



General Requirements Report

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Abstract

The deliverable 34.1 contains several analytical aspects of the FutureID client user interface. It shows six personas that were created as standard users and were built upon statistical knowledge. A task case analysis is used to dissect the most important use cases, to find all user related aspects and to identify commonalities of relevant user tasks. Concluding, the document contains a user-task matrix, where the analytical components are joined and conclusions are drawn. The detailed conclusions are strongly considered for the creation of mockups (task 34.2). Additionally, considerations for individual functional areas are given. Together with the user interface guidelines (deliverable 23.1), they will serve as a solid basis for implementation of UI-concepts in the prototypes.

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Document Information

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1. Introduction

As the description of work (DOW) states, there are several objectives set to the associated Task 34.1 of this deliverable:

- The requirements analysis task will transfer the functional and technical requirements derived from the use cases and scenarios into user interface requirements.
- Identification of essential client features.
- UI requirements will be identified and structured along the main client functionality.
- The analysis shall serve as the basis for creation and testing of mockup interfaces.

This deliverable contains different components, used for deeper understanding and analysis of the use cases and to understand the overall functionalities of the client. In the first part, there is the description of personas with different key characteristics. They are based upon empirical evidence among the target groups. The second part describes the task case analysis: starting from the most important use cases, common tasks are being identified. In the third part, the user-task matrix brings together the two previous parts. In the very end, conclusions are being drawn from the analysis of the user-task matrix.

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2. Personas

2.1 Rationale and Methodology

A Persona is a fictional description of a person that represents a typical user group. Personas are able to take a user profile and contain relevant information about this user and have been originally introduced by Alan Cooper in his book “the inmates are running the asylum” (1998).

The basis for the development of the six personas has been empirical data taken from the (N)Onliner Atlas publication (2011). The study has been conducted in Germany since 2009 and gives an overview over six different internet usage types and how they are spread among the general German population. Since FutureID wants to incorporate and include a broad range of people, the study could provide some reasonable groundwork for this. Together with the documents that will be addressing special needs in the accessibility related work packages, this will serve as a very broad basis for later user research.

Within the study, the overall population is divided into six groups which are distributed as follows:

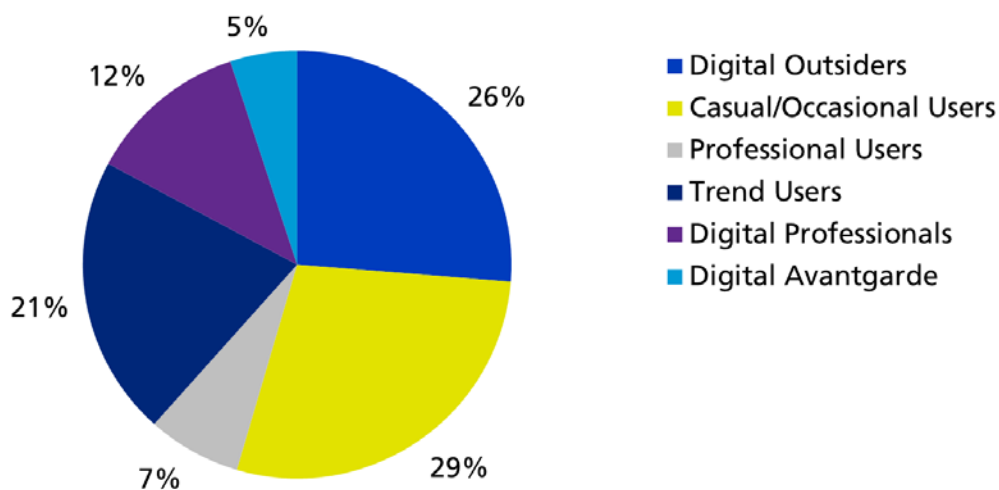


Figure 1: Distribution of the six user types in the (N)Onliner Atlas (Initiative D21 e.V., TNS Infratest 2011)

Although the developed personas have been created with the six user types as a basis, they also differ in some respects. Furthermore, additional knowledge (e.g. eCard ownership) has been added to address the detailed needs within the FutureID project.

2.2 Structure

The persona descriptions contain a picture and a running text that gives a bit of background knowledge about the individual’s life.

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Additional fields describe:

- Motivation to use FutureID
 - o Why is the persona interested in FutureID? What are the goals that can be achieved using the FutureID client?
- Attitude towards private data usage
 - o Is the persona generally aware of giving away personal information?
 - o Is it a person deleting their cookies? What kinds of passwords are used by this person?

Below, there is a table displaying the attitudes towards different technology-related opinions. The second page of the persona card contains some relevant facts about IT-knowledge, software used, their skillset, hardware devices and eID cards owned as tables.

