A “Crosscloud” Social Web Architecture, with CIMBA demo

Andrei Samba (MIT), Joe Presbrey (MIT), Ahmed El-Roby (QCRI), Essam Mansour (QCRI), Sandro Hawke (MIT), Ashraf Aboulnaga (QCRI), Tim Berners-Lee (MIT)

1. Today, apps hold user data
   Resulting in data modification
Alice performs some actions
Flexible
Fast and
A personal
Viable
are needed which provide:
In order to make CIMBA and other crosscloud apps competitive with centralized software, standards strongly favors active participation, simple designs, and “running code”.

2. Let’s move data under user control
   Alice performs some actions including a data modification
   and it presents a view of its data
   The WebApp modifies application data
   Alice’s Data Manager, with its database

3. Then users can try other software
   With the data also kept in a standard model (RDF Triples):
   Users can switch applications without losing any data
   Integrated Apps become possible, working with data from multiple domains
   Developers can use and interoperate with data from other apps
   Data management tools (version control, access control, provenance management) can work across all apps.

4. Social connections can move too
   By using WebIDs (URLs for people, which they control):
   Social connections (eg following, friending, photo tagging, granting access) are just more data, owned by the users involved
   People can switch apps without affecting who they can work with online
   Developers can produce powerful social software without first accumulating a critical mass of users

5. A Social Ecosystem can flourish, connecting everyone
   With many of today’s constraints removed, we expect to see a blossoming of new social software, such as:
   * Media sharing that can keep up with the explosive growth of camera use
   * Health data collaboration among patients, caretakers, scientists
   * Ad hoc, situationally appropriate, disaster relief systems
   * E-Commerce that keeps up with today’s mobile society

Research Agenda and the Linked Data Platform (LDP)

This vision requires technology which not only works in a lab, but will actually be adopted in industry, so we are working closely with relevant standards bodies, especially the W3C Linked Data Platform (LDP) Working Group. As this group completes its basic initial version and begins to plan for future versions, we are using CIMBA to validate the group’s decisions and help show what features are needed next. The standardization context gives us rapid technology transfer and strongly favors active participation, simple designs, and “running code”.

In order to make CIMBA and other crosscloud apps competitive with centralized software, standards are needed which provide:
- Fast and scalable distribution of data and queries, along the lattice from data producers to data consumers
- Trust management for data sources, including applications and software modules
- Vocabulary Conversion, so software written for one vocabulary can interoperate with software written for equivalent but different vocabularies
- Multilingual data management, so the non-English-speaking world can fully participate
- Flexible Read Access Control, so people can grant the access needed for cooperation without extra loss of confidentiality
- Flexible Write/Notify Access Control, so people can provide new information/updates to each other, without undue exposure to unreliable or malicious participants
- A personal identity system such as WebID, where identifiers for people are part of Linked Data
- Visible Business Models, allowing the infrastructure to grow, with all participants being suitably motivated

The power of your own blog combined with the ease of Twitter. With CIMBA (Client-integrated Micro Blogging Application) we have begun to demonstrate and validate our proposed Social Web Architecture.

The code is open source, and the architecture actively encourages forking and enhancement while maintaining interoperability.

Some planned features: (patches welcome)
- Notification of new postings
- Notification of new subscribers, mentions
- Connection to legacy microblogging systems
- Instant Messaging features (presence, typing-in-progress)
- Inline viewing of images
- Inline viewing of linked web pages
- Search through your subscription content
- Search through all public postings (requires external search engine/registry)
- Search for users (requires external search engine/registry)
- Scale to large number of subscribers