

Human Factors (HF); Personalization and User Profile Management; User Profile Preferences and Information

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<https://standards.iteh.ai/catalog/standards/sist/3394e479-49cc-4886-b299-c7dc3a5228f0/etsi-es-202-746-v1.1.1-2010-02>



Reference

DES/HF-00093

Keywords

profile, user

ETSI

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Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Human Factors (HF).

Introduction

The present document specifies information and preferences, which are choices made by the user, that will result in driving the behaviour of the system, and builds on the user profile concept described in EG 202 325 [i.1]. The concept of a user profile usually refers to a set of preferences, information and rules that are used by a device or service to deliver a customized version of capabilities to the user. In practice, most devices and services contain profiles specific to that product and unrelated to any other. This requires that, on change of service or device, the user has to re-educate themselves in how to personalize their services or devices and re-enter their information and preferences. This will result in variable success rate and user satisfaction.

There will be a number of user characteristics and preferences that will apply independently of any particular product (e.g. a user's preferred language or their need for enlarged text). A key objective is that users should not be required to provide this information more times than is necessary. Users move from one situation to another throughout the day (e.g. at home, driving, working). In each of these situations, users may have different needs for how they would like their ICT resources arranged. At present, an increasing number of products provide the user with ways of tailoring their preferences to these different situations. Users should be able to specify their context dependent needs in ways that require the minimum need to understand the individual products. In addition, personalization and user profile management holds the promise of improving the uptake of new technologies and allowing greater access to their benefits.

Any information/preference can be used as needed by the service/device, regardless of in which clause it appears. Further details on the organization of the information in the tables specifying the information and preferences in the tables are given in informative annex A.

The Design for All approach has been adopted in the present document. It means that accessibility is considered as something that can benefit people whether or not they have disabilities. Annex B provides a selection of preferences, referring to the various clauses which can be useful for people with disabilities.

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- xmlns:connectivity-preferences-ns=http://uri.etsi.org/upm/connectivity-preferences;
- xmlns:interaction-preferences-ns=http://uri.etsi.org/upm/interaction-preferences;
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1 Scope

The present document specifies a set of user profile preference and information settings for deployment in ICT services and devices for use by ICT users and suppliers.

The present document specifies:

- objects including settings, values and operations;
- a rule definition language for defining functionality such as automatic modification of profiles.

Profile solutions within the scope of the present document are:

- those provided for the primary benefit of the end-user;
- those which the end-user has rights to manage the profile contents;
- those where the end-user has the right to have a dialogue with the information owning stakeholder.

Intended readers of the present document are user profile providers, operators, service developers, service providers, device manufacturers, standards developers.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ETSI TS 102 747: "Human Factors (HF); Personalization and User Profile Management; Architectural Framework".
- [2] ETSI TS 102 334-3: "Network Address Book on fixed network; Part 3: vCard 2.1 profile for contact exchange by SMS/EMS for fixed network".

- [3] Cascading Style Sheets Level 2 Revision 1 (CSS 2.1) Specification.
NOTE: See <http://www.w3.org/TR/CSS2/>.
- [4] XML Schema Part 2: Datatypes Second Edition (October 2004).
NOTE: See <http://www.w3.org/TR/xmlschema-2/>.
- [5] PICSRules 1.1 - W3C Recommendation.
NOTE: See: <http://www.w3.org/TR/REC-PICSRules>.
- [6] ISO 639-3: "Codes for the representation of names of languages - Part 3: Alpha-3 code for comprehensive coverage of languages".
- [7] ISO 8601: "Data elements and interchange formats - Information interchange - Representation of dates and times".
- [8] ISO 4217 (2008): "Codes for the representation of currencies and funds".
- [9] ISO/IEC 24751-2 (2008): "Information technology - Individualized adaptability and accessibility in e-learning, education and training - Part 2: "Access for all" personal needs and preferences for digital delivery".
- [10] IANA - MIME Media Types.
NOTE: See: <http://www.iana.org/assignments/media-types>.
- [11] IETF RFC 4482 (2006): "CIPID Contact Information for the Presence Information Data Format".
NOTE: See: <http://www.ietf.org/rfc/rfc4482.txt>.
- [12] IETF RFC 4589 (2006): "Location Types Registry".
NOTE: See: <http://tools.ietf.org/html/rfc4589#page-3>.
- [13] IETF RFC 4119 (2005): "A Presence-based GEOPRIV Location Object Format".
NOTE: See: <http://www.ietf.org/rfc/rfc4119.txt>.
- [14] IETF RFC 5545: "Internet Calendaring and Scheduling Core Object Specification (iCalendar)".
NOTE: See: <http://tools.ietf.org/html/rfc5545>.
- [15] IETF RFC 3863: "Presence Information Data Format (PIDF)".
NOTE: See: <http://www.apps.ietf.org/rfc/rfc3863.html>.
- [16] IPTC Subject Reference System Guidelines (2003).
NOTE: See: http://www.iptc.org/std/NewsCodes/0.0/documentation/SRS-doc-Guidelines_3.pdf.
- [17] Doc 9674 - AN/946 - World Geodetic System - 1984 (WGS-84) implementation manual.
NOTE: See: <http://www.dqts.net/files/wgsman24.pdf>.
- [18] vCard: The Electronic Business Card, Version 2.1.
NOTE: See: <http://www.imc.org/pdi/vcard-21.txt>.
- [19] RFC 4480: "RPID: Rich Presence Extensions to the Presence Information Data Format (PIDF)".

