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| ToR STF 679 (Ref. SC USER) |
| Version: 1.2 |
| Author: User Group – Date: 2024-05-07 |
| Last updated by: ETSI Secretariat – Date:2024-06-28 |
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**Terms of Reference –Specialist Task Force Proposal**

**STF 679 (Ref. Body User Group)**

**User-centric Approach in digital ecosystem: The Smart Customized Services**

Summary information

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| --- | --- | --- | --- |
| Approval status | Approved by Ref. Body User Group (doc ref: USER (24)089\_003r1) | | **YES** |
| Approved by Board#148 (5-7 June 2024) | | **YES** |
| Reference Body | Ref. Body SC USER Group | | |
| ETSI Funding | **Maximum budget : 95 000 EUR** | | |
| Minimum of 4 ETSI Members Support | **YES/NO** | | |
| Time scale | **From** | 2024-09-15 | |
| **To** | 2026-06-15 | |
| Work Items | *USER WI 55, 2026-06-15* | | |
| Board priority | [ETSI STF funding criteria](https://portal.etsi.org/STF/STFs/Funding/ETSIbudget.aspx)   |  |  | | --- | --- | | **Priority Criteria** | **X** | | Maintenance of standards in mature domains |  | | Innovation in mature domains |  | | Emerging domains for ETSI |  | | Horizontal activities (quality, security, etc.) | X | | Societal good / environmental | X | | | |

Part I – STF Technical Proposal

# Rationale & Objectives

## Rationale

For several years, SC USER has been working on a project called “User-Centric approach in the digital ecosystem”. Until now, 7 documents (TRs and EGs) have been published, **mainly based on academic and research works**. The work on contextualization and human behaviour data resulted in the “Smart Identity” of the user defined in TR 103 875. Then the association of machine learning (ML) models and algorithms allows significant advances in the automation and decision support. It is on this work that we propose the last brick of the project: the “Smart Customized Services (SCS)” associated with the “User Information System (UIS)”.

The objective of the full project is to reach and empower and protect all citizens: everyone, including people with physical and cognitive disabilities, youth (according to the Digital Service Act), marginalized people, and the elderly, etc. It fits into this perspective to increase the participation rate of disadvantaged people in public, social and economic activities through smart and assistive technology, but also to offer more self-management to “expert” users.

The SCS (see figure 1) can effectively contribute to reduce efficiently the Digital Divide, and to make our societies fairer and our economies stronger and increase the freedom of users in the digital ecosystem.



Figure 1: Smart Customized Services for User-Centric approach in the digital ecosystem

1. What are the benefits and the innovation of this STF: Based on services composition, a smart service is an assembly of micro services.

SCS may be seen as a self-assembly of existing services to be adapted to the user (automation).

1. Or a service proposes several interaction levels to the user. At least three modes: beginner, advanced and expert. Other intermediate levels may be added. They are part of the service as soon as it is created. AI should choose the most appropriate level for the user.

More data are available in the article:

« Frédéric Lemoine, Tatiana Aubonnet, Noëmie Simoni, Self-assemble-featured Internet of Things, Future Generation Computer Systems, Volume 112, 2020, Pages 41-57, ISSN 0167-739X, https://doi.org/10.1016/j.future.2020.05.012. (https://www.sciencedirect.com/science/article/pii/S0167739X20302843) »

This project is using AI (Artificial Intelligence) to produce an "Intelligent", "highly contextualized" personalized, agile, and proactive interface that meets the needs and expectations of the user.

In the user-centric context (①), the user forces the entire digital ecosystem to provide the user with the services the user chooses, that personalizes, according to the paradigm "anywhere, anytime, anyhow, any device, every service, everyone”.

Each user is associated with a knowledge base (②) that represents its information system (UIS) containing:

- all needed information: user profiles (private, work), settings and customizations, location (s), agenda(s), …

- Open data

- Smart metering

- Smart Data

With the introduction of Artificial Intelligence (see ③), the information model is enriched with additional data, collected and which will refine the knowledge of the user and the services requested (for example data from sensors, connected objects of user environment). This learning provides a better understanding of the needs and a contextualization of the compound services.

The Smart Customized Services (④) allow, depending on the user's autonomy, to have the right personalized services at the right time to navigate and evolve in the digital ecosystem. Based on AI it offers the automation of service composition meeting the needs of the user. The used methods and architecture make it possible to orientate the inter-domain standards, with the specification of minimum requirements for all professional and public services.

The SCS (Smart Customized Services) is part of the general approach proposed by the user group which consists of putting the user at the center of the own digital ecosystem.

This approach implies giving the user the means to master and control own digital environment, i.e., data and applications.

This is what companies do since the beginning of the development of computing and IT. They have had to think about the best ways to build and manage their information system: data, application, communications resources necessary for the exercise of the activities and professions of the company.

We think it is desirable to transpose this approach to adapt it to all structures, including to cover individual (private and business) or family needs. Indeed, the individual uses of digital are more and more numerous and consequently they form an information system specific to each.

This is to consider the evolution and enrichment of the digital environment of individuals, from the personal computer where everything was local (data and applications) through the event of cloud computing to arrive at an open and controlled **user information system** with data and applicationpossibly both on personal or public cloud.

This evolution is represented in the figure 2 below:

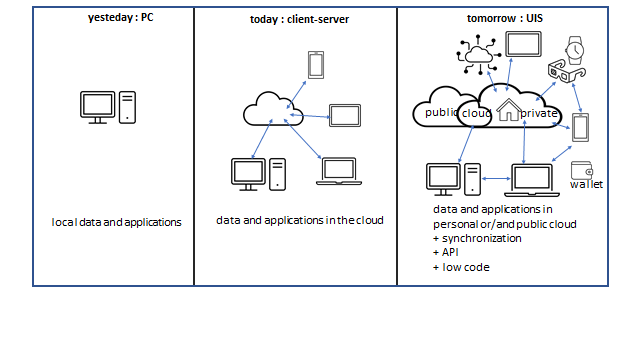


Figure 2: Towards the User Information System

With this new information and the use of AI, we now have the Smart Customized Services

## Objectives of the work to be executed

The work aims to define the User Interface that meets the needs and expectations of the user on request, with a stronger in-depth analysis of the following objectives (figure 3):

- "Intelligent" interface allows the user, in an explicit or intuitive manner, to use service components meeting user expectations. This service composition can be triggered according to a cursor ranging from “a simple-push button” to “a complete selection of components”.