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2.3 Sam Wright (Digital Outsider)



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Sam is a 62-year-old pensioner from Brighton, UK. Since his children moved out, he lives alone with his wife in their single-family house. Former times, he worked as a bank clerk and used to manage accounts. Nowadays, he rather goes back to his old working place to manage their finances than using a computer, because he feels it's safer this way. Next to his wife, children and grandchildren, he likes to go on fishing trips frequently throughout the season.

Motivation to use FutureID: He wants to have a safe standard that doesn't require any digital know-how. He tries to avoid using any electronic equipment as much as possible, but if he has to, he appreciates if it doesn't give him a hassle.

Attitude towards private data usage: He doesn't know much about this topic. This is why it doesn't seem important to him at all.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it			X
I am interested in new ICT innovations and products			X
I am often being asked for guidance regarding computer problems, buying advice etc.			X
Computer- / Internet knowledge is an important skill in almost all professions			X
We have to care more (be more concerned) about privacy in general			X
I don't know much about computers, therefore I have fear using them	X		
I try to avoid technical things	X		

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Basic Knowledge about	
Programs / Applications	X
Operating System	
Data Backup / Protection	
E-Mail	X
Homepages / Websites	X
Firewall	
Chat	
Blogs	
IP-Adresses	
Router	
Viruses, Trojans	
Anti-Virus-Software	
Encryption	
Password protection	
Security Updates	
Tracking Cookies	

Skillset	
Using a search engine	X
Text processing	
Installing Software	
Creating Presentations	
Spreadsheet Program (Excel)	

Software /Service Usage	Type	Usage Frequency
E-Mail	X	monthly
Online Shopping		
Online Banking		
Paypal (or similar service)		
File-sharing software		
Own Homepage		
Facebook Account		
Linked In Account		

Device Type	at Home	at Work
Desktop PC	X	
Laptop		
Printer	X	
Digital Camera		
Scanner		
WebCam		
Portable Music Player		
Smart Phone		
Tablet		
DSL Internet Access		
Mobile Internet		
External Card Reader		
Laptop integration		

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	When travelling / 2x year
Identity Card	X	Seldom
Bank Card	X	Only at ATMs / 2x month
Health Card	X	At doctors / 1x month
PKI-Card		

2.4 Liesl Wahl (Casual User)

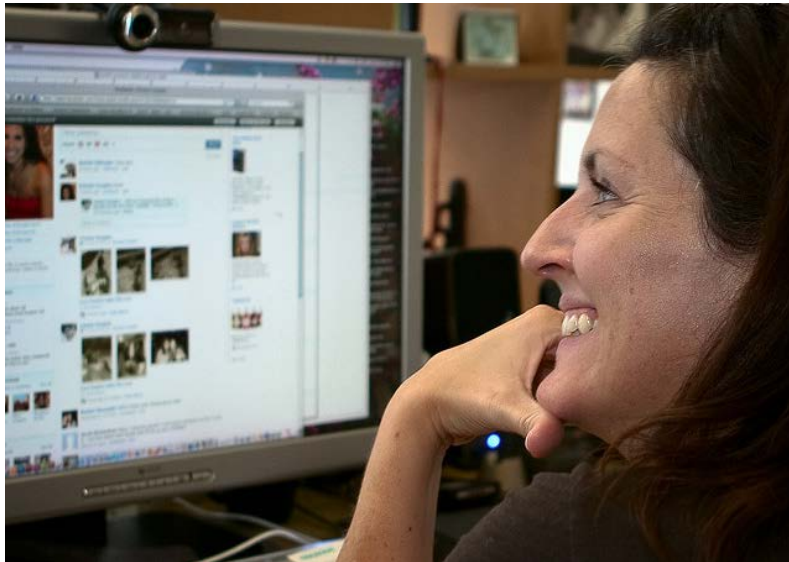


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Liesl is a 46-year-old employment assistant from Kristiansand, Norway. In her holidays, she likes to travel to different places. Because all her friends are members of a big social network, she finally also signed in. Since she has discovered the possibility to share her holiday photos with her friends, she uses this service from time to time.

Motivation to use FutureID: She wants a system that can be used to verify her identity easily while traveling.

