

Peer-to-Peer Remote Conferencing

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Problem

- Globally distributed workgroups usually rely on centralized web-based development platforms
 - e.g. SourceCast, SourceForge
- How decentralized systems, based on a P2P architecture, can be exploited to support collaboration of ad-hoc or small software teams?
- Decentralization has begun to being introduced in CSD
 - e.g. BitKeeper, GNU Arch

Characteristics of collaborative P2P systems

- **Autonomy**
 - Every peer can share information but at the same time can pose restrictions on confidential data
- **Intermittency**
 - Any peer can disappear at any time because of network disconnections
- **Immediacy**
 - Presence awareness and synchronous communication
- **Cost lowering and compartment**
 - Installation and maintenance costs can be distributed over all the peers

Approach taken: P2PConference

- Based on JXTA platform
- Multiple conference models
 - Meeting
 - Presentation
 - Panel
- Multiple Roles
 - Expert/Participant, Speaker, Panelist
 - Support Team: Moderator, Director, Scribe
- Currently integrated with a web inspection tool (IBIS)
 - Kickoff meeting

Features

- Closed group chat
- Whiteboard
- Agenda
- Presence awareness
- Typing awareness
- File sharing
- Freezing of discussants
- Hand raising
- Protection of meeting minutes

Agenda

Message board

The screenshot shows the JXTA P2PConference application window. The title bar reads "JXTA P2PConference" and the menu bar includes "File", "Conference", "User", "Utils", and "Help".

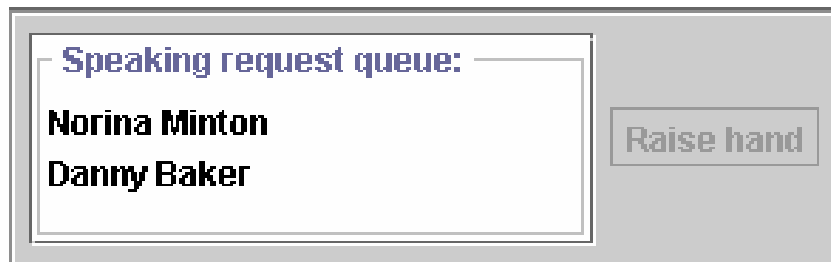
- Agenda:** Located in the top-left pane, it contains a "Presentation:" field with the value "ATM_SRS", a "Discussion is:" dropdown menu set to "Started", and a "Current item is:" dropdown menu set to "IBIS usage s...". A red circle highlights this section.
- Moderator says:** A text area below the agenda containing the message: "We can now start the ATM SRS inspection overview meeting. Press the 'Raise Hand' button to ask questions." Below this is a "Send" button.
- Who's on:** A list of participants in the bottom-left pane, including "Fred Dryer [Moderator]", "Danny Baker [Speaker]", "Marya Faucette [Expert]", "Monica Vemucci [Expert]", and "Mohammed Madhusudan [Expert]". A red circle highlights this list.
- Messageboard:** The central pane, titled "Discussion" and "Download", contains a "Messageboard:" section with a list of messages: "19.38 [YOU]: Hello everybody", "19.40 [Danny Baker]: Hi. This is Danny Baker.", "19.42 [YOU]: I'm going to show how IBIS works briefly.", "19.43 [YOU]: Then", and "Danny (the document's author) will deliver his speech". A red arrow points to this section.
- Whiteboard:** A large empty text area on the right side of the window.
- Question queue:** A section in the bottom-middle pane with a "Question queue:" label, a list containing "Mohammed Madhusudan" and "Marya Faucette", and buttons for "Satisfy", "Remove", and "Stop". Below the list is the text "No request".
- Input panel:** A text input field at the bottom of the window with a "Send" button to its right. A red arrow points to this area.
- Status bar:** At the bottom, it shows "Logged in as Fred Dryer (Moderat..." on the left and "0 Elapsed time: 0:16:05" on the right.

White board

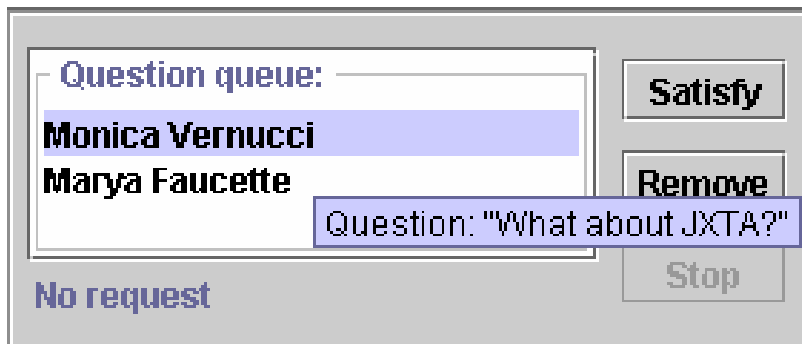
Presence panel

Input panel

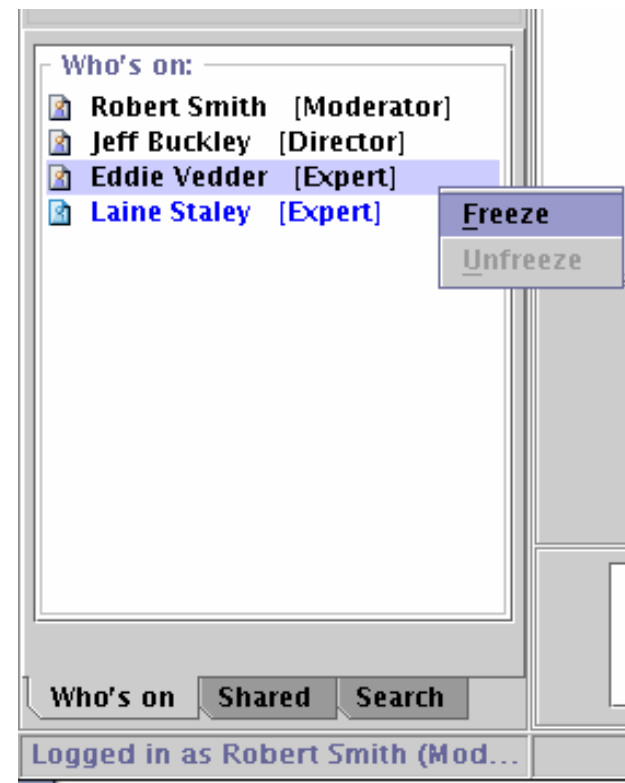
More screenshots



Speaker/Panelist perspective



Moderator perspective



Presence Panel

Ongoing challenges and future goals

- Need for experimentation on the field
 - e.g. collaborative software engineering education
- Make deployment easier by automating the initial peer configuration
 - It is a JXTA platform problem
- Add new features
 - Support for presentation sharing and co-browsing
- Integration as a plugin with an extensible IDE
 - e.g. Eclipse Platform