- "Highly contextualized" personalization interface considers user location (house, office, car, etc.), agenda(s), profiles (parental, professional, citizen, special needs, etc.), use digital identities (depending on the service, channel, terminal, etc.) and preferences (eco-responsible, cost, etc.). This concept of "personalization" significantly helps impaired people with temporary or permanent disabilities and older users by simplifying operations and usages, or for any user willing to benefit of simplest usage of devices and services.

- Agile architecture based on the user experience and which will make good use of emerging technologies (AI, Open Data, IoT, API, micro-service). With the help of sensors of all kinds, all users are actors in their own right.

- Proactive service allows the user to manage their data by offering a smart border between a professional and private life with isolation of contexts (ensuring privacy, security, etc).

- Service composition with an integrated QoS that controls the behavioural aspects. This is a significant challenge because simultaneously with its normal operational function the system must ensure QoS (reliability, availability, delay, and capacity) without forgetting resilience, security, accessibility, confidentiality.

- “Zero touch”: according to the user choice, the full automation may be realized.

Thanks to new technologies it may be noted that the user is assisted with an efficient manner (user clone is well known, through data bases, and AI proposes scenarios to the user who chooses). Section 7 details these capabilities.

## 

## Figure 3: Background for Smart Customized Services Target

The Research/innovation value chain is approached holistically and in synergy by leveraging researchers, students, and industrial partners, by (i) Master in continuing training at Telecom Paris / LTCI (Information Processing and Communications Laboratory) tailored to needs at all levels of expertise, (ii) Alternated training at CNAM/CEDRIC (Center for Studies and Research in Computer Science and Communication).

The Functional dimension (Figure 4) which will specify “smart services” and the composition of services as well as their orchestration according to user needs.

And the Organizational dimension which will translate the cooperation between the suppliers and the user through a specific use case.

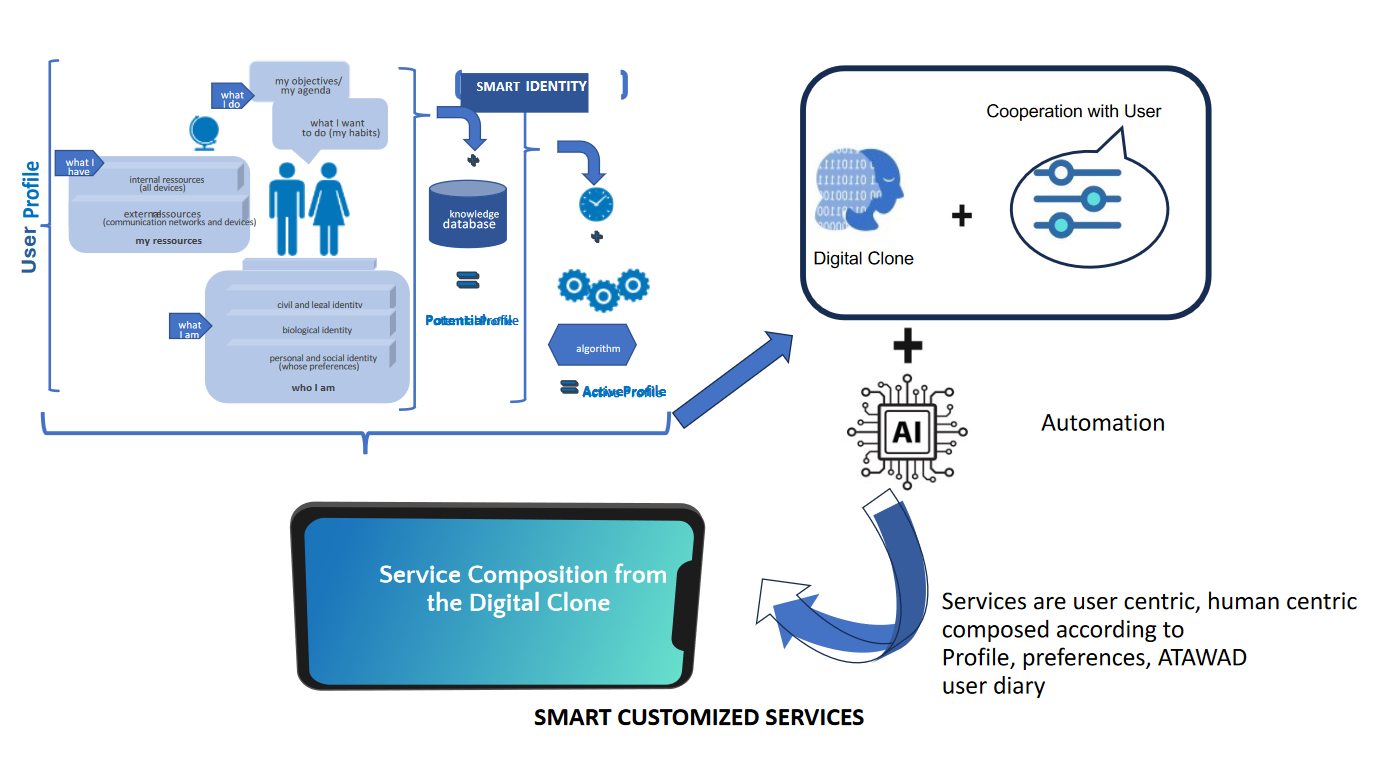


Figure 4: Smart Customized Services

## Previous funded activities in the same domain

The project “User Centric approach in the digital ecosystem” has been finely supported by ETSI, through two STFs. User Group added a document on QoS.

The results of these STF are 6 documents (4 produced by STF 543, 2 produced by STF 626).

[ETSI TR 103 438 - User centric approach in Digital Ecosystem](https://www.etsi.org/deliver/etsi_tr/103400_103499/103438/01.01.01_60/tr_103438v010101p.pdf)

[ETSI EG 203 602 - User Centric Approach: Guidance for users; Best practices to interact in the Digital Ecosystem](https://www.etsi.org/deliver/etsi_eg/203600_203699/203602/01.01.01_60/eg_203602v010101p.pdf)

[ETSI TR 103 603 - User Centric Approach; Guidance for providers and standardization makers](https://www.etsi.org/deliver/etsi_tr/103600_103699/103603/01.01.01_60/tr_103603v010101p.pdf)

[ETSI TR 103 604 - User centric approach; Qualification of the interaction with the digital ecosystem](https://www.etsi.org/deliver/etsi_tr/103600_103699/103604/01.01.01_60/tr_103604v010101p.pdf)

These documents define in detail the basic concepts of the project:

The 5-dimension model ACIFO, based on 5 sub-models, defined as:

* Architectural Model "Acifo": defines the global structure, including semantics and is optimized for the stated objectives.
* Communication (Relational) Model aCifo: defines the exchange protocols, including HMIs (User) and APIs (provider) exchange and management protocols over three planes: (1) Management (Monitoring), (2) Control, and (3) Usage.
* Information Model acIfo: defines the different Profiles (User, device, service). The information covers the whole ecosystem (equipment, network, applications, services, HMIs, User, etc.) from the offer to the resource's availability for Users, Providers and any other partners. It is a knowledge data base representing the whole ecosystem.
* Functional Model aciFo: defines services and service composition. The functionalities (the process) to compose any service based on "micro-service".
* Organization Model acifO: defines the role of any actor and which actor is responsible of each action. ("Who is doing what?").

