-in-time processes
 - changing markets
 - flexibility in processes and products
 - changes in process structures
 - changes in process data
 - Explicit, structured process management
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Inter-Organizational Business Process Management

The Background

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- XO-WFM (1)
- Intra-organizational WFM in eBusiness uses automated support for business process management *within* organization boundaries
 - Cross-organizational WFM in eBusiness uses automated support for business processes management *across* organization boundaries - eCommerce
 - Both forms can be coupled or integrated to get complete process support in virtual organizations
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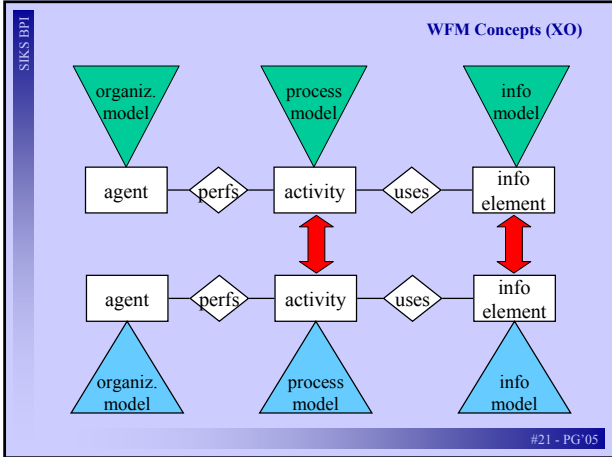
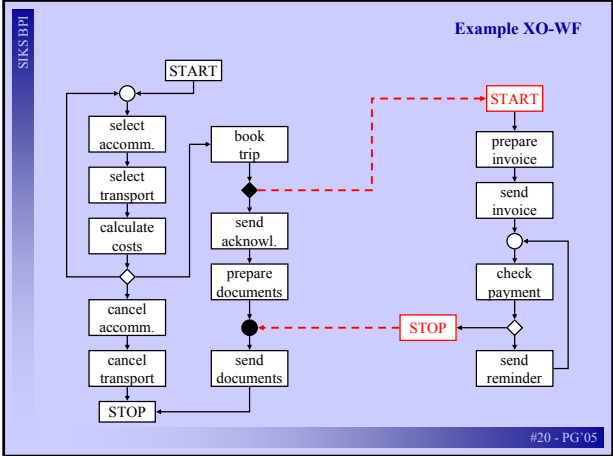
- SIKS BPI
- DIBPM
- Concentration on core business competence
 - Dynamic business process outsourcing
 - Asymmetric (business level client/server)
 - Horizontal and vertical markets
 - E.g. financial and logistics markets (*XF*)
 - Combination of highly specialized functions
 - Dynamic cooperative business networks
 - Symmetric (peer-to-peer business level)
 - Usually vertical markets
 - E.g. automotive and construction markets (*XW*)
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- SIKS BPI
- Supporting DIBPM
- 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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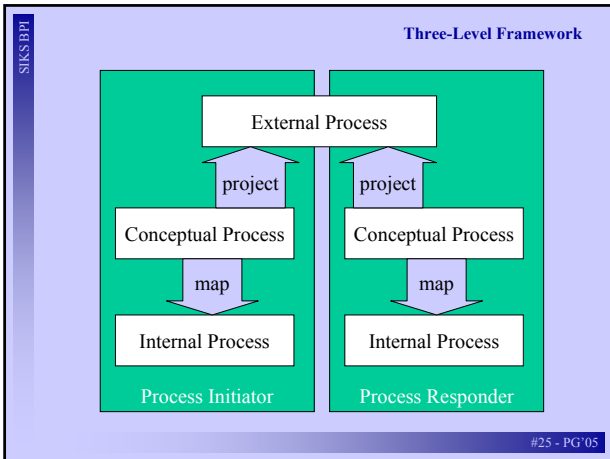
- XO-WF Aspects (1)
- Distribution
 - distributed process definition
 - distributed process enactment
 - Heterogeneity
 - different process/data standards
 - different software/hardware platforms
 - Autonomy
 - local decisions w.r.t. workflow enactment
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- XO-WF 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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Chapter 2
The Concepts

