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WIDE

# Channel Reflector: Multicast Channel Announcement System

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# Multicast Session Announcement

- Multicast session information consists of;
  - Source address, group address, encoding format, data rate, contents information, etc.
- Traditional method (used in MBone)
  - Session Announcement Protocol (SAP)
- Current method
  - Central server like E-mail, Regular Web

# SAP

- Pros.
  - Soft-state approach
    - Easy to announce sessions
- Cons.
  - Low scalability
    - Periodically flooding SAP data over UDP/IP multicast
  - High latency (especially when a large number of senders exist)
  - No security consideration
    - Any kind of node can send and receive SAP data
  - Weak policy definition
    - Scope definition is difficult to manage
  - Cannot work in SSM-only networks

# E-mail, Regular Web

- Pros.
  - Easy to use the implementations
  - Can add user authentication functions
    - But might be difficult to manage tons of thousands of users
- Cons.
  - Not suitable for highly dynamic session information announcement
    - Difficult to manage services being up and down frequently
    - Difficult to manage a very large number of sessions
  - No policy definition
    - Scope definition is conceptually impossible

# Channel Reflector (CR)

- Concept
  - Web-based multicast session directory/ announcement system that consists of distributed agents
  - Easy, simple, well-managed, and functional system that facilitates further IP multicast deployment

- From end-users;
  - Regular Web server that provides available or scheduled multicast session information
- From network administrators;
  - Local server in their network

# Functions

- Sender control
  - Only approved/authorized data senders and administrators can register their channel information in their local CR.
  - Only the approved CRs can synchronize their channel information to other CRs.
- Receiver control
  - Data receivers obtain available channel information from their local CR.
    - Access control is mandatory
- Scope control
  - Non-global scope channel information is announced among defined CRs (i.e. scoped CRs).