STF 626 produced two Technical reports defining the user Smart Identity and a Proof of Concept. These results are the first step to finalise the User Information System.

ETSI TR 103 875 - [parts 1](https://www.etsi.org/deliver/etsi_tr/103800_103899/10387501/01.01.01_60/tr_10387501v010101p.pdf) and [part 2](https://www.etsi.org/deliver/etsi_tr/103800_103899/10387502/01.01.01_60/tr_10387502v010101p.pdf)

In parallel, SC User has worked and produced:

[ETSI TR 103 437: Quality of ICT services; New QoS approach in a digital ecosystem](https://www.etsi.org/deliver/etsi_tr/103400_103499/103437/01.01.01_60/tr_103437v010101p.pdf)

Two webinars have been organised to present the different results of the STFs:

* [Webinar: ETSI User Centric approach in the digital ecosystem](https://www.etsi.org/events/1569-2019-04-webinar-etsi-user-centric-approach-in-the-digital-ecosystem), 16-04-2019.

<https://www.etsi.org/events/1569-2019-04-webinar-etsi-user-centric-approach-in-the-digital-ecosystem>

* Webinar: A user-centric approach of smart digital identity by ETSI, 20-04-2023.

<https://www.etsi.org/events/2206-webinar-a-user-centric-approach-of-smart-digital-identity-by-etsi>

An article in the magazine ENJOY (July 2023) summarizes the work done on “Smart Identity”:

## Market impact

The global impact and benefits can be expressed in 2 important points:

1. Increase the digital inclusion.

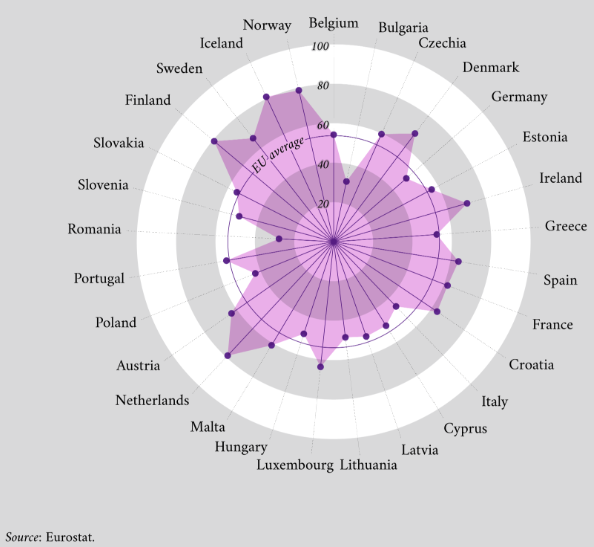
Digital inclusion is an EU-wide effort to ensure that everybody can contribute to and benefit from the digital world.

In its shaping Europe’s digital future policy, Europe stresses on the need to work in order to make the Internet easier to use. It has introduced activities such as:

* making ICT more usable for all and fostering the development of accessible technologies;
* assistive technologies: supporting the development of ICT that assists people with disabilities in the digital world;

And it must be understood that the question of disability must be extended to the very many people who have difficulty in mastering digital technology.

According to a European commission survey, while 84% of European people used the internet regularly, only 56% possessed at least basic digital skills.



Moreover, digital skills do not only concern what is useful in our personal lives; they also help us in our workplaces.

In Europe, more than 90% of professional roles require a basic level of digital knowledge, just as they require basic literacy and numeracy skills. The use of digital is spreading across all sectors from business to transport and even to farming.

That is to say that there is a significant source of development of digital uses that the Smart Customized Services should allow to release.

The Smart Customized Services associated to the User Information System will make it possible thanks to a perfect personalization of the digital services based on the smart identity as defined in STF 626, and this in an open source and interoperability context.

With the Smart Customized Services end-user will be able to have quick access to a wide range of services and options, be able to simply switch from a private configuration to a professional one or switch from one terminal to another in complete transparency.

1. Improve service visibility, control, and trust.

Because trust will be the key to the acceptability of future innovations in the digital field, the "Smart Customized Services " must have a positive impact on customer-supplier relations, and finally obviously the rate of use of new digital services.

The last Eurobarometer on digital society and technology (June 2023) shows clearly that there is still a long way to go to gain the full trust of all users in the digital world.

It should also be mentioned that the EU’s policy to Artificial Intelligence (AI), is based on “trust and excellence”, to give citizens the confidence to embrace these technologies.

Because the Smart Customized Services is an open-source development, achieved within the ETSI user group, with no commercial interests and proposes a new approach to address privacy and security issues by design, the project aims to provide confidence in the processing of data, in particular personal data.

Of course, the project will enrol the most recent European provisions on the protection of privacy (GDPR and e-Privacy act), cybersecurity (NIS1 and 2), and data processing (DGA and DA).

Indeed, the Smart Customized Services brings the benefits of service visibility, analytics and control through a smart dashboard. It assesses real-time information and management to the customer. It let the user decide the level of automation, i.e., contextualization he needs.

It also develops the concept of User Information System (UIS) which is in line with the Data Governance Act (DGA) which want to help people to have full control over their data and allow them to share them with a company they trust. According to this Act, this can be done by means of novel personal information management tools, such as personal data spaces or data wallets, which are apps that share such data with others, based on the data holder’s consent.

In other parts of the globe there are more or less equivalent regulatory provisions to be complied with. In the USA there is California Consumer Privacy Act; Brazil’s Lei Geral de Proteçao de Dados (LGPD) was modelled directly after GDPR and is nearly identical in terms of scope and applicability, but with less harsh financial penalties for non-compliance; India's Personal Data Protection Bill (PDPB) was introduced to parliament in December of 2019 and is likely to pass this year. PDPB is modelled after GDPR although some of its policies aren't laid out as clearly and more discretion is given to India's Central Government to decide how it is enforced and when exceptions can be made. It is similar in terms of requiring the consent of data subjects (or in PDPB's case, "data principals"), breach notification requirements, a right to be forgotten, and heavy fines for non-compliance that may be as a high as 4% of global annual turnover; South Africa's Protection of Personal Information Act (POPIA) came into effect on July 1, 2020. Organizations that are already GDPR compliant will certainly have a head start in becoming compliant with POPIA, but the two regulations aren't identical. It is vital that ETSI provide good supporting guides and information to business so that they may protect their customers’ data and ensure that those customers have a degree of control over how that data is used. The consequences of businesses of not complying with these acts could result for examples under GDPR fines of up to €20 million or up to 4% of annular worldwide turnover or whichever is greater.