Attitude towards private data usage: She has heard about privacy issues, but has no deeper knowledge about the topic. When news about privacy issues is out in the media, she is sometimes very confused about the explicit meaning. This results in fear.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it		X	
I am interested in new ICT innovations and products			X
I am often being asked for guidance regarding computer problems, buying advice etc.			X
Computer- / Internet knowledge is an important skill in almost all professions		X	
We have to care more (be more concerned) about privacy in general			X
I don't know much about computers, therefore I have fear using them		X	
I try to avoid technical things			X

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Basic Knowledge about	
Programs / Applications	X
Operating System	
Data Backup / Protection	
E-Mail	X
Homepages / Websites	X
Firewall	
Chat	X
Blogs	X
IP-Adresses	
Router	
Viruses, Trojans	
Anti-Virus-Software	
Encryption	
Password protection	
Security Updates	
Tracking Cookies	

Skillset	
Using a search engine	X
Text processing	X
Installing Software	X
Creating Presentations	
Spreadsheet Program (Excel)	

Software /Service Usage	Type	Usage Frequency
E-Mail	X	3 x week
Online Shopping		
Online Banking	X	weekly
Paypal (or similar service)	X	weekly
File-sharing software		
Own Homepage		
Facebook Account	X	daily
Linked In Account		

Device Type	at Home	at Work
Desktop PC		X
Laptop	X	
Printer	X	
Digital Camera	X	
Scanner		X
WebCam		
Portable Music Player	X	
Smart Phone		
Tablet		
DSL Internet Access	X	
Mobile Internet		
External Card Reader	X	
Laptop integration		

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	When travelling / 2x year
Identity Card		
Bank Card	X	Weekly, ATM
Health Card	X	In case of illness / 3x year
PKI-Card		

2.5 Rita Tejada (Job Related User)

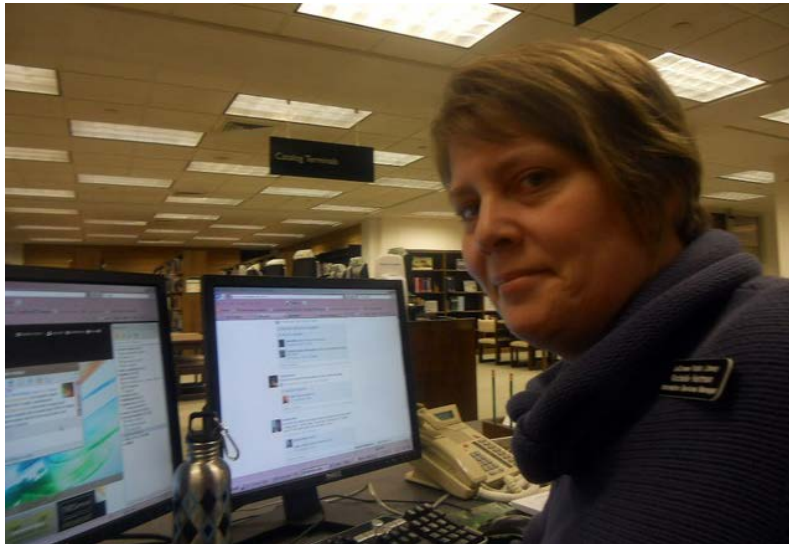


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Rita is 48 years old and lives in Mugardos, Spain. She has been working in an insurance company for 19 years. She loves the varying and changing challenges of her job. She is proud to find her way within all the documents and accounts in the company very quickly by using a special Computer program. At home, she doesn't use her computer at all.

Motivation to use FutureID: She could save a lot of time, if she wouldn't need to type in her password every time. Also for many different work related applications, she would benefit from a central system able to provide the needed functionality.

Attitude towards private data usage: She needs to handle privacy topics at work, concerning her customer's sensitive user data.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it			X
I am interested in new ICT innovations and products			X
I am often being asked for guidance regarding computer problems, buying advice etc.			X
Computer- / Internet knowledge is an important skill in almost all professions		X	
We have to care more (be more concerned) about privacy in general		X	
I don't know much about computers, therefore I have fear using them		X	
I try to avoid technical things		X	

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Basic Knowledge about	
Programs / Applications	X
Operating System	
Data Backup / Protection	
E-Mail	X
Homepages / Websites	X
Firewall	
Chat	
Blogs	
IP-Adresses	
Router	
Viruses, Trojans	
Anti-Virus-Software	
Encryption	
Password protection	X
Security Updates	X
Tracking Cookies	

Skillset	
Using a search engine	X
Text processing	X
Installing Software	
Creating Presentations	
Spreadsheet Program (Excel)	X

Software /Service Usage	Type	Usage Frequency
E-Mail	X	daily
Online Shopping		
Online Banking		
Paypal (or similar service)		
File-sharing software		
Own Homepage		
Facebook Account	X	weekly
Linked In Account		

Device Type	at Home	at Work
Desktop PC	X	
Laptop		
Printer	X	
Digital Camera		
Scanner		
WebCam		
Portable Music Player		
Smart Phone		
Tablet		
DSL Internet Access	X	
Mobile Internet		
External Card Reader	X	
Laptop integration		

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	Seldom, when travelling / 1x year
Identity Card	X	Very seldom for public controls
Bank Card	X	weekly
Health Card	X	Seldom / 3x year
PKI-Card	X	at work

2.6 Naja Kristiansen (Trend User)



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Naja is 27 years old, and works as a social work planner in London, UK. She lives together with her fiancé in a three roomed apartment. In her job she often has to answer emails, even from home. Her new Smartphone is a perfect fit to that task. She also uses it to download music and application store. She likes how simple that works for her.

