SWINBURNE UNIVERSITY OF TECHNOLOGY

Adaptive Service Process Management

-- *Decentralization Approach*

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ASAPM Project

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Outline

- Background about the Adaptive Service Level Agreement and Process Management (ASAPM) project
- Adaptive Service Process Management (ASPM) – A part of ASAPM
- A decentralization approach to ASPM
- Selected topics on ASAPM research and development
- Discussion

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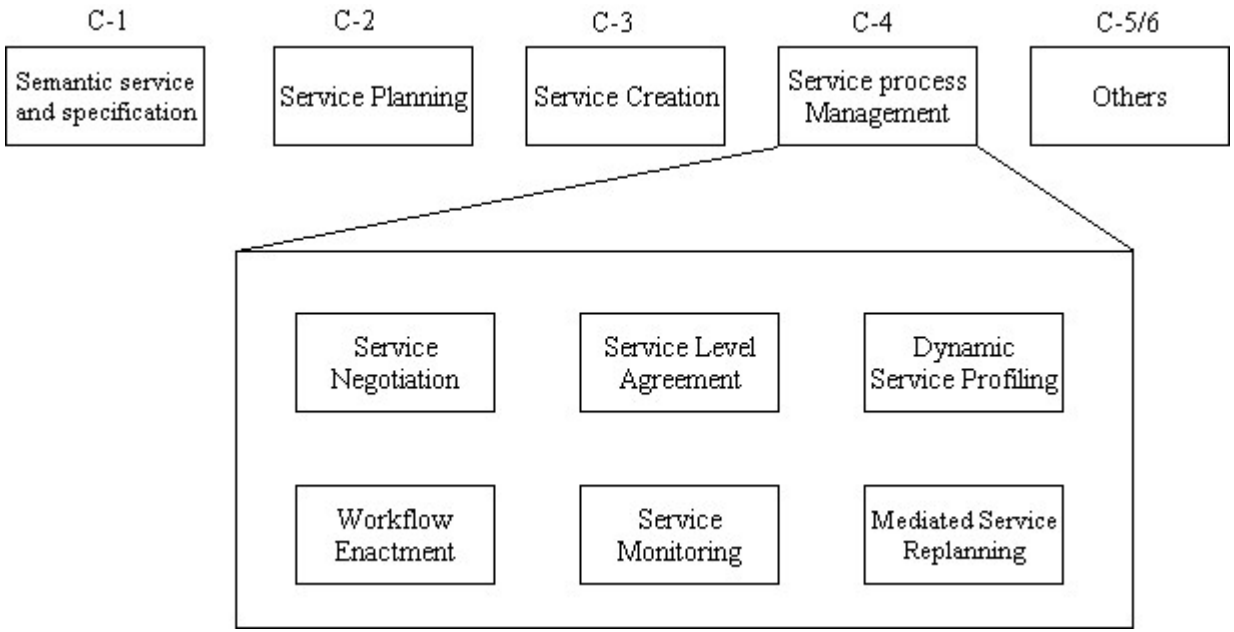
ASAPM project Background

- ASAPM project is a joint venture of Adaptive Service Grid (ASG), industry partners and CIAMAS for a service and workflow management system that supports the user's cases provided by the industry partners – Telstra, DSTO and 3i.

- ASAPM is similar to C-4 component in the context of ASG. The C-4 component is leaded and managed by the director of CIAMAS, and we are also responsible for the development of negotiation and mediation service re-planning subcomponents.