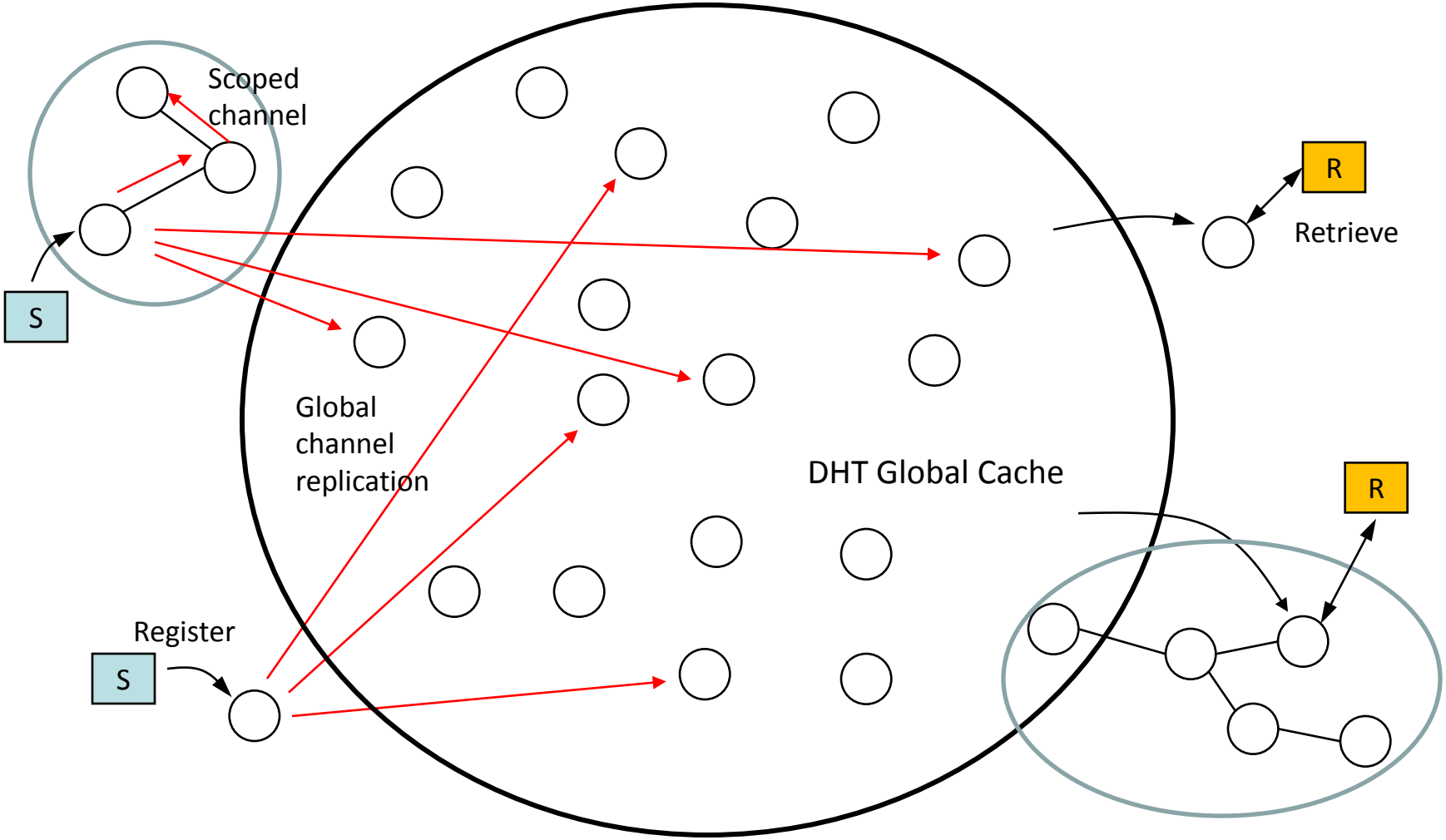
# Configurations

- For global channel announcement;
  - CR global cache
- For non-global scope channel announcement;
  - CR sub-tree consists of site CRs (parent CR and child CR)
- Scope configuration (when needed)
  - Static configuration to form “scope”
- Channel information description
  - SDP – Standard session description protocol