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] ETSI EG 202 325: "Human Factors (HF); User Profile Management".
- [i.2] ETSI EG 202 116: "Human Factors (HF); Guidelines for ICT products and services; "Design for All".
- [i.3] ETSI EG 284 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Incorporating Universal Communications Identifier (UCI) support into the specification of Next Generation Networks (NGN)".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

accessibility: ensuring that all sectors of the community have equal access to communications and online information

active profile, active user profile: set of all active profile components related to a user

address book: entity that contains a number of records describing contacts of the user

administrator: person who defines profiles with settings and rules

NOTE: also known as profile administrator.

context: any information that can be used to characterize the state of entities that are considered relevant to the interaction between a user and an application, network function, service or device

creation template: template where modifications made to the template will not affect any information, preferences and rules in profiles that were previously created from that template

design for all: design of products to be usable by all people, to the greatest extent possible, without the need for specialized adaptation

live template: template where modifications made to the template will affect all information, preferences and rules in profiles that were previously created from that template

normal profile: user view of information, preferences and rules that are always active in the profile when no specific situation is applicable

object: profile data with attributes, values and operations that the user can refer to when defining their profile

profile: total set of user related information, preferences, rules and settings which affects the way in which a user experiences terminals, devices and services

NOTE: The use of the word profile in the present document implies user profile unless otherwise stated.

profile data: set of user related information, preferences and rules which can be stored in a profile

profile tool: tool that enables a user to view and modify information in profiles

profile provider: entity (e.g. company such as a service provider, organisation such as a special interest or affinity organization) that provide profiles and associated services

rule: statement that can be interpreted by the UPM system to produce or limit an action

situation: state that the user has identified as being of significance

situation profile: user view of user related information, preferences and rules which affects the way in which a user experiences devices and services in a specific situation

template: set of rules and settings provided by an entity as a starting point for users for the creation of their profiles

usability: extent to which a product can be used by specific users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use

user: person using ICT services

user profile: See "profile".

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACR	Anonymous Communication Rejection
CNAP	Calling Name Presentation
CNAR	Calling Name Restriction
COLR	COnnected Line identification Restriction
CSS	Cascading Style Sheets
GPS	Global Positioning System
ICT	Information and Communications Technologies
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISDN	Integrated Services Digital Network
OIR	Originating Identification Restriction
PSTN	Public Switched Telephone Network
SMS	Short Message Service
TIR	Terminating Identification Restriction
UCI	Universal Communications Identifier
UID	Unique ID
UPM	User Profile Management
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
XML	Extensible Markup Language

4 Overview of personalization and profile management

4.1 Organization of the profile content

In general, a profile contains:

- Information: data about or related to the user (e.g. name, address).
- Preferences: choices made by the user about a given parameter that will define or modify the system behaviour. More complex preferences can be expressed in the form of rules (see below).

NOTE: When something is considered essential to the user, it would be more appropriate if a preference is instead called a "need" (e.g. a blind user sets the modality to "sound"). However, for simplification, in the present document the word "preference" is used.

- Rules: statements that can be automatically interpreted in order to define or modify the system behaviour.

More specifically, the profile is organized into several blocks. The major organisational units of the profile are:

- Personal information: data about or related to the user (e.g. name, address, location).

- Human centred preferences: These are the overall preferences that might apply across the user's usage of a wide variety of different devices and services.

As these preferences are not mapped precisely to specific features of services and devices, they may be presented in ways that must be interpreted before they can be used as the definition for a precise setting for a service or device feature.

- Service/device category related information and preferences: The information and preferences in this clause are related to service categories (e.g. Communications services), further sub-categories of the service category (e.g. Realtime communication), and specific services/devices.

Information and preferences need to be associated with a scope, which includes:

- (groups of) services;
- (groups of) devices;
- (groups of) people (e.g. entries in an address book).

A scope may be very narrow (e.g. one specific service) or very broad (e.g. preferred language for all my services).