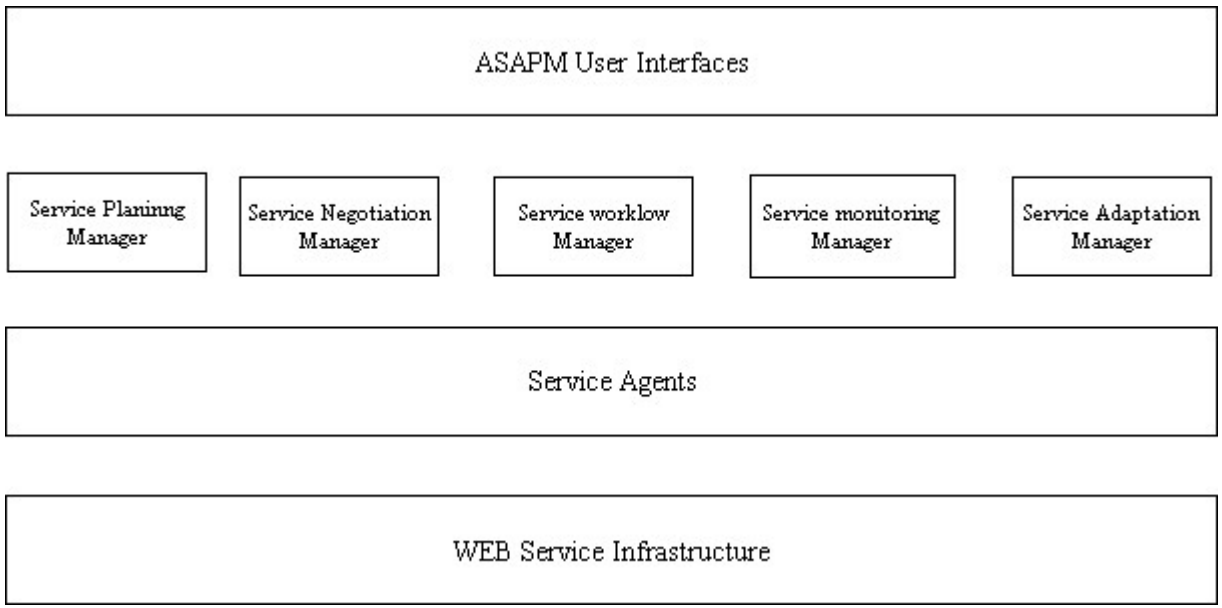
- ASAPM is relatively independent to ASG due to requirements of the user cases. It uses a multi-agent platform (JADE) with newly developed research results in CIAMAS.

ASAPM project Background



- ASG components and C-4 subcomponents

ASAPM project Background



- ASAPM System and Components

ASPM

- ASPM is a part of ASAPM focusing on service process management at execution. It consists of workflow management, service monitoring and service process adaptation components.

- The workflow management is responsible for service enactment according to a composed service specification.

- Service monitoring is to monitor the service performances of the service workflow as well as individual services based on QoS values .

- Service process adaptation provides the functionality of mediating re-negotiation and re-planning when there are QoS violations or unexpected service failures.

