

Human Factors (HF); Personalization and User Profile Management; Architectural Framework

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Human Factors (HF).

Introduction

The present documents 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 information, preferences and rules that are used by a device or service to deliver a customized version of capabilities to the user. Traditionally, many 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. The user profile concept described in EG 202 325 [i.1] provides an enhanced user experience.

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 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. 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. The present document provides an architectural framework for supporting personalization and user profile management.

1 Scope

The present document defines an architectural framework supporting the personalization and user profile management concepts described in EG 202 325 [i.1]. The present document addresses issues related to network requirements, functions and procedures. It also covers User Profile security and privacy issues.

Capabilities provided by the architecture are:

- data editing (e.g. creation, templates, update);
- data storage;
- synchronization;
- backup;
- access control respecting user preferences and legal policies;

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:
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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 ES 202 746: "Human Factors (HF); Personalization and User Profile Management; User Profile Preferences and Information".
- [2] ITU-T Recommendation M.3050 Supplement 1: "Enhanced Telecom Operations Map (eTOM) - Supplement 1 - Interim view of an interpreter's guide for eTOM and ITIL practitioners".
- [3] OMA, Push-to-Talk over Cellular, Architecture.

NOTE: See [OMA-AD-PoC-V2_0-20080507-C](https://standards.etsi.org/standards/etsi-ts-102-747-v1-1-1-200912/oma-ad-poc-v2_0-20080507-c).

- [4] ETSI TS 133 221: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Generic Authentication Architecture (GAA); Support for subscriber certificates (3GPP TS 33.221)".
- [5] ETSI TS 184 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Identifiers (IDs) for NGN".
- [6] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".
- [7] ETSI TS 188 002-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Subscription Management; Part 1: Requirements".

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 TR 132 808: "Telecommunication management; Study of Common Profile Storage (CPS) Framework of User Data for network services and management (3GPP TR 32.808)".
- [i.3] ETSI TR 180 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Release 3 definition".
- [i.4] ETSI TS 102 165-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Methods and protocols; Part 1: Method and proforma for Threat, Risk, Vulnerability Analysis".
- [i.5] ETSI TR 187 011: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Application of ISO-15408-2 requirements to ETSI standards - guide, method and application with examples".
- [i.6] ISO/IEC 15408-2: "Information technology - Security techniques - Evaluation criteria for IT security - Part 2: Security functional requirements".
- [i.7] UK Home Office; R.V.Clark; "Hot Products: understanding, anticipating and reducing demand for stolen goods", ISBN 1-84082-278-3.
- [i.8] ETSI EG 202 067: "Universal Communications Identifier (UCI); System framework".
- [i.9] ETSI EG 203 072: "Universal Communications Identifier (UCI); Results of a detailed study into the technical areas for identification harmonization; Recommendations on the UCI for NGN".
- [i.10] IETF RFC 4510: "Lightweight Directory Access Protocol (LDAP): Technical Specification Road Map".

