CrossFlow – Cross-Organizational Workflow Support for Virtual Organizations*

(Extended Abstract)

Paul Grefen
University of Twente
The Netherlands
grefen@cs.utwente.nl

Yigal Hoffner
IBM Zürich Research Lab
Switzerland
yho@zurich.ibm.com

1. The CrossFlow project

CrossFlow is a European research project of the 4th ESPRIT Framework, aiming at cross-organizational workflow support for virtual enterprises. Virtual enterprises in the CrossFlow context are based on a service provider-consumer paradigm in which organizations (service consumers) can delegate tasks in their workflows to other organizations (service providers).

The prime contractor in CrossFlow is IBM, participating with its Zürich research laboratory in Switzerland, its development laboratory in La Gaude, France, and its development site in Böblingen, Germany. Technology providers in the consortium are GMD-IPSI in Darmstadt, Germany, and the University of Twente in the Netherlands, who contribute their experience in groupware [By98] and workflow management [Gr99]. User partners are KPN Research in Groningen, the Netherlands, and AGFIL in Dublin, Ireland. Sema Group in Madrid, Spain, acts as industrial observer in the consortium.

The CrossFlow project started in September '98 and is planned to run for two years. The project covers the complete spectrum from requirements analysis to prototype assessment. Below, we briefly outline the goals of the project. See the CrossFlow web site at www.crossflow.org for further information.

2. Contract framework and language

Contracts between service consumer and service provider organizations form the basis for cross-organizational workflow cooperation in the CrossFlow project. Using the requirements derived from user scenarios, a conceptual contract framework will be developed.

Important aspects in the framework are quality of service (QoS, e.g., service execution times), level of con-

trol (LoC, e.g., transactional characteristics of services), and flexible change control (FCC) for workflow specifications.

Based on the contract framework, a contract specification language will be designed.

3. CrossFlow architecture

To support cross-organizational, contract-based workflow enactment, an architecture will be designed and realized in a prototype system. The CrossFlow architecture will be defined on top of commercially available workflow management systems. In the context of the project, the MQSeries Workflow system [IB98] (formerly known as FlowMark) will be used for this purpose. An isolation layer will be used to hide system-specific details of the WFMS from other CrossFlow modules.

The link between pairs of workflow systems will be realized through *proxy gateways*, dynamically generated modules residing at organizational boundaries. Generation of gateways will depend on characteristics specified in contracts.

The architecture will explicitly address QoS, LoC, and FCC features. To support these features, cooperation support service (CSS) modules will be designed. These modules will be dynamically generated or parameterized during workflow enactment depending on contract parameters.

Appropriate distributed application support will be used to accommodate the required flexibility in the CrossFlow architecture.

4. CrossFlow application scenarios

The conceptual framework and realized prototype will be assessed in user scenarios that have also served in the

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requirements analysis phase. Two user scenarios are used in the CrossFlow project. KPN Research provides a logistics scenario taken from the TNT logistics organization, in which outsourcing of parcel deliveries by customer organizations is covered. AGFIL provides a car insurance scenario, in which virtual organizations are formed between insurance company, call center, loss adjuster, and car body shops.

5. References

- [By98] R. de By, W. Klas, J. Veijalainen (eds.); *Transaction Management Support for Cooperative Applications*; Kluwer Academic Publishers, 1998.
- [IB98] *MQSeries Workflow Web Site*; IBM Corporation, USA, 1998. (www.software.ibm.com/ts/mqseries/workflow/).
- [Gr99] P. Grefen, B. Pernici, G. Sánchez (eds.); *Database Support for Workflow Management*; Kluwer Academic Publishers, 1999.