Since this proposed Technical Report will examine user interaction with services providing guidance about data protection, control, and access for both the user and service provider.

But to cope with all these regulations it is important to develop a cooperative orchestration of the system and abandon the client-server model.

1. Increase digital agility.

For end-user it is important to be able to have quick access to a wide range of services and options, be able to simply switch from a private configuration to a professional one or even switch from one terminal to another in complete transparency.

On a very competitive environment, the ability to provide a customer with a perfectly personalized service and to respond quickly to the customers’ wishes is a challenge in the market and for the wide deployment of innovative services.

The agility means to roll out new innovative services far easier and faster, while still delivering a consistently high-quality end-user experience. This is beneficial for both suppliers and customers.

## Consequences if not agreed

As indicated, we are at the final part of the project, and without this work, it is rather impossible to implement the UIS concept which will finalize the whole project. Of course, all the existing documents, recommendations, guide, etc, could be used by any stakeholder but without the final part, they will missing the complete concept of “User Centric”, with its UIS and its associated services.

And more generally, if we do not allow the user to be a full actor of the digital ecosystem, digital transformation will remain wobbly: while our proposal in this project will allow the dynamic cooperation, vital for the success of all the companies and user’s satisfaction.

# Relation with ETSI strategy and priorities

|  |  |
| --- | --- |
| **Priority Criteria** | **Rationale** |
| Maintenance of standards in mature domains |  |
| Innovation in mature domains |  |
| Emerging domains for ETSI |  |
| Horizontal activities (quality, security, etc.) | The Smart Customized Services integrates QoS/QoE, Security functionality, User privacy, accessibility, data protection… |
| Societal good / environmental | The Smart Customized Services is user centred. It gives the possibility to users to be fully autonomous of fully active, whatever equipment’s, networks, applications, locations, for a better accessibility and usage in the digital ecosystem. |

# ETSI Members Support

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **ETSI Member** | **Supporting delegate** | **Motivation** |
| 1 | AFUTT | Bernard Dupré | Afutt appreciates the work of the user group of ETSI and support this STF project because we believe that it is important to stimulate a user centric approach of the design and delivery of digital services.  The concept of Smart Customized Services and the specification elements associated with it, and which will be developed by the STF are expected to meet the fluidity and inclusion needs for all personal or professional digital usages. |
| 2 | Cadzow Communications Consulting Ltd. | Alex Cadzow | C3L supports the work of the User group of ETSI as we believe that is important to continually improve the user experience and interaction of technology along with their associated digital services that is current and in development |
| 3 | Institut Mines-Telecom | Tatiana Aubonnet  Noémie Simoni | For the digital school, it is very important to allow access to all and to fight against the digital divide. The contribution of new technologies must benefit everyone. Télécom-Paris fully supports this STF project. |
| 4 | LSTI | Armelle Trottin | The experience of the company in cybersecurity and certification indicates that such a project is in the right way for the users and small enterprises |

# Deliverables

## Base documents

|  |  |  |
| --- | --- | --- |
| **Document** | **Title** | **Status** |
| ETSI TR 103 438 | User Centric approach in Digital Ecosystem | Published |
| ETSI EG 203 602 | User Centric Approach: Guidance for users; Best practices to interact in the Digital Ecosystem | Published |
| ETSI TR 103 603 | User Centric Approach; Guidance for providers and standardization makers | Published |
| ETSI TR 103 604 | User Centric approach; Qualification of the interaction with the digital ecosystem | Published |
| ETSI TR 103 875 part 1 | User Centric Approach in Digital Ecosystem;  The User Information System;  Part 1: Smart Identity: user digital clone | Published |
| ETSI TR 103 875 part 2 | User Centric Approach in Digital Ecosystem;  The User Information System;  Part 2: Smart Identity: A Proof of Concept | Published |
| ETSI TR 103 437 | Quality of ICT services; New QoS approach in a digital ecosystem | Published |

## New deliverables

|  |  |  |  |
| --- | --- | --- | --- |
| **Deliv.** | **Work Item code**  **Standard number** | **Working title:**  **Scope** | **Expected date for publication** |
| D1 | DTR/USER-0055  User Centric Approach in the digital ecosystem. The Smart Customized Services (SCS) | **Working title**: The Smart Customized Services (SCS)  **Scope**: The first part: Analysis of the user expectations, the study of new data driven technologies (IA, deep learning, …) contribution and detailed definition and concept of the Smart Customized Services (SCS).  The result will aim to offer personalization adapted to the user with SCS services composition. This services composition highlights the automation of functionalities and their orchestration for a digital world that is more usable by all.  The second part: The implementation and the motion design showing the implementation of SCS on chosen use case(s). | T0+21 Months |

# Maximum budget

## Task summary/Manpower Budget

|  |  |
| --- | --- |
| **Task short description** | **Budget (EUR)** |
|
| T0 Project Management | 7 000€ |
| T1 Definition and specifications of SCS | 35 000 € |
| T2 Implementation of SCS for one use case. Creation of a motion design showing the implementation | 40 000 € |
| T3 Dissemination and demonstrations to users and stakeholders | 8 000 € |
| **TOTAL** | **90 000 €** |

## Travel budget

Travels for the participation to face-to-face meetings with User Group, Stakeholders and for the presentation of results in two congresses: 5 000€

# Tasks, Technical Bodies and other stakeholders

## Organization of the work

SC User will be in charge of the STF and will organise e-meetings, in addition to the current SC USER meetings, in order to consider the progress of the STF.

After selection of the experts, User Group will take the decision on the creation of a steering committee, depending on the selected team: in particular, it could be relevant to ask participation of members from other TBs.

At each milestone described in the relevant section, the User group will meet (preferably through remote meetings). If the steering Committee is created, it will be in charge of a short report to User Group meeting.

## The TBs identified in 6.3 will be consulted at each time the steering Committee (or User Group) will consider that it is needed. In all cases, the final version of the deliverable will be sent to these TBs before approval.

## Tasks for which the STF support is necessary

**Task 0 Project Management**

The task is to coordinate the project and to ensure that the activity is running smoothly and in line with these ToRs. The task also includes the reports to SC User (and to Steering Committee if created) and checking the quality of the deliverable for final approval.