Motivation to use FutureID: She wants an easy way to manage all her authentication credentials for social networks and web stores and citizen administration.

Attitude towards private data usage: She is interested in this topic, but it doesn't prevent her from using current trend websites. She prefers to have as much comfort as possible when it comes to the use of technology.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it	X		
I am interested in new ICT innovations and products		X	
I am often being asked for guidance regarding computer problems, buying advice etc.		X	
Computer- / Internet knowledge is an important skill in almost all professions	X		
We have to care more (be more concerned) about privacy in general			X
I don't know much about computers, therefore I have fear using them		X	
I try to avoid technical things			X

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Basic Knowledge about	
Programs / Applications	X
Operating System	X
Data Backup / Protection	
E-Mail	X
Homepages / Websites	X
Firewall	
Chat	X
Blogs	X
IP-Adresses	
Router	
Viruses, Trojans	
Anti-Virus-Software	
Encryption	
Password protection	
Security Updates	
Tracking Cookies	

Skillset	
Using a search engine	X
Text processing	X
Installing Software	X
Creating Presentations	X
Spreadsheet Program (Excel)	

Software /Service Usage	Type	Usage Frequency
E-Mail	X	monthly
Online Shopping	X	daily
Online Banking	X	weekly
Paypal (or similar service)	X	daily
File-sharing software		
Own Homepage		
Facebook Account	X	daily
Linked In Account		

Device Type	at Home	at Work
Desktop PC		X
Laptop	X	
Printer		
Digital Camera	X	
Scanner	X	
WebCam	X	
Portable Music Player	X	
Smart Phone	X	
Tablet	X	
DSL Internet Access	X	
Mobile Internet	X	
External Card Reader	X	
Laptop integration		

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	Frequently, when travelling / 1x 2 months
Identity Card	X	Seldom, for public controls / 1x year
Bank Card	X	Frequently for ATMs or online banking
Health Card	X	1x 2 months
PKI-Card	X	Almost every day: When being at work or when working from home or travelling

2.7 Vincenzo Lombardo (Digital Professional)



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Vincenzo is a 36-year-old family father, and works as an IT-administrator and security expert in a big company in Milan, Italy. Throughout his life, he has gotten used to solve any kinds of problems using his computer as a tool. He puts the new computer for his kids together himself and tries to inspire them to be curious about technology.

Motivation to use FutureID: He would love to use the system in one of his projects. Also it would seem like a reasonable and easy way to be able to use strong security means. He would like to promote it within his company.

Attitude towards private data usage: He is highly aware about data privacy because he has to ensure no faults happen in his work. He also heard about and roughly knows about some of the latest legal frameworks.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it	X		
I am interested in new ICT innovations and products	X		
I am often being asked for guidance regarding computer problems, buying advice etc.	X		
Computer- / Internet knowledge is an important skill in almost all professions		X	
We have to care more (be more concerned) about privacy in general	X		
I don't know much about computers, therefore I have fear using them			X
I try to avoid technical things			X

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Basic Knowledge about	
Programs / Applications	X
Operating System	X
Data Backup / Protection	X
E-Mail	X
Homepages / Websites	X
Firewall	X
Chat	X
Blogs	X
IP-Adresses	X
Router	X
Viruses, Trojans	X
Anti-Virus-Software	X
Encryption	X
Password protection	X
Security Updates	X
Tracking Cookies	X

Skillset	
Using a search engine	X
Text processing	X
Installing Software	X
Creating Presentations	X
Spreadsheet Program (Excel)	X

Software /Service Usage	Type	Usage Frequency
E-Mail	X	daily
Online Shopping	X	weekly
Online Banking	X	daily
Paypal (or similar service)	X	monthly
File-sharing software		
Own Homepage	X	daily
Facebook Account		
Linked In Account	X	daily

Device Type	at Home	at Work
Desktop PC	X	X
Laptop	X	X
Printer	X	X
Digital Camera	X	
Scanner		X
WebCam	X	
Portable Music Player	X	
Smart Phone	X	
Tablet	X	X
DSL Internet Access	X	
Mobile Internet	X	
External Card Reader	X	
Laptop integration	X	

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	Sometimes, when travelling / 1x year
Identity Card	X	Seldom, for public controls / 1x year
Bank Card	X	Frequently for ATMs or online banking
Health Card	X	1x 2 months
PKI-Card	X	Almost every day: When being at work or when working from home or travelling

2.8 Charlie Mitchell (Digital Avantgarde)



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Charlie is 34 years old and works as scientific assistant in Grenoble, France. He likes to discover new technologies, and to dissect and to analyze them. In his job, he has the possibility to be the first one to use the newest technologies and get his hands on all kinds of new gadgets. In his spare time he uses digital media to publish his most recent scientific findings in his blog or to communicate the newest security vulnerabilities that he has found to his large twitter follower base.