ASPM

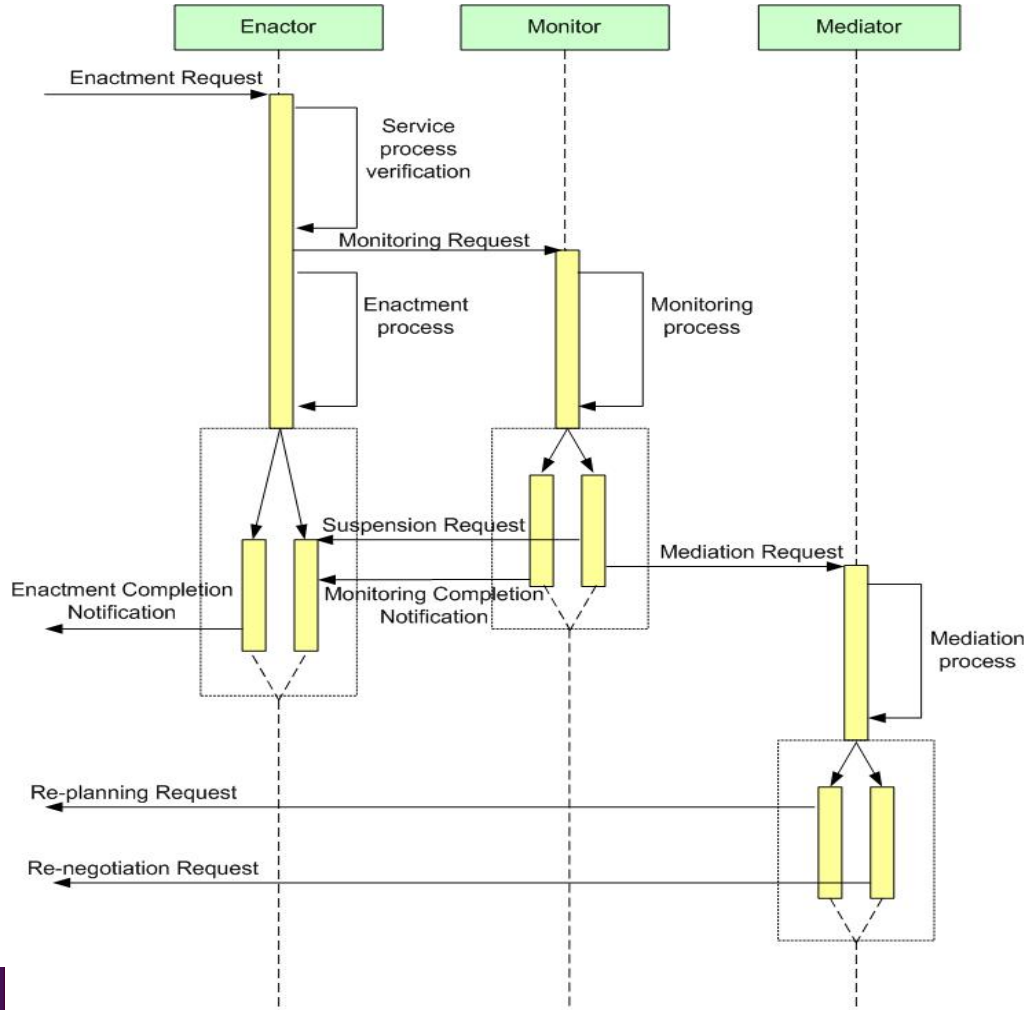


Fig. 1 Service Process Management Components

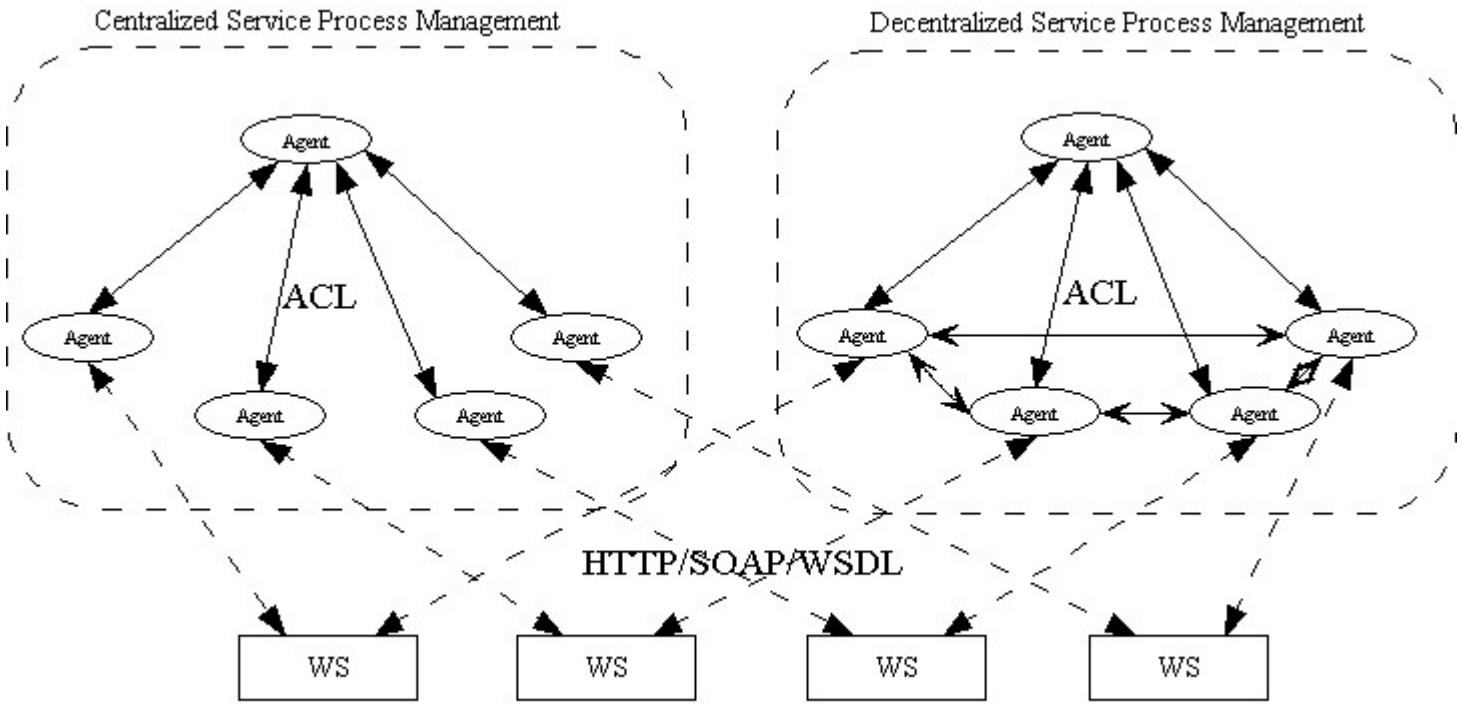
Decentralized ASPM

- Three different computing approaches are commonly used for implementing the service process management system - centralized, distributed and decentralized approach.

