Exploring Visualization Techniques to Enhance Privacy Control UX for User-Managed Access

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Agenda

- Data sharing and online privacy
- SmartAM Information Ecology
- Enhance privacy control
  - UMA Connection
  - UMA Control bridge
- Future works
- User Experience
Online Privacy is about sharing
The Paradigm
User Data sharing and online Privacy
SmartAM Information Ecology

- Context
- Content
- User
SmartAM Information Ecology

- **UMA/SmartAM Context**
  - Provide an advance system to allow internet user to protect and share online information
  - Prevent of lost of user privacy
  - Adhere to the international privacy regulations
  - Secure online information (access control)
SmartAM Information Ecology

- **UMA/SmartAM Content**
  - Authorizing User information
  - Authorizing User’s Web resource info
  - Authorization Policies
  - Requesting Parties Information
  - Analytics information (who, when, what)
SmartAM Information Ecology

- UMA/SmartAM User
  - Internet User/Social networking user
  - Company
  - Developer
  - Government
  - Curios!!
SmartAM UX
SmartAM states system

smartam UX Study
Possible actions and states of the system
Understand the nature of data sharing policy in distributed environment

- UMA model centralizes the authorization policies for all the Authorizing User's distributed web resource (protected resource).
- The externalization of the policies introduces a new level of complexity because the user must (mentally) map the authorization structure for each resource, in more sophisticated one.
- This new layer must be able to abstracting the existent, although it must be able to enhance the control on the information that will be shared.
- Increasing of Protected resources and requesting parties could be mentally difficult for the user to maintain control in practice on the information.
Risks

- Lost of Privacy
- Exploit of online personal Information
- Security breach
Enhance Privacy Control through visualization

- As result a context authorization policy and a governor system is definitely desirable.
- We introduce two new design concepts:
  - UMA Connection
  - UMA Control Bridge™
- A visualization tool is necessary to facilitate the creation of the sharing policy and the control of the privacy.
UMA Connection

- An UMA Connection defines a context of the data sharing policy.
  - It's a set of objects, including Contacts, authorized Apps and allowed actions on a specific resource.
  - It can include access restrictions (i.e. period validity) and/or Trusted Claims request to restrict access based on subject's information.

- An UMA Connection is fundamental to enhance user control for what purpose the information will be revealed.

- UMA Connection uses a visualization approach which helps user to define an appropriate context.

- An Authorizing User can create a Connection for him-self or for others.

- A Connection doesn't incapsulate other connections.
Structure of UMA Connection
Visualizing UMA Connection
UMA Control bridge

- UMA Control bridge
  - Is designed to adhere to the user-centric identity paradigm.
  - Provides a primary user interface for control Resources, Connections, Apps and requesters.
  - Provides a dashboard with main statistic information about connection, shared data, etc.
  - Incorporates a single view of these main controls, including a notification bar for new access request.
  - Provides 3-steps actions to get access to specific view, excluding optional view.
Maintain control on Information that will be revealed
Future works

- Graph Algorithm
- Super Connection (Basket of Resources)
- Visualization techniques (HTML5)
User eXperience

UMA Connection (part 2)
UMA Control bridge (part 3)
Thanks