Data-Intensive Remote Collaboration using Scalable Visualizations in Heterogeneous Display Spaces

Research Presentation: 06/17/14
Research Focus

• Improve Collaboration with Partially Distributed Teams
  – Each team may have a unique configuration for their SRSD
  – A portion of the data is shared between sites, while other content can remain private to each participating group
  – Shared applications and synchronization of data (go beyond basic audio/video conferencing)

• Evaluate communication, conferencing, and coordination
Synchronization Methods

• Data-pushing
  – Send unsynchronized applications between locations
  – Multiple sites cannot simultaneously interact with a shared application
  – Serves as an interactive “snapshot”
Synchronization Methods

• Data-duplication
  – Partition SRSD
    • Fully synchronized area with shared applications (including window control)
    • Unsynchronized area with local unshared applications
  – Interaction icons for input devices displayed at all locations

Synchronized shared applications with interaction icons shown in both SRSDs
Synchronization Methods

- Advanced data-synchronization options
  - Content synchronized, but position and size independent
  - Choose which aspects of each shared application will be synchronized and which will be controlled independently
  - Hierarchical properties of each shared application’s state

Semi-synchronized shared applications allowing teams at each site to share information while focusing on their expertise and audience

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Implementation

• Data-pushing
  – Application URL and current state sent to remote site
  – Remote site loads Application from URL with specified state
  – Further interactions at either site only modify the local copy
Implementation

• Data-duplication
  – Negotiated physical size of portal (same for both sites)
  – Independent scaling at each site (matrix transform)
  – State of each app synced when updated
Implementation

• Advanced data-synchronization options
  – Application shared in same way as *data-pushing*
  – State of each app synced when updated
  – Members of the application state can be toggled on/off
Evaluation

• Longitudinal User Study
  – 14 weeks between UIC and Hawaii
    • 4 weeks of each method, 2 weeks where all are available (users choice)
  – Ongoing status reports and coding meetings regarding SAGE2 development

• Focused User Study
  – 2 hour study where 4 people must collaboratively complete a task
  – 2 sites (2 people at each)
  – Knowledge is distributed
Questions?