- [i.11] Open Mobile Alliance (OMA): "SyncML Sync Protocol".
- NOTE: See http://www.openmobilealliance.org/tech/affiliates/syncml/syncml_sync_protocol_v11_20020215.pdf.
- [i.12] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data.
- [i.13] United Nations General Assembly resolution 217 A (III) (10 December 1948): "Universal Declaration of Human Rights".
- [i.14] ITU-T Recommendation X.509: "Information technology - Open Systems Interconnection - The Directory: Public-key and attribute certificate frameworks".
- NOTE: Also available as ISO/IEC 9594-8.
- [i.15] ETSI TS 123 240: "Universal Mobile Telecommunications System (UMTS); LTE; 3GPP Generic User Profile (GUP) requirements; Architecture (Stage 2)".
- [i.16] Open Mobile Alliance (OMA): "User Agent Profile, Specifications, Version 2.0", OMA-TS-UAPProf-V2-0-20060206-A.
- [i.17] Open Mobile Alliance (OMA): "Device Profile Evolution V1.0".
- NOTE: See http://www.openmobilealliance.org/Technical/release_program/dpe_V1_0.aspx.
- [i.18] Open Mobile Alliance (OMA): "Device Management Working Group".
- NOTE: See <http://www.openmobilealliance.org/Technical/DM.aspx>.
- [i.19] Open Mobile Alliance (OMA): "Device Management Protocol, Specifications", OMA-TS-DM-Protocol-V1-2-1-20080617-A.
- [i.20] Open Mobile Alliance (OMA): XML Document Management V1.1.
- NOTE: See http://www.openmobilealliance.org/Technical/release_program/xdm_v1_1.aspx.
- [i.21] Open Mobile Alliance (OMA): Presence Simple V1.1.
- NOTE: See http://www.openmobilealliance.org/Technical/release_program/presence_simple_v1_1.aspx.
- [i.22] ETSI ES 283 030: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Presence Service Capability; Protocol Specification [3GPP TS 24.141 V7.0.0, modified and OMA-TS-Presence-SIMPLE-V1-0, modified]".
- [i.23] Open Mobile Alliance (OMA): "Instant Messaging and Presence Service V1.3".
- NOTE: See http://www.openmobilealliance.org/Technical/release_program/imps_v1_3a.aspx.
- [i.24] "OMA-TS-XDM-Core-V1-0-20051103-C" and "OMA-TS-XDM-Shared-V1-0-20051006-C".
- [i.25] ETSI TS 183 038: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN Simulation Services; Extensible Markup Language (XML) Document Management; Protocol Specification (Endorsement of OMA-TS-XDM-Core-V1-0-20051103-C and OMA-TS-XDM-Shared-V1-0-20051006-C)".
- [i.26] Open Mobile Alliance (OMA): "Enabler Release Definition for XML Document Management Candidate Version 2.1", 31 March 2009, OMA-ERELD-XDM-V2-1-20090331-C.
- NOTE: See http://www.openmobilealliance.org/Technical/release_program/docs/XDM/V2_1-20090331-C/OMA-ERELD-XDM-V2_1-20090331-C.pdf.
- [i.27] IETF RFC 4825: The Extensible Markup Language (XML) Configuration Access protocol (XCAP).
- NOTE: See <http://www.ietf.org/rfc/rfc4825.txt>.

- [i.28] "W3C Recommendation: "XQuery 1.0: An XML Query Language", January 23 2007.
- NOTE: See <http://www.w3.org/TR/xquery/>.
- [i.29] "W3C Composite Capability/Preference Profiles (CC/PP): Structure and Vocabularies", G. Klyne, F. Reynolds, C. Woodrow, H. Ohto.
- NOTE: See: <http://www.w3.org/TR/2007/WD-CCPP-struct-vocab2-20070430/>.
- [i.30] "W3C Mobile Web Initiative (MWI) Device Description Repository (DDR)".
- NOTE: See <http://www.w3.org/TR/2007/WD-ddr-core-vocabulary-20071218/#sec-introduction>.
- [i.31] "W3C Delivery Context Ontology (DCO)".
- NOTE: See <http://www.w3.org/2007/uwa/editors-drafts/DeliveryContextOntology/2007-11-30/DCOntology.html>.
- [i.32] 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 terms and definitions given in EG 202 325 [i.1] and the following apply:

Concealable, Removable, Available, Valuable, Enjoyable, and Disposable (CRAVED): classification scheme to determine the likelihood that a particular type of item will be the subject of theft [i.7]

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

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 profiles

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.

root profile: part of the profile held by the profile provider

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

subscriber: person or organization responsible for concluding contracts for the services subscribed to and for paying for these services

NOTE: See ITU-T Recommendation M.3050.1 [2].

3.2 Abbreviations

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

3GPP AKA	3GPP Authentication and Key Agreement
AA	Attribute Authority
AC	Attribute Certificate
AS	Application Server
ASF	Application Server Function
CA	Certificate Authority
CC/PP	Composite Capability/Preference Profiles
CPS	Common Profile Storage
CRAVED	Concealable, Removable, Available, Valuable, Enjoyable, and Disposable
CSCF	Call Session Control Function
CSP	Communications Service Provider
DAC	Discretionary Access Control
DM	Device Management
DPE	Device Profile Evolution
FE	Functional Entity
GAA	Generic Authentication Architecture
GBA	Generic Bootstrapping Architecture
GUP	3GPP Generic User Profile
GUPR	3GPP Generic User Profile Data Repository
GUPS	Generic User Profile Server
ICT	Information and Communications Technologies
IMS	IP Multimedia System
IP	Internet Protocol
ISDN	Integrated Services Digital Network
LDAP	Lightweight Directory Access Protocol
MAC	Mandatory Access Control
NGN	Next Generation Network
OWL	Ontology Web Language
PKC	Public Key Certificate
PKI	Public Key Infrastructure
PMI	Privilege Management Infrastructure
PoC	Push to Talk Over Cellular
PSTN	Public Switched Telephone Network
PUA	Personal User Agent
RAF	Repository Access Function
RBAC	Role Based Access Control
RDF	Resource Description Framework
RP	Reference Point
SA	Security Associations
SA	Service Agent
SAML	Security Assertion Markup Language
SIP	Session Initialization Protocol
SOA	Source of Authority
SS	Service Server
SSO	Single Sign On
SuM	Subscription Management
TGS	Ticket Granting Server
TLS	Transport Layer Security
TVRA	Threat Vulnerability and Risk Analysis
UAProf	User Agent Profile
UCI	Universal Communications Identifier
UDF	User Data Function
UE	User Entity
UE	User Equipment
UP	User Profile
UPM	User Profile Management
UPSF	User Profile Server Function