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

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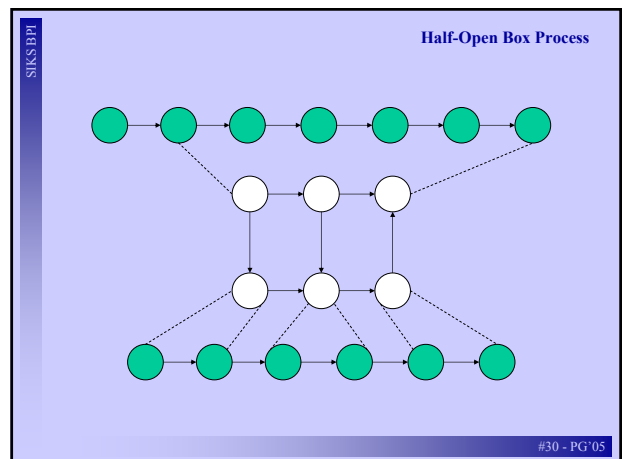
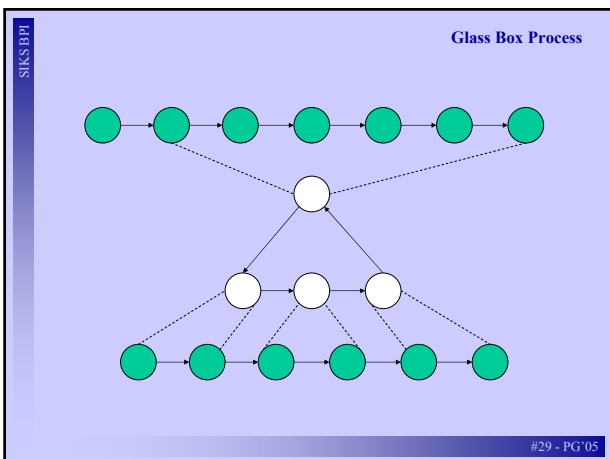
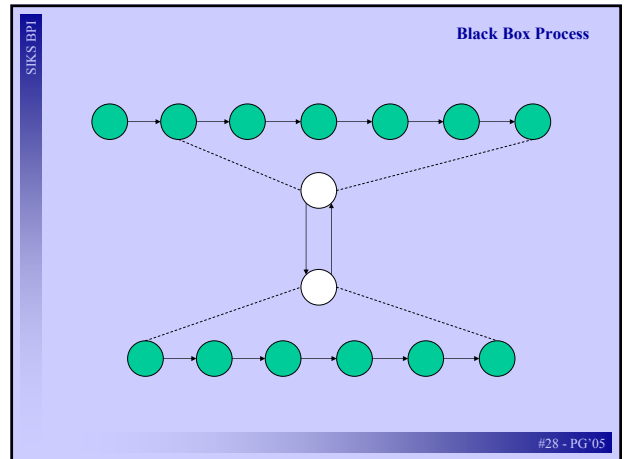
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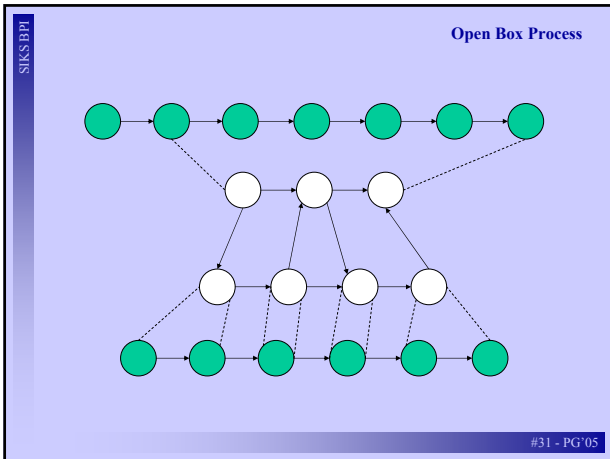
XO Control Flow

