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Smart interface for digital ecosystem:

Smart identity, a Proof of Concept

<

**TECHNICAL REPORT**

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# Foreword

This Technical Report (TR) has been produced by {ETSI Technical Committee|ETSI Project|<other>} <long techbody> (<short techbody>).

# Modal verbs terminology

In the present document "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](https://portal.etsi.org/Services/editHelp!/Howtostart/ETSIDraftingRules.aspx) (Verbal forms for the expression of provisions).

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# Executive summary

# Introduction

# 1 Scope

The present document …

# 2 References

## 2.1 Normative references

Normative references are not applicable in the present document.

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] <Standard Organization acronym> <document number><version number/date of publication>: "<Title>".

[i.2] etc.

# 3 Definition of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the [following] terms [given in ... and the following] apply:

## 3.2 Symbols

## 3.3 Abbreviations

For the purposes of the present document, the [following] symbols [given in ... and the following] apply:

For the purposes of the present document, the [following] abbreviations [given in ... and the following] apply:

# 4 Smart Identity: from definition to PoC design

## 4.1 Identity definition

The notion of identity is complex and polysemous.

It depends on the point of view to consider what an individual can be, and on the use that we want to make of this identity.

We can identify 3 domains of identification which are cumulative:

> civil and legal identity

This identity traditionally and mainly consists of the following elements:

surname, first name, sex, nationality, filiation (relationships), date and place of birth.

This identity is deemed to be stable throughout life

> biological identity: Height, weight, eye color, retina, fingerprint, DNA

Some attributes of this identity can be used to formally identify a person, in addition to the civil identity.

> social and personal identity

It is made up of many sociological and psychological elements: place of residence, profession, standard of living, hobbies, tastes, friends, beliefs, commitments, etc.

It is built, it evolves and is enriched during life, it is never fixed

These are identities that can be described as objective or suffered. But there are also subjective and desired identities, corresponding to the way an individual decides for himself how he intends to present himself to others. It is a sort of narrative identity. Social networks and the use of pseudonyms and avatars in cyberspace are a tangible manifestation of this. It can be noted in this regard that in the digital world it is possible to have several identities

For our smart ID we start from the attributes of the objective identity of the person

We add the resources (equipment, services) available

We consider the sequence of his roles in space-time: his objectives, his activities, his tasks, his schedule.

We are also interested in the information it uses to make awareness choices.

More simply, the smart ID is thus the representation of a person:

for what it is

for what it has

for what it does

for what it knows

## 4.2 from Identity to User Profile

what we are

what we have (ressources)

what we do

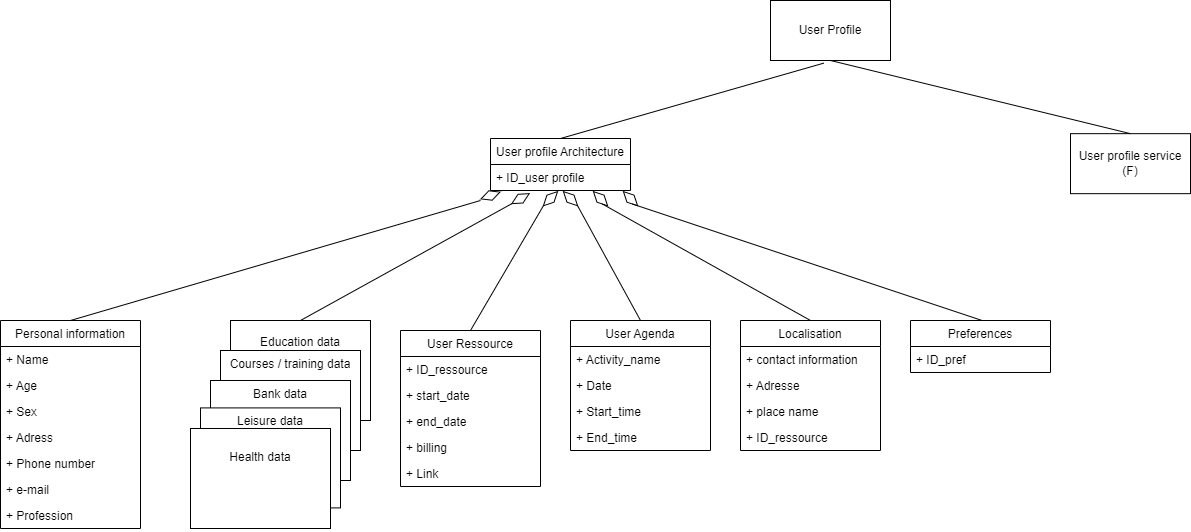


Figure 1 : Relationship between Identity définition and user profil model

The "user profile" Is therefore the informational representation of the user's identity (figure 1) in the digital ecosystem, including