Motivation to use FutureID: He would be interested in trying out FutureID, to measure the system and to find any potential security leaks. He would be interested in actively participating in the open source part of the project.

Attitude towards private data usage: He has a critical view to privacy topics, and tends to see the disadvantages first. He is very careful and skeptical towards any usage of any potentially sensitive data about his person.

Attitudes	Yes	Partially	No
If I have the opportunity to do something digitally, I generally prefer it	X		
I am interested in new ICT innovations and products	X		
I am often being asked for guidance regarding computer problems, buying advice etc.	X		
Computer- / Internet knowledge is an important skill in almost all professions	X		
We have to care more (be more concerned) about privacy in general	X		
I don't know much about computers, therefore I have fear using them			X
I try to avoid technical things			X

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Basic Knowledge about	
Programs / Applications	X
Operating System	X
Data Backup / Protection	X
E-Mail	X
Homepages / Websites	X
Firewall	X
Chat	X
Blogs	X
IP-Adresses	X
Router	X
Viruses, Trojans	X
Anti-Virus-Software	X
Encryption	X
Password protection	X
Security Updates	X
Tracking Cookies	X

Skillset	
Using a search engine	X
Text processing	X
Installing Software	X
Creating Presentations	X
Spreadsheet Program (Excel)	X

Software /Service Usage	Type	Usage Frequency
E-Mail	X	daily
Online Shopping	X	daily
Online Banking	X	monthly
Paypal (or similar service)	X	monthly
File-sharing software	X	weekly
Own Homepage	X	daily
Facebook Account	X	daily
Linked In Account		

Device Type	at Home	at Work
Desktop PC	X	X
Laptop		X
Printer	X	X
Digital Camera	X	X
Scanner		X
WebCam	X	X
Portable Music Player	X	
Smart Phone	X	
Tablet	X	X
DSL Internet Access	X	
Mobile Internet	X	X
External Card Reader	X	
Laptop integration	X	

eID Cards	Type	Usage Frequency and Type of Usage
Passport	X	Sometimes, when travelling / 1x year
Identity Card	X	Seldom, for public controls / 1x year
Bank Card	X	Frequently for ATMs or online banking
Health Card	X	1x 2 months
PKI-Card	X	Every day: When being at work or when working from home or travelling

3. Task Case Analysis

3.1 Rationale and Methodology

The following section is related to the task case analysis based upon predefined use cases. The five use cases were chosen, because they were identified as most relevant for the project (within the work from T21.5). These use cases serve as a starting point for the identification of all user related tasks.

The next sections contain excerpts from the use case documents identified in Task 21.5. The File description is referencing the relative path among the individual use case document in the LiveLink system.

3.2 Structure

The task case structure is related to the working draft specification of Task Models (W3C Working Draft, 2012). There, tasks are divided in four categories:

- **user task**— an internal cognitive activity, such as selecting a strategy to solve a problem
- **system task**— performed by the application itself, such as generating the results of a query
- **interaction task**— user actions that may result in immediate system feedback, such as editing a diagram
- **abstraction task**— a task that has subtasks belonging to different categories, and thus cannot be allocated uniquely using the previous three categories

The tasks of relevancy for our task analysis are system tasks (so what is shown to the user) and interaction tasks (what can the user can do). Within the use cases, they are indicated as follows:



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3.3 Know your customer

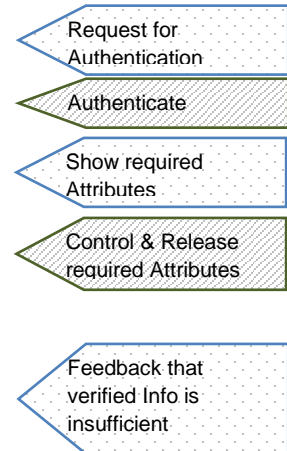
Version last accessed: 23.04.13

Use-Case No 01 KYC/ SP21.5_KYC_Proposal_v008.doc

Excerpt from the Use Case Document:

Section 9.7 *Process:*

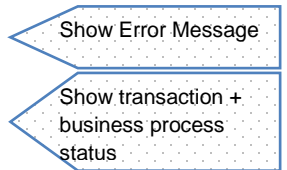
- The User enters the KYC Application Service page or is approached as part of an automated process
- The KYC Application Service requests the User to authenticate with its eID.
- The User is asked to release required declarations/affirmations by the KYC Application Service. [...]
- The Attribute Manager holding the attribute data forwards the signed declarations/affirmations or their URLs to the KYC Application Service, via the Broker (and via a dispatcher at the IdsP if needed)
- The KYC process continues using other methods if verified information is insufficient.