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
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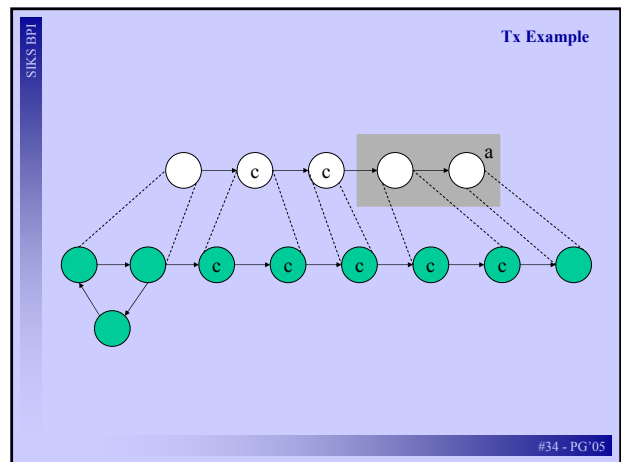
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XO Tx and QoS

Ingredients Number 2 and 3

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- Transactional processes
- Three-level model \Rightarrow multi-level Tx model
 - E.g. WIDE Tx model, XTC BTF
 - Long-running, multi-phase processes \Rightarrow multi-phase Tx model
 - E.g. XTC BTF
 - Business process structure and semantics \Rightarrow flexible Tx semantics
 - E.g. atomicity criteria, XTC ATC
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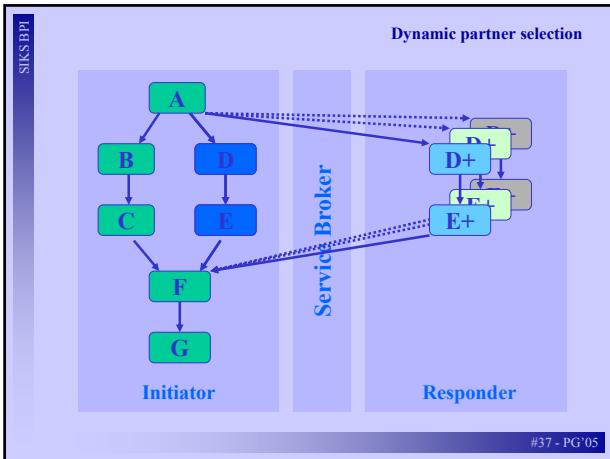
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- QoS Agreements
- QoS dimensions:
 - Execution times
 - Reaction/wait times
 - Availability of resources
 - Quality/precision of results
 - Electronic contracting
 - Contract structure
 - XF QoS CSS clauses, 4W
 - Contract specification language
 - Samuil, XTC
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Dynamism

Ingredient Number 4

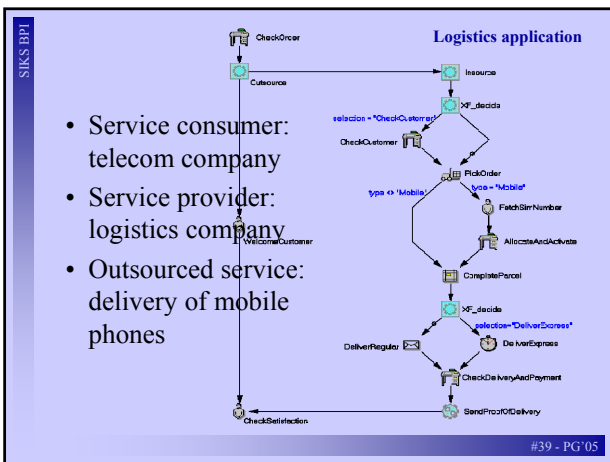
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Dynamic interorganizational business process

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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BPM

Chapter 3 The Technologies

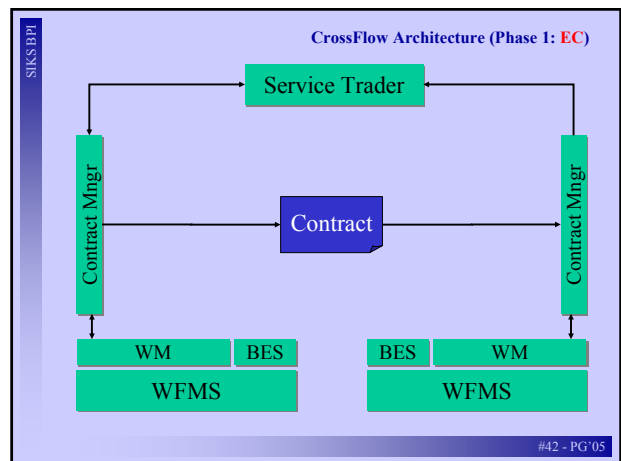
- CrossFlow Technology
- SOC Technology
- BPWS Model
- Architecture Blueprint

