Support for Mobile Software Processes in CAGIS

by

Alf Inge Wang
Introduction

• Distributed and heterogeneous environments
• Managing people working:
  – Different places
  – Different times
  – Different tools
  – Different processes
• Organisations divided into autonomous sub-organisations
• EPOS experiences
CAGIS Multi-Agent Architecture for Cooperative Software Engineering

Experience Repository

Workspace 1
- Local Process Model
- Coordination agent
- Negotiation agent
- Monitor agent
- Mediation agent
- Local agent

Workspace 2
- Local Process Model

Agent Meeting Place
Main Concepts: Process & Links

- Process
- Process fragment
- Activities
Main Concepts: **Process DTD**

```xml
<!DOCTYPE process PUBLIC "-//W3C//DTD XML 1.0//EN" "http://www.w3.org/TR/REC-xml/">
<!DOCTYPe process SYSTEM "Process.dtd">

<!ELEMENT process (name, (processfragment)+)

<!ELEMENT processfragment (name, (workspace), (activity)+)>

<!ELEMENT activity (name, (workspace), (prelink)*, (postlink)*, (state), (due)?, (feedback)?, (description), (code)*)>
```
Small example

<Activity>
<Name>compile</Name>
<Workspace>Kramer</Workspace>
<Prelink>Elaine/code</Prelink>
<Prelink>Elaine/read document</Prelink>
<Postlink>George/build</Postlink>
...
</Activity>

Workspace: Elaine

Workspace: Kramer

Workspace: George
Moving Process Fragments
Approach 1: Using process servers

Step 1: PS1 callcgi-script PS2
Step 2: PS2 send request for XML-download
Step 3: Receive XML-file and instantiate
Step 4: PS1 removes process fragments
Moving Process Fragments
Approach 2: Using Software Agents

Workspace: Kramer
Workspace: Elaine
Workspace: Jerry
Workspace: George

Process server 1
Co-ordination
Agent
Meeting Place
Negotiation

Process server 2
Process Support Tools

- **Process server**
  - Process engine
  - Registration and Un-registration of Activities
  - Moving process fragments

- **Process modeller**

- **Agenda Manager**
  - Agenda browser
  - Activity browser

- **Process Monitor**
  - Monitor progress and state of process
  - Change process state information
The Modeller and Agenda tools

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Alf Inge Wang, Email: al@finge.com, Web: http://www.finge.com
The Activity and Monitor tools
Experiences

- Easy to model processes
- Only for simple, local processes
- Multi-agent architecture to track process fragments
- CM tool to manage local changes of process model
- Problems:
  - Dangling links
  - Analysis of process model changes
- Usage:
  - Out-sourcing
  - Re-allocation of work
  - Reorganising projects
Conclusion

• Prototype to support mobile software process
• Integration with the rest of CAGIS architecture:
  – CAGIS Multi-Agent Architecture
  – CAGIS GlueServer
  – CAGIS Transaction Manager
  – CAGIS Document Services
• Experiences with more CSE processes
• Checking model consistency