* Personnal informations
  + legal identity
  + Identifications

*according to the role :*

* + - Work ID
    - Health ID
    - …
* User centric characteristics that impact configurations

*Actions according to :*

* + Preferences
  + Space-time (agenda)
  + Localisation
* The ressource description *according to the localisation*
  + internal ressources (equipment, network, services)
  + external ressources (equipments, network, services)

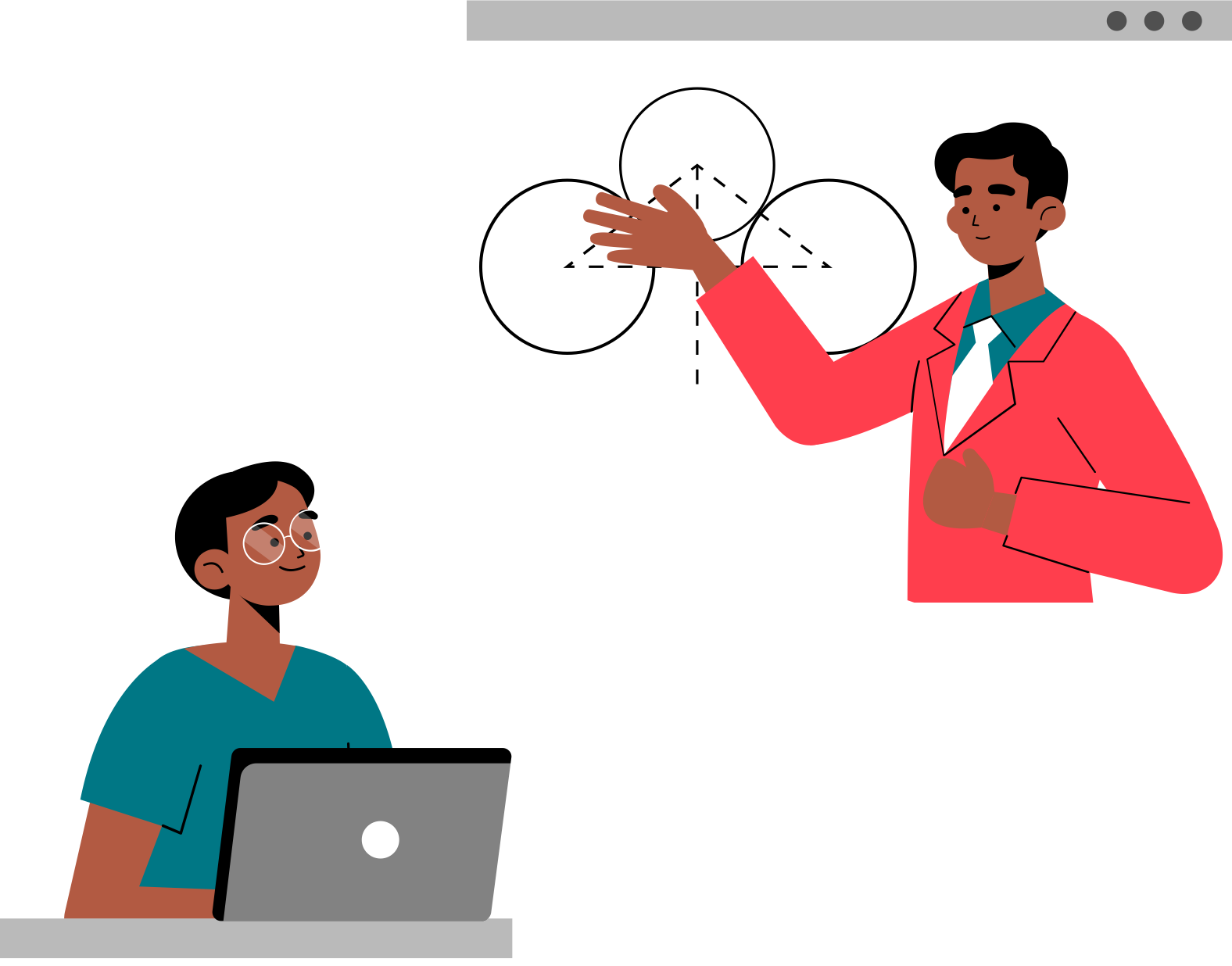
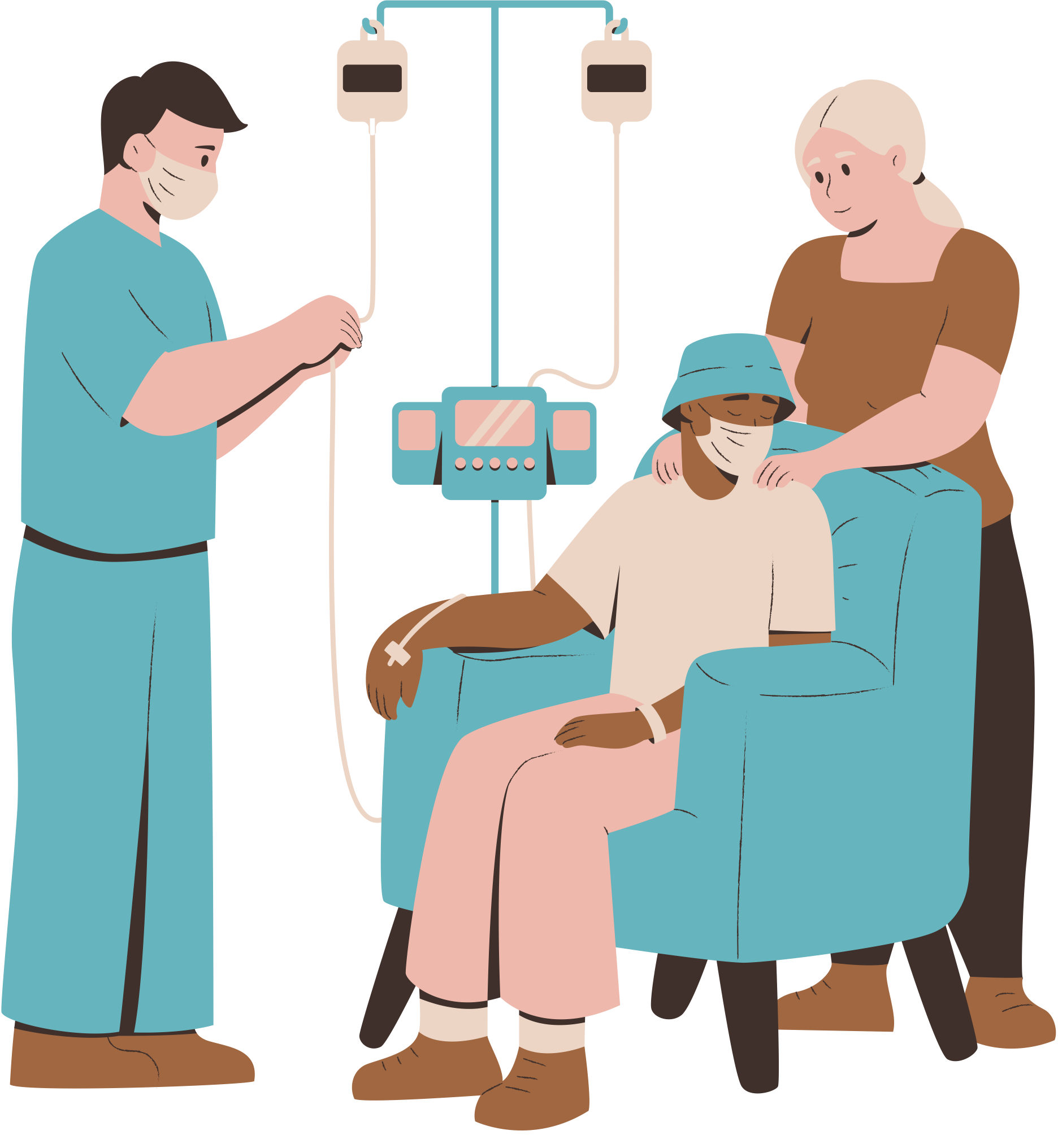
More precisely the personnal sheet / template (figure 2) identity can be as following:

|  |
| --- |
| PERSONAL INFORMATIONS |
| Social ID |
| * Social ID * Last Name * First name(s) * Last name * Gender * Date of birth * Country of birth * City of birth * Nationality (s) * Occupation   Personal contact information   * Address * Postcode * Town or city * Mobile phone / landline * E-mail address   Professional contact information   * Business address * Postcode * City or town * Mobile phone / landline * E-mail address   Other   * Residence permit * Visa * Passport |

Figure 2 : personal informations template

Moreover, with the evolution of paradigms, the relationship between the user and the system is now an n to n relationship meaning that the user has n profiles (figure 3).