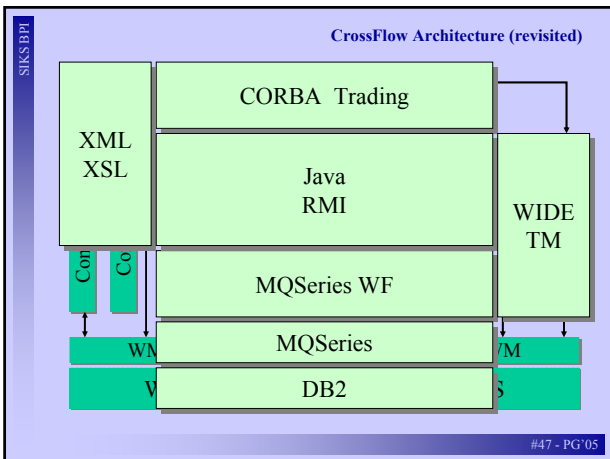
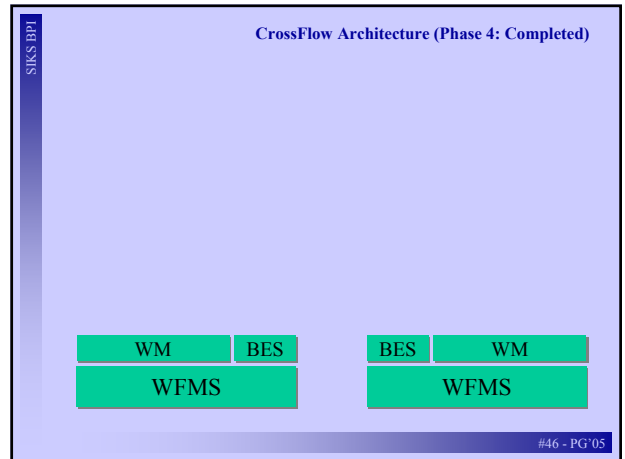
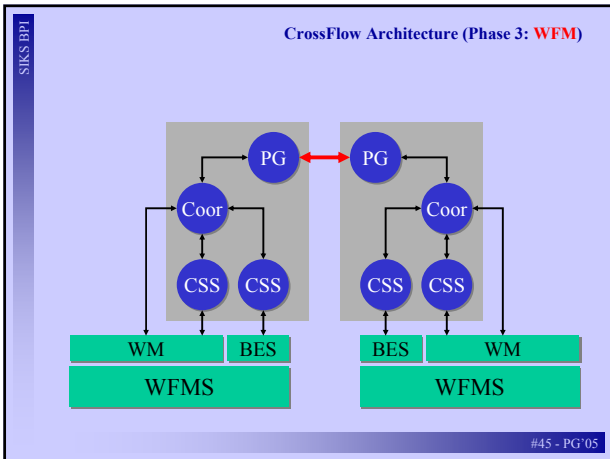
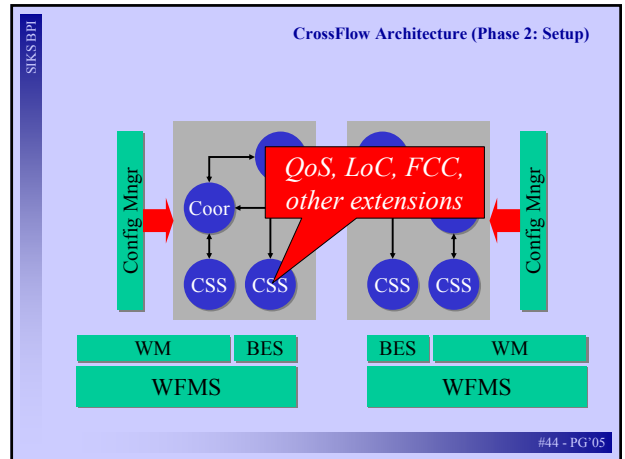
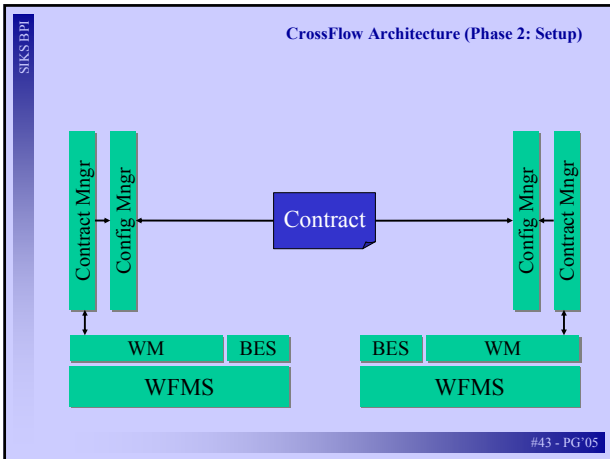
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CrossFlow Technology

