Wide Area GroupFlow

Groupware-based Workflow Management between distributed organizations and heterogenous systems
Scenario of Wide Area Workflow Management

Office with structured or ad hoc Workflow Management

Compound Document

Address

Message Object

Message Object

Message Object
So what is the difference between "Local Area" and Wide Area Workflow Management?

- Not all persons or organizational units are known before
- Process structures of partners are partially or completely unknown:
  - Central planning of workflows is mostly impossible
  - Routing paths and storage locations cannot be monitored easily
- Level of trust is mostly lower than within the own organization:
  - Confidentiality has to be kept strictly
  - Information have to be filtered --> Content Management
- Technical security problems are much higher
- Transfer rates are comparably low
- Hard- and software are mostly heterogenous
So what is the difference between "Local Area" and Wide Area Workflow Management?
The conceptional background of the Wide Area GroupFlow Approach

- Three dimensions of Wide Area Workflow
- Main focus of organizational integration
- Information routing mechanisms
Three dimensions of Wide Area Workflow Management

- Communication channel
- Organizational integration
- Information routing

Dimensions:
- Inter-organizational
- Intra-organizational

Channels:
- LAN
- WAN
- Mobile

Routing:
- Send
- Share
- Combination

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  Wide Area GroupFlow
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Continuum of Organizational Integration in Wide Area Workflow Management

Intra-organizational

<table>
<thead>
<tr>
<th>One organization with distributed subsidiaries</th>
<th>Trust (standard form)</th>
<th>Profit center system in an organization or trust</th>
<th>Virtual organizations</th>
<th>Strategic partnerships</th>
<th>Market interaction, e.g. Customer &amp; supplier</th>
<th>No connection</th>
</tr>
</thead>
</table>

Inter-organizational

one legal domain

separate legal domains

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# Information Routing Mechanisms

<table>
<thead>
<tr>
<th>Send-Model</th>
<th>Combination of Send- and Share-Model</th>
<th>Share-Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>➔ E-Mail contact</td>
<td>➔ Gateway-databases</td>
<td>➔ selective replication</td>
</tr>
</tbody>
</table>

- **loose**
- **close**

*Cooperation*

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*Wide Area GroupFlow*
The Wide Area GroupFlow System (WAGS)

- Architecture concept
- Addressing system
- WAGS connection of organizations
- WAGS Modeler
Wide Area GroupFlow - Architecture Concept

Organization concepts, business process analysis

- Infrastr. Modeler
- Informat. Modeler
- Process Modeler
- Process Simulator
- Process Analyzer

tool layer

workflow application layer

- Infrastructure
- Information
- Process

workflow repository layer

Enabling environment

Hardware, operating system, LAN

External directory

Gateway

External partners gateway

Selective replication

WAN
Wide Area GroupFlow - addressing system

- In the External Directory
  - Public area (GRI)
  - Internal area (IRI)

1. abstract address
2. public description of task performed

mapping by the WAGS Process Modeler

1. internal workflow node- or cluster-id
2. internal description of task performed

Global routing information (GRI)

Internal routing information (IRI)
Wide Area GroupFlow - connection of organizations

Organization A

- Ext. directory
  - address (GRI)
  - Sending Gateway
  - Message Object
  - replication (GRI)

Organization B

- Ext. directory
  - address (IRI)
  - Receiving Gateway
  - main processes
  - sub-processes
  - tasks
  - role person(s)
  - Black box
  - Grey box
  - White box

Message Object

replication
Wide Area GroupFlow - connection of organizations

Organization A

Message Object

Organization B

tasks

role person(s)
Wide Area GroupFlow Modeler

- Interactive graphical tool for process design
- Handling of External Directory
- New design possibilities:
  - Start nodes
  - Outgoing and incoming nodes for external workflows
  - Synchronization nodes (--> replication)
  - Hierarchical clustering (top-down or bottom-up design)
  - Library for object re-use
  - Settings for content management
START

sub-workflow: design of front part

Task: Prepare quotations

Task: Evaluate quotations

Task: External task
START

sub-workflow: design of front part

Task: Prepare quotations

Task: External task

Task: Evaluate quotations
START

sub-workflow: design of front part

Task: Prepare quotations

Task: Evaluate quotations
Replicational approach

- Usage:
  - Intraorganizational workflow
  - Distributed locations
  - Wide Area GroupFlow as common standard in all locations

- Realization:
  - Individual document is created for each sub-workflow in "replication-split node" and distributed by selective replication
  - "replication-join node" collects all documents in a folder
Conclusions

- Wide Area Workflow Management is more complex than just spreading known systems over several locations.

- A scalable degree of cooperation is useful:
  - Pure messaging for loose cooperation
  - Gateway Application and External Directory for closer cooperation and more structure
  - Replication technology for tight connections

- Publishing of process addresses allows for decentralized planning and realization of distributed workflow management:
  - Distinguishing between external (GRI) and internal addresses (IRI) protects confidential information
  - Possibility of flexible reaction during runtime

- Gateway Application and External Directory allow for connection of heterogeneous workflow management systems.
Wide Area GroupFlow related Publications

- "Workflow Management zwischen verteilten, Groupware-basierten Büros (Wide Office)"
  Tagungsband GI-Workshop "CSCW in großen Unternehmungen", Hrsg.: Uellner, St., Telekom AG, Darmstadt 1996

- "Workflow Management between distributed organizations - the Wide Area GroupFlow Approach"

- "Von lokalem zu verteiltem Workflow Management - das Wide Area GroupFlow Phasenmodell zur Einführung und Optimierung verteilter Vorgangsbearbeitungssysteme"
  Arbeitspapier, Wirtschaftsinformatik 2, Universität Paderborn
Getting connected

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- WWW:
  http://pbwi2www.uni-paderborn.de/domino/wi2_web.nsf/
Wide Area GroupFlow - practical evaluation

- Intraorganizational Wide Area Workflow:  
  Support of the Mobile Sales Force at Warsteiner Brewery

- Interorganizational Wide Area Workflow:  
  Reorganization of the PC-Management with external partners (outsourcing) at Hella AG, Lippstadt
Message Object Structure

Message Object

**Representation:** Position of fields, graphical and UI elements, showing and hiding of properties, dialogs etc.

**Methods:** Event driven: display and changing of properties, user dialogs and actions, launching of external processes, etc.

**Properties:**
- Custom. adress
- Sales informat.
- Insurance 1

**Content Blocks:**
- field 1
- field 2
- field 3
- field 4

**Position of fields, graphical and UI elements, showing and hiding of properties, dialogs etc.**

**Event driven:** display and changing of properties, user dialogs and actions, launching of external processes, etc.

**Field Name**
- field 1
- field 2
- field 3
- field 4

**Field Type**
- field name
- field type
- field content

**Message Object**

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Wide Area GroupFlow
Content Management

- Compound Document
  - content
    - Mandatory fields
      - Sender
      - Recipient
      - Date-time-stamp
      - Subject
      - .......
    - Selected content fields
      - content blocks
      - Single fields, e.g.: letter text, graphics, budget table, Insurance number
      - .......
    - Workflow fields
      - tracking logic
      - routing logic
      - status management
      - .......
  - internal form
  - filtering process

- external form

Message Object

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