The values of the profile information and preferences in the profile will be either:

- directly set by the user;
- read from other profile information (e.g. from devices or services);
- set as the result of a rule that is contained in the user's profile.

4.2 Semantic interoperability

User descriptions of information and preferences can differ significantly between different services and devices and even between different contexts of use within the same service/device. However, the formal object descriptions will need to conform to standardized naming conventions, to enable profiles to be migrated between UPM systems.

If data in profile components relating to a device or service have been specified by the user, then related profile fields for other devices or services can be directly populated by the same standardized data or data translated to produce the same effects. Whereas it is essential to have standardized descriptions of these objects in order that profiles can be migrated from one provider to another, this does not imply that users will need to understand these descriptions. In addition, it is possible for a service provider, a manufacturer or an operator to define profile data in addition to those specified in the present document for incorporation in a user profile.

4.3 Profiles and user views

4.3.1 Situations, context and the scope object

Users move between situations throughout the day (e.g. at home, driving, working). In each of these situations, users may have different needs for how they would like their ICT resources arranged. Wherever a user wishes to have different behaviour from their ICT it will first be necessary to identify criteria that uniquely define the situation. These criteria are captured as rules that defines when a Scope object is active (i.e. when its isActive method evaluates to TRUE). Hence the user concept of a "situation" is represented in the system by a Scope object.

Clause 5.4.4 in TS 102 747 on "Personalization and User Profile Management: Architectural Framework" [1] shows very flexible ways in which the profile data is modified according to the context. However, users will be unable to understand all of the possible implications of the dependency of individual data items on context. For this reason, it is necessary to introduce the concept of User Views of the profile. Although it is possible to create any number of specialized views of the profile, two views that have been defined in EG 202 325 [i.1], and which are described to users as profiles, are the "Normal Profile" and the "Situation Profile". The view that is described as the "Normal Profile" shows all of the profile data that will be applied when no specific user-defined situation applies. This view can be achieved by creating a view of the profile that shows the values of profile data when no Scope object other than the "Normal" Scope object have been activated.

Whereas the "Normal Profile" view shows the values of the items in the user profile, it is useful to show the values of profile data that may need to be set to values relevant to a user-determined situation. There is therefore a need for another view which corresponds to the user concept "situation". Such a view is described in user terms in EG 202 325 [i.1] as the "Situation Profile". In this view the user can see the values assigned to profile data items that may need to have a special value set in that situation. The situation profile view will contain fewer profile data items than the "Normal Profile" view, as it will contain only those data items which are different in that specific situation (i.e. only profile data items associated with the Scope object that represents the user's "situation").

Profile providers may also offer other views of the profile to users. For example, users may wish to see all of their profile as it will be in a particular "situation", not just the standard view that shows those profile data items that are uniquely configured for the current situation.

Profile users should be allowed to view their profiles making use of these user views and, if they have administrator rights, should be allowed to modify the profile data that they see in these views. Modifications to profile data in a user view that shows a "Situation Profile" is a means to allow the modification of the Profile-Item-Attributes associated with that "situation" (i.e. associated with the Scope object that represents that "situation").

Conflicts may appear when two (or more) Scope objects are simultaneously activated, which would result in an attempt to set the same profile data to different values. To avoid this, the UPM system needs to determine which of these alternative values shall be applied. Therefore, priorities are assigned to "Situation Profiles" and/or profile data items. In the UPM system, the priorities are attributes of the Scope objects that are associated with "Situation Profiles" and individual profile data items. If there is an attempt to set two (or more) different values for an item of profile data, then the value of the profile data that is associated with the Scope object with highest priority is set. The mechanisms for handling conflicts and dealing with the situation when priorities still do not resolve a conflict are described in more detail in TS 102 747 [1]. Table 5.3.3 (Scope class) gives the specification of the priority attribute of the Scope object, and defines ranges of priorities to be assigned to different categories of Scope objects (determined by the scope-category attribute of the Scope object).

Profile provider support should assist users in defining priorities to avoid potential conflicts.

4.3.2 Avoiding conflicts by using templates

Potential conflicts (when two or more Scope objects, are trying to set the same data to different values), may be resolved by the use of a well designed set of pre-defined templates that assign priorities to preferences in a way that eliminates conflicts for most probable combinations of situations (Scope objects).

It would be expected that if profile providers assist users to create their profiles by means of a "creation wizard", the wizard would make use of such a coherent set of templates and would thus create an initial profile setup where conflicts are eliminated or confined to extremely unlikely combinations of situations.

4.4 Profile extensions

4.4.1 Additional standardized information and preferences

In addition to profile data items as defined and listed in the present document, it is expected that there will be a need for future additional standardized information and preferences, for which new versions of the present standard will be developed.