An Early Prototype

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SOC Technology

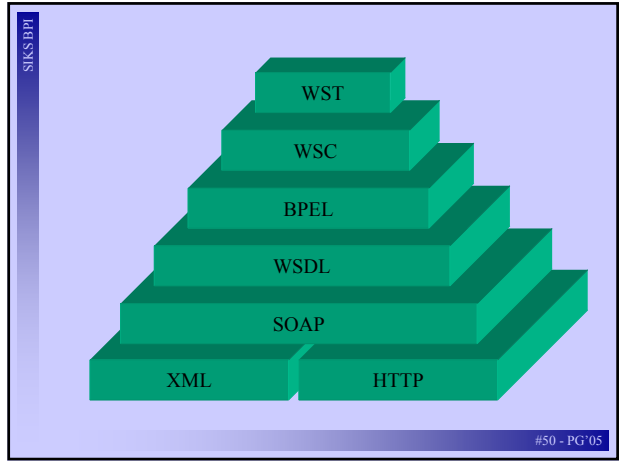
What is Out There ?

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SOC Technology

- Platform:
 - HTTP, SOAP, WSDL
- Control flow:
 - BPEL (WSFL+XLANG)
- Transaction:
 - WS-C, WS-T
- Quality of Service:
 - WS-A (+ WSDL, JSDL, WSLA)
- Dynamism (brokering):
 - UDDI, OWL-S