- We have developed a centralized ASPM system, and are readily moving on developing a decentralized one.

- ASPM is a multi-agents based system using JADE platform.

Decentralized ASPM



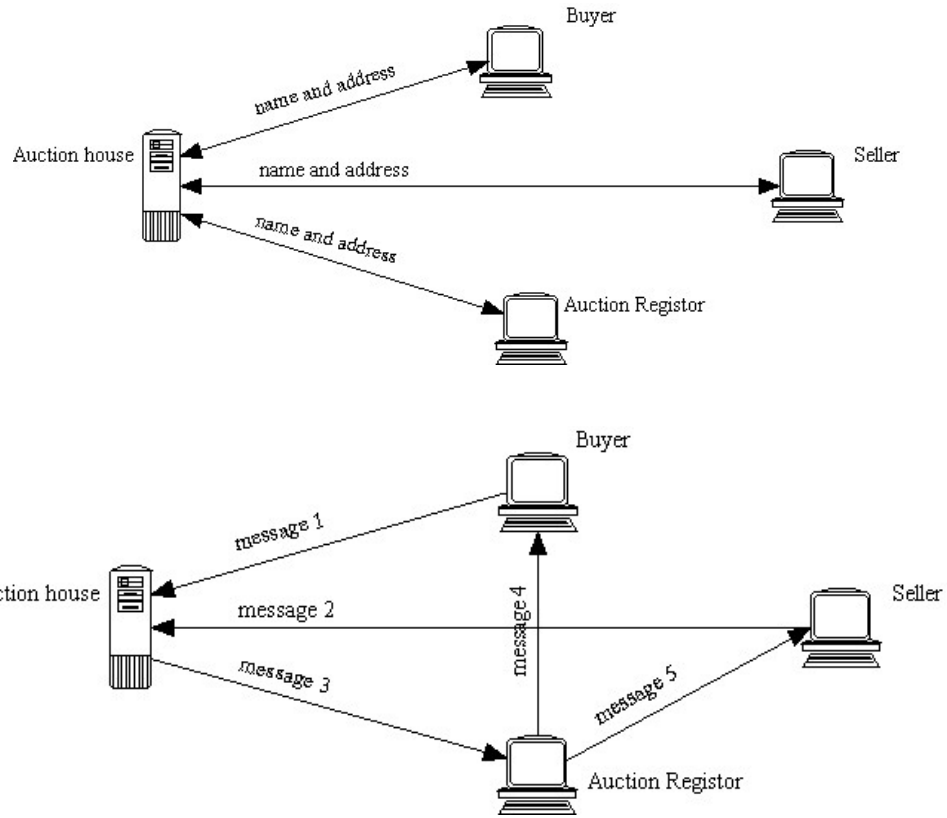
- Centralized vs Decentralized in Service Process Management