Section 9.8 *Communications with eID client:*

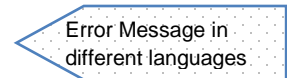
Error Conditions

- There would be a series of errors corresponding to each communication and step with partial or complete failure of the transaction or business process



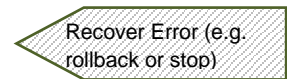
Error Messages

- Error messages should use a library to display in the appropriate language to all parties in the process



Error Recovery

- There should be recovery modes to deal with roll-back or fail/stop.



3.4 Circle of Trust

Version last accessed: 23.04.13

Use-Case No 06 Circles of Trust/ SP21 5 Use Cases - Circles of Trust.docx

Excerpt from the Use Case Document:

Section 6: *Example of Use-Case: Engineering Collaboration:*

- John Primeur is a senior engineer at major French automotive corporation (OEM/brand owner) Citreault, where he is involved in a number of projects, including collaborative projects with a number of partners. When he joined Citreault, and again when he became a senior engineer, he was informed that Citreault would store his position in the

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company's information systems for the purpose of (among other things) controlling access to information from Citreault's systems.

- John owns an ID card provided to him by Citreault, which he uses to gain access to the company premises in the morning (showing the card to the guard at the entrance) and to log in to the IT systems he uses (using the corporate PKI).
- Citreault is collaborating with German engineering enterprise Goschental (Tier 1 supplier) and several smaller Swabian engineering offices in the design of electric cars in project Electrocule. John is involved in this project. When the project was established, he was informed that his involvement in the project would be stored in Citreault's information systems, again for the purpose of controlling access to confidential information (and, potentially, other purposes). People who were not involved in the project from the start are informed when they joined the project.
- When this collaboration was established, John notified Citreault's IT department, which added appropriate access control policies to Citreault's relevant systems (stating access to the system is allowed for Goschental engineers working on project Electrocule). John can also, when creating documents, assign them to project Electrocule, which will protect (e.g. encrypt and sign) the document using Citreault's Enterprise Rights Management (based on Citreault's PKI).
- In addition to gaining access to Citreault computers and services (e.g. logging into desktop PCs) and services shared between Citreault and Goschental (e.g. document management, which may be hosted either at Goschental, Citreault or a third party), he uses the same eID to access (i.e. decrypt) documents supplied by Goschental. He can verify the documents have been supplied by Goschental engineers.
- The same is possible for Goschental engineers involved in Electrocule. They are also informed in a similar manner.

Show card at a person

Log In / Authenticate

Show Project security status

Show Document Status / Display confidentiality

Sign Document

Access/Decrypt Document

3.5 Insurance Industry

Version last accessed: 23.04.13

Use-Case No 11 Handling of personal fluctuation/ SP21-5 Use Cases - insurance v005 .docx

Excerpt from the Use Case Document:

Section 5: Background to Use Case

Insurance broking portals provide access to different services from insurance companies in the internet. These insurance broking portals can be used by direct customers (B2C), as well as independent sales agents (B2E) / (B2Subcontractor), which will benefit most.

Insurance broking portals currently implement their own authentication services with their own hardware tokens in order to ensure secure

Show Document Status / Display confidentiality

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authentication and authorization. This leads to high costs for insurance broking portal providers and independent sales agents.

The use of FutureID for this kind of services would make it possible for insurance portal providers to support different kinds of eIDs for authentication. The independent sales agents could then use their already available eIDs (“neuer Personalausweis” etc.) to authenticate to a variety of insurance broking portals.

Authenticate (with different options)

Section 6: *Goal of the Use-Case*

In its current implementation there are many inefficiencies and burdens for independent sales agents. The process of creating a new account for an insurance broking portal is connected to high efforts for the end users. FutureID will reduce the effort for usage of this kind of services on both sides: service provider and user.

Show granted access @service

The benefits for independent sales agents are clear. They will be able to flexibly authenticate at different platforms without the hassle of remembering different passwords and having multiple hardware tokens. The burden for an independent sales agent of registering in different portals will be eliminated, because they just need to register at one identity provider and would be granted access to several different insurance provider portals.