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SOC Technology

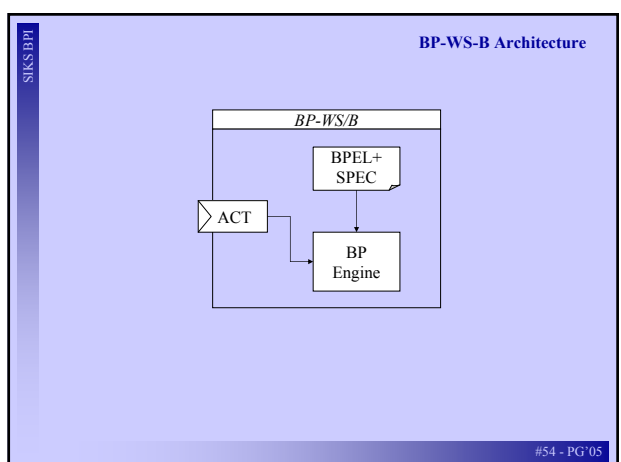
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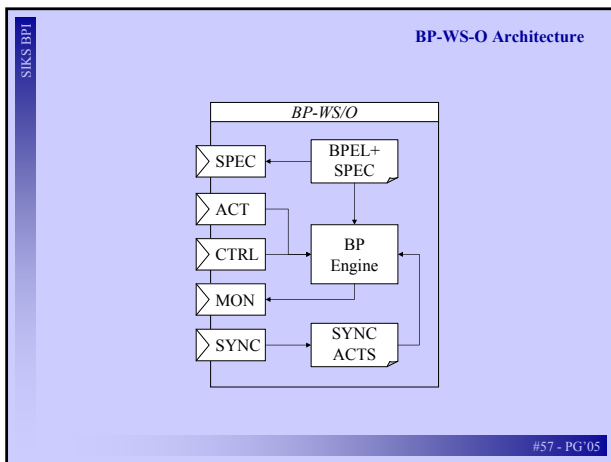
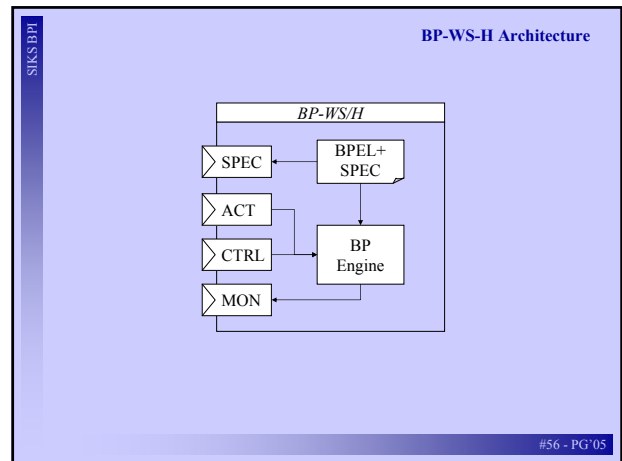
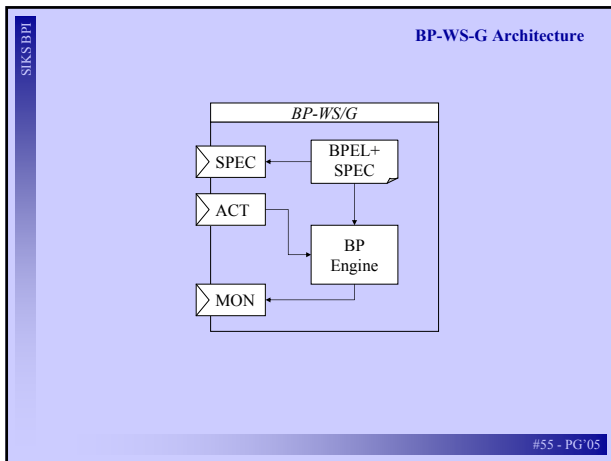
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BPWS

An Approach to SOC4DIBPM

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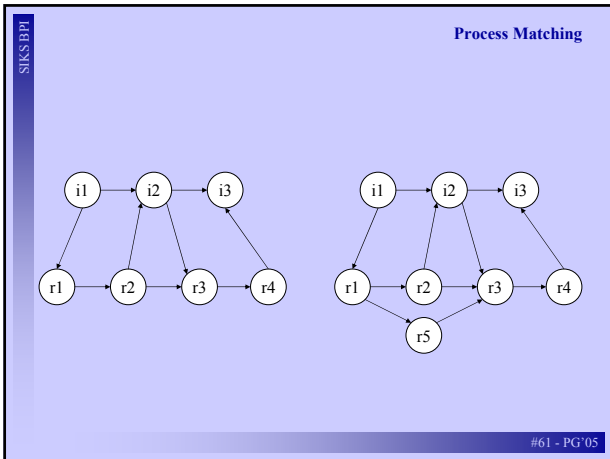




