Active Systems (GR/K77068)

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If middleware platforms are to support emerging applications they require extension to support asynchronous operation. Active Systems has addressed this by developing the Cambridge Event Architecture (CEA).

CEA defines a *publish, register, notify* paradigm with event object classes and source-side filtering based on parameter templates. Standard platform technology is used: the interface definition language (IDL) is used to publish events and automatic stub generation is used for event notification. Asynchronous notification allows a system to respond immediately to the occurrence of events, such as the detection of a mobile user or the withdrawal of access rights from an individual.

Scalability is achieved by source-side, fine-grained filtering which minimises the use of communications bandwidth for event notification. Also, template matching scales with the number of parameters rather than the number of clients.

CEA supports direct, source to client notification and also indirect, mediated notification. A special form of event mediator is a composite event detection service which supports filtering across multiple distributed event sources. An event algebra and associated language allow clients of the service to indicate composite events to it. Event mediators and composite event servers support registration and notification in the standard way as described above.

Event notification is also a powerful composition paradigm. Events may be used as the "glue" for composing independently developed components.

Closely integrated with the CEA is Oasis, our open architecture for secure interworking services. For scalability, an Oasis server may name its many users in terms of a number of roles; access rights are associated with roles. Oasis needs the CEA's asynchronous notification to support immediate and selective revocation of access rights. Also, access control is applied both on event registration and on notification.

Details of Active Systems and related projects, with publications, may be found at
http://www.cl.cam.ac.uk/Research/SRG/opera

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