This task is very important ensure the fine cooperation between actors that are working in different fields with different approaches and tools.

**Task 1 Definition and specifications of the Smart Customized Services (cooperative)**

The Smart Customized Services (SCS) ensures the cooperation between the user and providers. This includes the need to have the relevant security, QoS …The task identifies the user’s needs in the digital ecosystem, that is to say the digital environment in which users operate by taking into account all equipment (terminals, connected objects, sensors, …) all technologies and their interactions, as well as all necessary services, APIs and software. It will be focused more specifically on advances in AI (Artificial Intelligence) to use machine learning features to improve the customer experience by making it “tailor-made” thanks to the data collected during the use of services (learning).

This task will ensure that users shall be able to access from anywhere, with any mean, all the time to any expected service. They desire the continuity of personalized services considering their preferences. The result will aim to offer personalisation (with “as a service” composition) to the user. This service composition highlights the automation of functionalities and their orchestration for a digital world that is more usable by all.

To ensure this goal, providers will have to adapt their “ACIFO”, in relationship with the requirements from the user-centric approach and organizational choices that will impact cooperation with users., as defined in the documents listed in § 1.3 and 4.1.

This task is intended to take benefit of Research/innovation by an approach holistically and by appropriate specifications, in synergy by leveraging researchers, students, and industrial partners, in order to specify the demonstrator and the requirements for the development of the demonstrator. All these partners are not currently involved in the User Group activities.

Remarks:

It is reminded that ACIFO is the recommended methodology to deal with the five dimensions of a digital project. For the "Smart Customized Services ", we have already defined:

* Architecture (STF 543): the overall structure is based on a modelling of the digital ecosystem (real world) considering a distribution in levels of visibility: equipment, networks, applications, data, users. The components of each level are “As a Service”.
* Communication is based on the protocols in force and translates the various cooperation (services: API + https...; sensors: IoT protocols, etc.).
* The Informational dimension (STF 626): Enriched knowledge base (IA, ML) with Smart Identity.

To go further this task 2 will be in charge of:

**Task 2 Implementation of SCS for one use case. Creation of a motion design showing the implementation**

The plan is to implement the results of task 2 on a specific use case.

One of the components of the Smart Customized Services comes from the user clone (smart identity as defined in ETSI TR 103 875 parts 1 & 2).

As it is a research/innovation project, the exact shape of the demonstrator cannot be defined precisely at this stage. The requirements of the demonstrator are defined by task 2 and the final shape of the demonstrator will be defined by task 2.

However, the demonstrator will offer the possibility to users to experiment the Smart Customized Services through a specific application simulating the interface on a smartphone. The user will be able to choose the level of autonomy depending on the needs, expectations, and level of “competence in digital” of the user.

**Task 3 Dissemination of results and promotion in ETSI Standards.**

LS to relevant TBs

Article in ENJOY

A webinar and participation to (at least) one ETSI workshop (e.g.: TC STQ, IOT week…)

Communications to stakeholders (including providers, regulators…)

## Other interested ETSI Technical Bodies

As the impact of the STF may be rather large, it is planned to ensure relationship with other TBs:

* TC HF. Mainly to ensure that the special needs are considered. Also, we will refer to TC HF work on age verification.
* TC Cyber: the security of data is one of the main challenges of this final step of the project.
* ISG SAI: one of the tools implemented is based on AI.
* TC eHealth: in the documents already produced in the context of the project, use cases linked with health were considered. If it is also the case for this project, liaisons with eHealth will be planned.

As the results of the STF should be of interest for the TBs or other bodies, such as 3GPP, the plan is to organise a webinar when the main results will be available before the end of the project. A short feedback session will be given at each OCG meeting to inform about the progress of the STF: the STF team will produce on a regular basis a slide describing the progress.

## Other stakeholders

The results of the STF will be communicated to the Body of European Regulators for Electronic Communications (BEREC) and the Bureau European des Unions de Consummators (BEUC) as they will be of interest for the regulators and consumers associations over Europe. Where possible, the national regulators and consumers associations will also be informed about these results and potential impacts for users and suppliers.

SC USER will organize at least one workshop dedicated to the dissemination of the results, in order to communicate to other standardization (SDO) and technical bodies, such as ITU-T, CEN/CENELEC, ENISA and national SDO and technical bodies.

A collaborative research project funded by the French Agency for Research (ANR) public funding agency that could take benefits of the results of the STF: INTELLIGENTSIA **(**INTelligent Edge using Learning Loops & Information GEneration for NeTwork State Inference-based Automation).INTELLIGENTSIA objective is to fast move towards automation of services and networks by leveraging advanced learning algorithms with large-scale virtualization and to meet control and operations requirements of massive IoT use cases.

The demonstrator could also be used by universities.

Part III: Execution of Work

# Work plan, time scale and resources

## Task description

|  |  |
| --- | --- |
| **Task 0** | **Project Management** |
| **Objectives** | Indicate here the objective of the task in general terms. |
| **Input** | STF ToRs |
| **Output** | Professional project management and high quality of the results produced |
| **Interactions** | The task is to coordinate the project and to ensure that the activity is running smoothly and in line with these ToRs. The task also includes the reports to SC User (and to Steering Committee if created) and checking the quality of the deliverable for final approval.  This task is very important ensure the fine cooperation between actors that are working in different fields with different approaches and tools. |
| **Resources required** | * good knowledge of relevant user centric approach. * good experience of new services and architectures; good knowledge of software engineering. * Excellent experience in project management   . |

|  |  |
| --- | --- |
| **Task 1** | **Definition and specifications of the Smart Customized Services (cooperative)** |
| **Objectives** | The goal of the project is to be able to adapt functionally to fluctuating conditions which are specific to our environment. Indeed, the humans that we are, we move around, we change our minds depending on the context, etc. How can we automate the different functionalities and effectively assist each of us?  To do this, depending on the scope of application, we work on two axes:  - That of the enrichment of data of all kinds (health, transport, climate, finance, fashion, etc.) and of all origins in general and from IOT components in particular, to have the most complete UIS.  - and that of machine learning (ML) models and algorithms for functions and processes.  We will specify several functionalities in order to offer two or three “use cases” of Smart Customized Services. From training the algorithms (ML) on relevant datasets, we will be able to give either the appropriate answer or help with the decision, by evaluating different scenarios, in order to have the best proposal.  This task will ensure that users can access any expected service from anywhere, by any means and at any time. The result will aim to offer continuity of personalized services thanks to “as a service” composition. |
| **Input** | ACIFO Model  All the documents listed in section 1.3, and in particular the documents defining the Smart Identity |
| **Output** | The first part of the TR defining the Smart Customized Services with:  - Specification of Smart Services functionalities for the daily life of users.  - Specification of functionalities Smart Services for the security and privacy  - Service Composition and Orchestration based on AI  - Data set, models and algorithms used and based on AI. Description of the cooperation between user and suppliers in an organization where the user is a fully-fledged actor. |
| **Interactions** | This first part will include all the features and will need exchanges with the partners listed in section 6.3.  This first part will be submitted for comments to the potential Steering Committee and to USER Group for endorsement. |
| **Resources required** | • Good knowledge of relevant user centric approach;  • Expert knowledge of AI and Smart Data techniques;  • Good knowledge of relevant User Security;  • Good knowledge of User Experience and User satisfaction |