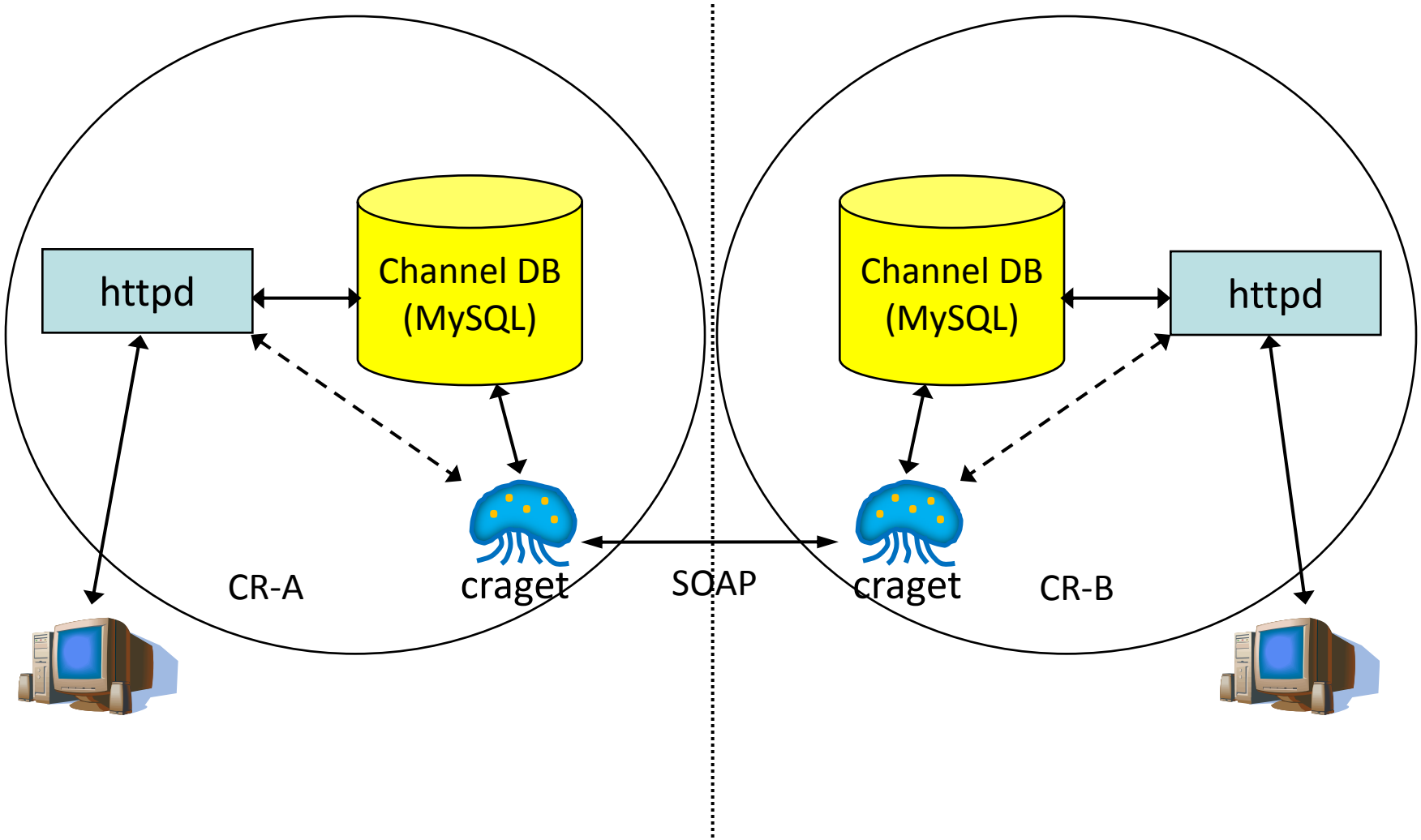
# CR Implementation

- Implementation components
  - craget (Channel Reflector Agent)
  - Apache http server
  - MySQL DBMS
    - Accessed through Ajax
  - Bamboo (DHT part)