Selected Topics on ASAPM research and development

- WS2JADE for the interaction between agents and WS (Xuan).
- Multi-Agents based ASAPM architecture (Ingo)
- ASAPM user interface and some other research topics (Mohn)
- Service negotiation strategies (Jian, Jakub, James)
- Agent negotiation protocols (Sgoh)
- Service workflow replanning (Jinan Feng)
- Distributed service management using MUSE (Zheng)
- Workflow decomposition (Xuan, Sgoh, Boris)

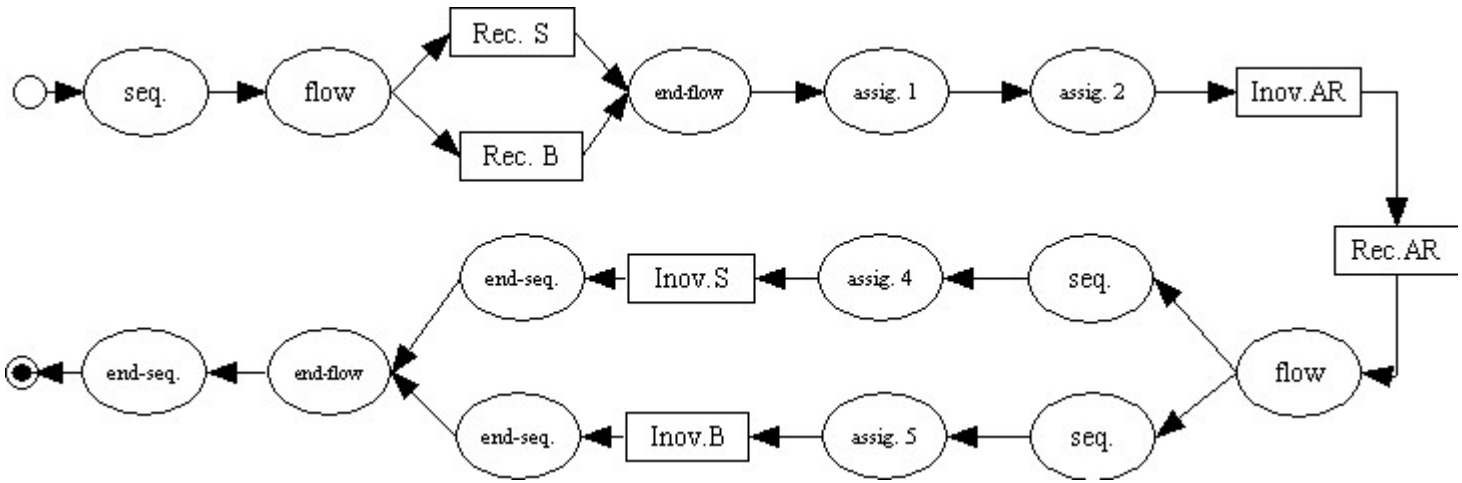
Selected Topics on ASAPM research and development

- A simplified example of decomposing service workflow for decentralized workflow enactment.