…

Figure 3: Les n profils potentiels d’un utilisateur

The instantiation of the User Profile model will give the complete picture of the user according to his roles in space-time, his preferences, and his location.

## 4.3 knowledge base for Smart Identity: Potential profile

Our identity is also “what we know”. This is why we integrate our knowledge of the characteristics of the different areas and the external services requested in order to carry out the different tasks in good awareness.

What we know : potential profile (information allowing choice to be made awareness)

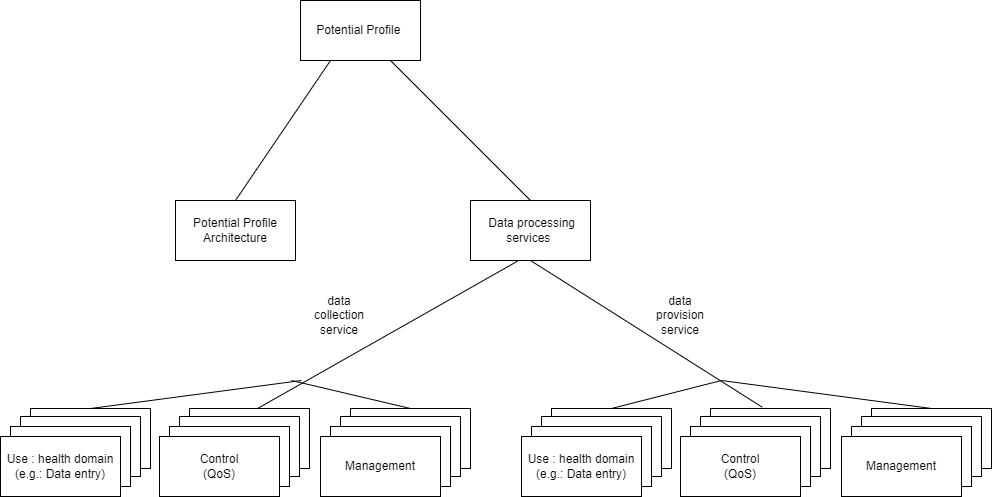


Figure 4: knowledge base

Like any entity, the Potential Profile has an architecture and a service interface. The first service consists of data collection (instantiation of the Potential Profile model) to store architecture information. The architecture of the Potential Profile enriches the architecture of the User Profile by informing all the areas relating to a temporal action. The second service will be all the processing on the analysis of the data in order to have additional decision-making information

Each role played by the user requires data from each of the domains. That is to say for each action we need transversal data (figure 5). For example, during a medical appointment for payment, we will need the finance domain template as for all actions that will require payment.

Health template

Sport template

Work template

Purchase template

Entertainment template

Financial template

Medical appointment

Indoor sport

Professional Meeting

Purchase of winter clothes

Outing with friends

Figure 5 : transversal data

For the Poc we will need templates corresponding to the most common roles, that is to say the basic roles (figure 6) involved in areas such as health, work, finance, travel, etc.

|  |
| --- |
| HEALTH TEMPLATE |
| * Social security number * Mutual insurance (CMU, professional, etc.)   Health information   * General information * Weight * Height * Health parameters * Temperature * Pulse/heart rate * Oxygen saturation * Respiratory rate * Blood pressure   Medical record   * Blood type * Rhesus * Vaccination booklet * Vaccination certificates (covid-19) * Current treatment(s) * Allergies * Last tests * Latest prescriptions * Medical appointments (past and future) * Doctor of record * Emergency contacts |

|  |
| --- |
| TEMPLATE SPORT (well-being) |
| * Membership card   Information   * User behaviours * Time spent sleeping / in bed * Inactivity time * Number of steps * Distance (walking and running) * Stages climbed * Stability of walking * Other * Calories   Information sheet   * Type of subscription (classic, premium) * Duration of subscription * Wellness goal(s) |