Show security strength of authentication

Section 7: *Unique Value Proposition*

- Eliminates the need of multiple accounts for different insurance platforms
- More secure authentication
- Platform-independent and security enhanced solution for authentication
- Cost savings for all sides

Use many platforms and means for authenticating

Section 10: *PESTLE Analysis / Environmental Impact*

- For the registration process and other insurance related tasks no paper will be needed anymore. The users will then be able to digitally sign contracts either online or offline together with the independent sales agents.

Sign Contract

3.6 Age Verification

Version last accessed: 23.04.13

Use-Case No 12 Age Verification/Use Case - Age Verification

Excerpt from the Use Case Document:

Section 5: *Background to Use Case*

As part of the proposed European Data Protection Directive 2012, Age Verification of minors is an important task in the European political agenda. The European Data Protection Supervisor (EDPS) Article 8 of the Data

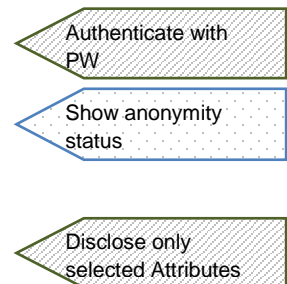
Verify Age (or other Attribute)

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Protection Directive hereby addresses Age Verification in the form, that authorization of a parent or custodian only for children below the age of 13 years is required (O’Connel 2012). It is furthermore currently assessed as how to enforce automatic data processing, in order to address this issue (O’Connel 2012). Furthermore there is no consistent European approach regarding this gap. Although there are existing national projects, which address the issue of Age Verification, collaboration and knowledge exchange between these initiatives has not yet been initiated (Manson et al. 2012). Additionally, pilots, such as STORK Safer Chat, have technically proven, to possibly use electronic identities for age verification, without disclosing unnecessary information beyond the person’s age (O’Connel 2012).

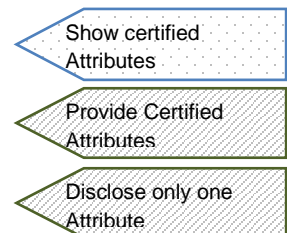
Section 9: *Technical Architecture*

In order to provide such age verification, the electronic identity must be equipped with a certified age attribute. These can be obtained, e.g. by using official electronic identities, such as citizen cards, throughout the age verification process. However, the overall verification process must hereby be aware of the special requirements of age verification. There are some domains, required to implement age verification, according to the Data Protection Regulation Draft (2012). Yet, research shows, that anonymity plays a key role in these services (Heiko Roßnagel 2010). Therefore it is unlikely, that citizens will be willing to verify themselves using cards issued by officials. FutureID can address this issue, by enabling usage and linking of several credentials, such as passwords, preventing the user from being required to officially authenticate themselves using e.g. a citizen card. Furthermore, age verification in the context of the Data Protection Regulation Draft (2012) does not require a full authentication. Therefore trustworthy age verification can already be obtained by applying the concept of K-Anonymity. Using this concept, this leads to the age verification process only requiring a certification of the user’s age, minimizing the information submitted to one single attribute. This allows for an age verification process, able to be used even by services, where anonymity is a business driver.



This narrows the requirements of the technical architecture for this specific use case down to the following points:

- Enable linking of several credentials
- Enable provisioning of certified attributes (e.g. by linking of electronic identities, to the citizen card)
- Use a K-Anonymity process, disclosing any information except for the user’s age, and the official verification of this age



3.7 Third Party Credentials

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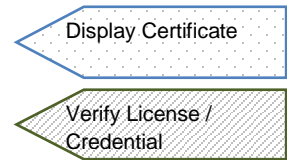
Version last accessed: 23.04.13

Use-Case No 10 Third Party Issuers/ SP21.5 Use Cases - Third Party Issuers.docx

Excerpt from the Use Case Document:

Section 5: *Background to Use Case-Fishing License*

Fishing in Germany is regularized and requires passing a fishing test and a fishing license for the particular areas. The fishing test must be passed only once and is valid for lifetime. The certificate for a passed exam is issued by any municipality in Germany. In addition, a temporary fishing license for a particular area must be bought by local municipalities. Both, the certificate and the license must be shown for inspection.



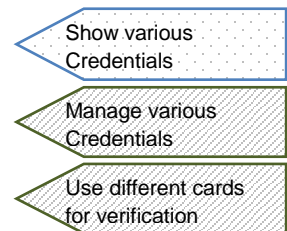
The issuance and verification process is very inconvenient for both parties. People must carry their identity card, fishing certificate, and fishing license to go fishing. The paper-based certificate and license may get lost, destroyed, or just forgotten. [...]