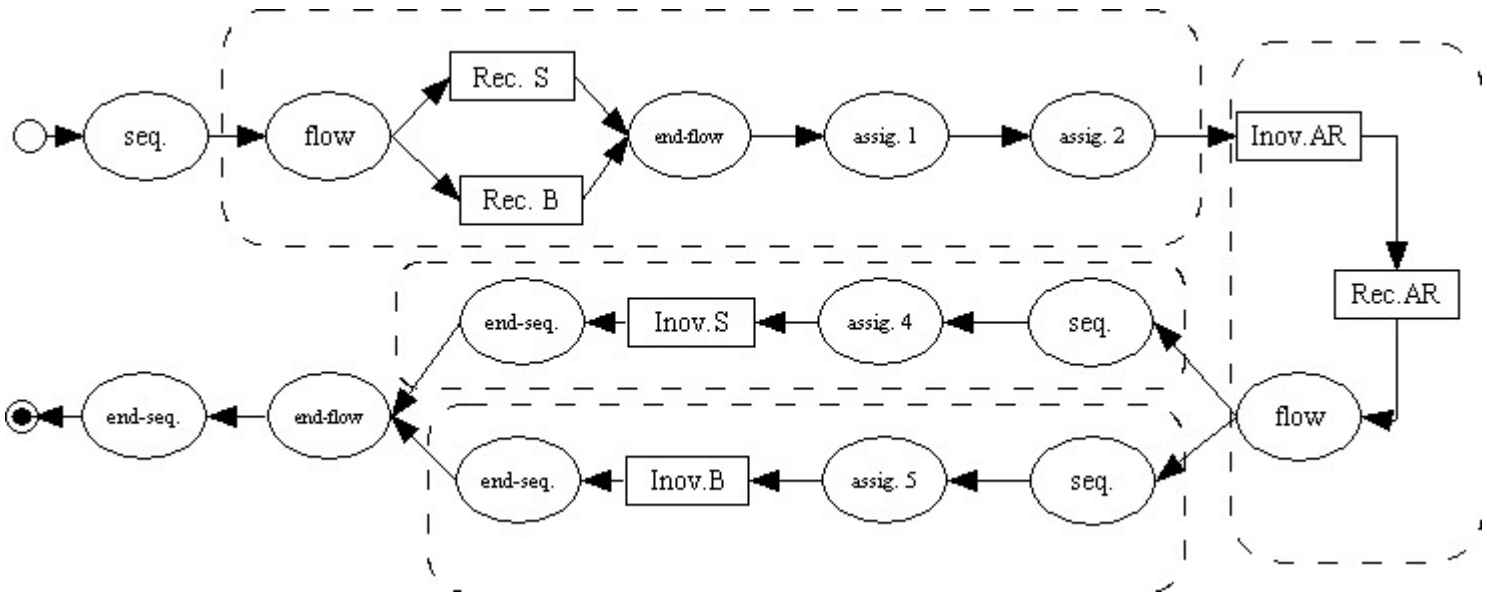
Selected Topics on ASAPM research and development

- A service workflow for the auction registration process



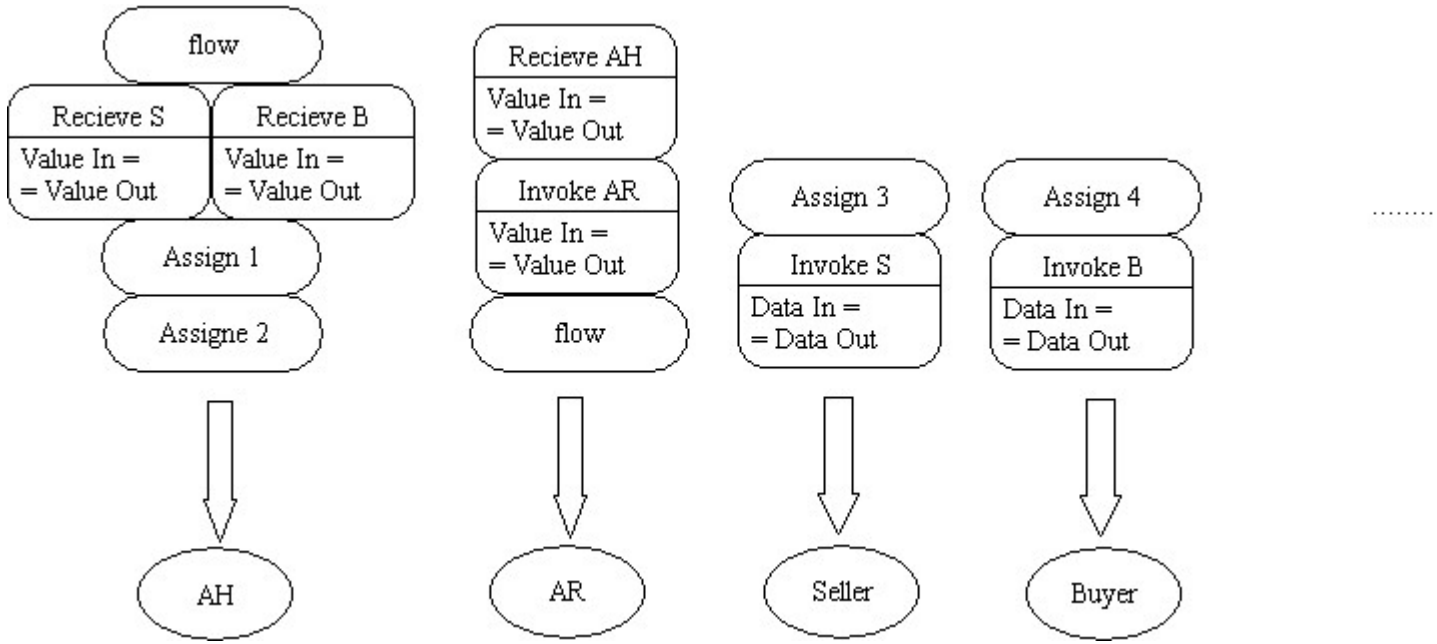
Selected Topics on ASAPM research and development

