

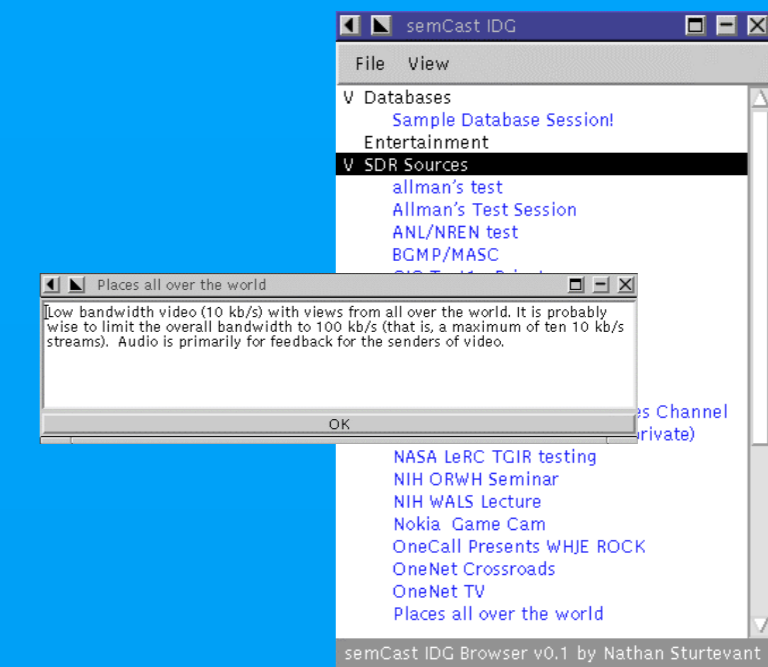
Information Discovery Graph

INTERNET RESEARCH LAB

An Internet Multimedia Session Directory

What is a session directory?

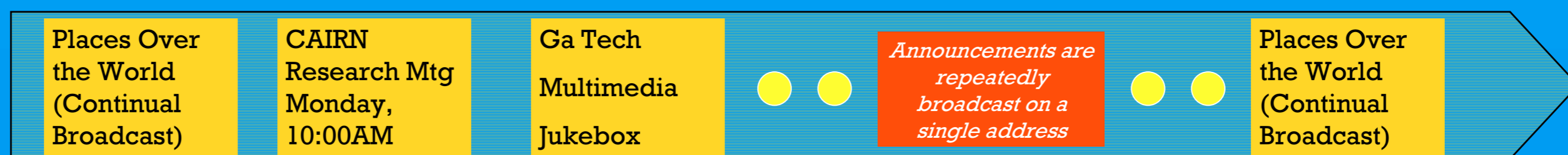
- The Mbone is the portion of the Internet on which multicast is deployed - an efficient one-to-many broadcast mechanism.
- Multimedia sessions are announced in a session directory, such as SDR, allowing users to locate and view interesting sessions. So, it is much like a TV Guide.
- Announcements are made on a single multicast channel using the Session Announcement Protocol (SAP) to which users listen in order to receive session announcements.



Our Java implementation of a Session Directory.

Current Session Directory Architecture - a single channel

Announcement Traffic over Time

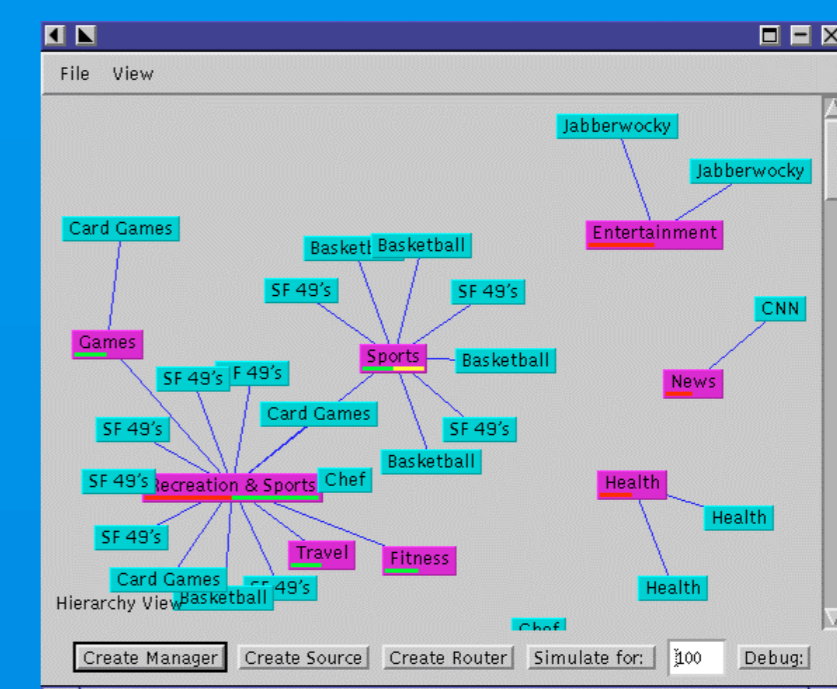


- Announcements are not cached within the network
- Results in long start-up delays to hear all sessions
- Announcements are not grouped or categorized by content