|  |  |
| --- | --- |
| **Task 2** | **Implementation of SCS for one use case. Creation of a motion design showing the implementation** |
| **Objectives** | This involves developing a complete use case. If we take it for example in the field of health, we will offer compositions of services, such as monitoring blood tests, monitoring physical condition, making appointments, nutritional coach, calorie counter, the sleep cycle followed by waking up, smoking cessation, diabetes control, fall detection, etc. The synchronization of the smartphone with the different devices, data sharing and security aspects will be taken into account.  We are confident in the success of such a task, because all the planets are aligned. Indeed, we have a simultaneous evolution of:  • design, making services stateless,  • the information model with the knowledge base with AI algorithms,  • the evolution of telecoms with higher bandwidth and adapted protocols,  • storage with Cloud and Edge, and  • the context with a user-centric approach,  and we have the means to have information on human behaviour.  This task includes the definition of the Smart Customized Services requirements needed for its development.  Creation of a motion design showing the implementation. |
| **Input** | * ETSI TR 103 875 part 2: User Centric Approach in Digital Ecosystem; The Smart Interface Part 2: Smart Identity: A Proof of Concept * Specification of Smart Customized Services (result of Task 1) * Data set: service catalog with offer QoS |
| **Output** | The second part of the TR: The implementation  - The Smart services specified in task 1 respecting the "as a service" properties.  - The demonstrator which will show through a session opened by the user, a selection of services appropriate to the active profile of the user and their orchestration.  Among the means mentioned, there is artificial intelligence which makes it possible to tailor the composition of services thanks to the data collected from the user's profile in order to improve the customer experience.  More specifically, machine learning with supervised learning makes it possible to make good predictions and then be able to classify.  You will then need:  - choose a model (CNN or MLP).  - prepare the data, to build the model.  - train the model, adapt the parameters, to have a good prediction rate.  - deploy the model  A motion picture showing the implementation. |
| **Interactions** | The main interactions will be with the potential Steering Committee and with SC USER. If the final result is defined in the milestone, it will be needed to make a “live” demonstration of the Smart Customized Services during a User Group meeting. |
| **Resources required** | • expert knowledge of relevant SOA standards;  • good experience of AI and Smart Data techniques, and components “As a Service”;  • expert knowledge of software engineering and open source techniques; |

|  |  |
| --- | --- |
| **Task 3** | **Dissemination of results and promotion in ETSI Standards.** |
| **Objectives** | Dissemination towards digital community. This should encompass the attendance to at least 2 Technical Meetings and 1 Webinar. |
| **Input** | Task 1 and Task 2 reports |
| **Output** | * Presentations, * TR documents * Academic articles on the concepts introduced and developed in our study, namely: USI, potential profile and active profile, data processing based on AI, , …. |
| **Interactions** | LS to relevant TBs  Article in ENJOY  A webinar and participation to (at least) one ETSI workshop  Communications to stakeholders |
| **Resources required** | * expert knowledge of AI, smart data techniques and components “as a service”, digital ecosystem, user centric approach.   This task is dedicated to experts involved in the STF. |

## Milestones

**Milestone A – Detailed ACIFO model of the Smart Customized Services Objectives to be achieved (e.g., maturity and content of the deliverables)**

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **A** | Detailed ACIFO model of the Smart Customized Services | 2025-01-15 |
| Reference Body Deliverable | Early Draft for review by Reference Body |
| ETSI Deliverable | Progress Report approved by Reference Body |

**Milestone B – Definition of the SCS**

|  |  |  |
| --- | --- | --- |
| **Milestone** | Description | Cut-Off Date |
| **B** | Definition of the SCS  Task 1completed | 2025-03-15 |
| Reference Body Deliverable | Early Draft including the definition of the demonstrator reviewed by Reference Body |
| ETSI Deliverable | Progress Report approved by Reference Body |

**Milestone C – Requirements for the SCS**

|  |  |  |
| --- | --- | --- |
| **Milestone** | Description | Cut-Off Date |
| **C** | Use cases for the implementation (interim TR draft) and requirements for the demonstrator development | 2025-06-15 |
| Reference Body Deliverable | Stable Draft reviewed by Reference Body |
| ETSI Deliverable | Progress Report approved by Reference Body |

**Milestone D – Interim progress of tasks 2 and 3**

|  |  |  |
| --- | --- | --- |
| **Milestone** | Description | Cut-Off Date |
| **D** | Progress in the Development of the implementation simulating the SCS and first dissemination of results | 2025-10-15 |
| Reference Body Deliverable | Stable Draft reviewed by Reference Body |
| ETSI Deliverable | Progress Report (tasks 2&3) approved by Reference Body |

**Milestone E – Implementation available**

|  |  |  |
| --- | --- | --- |
| **Milestone** | Description | Cut-Off Date |
| **E** | Final use cases demonstration (through the implementation) | 2026-04-15 |
| Reference Body Deliverable | Stable Draft including the user guide for the implementation validated by Reference Body |
| ETSI Deliverable | Progress Report approved by Reference Body |

**Milestone F – Final step of the STF**

|  |  |  |
| --- | --- | --- |
| **Milestone** | Description | Cut-Off Date |
| **F** | Deliverable approved  Tasks 2 & 3 completed | 2026-05-15 |
| Reference Body Deliverable | Final Draft approved by Reference Body |
| ETSI Deliverable | Final Report approved by Reference Body |

**Milestones**

Milestone 0 is the start of the actual work of the Experts after the recruitment phase.

