Supporting privacy preferences when sharing personal content

Patricia Charlton and Jonathan Teh
Motorola Labs
Patricia.charlton@motorola.com
Jonathan.teh@motorola.com
Overview of the presentation

- Privacy and Digital Content
- Digital content management and sharing
- Privacy Preferences, Policies and Tools
- Some findings and challenges going forward
User results when using mobile devices to create and share content

- Easy sharing (open) between known social groups
- Prevention of content misuse when sharing or providing access to anonymous environments
- DRM too complicated and not well received
- Default rules required and those proposed were thought to be useful
- Flexibility required to deal with granularity of content management
- Access preferences should be with the content when the content leaves the owner’s environment/device
## User privacy priorities when sharing content (scale of 1 to 5)

<table>
<thead>
<tr>
<th>Priority</th>
<th>Concern Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrolled distribution/misuse of content</td>
<td>Main concern: 5</td>
</tr>
<tr>
<td>Declaring access rights when sharing with individual or known groups</td>
<td>Concern about further distribution: 3</td>
</tr>
<tr>
<td>Declaring access rights when sharing with anonymous community</td>
<td>More concerned but they filter: 4</td>
</tr>
<tr>
<td>Declaring access rights for environments, location</td>
<td>More concerned about devices: 3</td>
</tr>
<tr>
<td>Declaring access rights on a specific piece of content</td>
<td>More concerned about compromising situations: 3</td>
</tr>
<tr>
<td>Declaring access rights about specific content in a location</td>
<td>Implications of content in different locations: 3</td>
</tr>
<tr>
<td>Person identity via media analysis</td>
<td>Not concerned about this: 2</td>
</tr>
<tr>
<td>Declaring access rights about automatic metadata</td>
<td>Not concerned: 1</td>
</tr>
<tr>
<td>Declaring access rights about personal metadata</td>
<td>More concerned when manual metadata is being used: 4</td>
</tr>
</tbody>
</table>
Profiles, Preferences and Policies

Profiles for configuring devices and applications:
- Profile about a device e.g. memory size, ring tone style
- Profile about user e.g. age, address

Preference for customising an application possibly at run-time
- User declares preferences
  - e.g. I prefer to listen to the radio than watch TV, I prefer films to news etc.
  - E.g. I prefer my mum to receive weekly photo updates of my cat. I prefer all my photos to be centrally stored on my home server

Policies declare explicit actions, taking contextual cues from profiles and preferences
- E.g. a preference “never share this content” is declared in a policy with an action “grant no access rights” to this content
- E.g. a preference “share my holiday photos with my family” is declared as a policy with contextual cues which are “holiday photos and family” (group contacts) with an action “grant access rights” to this content
Preference and Device Content Management

Data (Profiles and Policies) Plus Engine
Either each device or networked

Julie’s devices

Pete’s Devices

Contact: Pete
Share: Photo
Device: Mobile
Metadata: none

Attach the rules to the content so that the rules manage the content wherever it is. Only the rules needed go with the content which are executable code

Example default Rules
• Ownership to remain with originator
• Close friends to view and copy
• No anonymous viewing
Privacy Preference Engine

Semantic metadata
- My preferences
- Privacy preferences
- Device profiles
- Contact profiles
- Multimedia ontologies
- Default policies

Privacy Preference Engine
- Policies generated from privacy preferences
  - Contextual-based user preference knowledge
  - Contextual cue for access, delivery and sharing of content

e.g. automate per contact the access context rights to specific Content or collections of content
Creating and adding personal content access rights as rules

- Create (From user) or use default policies: Preferences and policies applied to content, metadata and contacts (family, friends, colleagues etc.): Done by privacy reasoner
- Share content: The reasoner creates a new modified content collection for each contact adding appropriate access rights (uses simplified rights from DRM) based on user policies: Done by privacy reasoner
- Generate the rules to be attached to content: Done by rule generator
- Execute rules when receiver wants access to content: Done by self-governing reasoner
Key Findings

- Privacy model to meet social networking and content sharing applications
- Social networking and personal metadata
- Semantic attacks: Ontologies, personal metadata and autonomous systems
- Many types of knowledge required but only small amount of facts used
- REI: Complexity, meta-policies, granting rights, scalability-linked to the type of applications
The right to decide

- Policies and users: What and how
- Terminology: Is it a profile or a policy or a preference?
- “test-bed”:
  - Semantics of policy languages,
  - appropriate application set that the approach targets (guidelines),
  - Flexibility and ease of use required,
  - Policy enforcement methods
## The Knowledge Connection

### Me & Myself

**Scenario**
I would like to take my holiday photo Collection with me

**Preference Engine (applied to policy inference system)**
Pack and go, target appropriate form factor

**Scenario**
I would like to see an automated showing of my birthday party photos

**Privacy Preference Engine (applied to policy inference system)**

### Family & Friends

**Scenario**
I want to always share the best photos of my family with close friends and family

**Privacy Preference Engine (applied to policy inference system)**
Sends the photo to mum and dad – the family group

**Scenario**
To send holiday video and pictures with some personal annotations and create a group collection

**Privacy Preference Engine (applied to policy inference system)**

### People I work with

**Scenario**
I need some good slides for aceMedia review

**Privacy Preference Engine (applied to policy inference system)**

**Scenario**
I wonder where the meeting docs and notes are for the next meeting?

**Privacy Preference Engine (applied to policy inference system)**
Pack and go to appropriate form factor, provides a summary.

### External Commercial world

**Scenario**
I want to follow my favourite football team and be kept up to date

**Privacy Preference Engine (applied to policy inference system)**

**Scenario**
I would like to enhance my collection with music

**Privacy Preference Engine (applied to policy inference system)**

**Scenario**
I need some good slides for aceMedia review

**Privacy Preference Engine (applied to policy inference system)**
Finds appropriate music content, purchase the content, proposes an organisation
Thank you!