4.4.2 Proprietary profile extensions

In addition to profile data items as defined and listed in the present document, it is possible for service developers and device manufactures to include proprietary profile data items in the profile which shall be identifiable as proprietary (e.g. specify the company and/or product identifier for which the proprietary information and preferences are intended for). Proprietary profile extensions are outside the scope of the present document.

5 Profile management

5.1 Introduction

As profile portability (see [i.1]) is an important requirement, there is a need for standardized definitions, information and preferences in this area.

Create and manage a profile is the activity that allows the user to enter information and express preferences in the profile. In this Activity there are two main steps, each of them associated to information and preferences.

- 1) **Profile identification:** information about the profile and preferences about how to identify it.
- 2) **Profile management and use:** preferences about the expected behaviour of the system.

5.2 Model

The main system model is shown in figure 5.2.1.

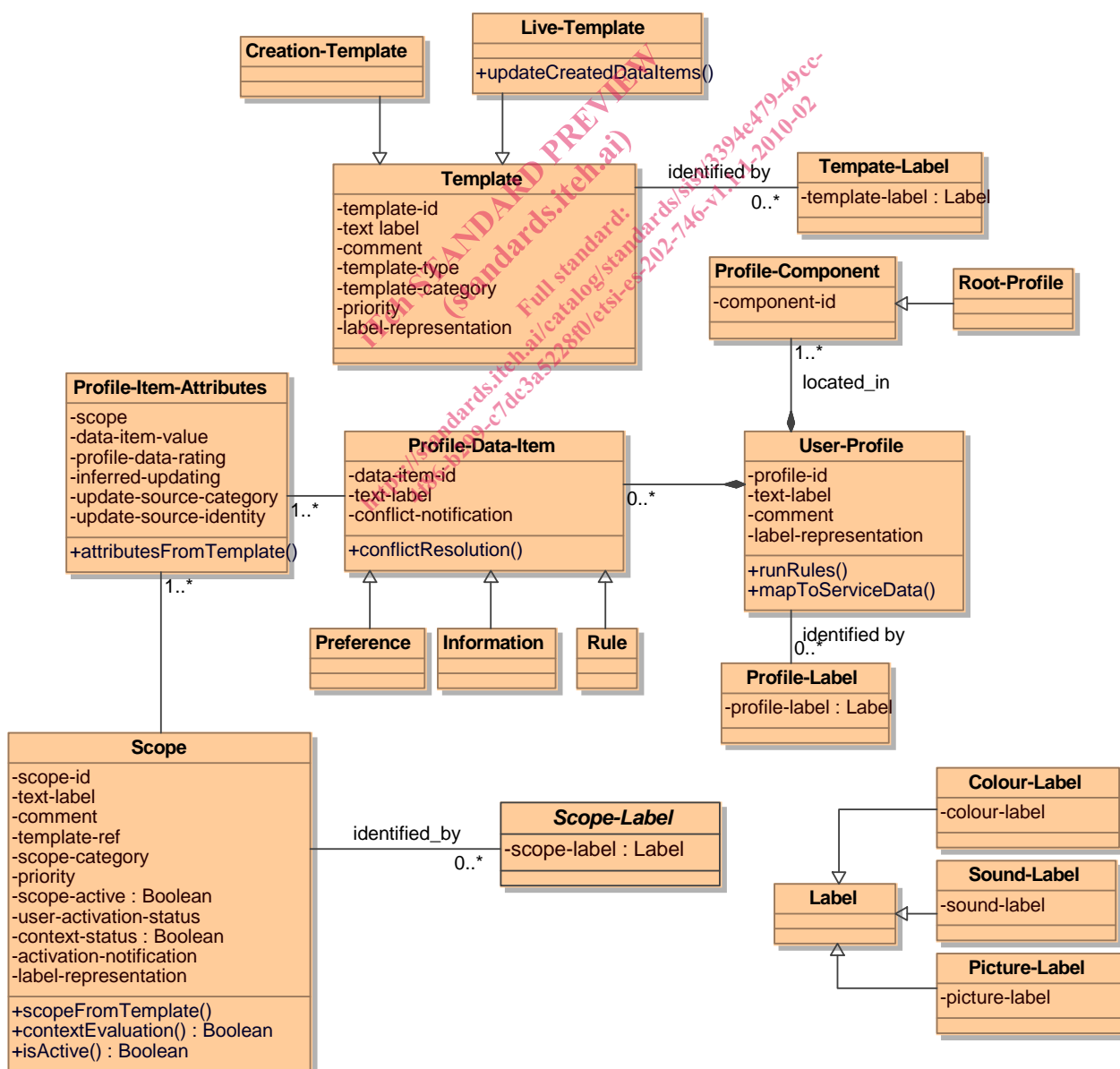


Figure 5.2.1: UPM system model