Milestone A Detailed ACIFO model of the Smart Customized Services

Milestone B Definition of the Smart Customized Services

Milestone C Use cases for the Smart Customized Services (requirements for the development)

Milestone D Progress Reports

Milestone E Development of the *motion picture showing the* Implementation *one the chosen use case*

Milestone F Deliverable approved. Deliverable published and STF closed

**Milestones**

|  |  |  |
| --- | --- | --- |
| **Milestone** | **Description** | **Cut-Off Date** |
| **M0** | Start of the actual work of the Experts after the recruitment phase | T0 |
| **MA** | Detailed ACIFO model of the Smart Customized Services | T0+4 Months |
| **MB** | Definition of the Smart Customized Services | T0+ 6 Months |
| Task 1 completed  D1: Stable Draft for definition of the Smart Customized Services |
| Progress Report approved by Reference Body |
| **MC** | Use cases for the Smart Customized Services demonstrator (and requirements for the demonstrator development) | T0 + 9 Months |
| Draft defining the SCS requirements available for review |
| **MD** | Progress reports of T2 and T3 | T0 + 13 Months |
| **ME** | Development of the motion picture showing the Implementation one the chosen use case | T0+ 19 Months |
| Task 2 completed  D1: Stable Draft |
| Progress Report approved by Reference Body |
| Task 3 Dissemination of results |
| Final Draft approved by Reference Body |
| Final Report approved by Reference Body |
| **MF** | Deliverables D1 approved  Task 0 completed | T0 + 20 Months |
| Deliverables published and STF closed | T0 + 21 Months |

## Task summary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Code** | **Task / Milestone** | Target Date | | Estimated Cost (EUR) |
| From | To |
|  | Start of work |  |  |  |
| T0 | Project Management |  |  | 7 000 |
| Milestone  A | Detailed ACIFO model of the Smart Customized Services |  |  |  |
| T1 | Definition of User Smart Customized Services concept |  |  | 35 000 |
| Milestone B | Definition of the Smart Customized Services Task 1 completed  D1: Stable Draft for definition of the Smart Customized Services  Progress Report approved by Reference Body |  |  |  |
| T2 | Implementation of SCS for one use case |  |  | 40 000 |
| Milestone C | Requirements for SCS  Draft defining the demonstrator requirements available for review |  |  |  |
| Milestone D | Progress reports of T2 and T3 |  |  |  |
| Milestone E | Development of the implementation  Task3 completed  D1: Stable Draft  Progress Report approved by Reference Body  A motion picture showing the implementation is available.  Task 3 Dissemination of results  Final Draft approved by Reference Body  Final Report approved by Reference Body |  |  |  |
| T3 | Dissemination and demonstrations to users |  |  | 8 000 |
| Milestone  F | Deliverables published, STF closed |  |  | 4 000 |
|  | | | | **90 000** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task/ Mil.** |  | **S** | **O** | **N** | **D** |  | **J** | **F** | **M** | **A** | **M** | **J** | **J** | **A** | **S** | **O** | **N** | **D** |  | **J** | **F** | **M** | **A** | **M** |
| T0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MA |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MB |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| T2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MC |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |  |  |  |  |
| MD |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |  |  |  |  |  |  |
| ME |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |  |  |
| T3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| MF |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X |

# Expertise required

## Team structure

Up to 5 participants to ensure the following mix of competences:

|  |  |
| --- | --- |
| **Priority** | **Qualifications and competencies** |
| High | Good knowledge of relevant user centric approach |
| High | Good knowledge of software engineering |
| High | Expert knowledge of AI and Smart Data techniques |
| High | Expert knowledge of components “as a service” and digital ecosystem |
| High | Good knowledge of User Experience and User satisfaction |
| High | Good knowledge of relevant User Security |
| High | Great experience in project management and ETSI processes |

Part IV: STF performance evaluation criteria

# Performance Indicators

The performance indicators must include qualitative and quantitative assessment of the following elements, as applicable:

|  |  |
| --- | --- |
| **Select relevant Performance indicators applicable for these ToR (X)** | |
| **Contribution from ETSI Members to STF work** | |
| Direct financial contribution (co-funding) | 1 or 2 days by week during all the duration of the project |
| Support to the STF work (e.g., provision of test–beds, organization of workshops, events) | Platform for the development of the demonstrator |
| Steering Group meetings (number of meetings / participants / duration) | At least before each milestone |
| Number of delegates directly involved in the review of the deliverables | 4 |
| Contributions/comments received from the Reference Bodies | At least two by UG meeting |
| Contributions/comments received from other Reference Bodies | LS expected |
|  |  |
| **Contribution from the STF to ETSI work** | |
| Contributions to Reference Body meetings (number of documents / meetings / participants) | At least two contributions by meeting |
| Contributions to other Reference Bodies | LS out |
| Presentations in workshops, conferences, stakeholder meetings | Mainly in the last part of the STF (At least 2) |
|  |  |
| **Liaison with other stakeholders** | |
| Stakeholder participation in the project (category, business area) | BEREC, regulators, national authorities.; |
| Cooperation with other standardization bodies | Mainly with ITU-T |
| Potential interest of new members to join ETSI | It is expected to motivate new members to implement the Smart Customized Services |
| Liaison to identify requirements and raise awareness on ETSI deliverables |  |
| Comments received on drafts (e.g., on WEB site, mailing lists, etc.) | A new web page to be published |
|  |  |
| **Quality of deliverables** | |
| Approval of deliverables according to schedule | X |
| Respect of time scale, with reference to start/end dates in the approved ToR | X |
| Comments from Quality review by Reference Body | X |
| Comments from Quality review by ETSI Secretariat | X |
|  |  |

Time recording

For reporting purposes, the STF experts shall fill in the time sheet provided by ETSI with the days spent for the performance of the services.

During the activity, the STF Leader shall collect the relevant information, as necessary to measure the performance indicators. The result will be presented in the Final Report.

# Document history

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Date** | **Author** | **Status** | **Comments** |
| 0.1 | 2023-05-28 | JYM |  | Initial draft for discussion with other TB Chairs (OCG) |
| 0.2 | 2023-05-24 | Experts |  | Comments from experts on initial draft |
| 0.3 | 2023-07-25 | JYM |  | Including contributions |
| 0.4 | 2023-07-26 | JYM |  | Following the drafting session (25 July) |
| 0.5 | 2023-08-01 | Experts |  | Before the drafting meeting (01 August) |
| 0.6 | 2023-08-01 | Experts |  | After the drafting meeting |
| 07 | 2023-08-08 | NS |  | New inputs |
| 08 | 2023-08-09 | Chair |  | Final version of ToRs |
| 09 | 2023-08-22 |  |  | Approved version by SC User Group |
| 1.0 | 2023-08-28 | ETSI Secretariat | Final | Update before Board#144 submission |
| 1.1 | 2024-04-02 | Experts |  | Revised proposal to answer Board comments |
| 1.1.1 | 2024-04-19 | Experts |  | Draft for approval by SC USER |
| 1.1.2 | 2024-05-07 | SC user |  | Approval |
| 1.2 | 2024-06-28 | ETSI Secretariat | Final | Update before CL publication |

