Development and Experimental Proof of Interworkflow Management System

**Member:**
Kanagawa Institute of Technology
Hitachi, Ltd.
TOSHIBA CORPORATION
Japan SIG, WfMC

**Non-Member:**
ARK Information Systems Inc.
NTT Software Corporation
Keio University
Today’s Main Report

✧ I’d like to report:

◆ Development of Interworkflow Management System
  • This system is connected with two workflow products: Groupmax and InConcert
  • Inerworkflow management system is support technology of inter-operation among different WFMSs

◆ Report of Experimental Proof of Interworkflow Management System
Background

✧ Interworkflow Application Model: Tokyo Meeting (Feb. 1997)
   The Design of Cross-Organizational Workflow Processes and
   Distributed Operations Management. WFMC-TC-2102

✧ JSA demonstrated an Interworkflow support system
   based on a prototype: Berlin Meeting (Feb. 1998)

✧ Our Proposal was Accepted: Vienna Meeting (Jan. 1999)
   ◆ “Development and Experimental proof of
      Interworkflow Management System”
   ◆ Information-technology Promotion Agency (IPA)
      -- An extra-departmental body of MITI --

Project Partners:

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Interworkflow Support Technologies

✧ Technologies for automating business processes across organizations (companies or divisions)
  ◆ Operate as workflow in a single organization.
  ◆ Define as workflow in a single organization.

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![Diagram](image_url)

- Call Reception
- Check of previous cases
- Answer
- Entry in Records
- Reception
- Check
- Answer
- Automated Connection

Workflow in Sales Company

Workflow in Manufacturing Companies
Feature of Interworkflow

✧ Support of business process among multiple organizations
  ◆ Integration of business process among enterprises
  ◆ Business-to-Business E-commerce (B2B EC)

✧ Managing both Cooperation and Autonomy
  ◆ Linking Interface is decided strictly by discussion among organizations

On the contrary,
  ◆ Internal process in each organization is added by its own decision and is not open to the other organization
  ◆ Each organization uses particular information technology and machine
Approach of Proposal Technology

✧ Definition of hierarchical business process

◆ Linking Interface: Description by Interworkflow Definition Tool
  ◆ Describe it by Interworkflow Definition Tool and each organization confirm it.
  ◆ Convert to the process definition data in each organization by Translator and distribute it to each organization. We say process definition data Skeleton.

◆ Internal process: Each Organization adds and edits internal processing by process definition tool of WFMS in organization.

✧ Interoperability of different WFMS

Issue1 ---- Standardization

Issue2 ---- Support of Description

✧ Result of Standardization

✧ Core of Proposal Technology
Configuration and Share

Interworkflow Management System common parts

Workflow Management System -A
(WFM-A: GroupMax)

Workflow Management System -B
(WFM-B: InConcert)

ARK Information Systems Inc.
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Toshiba Corporation

NTT Software Corporation: Experimental Proof
Special Feature of Interworkflow Definition Tool

✧ Table of Interworkflow Resource Data  ---  Resource Editor

◆ Interworkflow Resource Data:
  Company Name, Organization Name, Participant Name, E-Mail Address

◆ Interworkflow Resource Data is registered and used by Uni-Table.

◆ Interworkflow Resource Data become consistently.

✧ Description of Interworkflow Process Definition Data  ---  Process Editor

◆ Interworkflow Process Definition Data is that only linking interface that can be open to other organization is defined on one place.
**Interworkflow Definition Tool**

**Definition by GUI of Process Editor**

```
process P1 def {
    interact P2 : INSTANCE;
}
process P2 def {
    interact P1 : CREATOR;
}
process P1 body {
    act [A11];
    new P2;
    act [A13]
}
process P2 body {
    act [B21];
    act [B22]
}
```

**Definition by Resource Editor**

**Interworkflow Resource Table**

| SourceNodeID | **|
| TargetNodeID | **|
| [TargetUserID] | **|

**Interworkflow Definition Data**

**Interworkflow Definition Tool**

**Interworkflow Definition Data**

**ProcessDefinitionID**

P2

**Profile**

chain

**Interworkflow Resource Data**
Workflow Engine-A (Source)  Workflow Engine-B (Target)

Start Conversation
Create Process Instance
Change Process Instance State
Start Conversation
Create Process Instance
Change Process Instance State
Stop Conversation
Stop Conversation

Start Conversation
Req.F. ContractID
SourceNodeID
Create Process Instance
Req.F. ProcessDefinitionID
Profile
[SourceBDefName]
[TargetUserID]
Change Process Instance State
Req.F. [TargetUserID]

Start Conversation
Res.F. TargetNodeID
Create Process Instance
Res.F. [TargetBDefName]
Change Process Instance State

Run Time
Organizations to be linked decide the linking interface

Workflows are implemented in each organization

Work is carried out and managed

Description of Interworkflow Definition

Semi-automatic conversion by translator + Contract ID + addition of internal work procedures in each organization

Operation of Interworkflow in inter-operating different WMS

WfMC Interface 4

Regular Procedure:

Interworkflow definitions

Process Definition Data
Without Interworkflow Definition Tool

✧ When each organization describes interworkflow separately,
✧ Problems frequently occur when systems are connected much time is spent on testing, and
✧ very large-scale linking interface may become unmanageable.

Organization 1
Organization 2

Each organization writes external interfaces.

Problems occur (due to false expectations, misunderstandings, etc.)
With Interworkflow Definition Tool

✧ Define interworkflow interfaces and distribute them to each organization.
✧ Each organization adds descriptions for its own internal processing.
✧ Interfaces are written top-down in one place.
✧ Internal processing is added individually.
✧ Perfect meshing
Demonstration(1)

✧ The Nested Type (Two Organizations)

◆ Interworkflow Resource Data Definition by Resource Editor
◆ Interworkflow Process Definition by Process Editor
◆ Conversion by Translator
◆ Internal Process Definition in Each WFMS Definition Tool
◆ Operation in Each WFMS Engine (GroupMax & InConcert)
Demonstration (2)

✧ The Nested Type (Three Organizations)

◆ Interworkflow Resource Data Definition by Resource Editor
◆ Interworkflow Process Definition by Process Editor
◆ Conversion by Translator
Experimental Proof

- Individual Workflow

- Interconnection of Workflow
  - Individual definition

- Interconnection of Workflow
  - Interworkflow definition

Execution Time of Operation

System Building Time

Mistake
Test and Debug
Usability
Report of Experimental Proof

Condition

- Without IwfD
- With IwfD

Number of Mistake

1/3

Time of Debug

1/10

Building Time: 0.6 0.7

Relative Number

0.66

Time

0 100 200 300 400 500

Condition

IwfD. Iwf Definition Tool (n). Number of organization

Time

Interworkflow Definition
Individual Definition
Test and debug

Number of Mistake: 1/3
Time of Debug: 1/10
Building Time: 0.6 0.7
Expectation

✧ Examinee reported that usability is not good.
   ◆ System is not modified yet, because of first challenge.

If usability will be better,
   ◆ Time of Definition will decrease,
   ◆ System building time will decrease, more.
✧ We think that the goal of Interworkflow Definition Tool will achieve.
Summary

✧ Development of Interworkflow Management System connected with two workflow products
✧ Report of experimental proof of our project

Thank you for your attention

Actual Demonstration will be held back side, Please see it!!