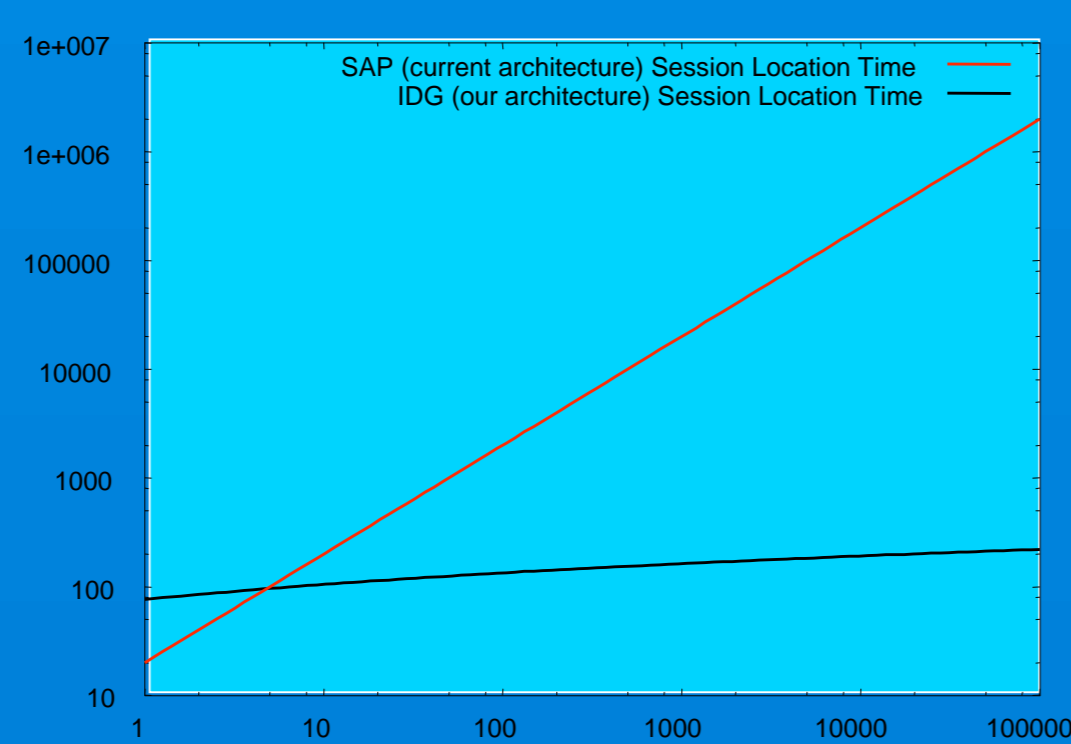
Information Discovery Graph

Design Features

- Cache servers, called **Managers**, store session announcements
 - Managers auto-arrange in a hierarchy according to announcement content
 - Each manager handles a single semantic topic
- Entities (people, software agents, etc.) can browse or search the hierarchy for content related to their interests.



The architecture as seen from our simulation. Managers are purple. Data within the IDG is represented by light blue boxes. Lines represent the connections between multicast groups and the connections between data sources and managers.



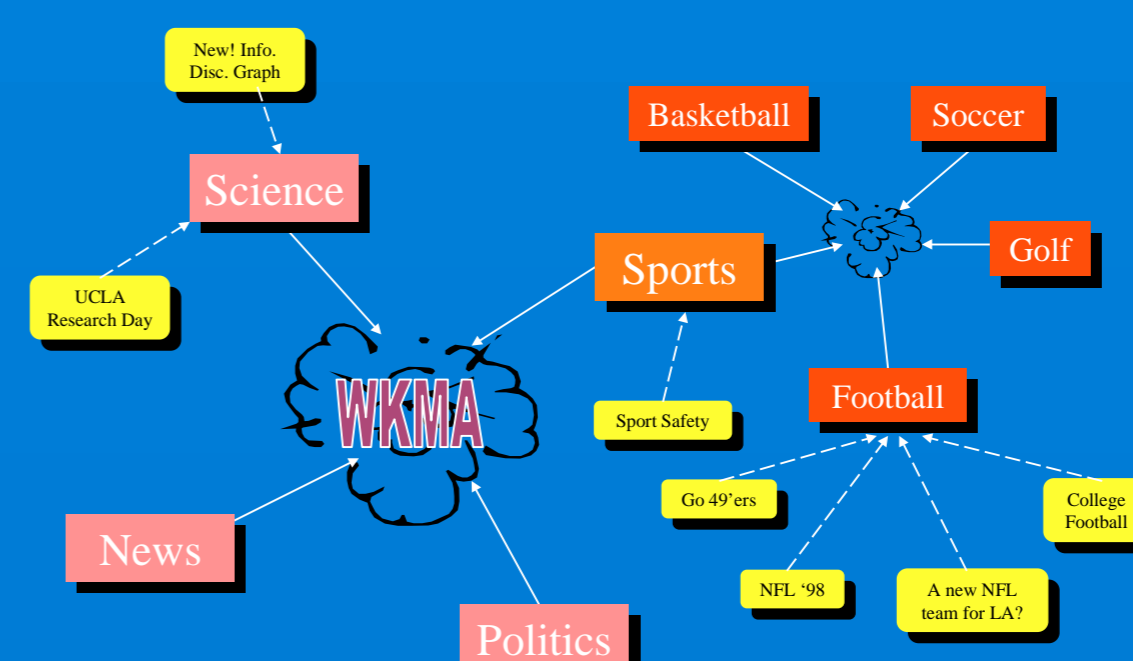
Comparison of time required to locate a session. The x-axis measures the number of sources available. The y-axis measures time in seconds to find relevant sources.

Unique Characteristics

- Scalable design maintains fast searching as number of data sources grows
- Information shared between managers ensures a robust environment in the case of failures
- Taxonomy is flexible, allowing dynamic organization of new topics
- Supports incremental deployment by encapsulating existing SDR traffic

Future Research

- Develop spatial caching and other models to reduce global bandwidth (currently grows linearly with number of sessions)
- Design better self-organizing behavior of managers
- Complete transition from simulation to prototype



The IDG architecture. All activities start at a well-known multicast address (WKMA). From there users can quickly reach managers holding topics in which they might be interested.

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