URI	Uniform Resource Identifier
USB	Universal Serial Bus
WAP	Wireless Application Protocol
XCAP	XML Configuration Access Protocol
XDM	XML Document Management
XML	eXtensible Markup Language

4 Summary of profile

The role of profiles is to enable all the devices and services used by a user to share the user's preferences and to adapt to the environment in which the device or service is invoked.

NOTE 1: A detailed description of the personalization and user profile concept is to be found in EG 202 325 [i.1].

A user profile is a data object that stores information in the form of profile data items and rules whose value represents preferences related to a particular user for use by a device or service. The definition of the profile data items inside the profile is given in ES 202 746 [1]. The key aim of the architecture is to allow many devices to share a single profile, either in full or in part (referred to as a profile component), and to allow some profile data items of the profile to be set depending on the context in which the device or service is operating.

NOTE 2: In the present document the term profile is synonymous with user profile and is used except where it is essential to distinguish user profile from (for example) service profile.

The management of profiles is carried out using the capabilities of the User Profile Management (UPM) system defined in clause 5.

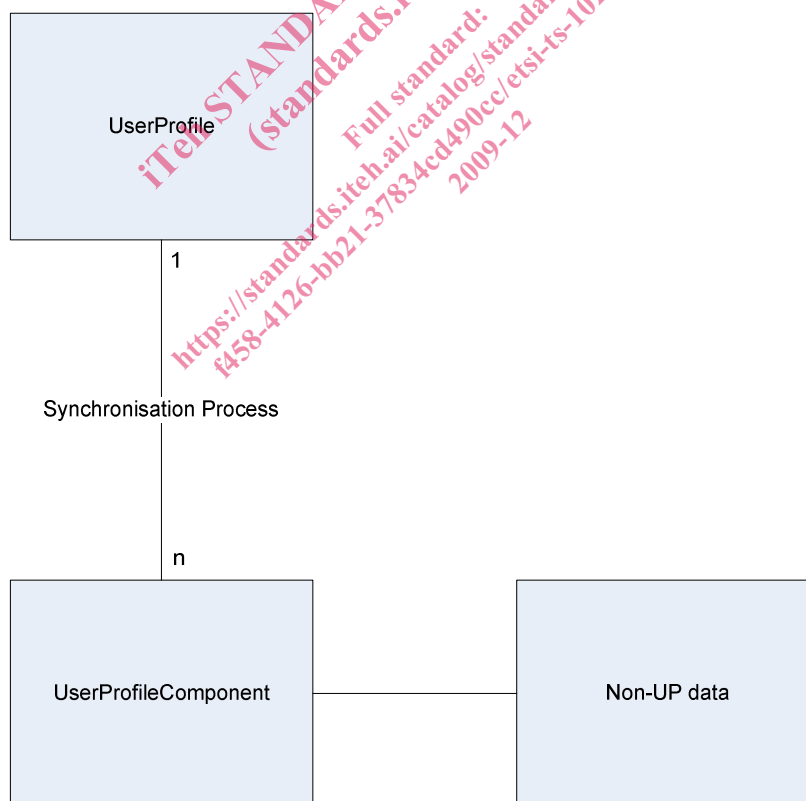


Figure 4.1: Profile components

Whereas in the present document the user profile is considered as if it is a single data entity in practice parts of this profile (user profile components) may be distributed amongst a number of storage locations that include the user's services and devices. The architecture shall support the synchronization process outlined in clause 5. Devices and services shall support the use of profiles (i.e. the use of externally provided configuration data).

It is assumed that in locations where there are profile components in use that there may also be device, service or context specific "Non-UP data" that do not form part of the user profile and thus are excluded from the synchronization process.