|  |
| --- |
| TEMPLATE DISPLACEMENT |
| Informations |
| * Tickets / tickets for transport   Ticketing   * Air / train / bus tickets * Advantage / discount card   Carpooling information   * Name and contact of the driver * Departure time * Meeting point (departure) * Arrival point   Stay   * - Hotel/accommodation reservation |

|  |
| --- |
| TEMPLATE WORK |
| * Registration number * Access badge * Tickets / restaurant card   Professional file   * Job function * Office * Department / service   Other   * Employment contract / internship agreement * Pay slips |

|  |
| --- |
| TEMPLATE EDUCATION |
| * Personnel number * INE number * Education card   Student information   * Education * Timetable * Teaching units * Documents * Grades |

|  |
| --- |
| TEMPLATE SHOPPING / PURCHASES |
| Informations |
| * Item preferences * Product size   Customer record by supplier   * Customer number * Membership / loyalty card * Username * Gift card * Discount coupons * Ordering * Points * My addresses (delivery and billing) * My payment methods (credit card, multiple payments, etc.) |

|  |
| --- |
| TEMPLATE DOMOTIC |
| * Access card / key * Charges * EDF * Hot and cold water * Heating * Maintenance costs * Green space * Common areas * Household waste collection tax * Connected house * Management of: security, access, lighting, temperature, fans, objects, etc. * Other * Lease agreement / certificate of residence |

|  |
| --- |
| TEMPLATE FINANCIAL |
| Bank information / current account   * RIB * Authorised overdraft * Bank card * Cheques * Transfers & direct debits   Savings (passbook)  Insurance   * Home insurance * Life insurance * …   Loan(s)  Sponsorship  Other   * - Bank documents |

Figure 6 : common knowledge templates

## 4.4 Poc Design

4.4.1 data collection

Data collection consists of filling in the Potential Profile, which includes User Profile data, data on the various user domain interest, and data from the services requested (e.g. weather, etc.), as well as data processing contributions.

4.4.2 SmartID : active profile

The intelligent user profiling process, after the collection of their data, begins with the consideration of their user centric parameters (space-time, space-place and preferences), which constitute the system input data allowing the obtaining the active profile.

Then an identification of the activity and a classification in relation to the different areas will be made using artificial intelligence algorithms during the data processing phase. There will then follow a selection of templates that may correspond to the areas of user action during this time slot. For example, a medical appointment might require the health, finance, and travel templates.

The preferences will make it possible to finalize the personalization of the active profile (FIG. 7) and to select the user's preferred resources (equipment, networks, services) according to his location.

user centric caracteristics

Space-time (schedule)

Selection of templates corresponding to the domain of user action during this time slot

Localisation

Identification and classification of the activity in relation to the domain

Preferences

Prediction of the domains to which the activity belongs

Health, education, finance, etc.

According to the localisation

According to the preferences

active profile display

ressources selection (equipments, networks, services)

Figure 7: Smart user profiling process and active profile procurement

# 5 data collection

*Model, Structure ; tools*

## 5.1 User profil service : data collection process

5.2 Knowledge base tools

Xampp  

5.3 final knowledge base

# 6 data processing

*Filtering, validation…*

6.1 shaping the problem

6.2 resolution tools

6.3 results

# 7 PoC : use case presentation

7.1 User Story

Considérons l’Agenda et la Localisation prévisionnels du 19 septembre 2022 soir présenté à la figure 8.

|  |  |  |
| --- | --- | --- |
|  | AGENDA | LOCALISATION |
| 15h – 17h | Réunion d’équipe | Bureau |
| 17h15 – 18h | (Déplacement) |  |
| 18h – 18h30 | Préparation pour la salle de sport | Maison |
| 18h45 – 20h | Séance de sport | Salle de sport la plus proche |
| 20h15 – 21h | Dîner | Maison |
| 21h – 22h | Achat des vêtements automne / hiver | En ligne |
| 22h | Repos |  |

Figure 8 : Agenda et localisation prévisionnels de l’utilisateur

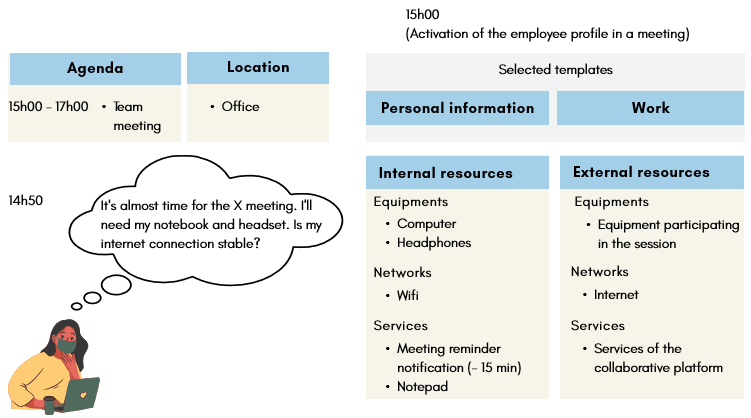


Figure 9 : Profil actif de l’utilisateur à 15h (employée en réunion)