- A possible way to partition the workflow



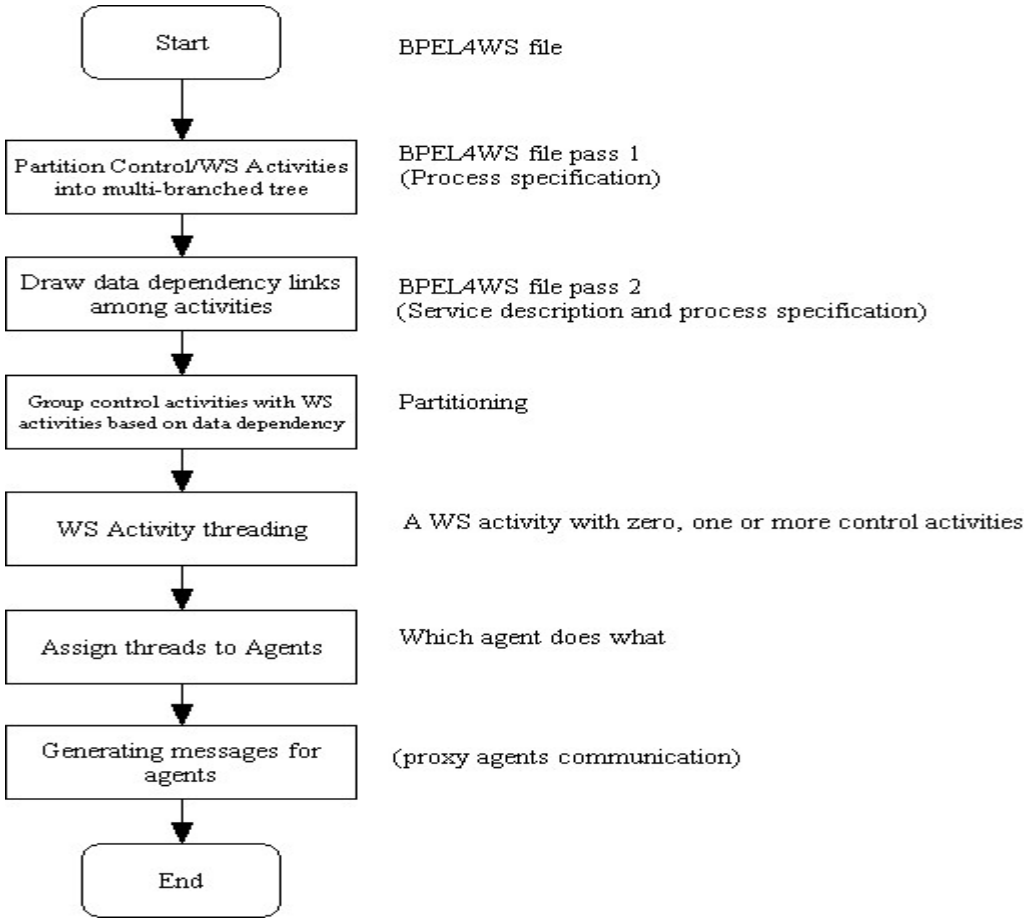
Selected Topics on ASAPM research and development

- Assign activities to agents



Selected Topics on ASAPM research and development

- The procedure for partitioning BPEL4WS service composition



Discussion

Thank you

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