Personalization and User Profile Management

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ETSI Workshop on
Multimodal Interaction on Mobile Devices
World Class Standards

Problem

Services and content may not be delivered appropriately to:

- all users in various situations
- different devices with different software and hardware

ETSI Human Factors STF342 focuses on:
- all users in various situations
- multimodal, multi-device environments
- different situations – different needs
Why is standardization work on personalization and user profiles useful for multimodal interaction?
Personalization today

- The range of settings and preferences that can be set by users will not be consistent between
  - different devices or services, or
  - between comparable services and devices from different vendors.
- Impossible to transfer the settings that have been set for one service/device to another similar service/device in a way that ensures that the same outcome will be achieved.

This problem would be overcome if...
It would be better if…

- different devices or services of the same type had consistent sets of settings which had value ranges that produced identical effects;
  - For example terms like "very loud" or "large text" to be useful, the users wish them to always result in the same standardized user experiences.
Why standards?
Benefits of personalization based on ETSI standards

For the user
- A better user experience - in a range of situations.
- A profile, that suits a specific situation and that handles many areas, will only need to be defined once. The users will not have to re-enter their preferences each time they acquire new services and devices.

For manufacturers and service providers
- Satisfied users
- Shorter development time
- Larger user segments reached more easily and quickly, thereby ensuring quicker uptakes of key technologies.
ETSI work on personalization and user profiles

- EG 202 325 published 2005 (Specialist Task Force STF265)
  - Concept and guidelines

- New Specialist Task Force – ETSI Human Factors STF342
  - ETSI Standard (ES) on standardized personalization objects
  - ETSI Technical Specification (TS) on architectural framework

- New Specialist Task Force – ETSI Human Factors and eHealth STF352
  - ETSI Standard (ES) on standardized personalization objects in the eHealth domain

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What is a User Profile?

User and context information used to deliver:

services and content,
in a format tailor-made to users’ needs.

Contain data describing:

- The user’s preferences including their
  - characteristics
  - preferences and needs depending on time, activity, role, location

- Has context information related to
  - User Profile Management system
  - Services and terminals
  - Physical objects in users’ proximity
Information acquisition

- Explicit methods
  - user actively defines the settings.

- Implicit methods - adaptive personalization
  - mechanisms that more or less continuously adapt user profile data to match user requirements that have been inferred as a result of continuously monitoring user behaviour.

Example: if a user always change the modality in a specific situation and context, then the system could provide that modality automatically when the same situation occurs.
Information acquisition

- Combination of Explicit/Implicit
  - Profile tool search for patterns in the user’s behaviour. When a pattern is detected, the user would be asked an explicit question to check the assumptions made about the user.
  - Profile tool may initially ask users to provide information (explicit method), and then update this information based on patterns in the user’s subsequent behaviour (implicit method).
Where are the profiles?

ETSI Human Factors - Personalization and user profiles
Example – Multimodality
Special need - listen to text

- A blind person or a child who cannot yet read might prefer listening to text.
- A person driving a car might prefer listening to text.

The permanent preference "Listen to Text"/“Blind” provides this service.

The situation dependent profile “Car” provides this service.
Automatic activation of profiles

Users could define activation rules according to their activities and context, including:

- time schedules
- accessories
- external applications
- physical sensor/transmitter
- location based services
Example - Profiles with automatic activation
Invitation to our workshop

- When: 09:00 the 28th January (registration from 08:30) until 12:30 on 29th January 2009

- Where: ETSI Headquarters, Sophia Antipolis, France,

- No fee for attending the workshop

- Further details on workshop, see http://portal.etsi.org/stfs/STF_HomePages/STF342/STF342.asp
Thank you!
Information and communication

- **Web:** [http://portal.etsi.org/stfs/STF_HomePages/STF342/STF342.asp](http://portal.etsi.org/stfs/STF_HomePages/STF342/STF342.asp)

- **Email:** Francoise.Petersen@etsi.org

Do you want to:

- 1. receive the newsletters from our STF (about once a month, or when relevant)?
- 2. discuss personalization and user profiles with a wider group? If so welcome to use our mail list
  [HF_User_Profile_Management@list.etsi.org](mailto:HF_User_Profile_Management@list.etsi.org)

  - Subscribe at: [http://list.etsi.org/HF_USER_PROFILE_MANAGEMENT.html](http://list.etsi.org/HF_USER_PROFILE_MANAGEMENT.html)
Information sharing and privacy

- As users become more aware of privacy issues, there is
  - an increasing need for user acceptance of personalized services
  - a demand for solutions allowing them to be in control of their profile data.
- If profile data is made available to the wrong people, then users will lose confidence.
- Too restricted access to profile data should be avoided,
  - as it may reduce the usability and the number of available services.
Technical Specification (TS) on Architecture Network and terminal issues

Step 1 (first 8 months)
- Gap analysis
  - Requirements from EG 202 325
  - UCI/TISPAN architecture
  - Other related architecture input, such as OMA, IST, SPICE OWL ontologies...