- Tx aspects
- Black box
 - Simple: atomic service
 - Glass box
 - Observable BPEL
 - Half-open box
 - BPEL+ (spheres, comp.act., Tx savepoints)
 - Open Box
 - As above, but symmetric
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- QoS aspects
- Black box
 - Simple: only overall
 - Glass box
 - BPEL + detailed QoS (WSLA) – via SPEC
 - Half-open box
 - As above, but as input to process control
 - Open Box
 - As above, but now symmetric
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- Brokering aspects
- Name-based
 - Très, très simple
 - Attribute-based (XF)
 - Predefined attributes (matching space)
 - Name (of course), QoS, Tx
 - Semantics-based
 - Meaning of services, OWL-S
 - Structure-based (XW?)
 - Process matching
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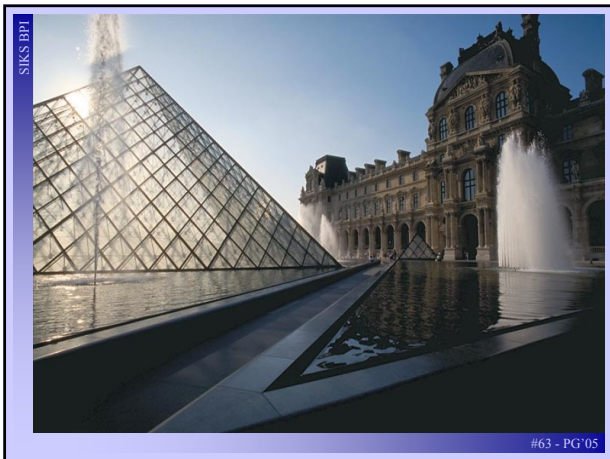


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An Architecture Blueprint

*Getting More Practical
(at least a bit)*

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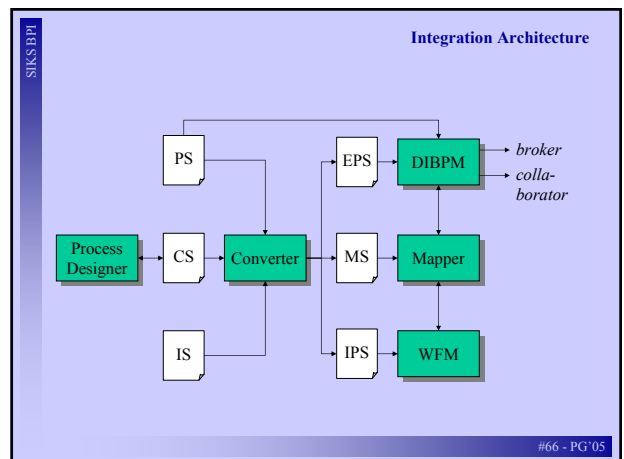
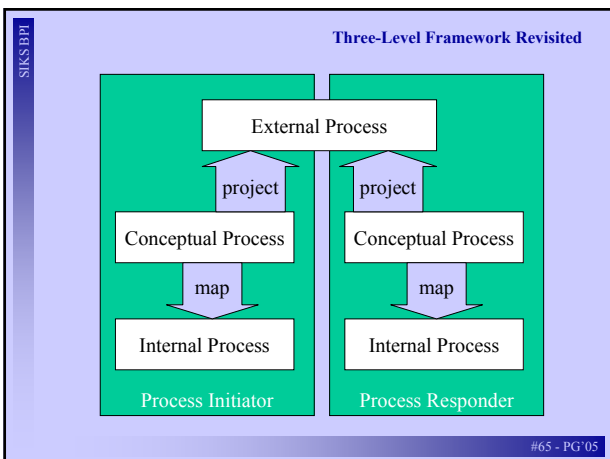


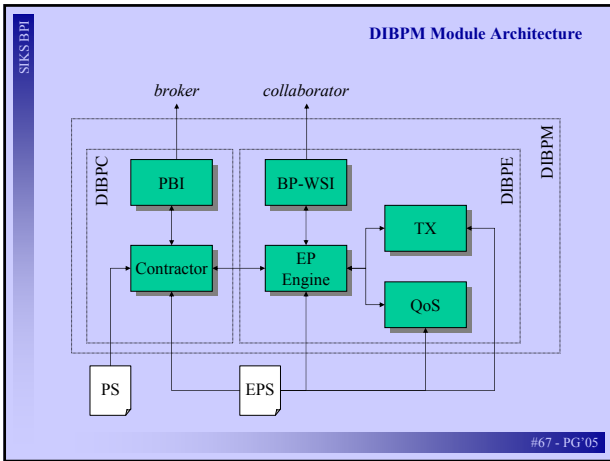
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Architecture is the art of how to waste space

Philip Johnson, 1964

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Chapter 4 Now & Further

- Example Project: CrossWork
- Current Developments
- Conclusions

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