Annex I Response to the Request for Proposals  
CfE – STF 679 (REFERENCE BODY USER)   
Deadline: 05 August 2024

**If you are an ETSI Member \***

**ETSI membership status (Indicate your status):**

Full

Associate

Observer

**If you are not an ETSI Member \***

Please indicate:

**Full name of the ETSI member supporting the application (list of ETSI members on etsi.org):**

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Official contact name of the ETSI member supporting the application:**

-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Note: A formal confirmation of the support from the Official contact is required (e.g. by e-mail sent to STFLINK@etsi.org) and an “ETSI Member Support Letter” will be required if you are selected.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Contractor information \*** | | | | |
|  | | | | |
| **Contractor name \*:**  *Indicate the Company/Organization Name* | |  | | |
|  | | | | |
| **Contact person for the technical aspects** | | **Contact person for Decision on ETSI financial offer to this project (if any)** | | |
| Title |  | Title |  | |
| First name |  | First name |  | |
| Last name |  | Last name |  | |
| Role |  | Role |  | |
| e-mail |  | e-mail |  | |
| Phone |  | Phone |  | |
|  | | | | |
|  | | **Yes** | | **No** |
| Do you or any employee of your Company/Organization hold an elected or appointed position in the Reference Body requesting the STF 679 creation? | | o  Indicate in which position:  ----------------------------------- | | o |
| **If you are self-employed candidate:**  Do you currently have other contracts in progress with ETSI? | | o | | o |

All fields marked with an asterix (\*) are mandatory

**1.1 Introduction**

A short presentation of the technical structure responsible for this activity, e.g.:

* Business area, number of employees, link to WEB site,
* Department(s)/team(s)/experts in charge of the technical activities related to this Project,
* Reference to products/services of your Company/Organization or supporting Member to which the standards developed by this Project will apply,
* Motivation for your Company/Organization or supporting Member to participate in this Project.

**1.2 Proposed approach**

**Proposed contribution to tasks & related cost**

Identify the tasks to which your Company/Organization is proposing to contribute by filling-in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks No** | **Tasks\_Description** | **Max Budget Allocated in Euro** | **Amount in Euro (mandatory)** | **% of whole Task (mandatory)** |
| 00 | Project Management | 7000 | . | . |
| 01 | Definition and specifications of SCS | 35000 | . | . |
| 02 | Implementation of SCS for one use case. Creation of a motion design showing the implementation | 40000 | . | . |
| 03 | Dissemination and demonstrations to users and stakeholders | 8000 | . | . |
| **TOTAL** | | **90000** |  |  |

**Amount in Euro (mandatory)**: Indicate the price offered for your contribution to the task(s)

**% of whole task (mandatory)**: Indicate to which percentage of the execution of the whole task your offer corresponds

Provide a description of the proposed approach, competences, reference to related activities:

* Explain which part of the task is corresponding to the requested percentage that your Company/Organization will handle,
* Explain the scope that your Company/Organization will cover,
* Explain your approach to the management of the quality and,
* Explain your approach to the management of the risks and their mitigation,
* Describe and justify the proposed costs to achieve this project objectives.

Annex II Terms and Conditions  
CfE – STF 679 (REFERENCE BODY USER)   
Deadline: 05 August 2024

**2.1 Submission of Proposals**

All proposals in response to this CfE shall be submitted before the deadline indicated in thisCollective Letter, using exclusively the WEB application on the ETSI Portal at the following address: <https://portal.etsi.org/cfe>.

Proposals shall be composed of Curriculum Vitae of the proposed service providers’ personnel and the Annex I of this CfE duly filled-out.

Proposals that will be partial or incomplete at the deadline will not be accepted.

The Terms and Conditions in this Annex will apply.

**2.2 Modification and Withdrawal of Proposals**

Applicants may, without prejudice to themselves, modify or withdraw their proposal by written request, provided that the request is received by ETSI prior to the due date and time, at the address to which their proposal was submitted. The applicant may submit a new proposal provided that such new proposal is received prior to the deadline for responding which is specified in this Collective Letter.

**2.3 Assessment of Proposals**

The ETSI Director-General, in consultation with the Reference Body Chairman, is responsible for the selection of the service providers that will be contracted to perform this Project work. The ETSI Director-General and the Reference Body Chairman may be assisted by a Selection Panel to assess the applications received and make the final decision.

As per article 1.10.4 of the ETSI Directives, the Director-General may discard proposals that could be identified as creating potential conflict of interest.

The ETSI Secretariat will only communicate to the applicants the result of the selection (accepted or not accepted). Should applicants need more information on the rationale for the selection, they must address a formal request to the ETSI Director-General.

The following evaluation criteria will be applied to all proposals, in order of priority:

* Evidence that the applicant has the necessary structure and expertise to ensure delivery
* Reference to current or previous activities in the specific technical domain of this project
* Critical review of the most efficient way to achieve the objectives in this Project ToR
* Effective proposed approach/methodology for the execution of the tasks
* Implementation schedule
* Clear pricing policy

Compliance with the first two (2) criteria is mandatory.

Proposals that are not considered compliant with these criteria will be discarded.

Priority will be given to technical quality of the proposals. Pricing considerations will be taken into account to ensure that the best value for money is achieved. Compatibility with the maximum budget allocated to this Project will be verified before placing a Service Contract.

Following the assessment process, ETSI reserves the right to grant contracts to other than the cheapest proposals, to accept or reject any offer completely or in part, or to reject all proposals, without providing the reasons. If no offer is accepted, ETSI may decide to abandon the work or proceed in any other manner ETSI may select.

**2.4 IPR and confidentiality Agreements**

The information provided in this CfE, as well as the fact that the applicant has received the CfE, is considered confidential and protected under copyright laws. The applicant may not discuss, share, or use the information in this CfE for any purpose other than the response to this CfE.

ETSI will not disclose the content of any proposals to other applicants or any other party, with the exception of the persons involved in the assessment process described in §2.3 above.

However, ETSI reserves the right to make use of the information provided in this proposal to improve this project definition for the purpose of this CfE or any other manner in which ETSI may decide to proceed to select the service providers.

If successful, the applicant will be required to sign a Service Contract, which includes IPR and Confidentiality clauses aligned with the relevant policies in the ETSI Directives.

**2.5 Preparation cost**

ETSI will not be responsible for any costs or expenses that the applicant may incur in preparing and/or submitting the proposal.

**2.6 Service Contract**

A Service Contract will be proposed to the applicants that will be selected to perform the work.

Details on the Terms and Conditions of this contract can be found on the ETSI Portal, at the following address: <https://portal.etsi.org/STF/STFs/Contracts.aspx>