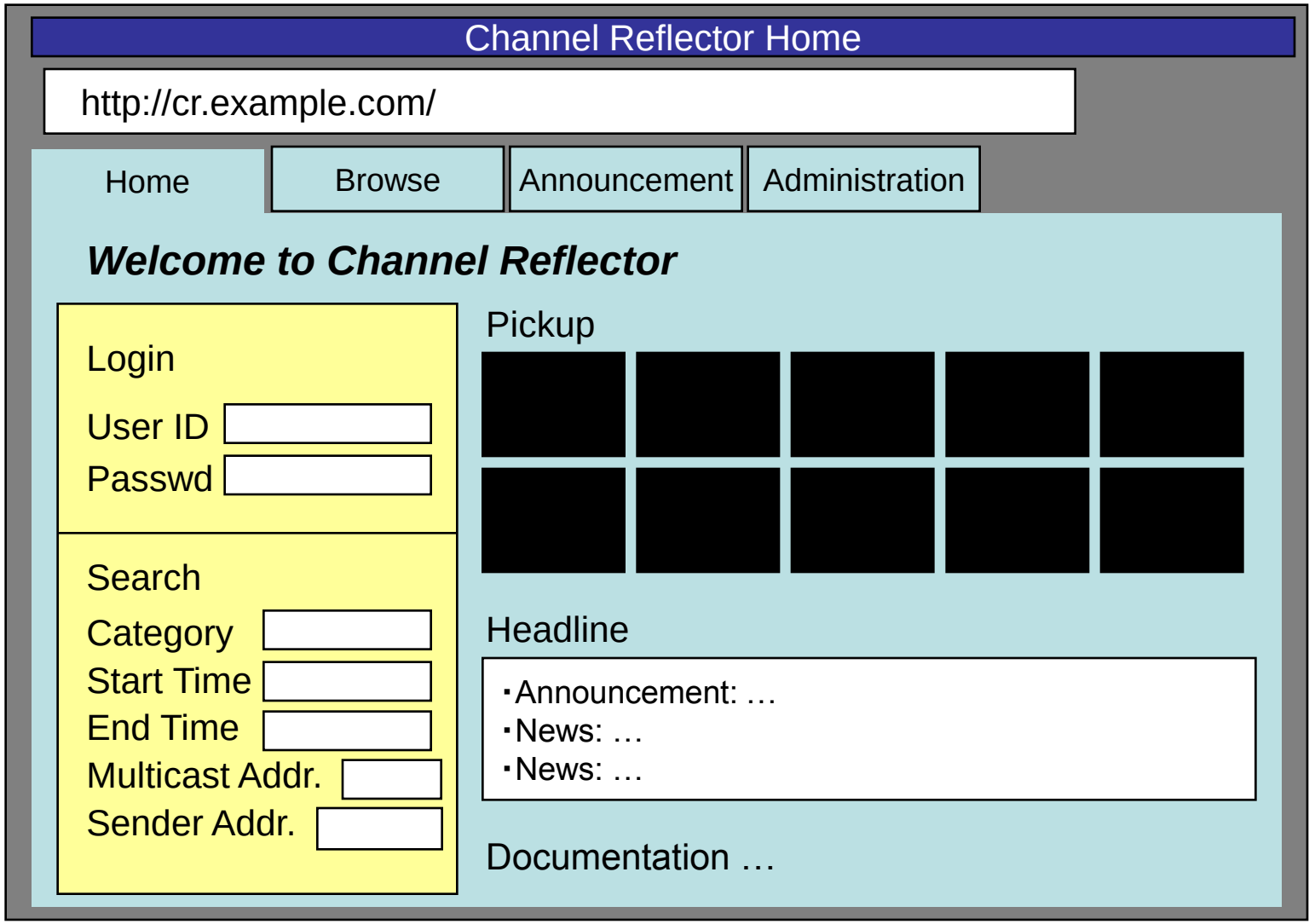
# CR Global Cache and Sub-Tree



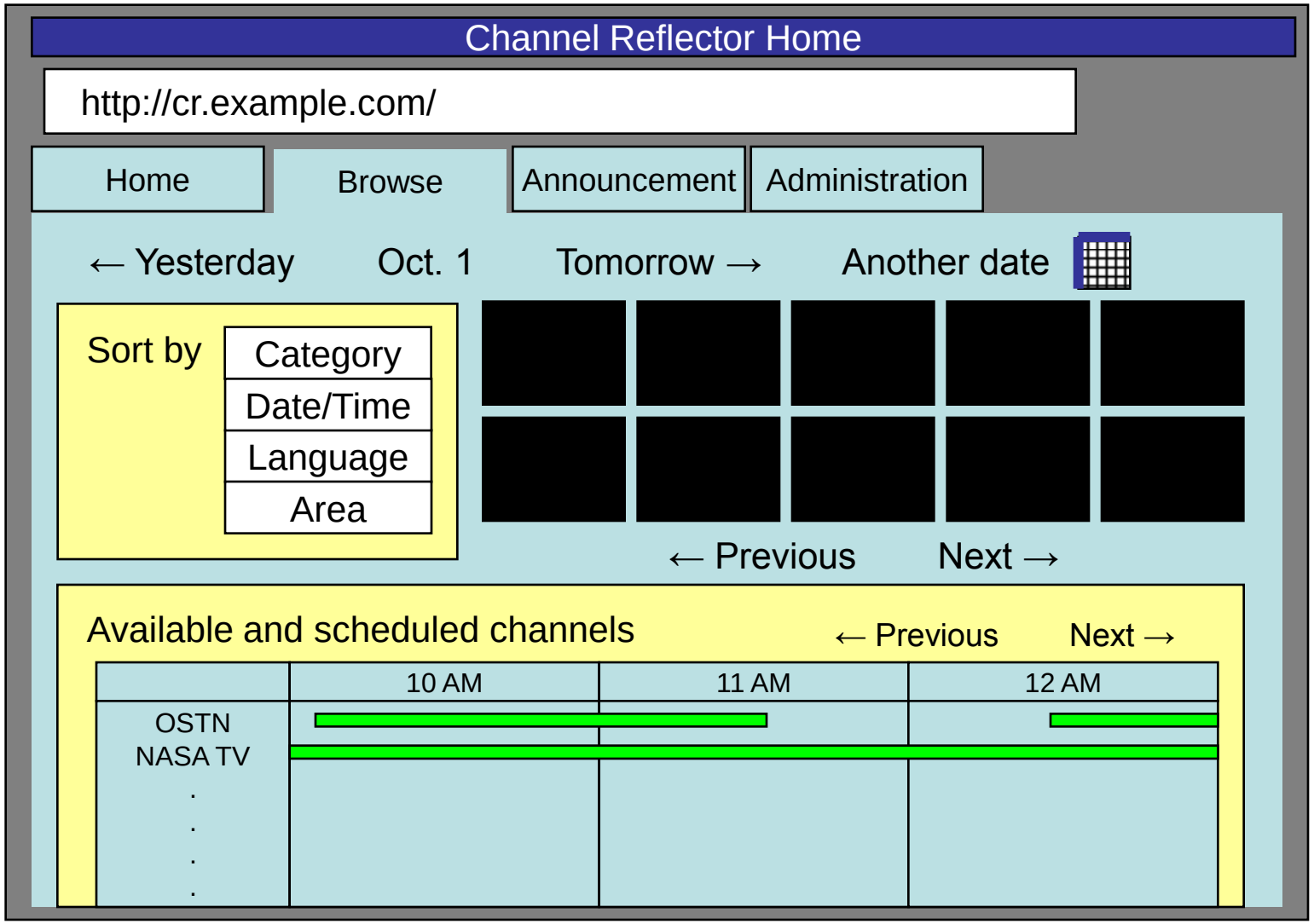
# CR-to-CR Communication



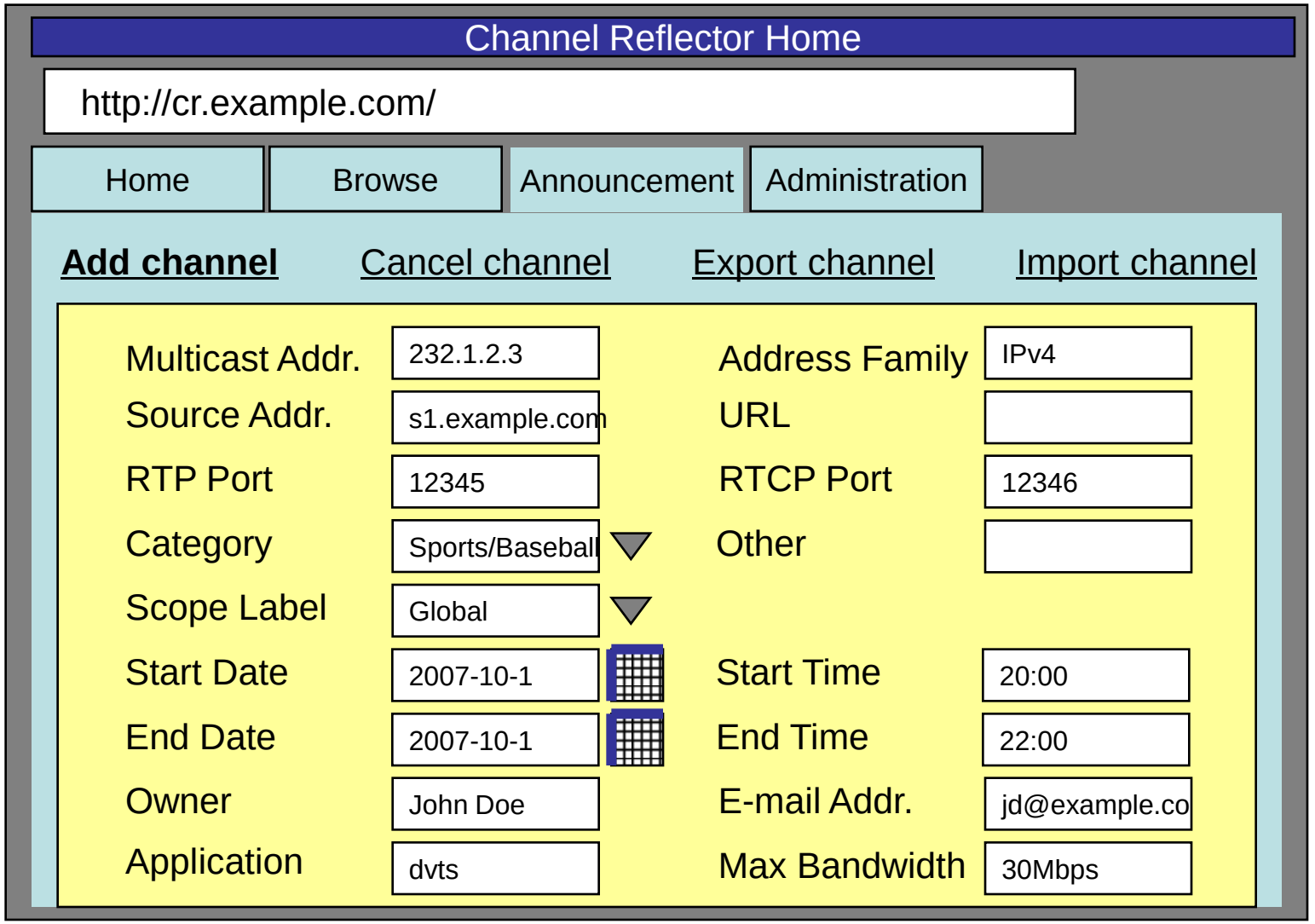
# Web-Based Interface



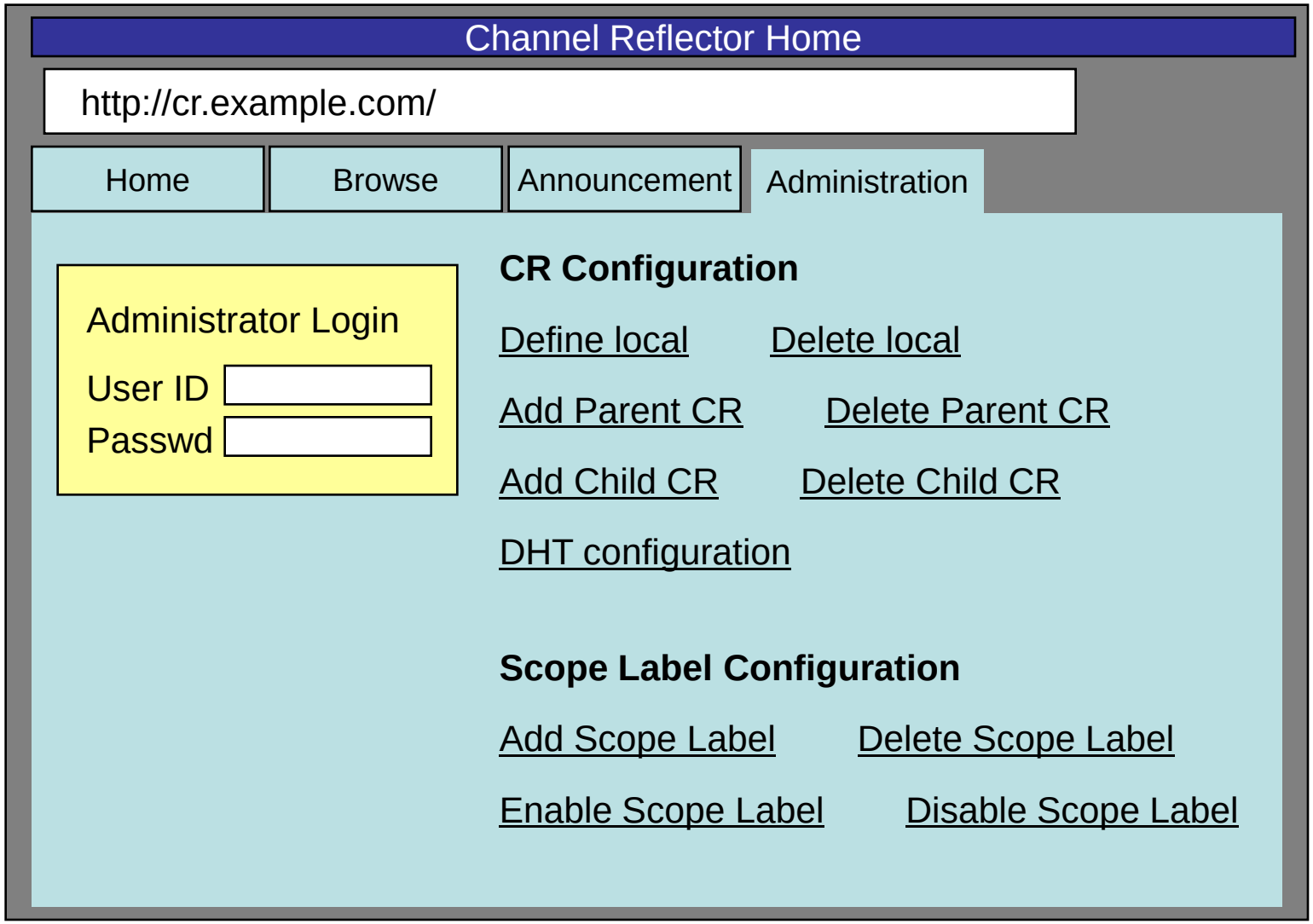
# Browse Channels



# Register Channels



# Interface for Administrators



# Future Work

- Code improvement
- User-interface improvement
- AAA stuff
- Better scope definition

# Collaboration / Cooperation

- Development
  - User interface design and its development
  - SDP/XML parser
- Operation
  - Prepare local CR
  - Make your CR be part of the global cache (DHT)
  - Bind your CR to the global cache
- User
  - Register and retrieve channel information

# Release Plan

- Binary package
  - Linux rpm and NetBSD binary (planned)
  - Source code will be available after the code improvement
- If you are interested in the collaboration/ cooperation, please contact me;

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