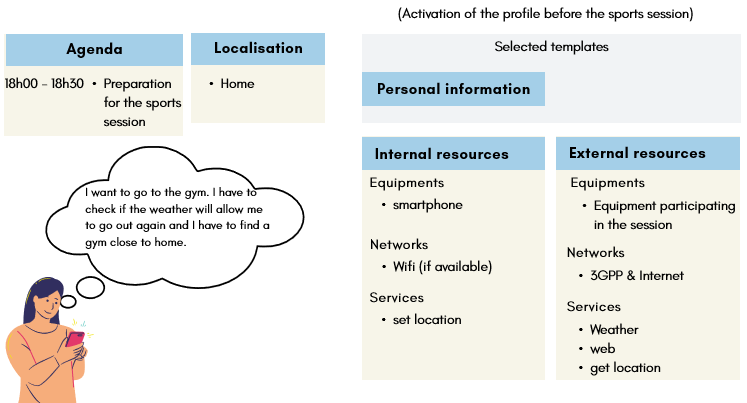


Figure 10 : Profil actif de l’utilisateur à 18h (réflexion pour aller à la salle de sport)

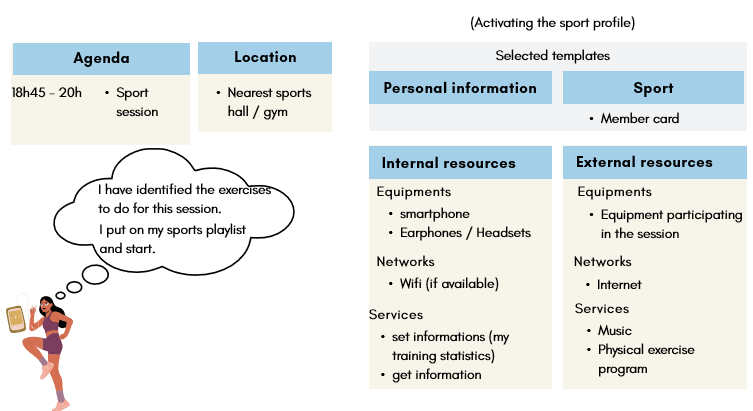


Figure 11 : Profil actif de l’utilisateur à 18h45 (sportive)

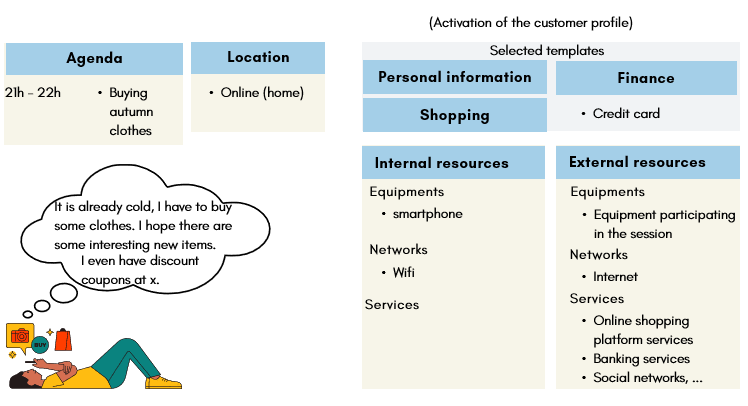


Figure 12 : Profil actif de l’utilisateur à 21h (cliente)

7.2 Les données de l’user profil

7.3 Les données du potentiel Profil

7.4 Le profil Actif

# 8 PoC : realization (results)

8.1 Description de la maquette

8.2 Les modèles complémentaires

8.3 Le traitement de l’user story

Annex A:  
Title of annex

Annex:  
Bibliography

Annex:  
Change History

| Date | Version | Information about changes |
| --- | --- | --- |
| <Month year> | <#> | <Changes made are listed in this cell> |
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