Step 2 (after step 1, till month 23)
- How to solve the identified gaps
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Architecture to support user profile management

- Previous ETSI work on user profile management (EG 202 325) defined a large set of guidelines
- It is necessary to identify what architectural solutions are required to deliver these guidelines
- The solution for supporting UCI in IMS based NGNs will be examined as a potentially practical solution
- Examination of possible architectural options requires:
  - A thorough analysis of the guidelines in EG 202 325
  - A coherent and clear way of representing the concepts behind those guidelines
  - Examining the approach behind user profile solutions documented in other standards
  - Looking for gaps between architectural options and the set of requirements
Planned Trial, with IST-Simple Mobile Services (IST-SMS)
Autumn 2008

- **Users**
  - at the campus area of the University of Rome “Tor Vergata”,
  - at least 100 students plus teachers, researchers and administrative people

- **Context** in order to trigger automatic activation, deactivation and processing of profiles as from ETSI EG 202 325:
  - Presence
  - location (indoor and outdoor location information),
  - time,
  - interaction with physical objects in users’ proximity (RFID tags, visual code recognition, Near Field Communication (NFC), Bluetooth)
  - real world context information...
Planned Trial, with IST-Simple Mobile Services (IST-SMS)

- Use of an **unique user identifier** in form of a SIP address mostly compliant with the UCI concept and including:
  - contacts, groups, relationships and social networks
  - messaging (non-realtime)
  - chat & IM (realtime)
  - emails
  - phone calls

- **Profile provider - University of Rome “Tor Vergata”**, 
  - In order to drive different kind of communications (phone calls, emails, instant messaging), according to user defined policy rules, the trial will evaluate the use of an unique user identifier in form of a SIP address mostly compliant with the UCI concept.
  - Trial participants will be provided with a special SIM card able to store sensitive profile data, identity information and digital certificates to prove user’s identity.
  - The interface toward this SIM card will be based on an implementation of OMA Smart Card Web Server (OMA SCWS) which allows information stored in the card be accessed from the user equipment using https connections.
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Profile Agent components and interfaces

NOTE: In EG 202 325 this was called "Viewing/Editing Agent"
Creation of situation dependent profiles

- User supported by a wizard and a set of templates, e.g. related to:
  - activities and places:
    - Out
    - At home
    - At work
    - In a meeting
    - Driving a car
  - Environmental situations:
    - Noisy

- Combinations of situation dependent profiles at execution time
Activation of situation dependent profile
Profile processing agent

Evaluation Engine
- calculates new values of all preferences, addressed in the profiles associated with the State Variables = True,
- and then passes on the result to the Execution Engine.

Execution Engine
- Responsible for taking the changes identified by the “Evaluation Engine” and making those changes in the relevant devices and services.
State variables

State Variables (SV) can be variables that are set on different conditions, such as:

- SV_At_Work,
- SV_At_Home,
- SV_In_Meeting,
- SV_Sleeping,
- SV_Noisy,
- SV_In_Car
How events affect state variables

- State variables are set by the “Context Handler”
- The context information can relate to a range of events such as:
  - GPS coordinates,
  - sensors,
  - swiping card through/close to reader (or NFC),
  - microphone detecting volumes,
  - logging in to system,
  - time in an electronic agenda
How change of value of state variable(s) affects preferences

When a state variable change value to True or False, then the Profile Evaluation Engine will evaluate the situation. It will:

1. Check which states variables have the value True and retrieve the corresponding situation dependent profiles.
2. For each of the preferences addressed in these situation dependent profiles, choose the value with the highest priority for the resulting profile.
3. Pass on the result to the Execution Engine, which ensures that the relevant values are changed in the services and devices.
Assigning priorities - 1

Potential clashes may appear when the same preference is addressed in more than one profile, as the system needs to determine which of these alternative values will be applied.

- Avoid clash, by assigning priorities at creation time, when the user is “concentrated on the task” ;-

- preferably dealt with in the provided templates

- Otherwise…
Assigning priorities - 2

If priorities are not dealt with by the system (e.g. in templates), the user can do it:

- For each preference, the system will list the situation dependent profiles which address the same preference.
- Ask the user to rank them regarding lowest to highest priority.
Clashes…

- could almost be avoided - as the different priorities should let the system choose the preference with higher priority

But…
Clash at run-time

The degree of involvement of the user in the resolution of the conflict would be decided during initial set-up of the user profile management system.

- Typical options for such a rule, as expressed to the user:
  - “When the clash occur, ask me”;
  - “Make the recommended change and ask me to confirm or modify this at a time when I am not busy, ask me”;

How the system would make a choice in case the user do not want to deal with the clash when it occurs is under discussion in the project…