The setting of profile data items may be overridden by context data. The profile content when initially invoked is termed the "normal" profile and any modification of the settings of elements by the situation may be referred to as the "situation profile". The term "active" profile is used to refer to the set of profile data items and the settings of those profile data items that are active at the observation point (i.e. at the device or service using the profile).

NOTE 3: If the value assigned to an element is set by the device and/or service context the resultant value may or may not be synchronised with the profile maintained by the profile provider.

The data model, and its coordinating system model, is defined in ES 202 746 [1] and copied below in figure 4.2.

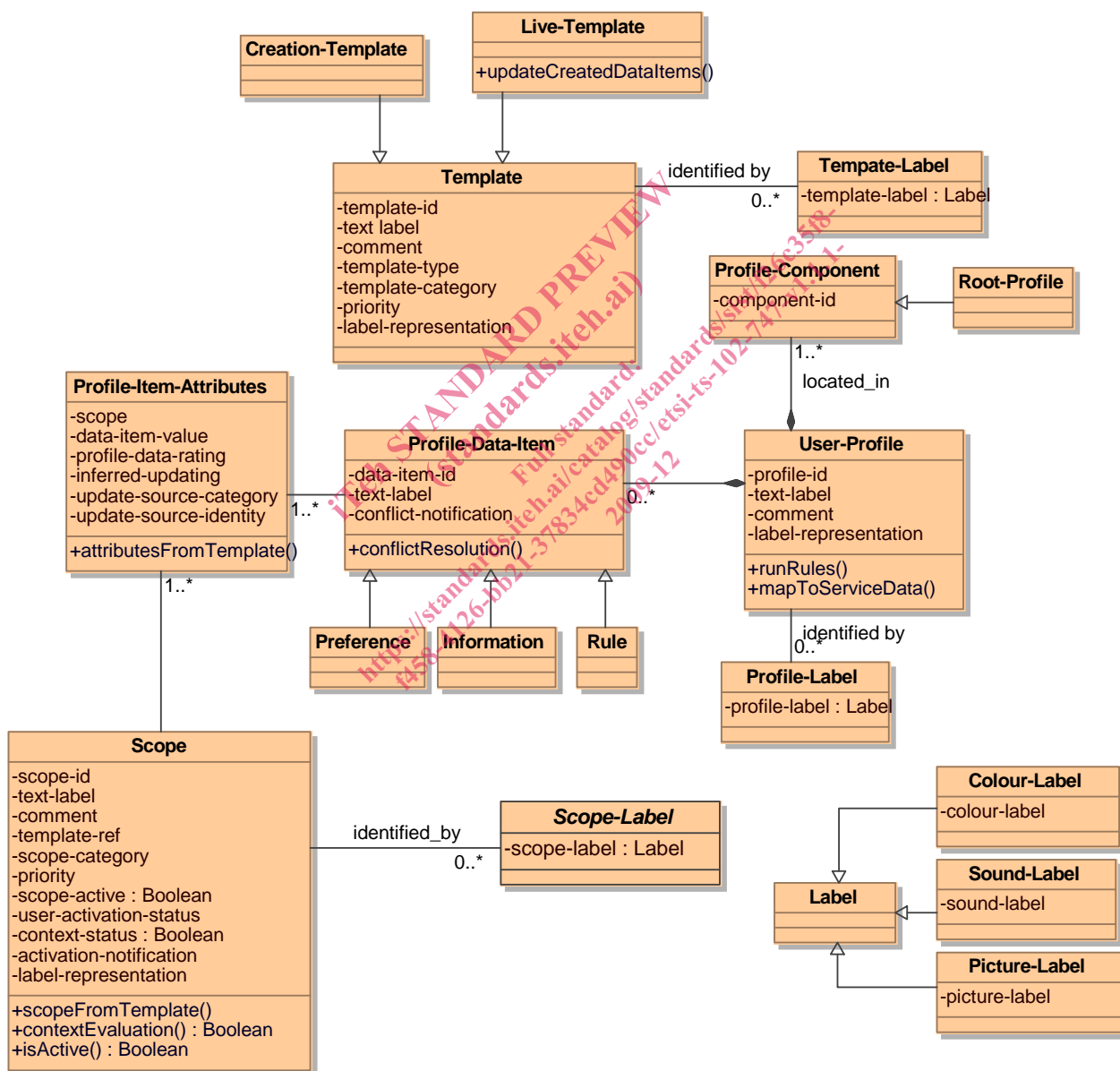


Figure 4.2: UPM system model (from clause 5 in ES 202 746 [1])