To make the process more reliable, the certificate and the license should be replaced by a digital credential. That would improve the issuance and the verification. In addition, it should be possible to store the credentials on mobile devices or identity cards. FutureID can provide the infrastructure and the required client and server components to enable such functionality.

Section 6: *Goal of the Use Case*

The goal of the Third Party Issuers use case is to:

- demonstrate the ability of the FutureID client to handle various credentials
- increase the usage of eID cards in everyday life
- combine governmental and non-governmental credentials
- replace paper-based certificates
- simplify credential issuance and verification



Section 9: *Technical Architecture*

From a high-level point of view FutureID will provide a Credential Management Service. Third party issued credentials will be stored securely in the FutureID infrastructure and managed by the user. The user can select a credential for identification and authentication to a service or person.

Presentation



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The presentation of the credential during an inspection can be done in a graphical way, for instance, in form of a QR code or barcode. This presentation form is well-known from mobile ticketing in public transportation or check-ins on airports and can easily be established if the third party issued credentials are stored on mobile devices.

Graphically show Credentials (Barcode) for others to process

In the case of storing credentials on a smart card, which has no graphical interfaces in general, the credentials must be transmitted to an inspector's verification device. Such a device must equip with necessary communication interfaces for receiving the credentials and performing verification protocols. Depending on the type of verification protocol additional interfaces, for instance, a mobile Internet connection to query OSCP requests, are required. [...]

Select Credential for identification or authorization

CRL are only updated and issued periodically, which might not be sufficient in all use cases. Hence, real-time validation and revocation information are not available. Certificates for websites or encrypting e-mails are typically revoked because the corresponding private keys are compromised. In the use case Third Party Issuers the issued certificates are more similar to credentials that must be revoked if they get stolen. The credential is stored on a smart card or mobile device that is equipped with an access control itself (e.g., a PIN code). That should protected the credentials until the lost is reported and the CRLs are updated. [...]

Store Credentials on Smart Card or mobile

Binding

In some case it may be necessary to bind credentials on particular device. That can be archived directly or indirectly.

In the case of an identity card, the binding can be done indirectly. We consider a credential stored on an ID card including the owner's first and last name. During an inspection the owner presents his ID card to the inspector, who is able to compare the name of the credentials with the name printed on the card surface. A special binding is not necessary, because it is done by using an ID card as a transport medium.

Link Credentials to Attributes

Direct binding can be done in many different ways, for instance, encryption, signing or constant serial numbers. In the case of the fishing use case, for instance, the certificate and the license contain the same serials number, which enables to verify the binding between both credentials.

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3.8 Common Tasks

The common tasks show the collection of commonly used tasks across the use cases. Individual task names might have been changed slightly for unification. “Reference UC” refers to the use cases that the task has been used in (KYC- Know your customer, CT- Circle of trust, II- Insurance industry, AV- Age verification, 3P- Third party credentials). The task type refers to the type of task related to the W3C task model structure (2012): ST-System task, IT- Interaction task, UT-User task. Not all identified tasks are referred to in the use cases. Some tasks that are necessary across several sections (e.g. help or error handling) or that were logically missing have been added.

3.8.1 Credential Handling

- Credential Display and Order

Task Name	Task Type	Reference UC
Show list of Credentials	ST, Overview, Grouping, Comparison	3P, KYC, II, AV
Show Attributes of Credentials ₁	ST, Overview, Grouping	3P
Grant Access to credential store (for services)	ST, Feedback	3P

- Credential Management

Task Name	Task Type	Reference UC
Handle/Manage credentials	UT, Top Level	3P, (KYC, II, AV)
Select credential for identification or authentication	IT, Single Selection	3P, KYC, II, AV
Store credentials on mobile device or smart card	IT, Control	3P
Establish link between credentials and attributes	IT, Edit	3P
Display certificate (to others), graphically present credential (barcode)	IT, Detail On Demand	3P
Transmit credentials (to verification device, for others)	IT, Control	3P
Verify License / credentials (to others)	UT, Problem Solving	3P
Gain Access control to credential store	IT, Control	3P
Bind credential to device	IT, Edit	3P

¹ Initial preliminary proposed attribute set includes: name, issued from, timestamp, security strength, used in services (list), verified attribute

3.8.2 Authentication

- Authentication Display (KYC, CT, II)

Task Name	Task Type	Reference UC
Request Authentication in Service	ST, Generate Alerts, Feedback	KYC, CT, 3P, II, AV
Show strength (security) of required or current authentication	ST, Overview, Comparison	II, KYC, CT
To be granted/denied access (for specific (sub-)services) and being displayed to user	ST, Feedback, Generate Alerts	II, 3P
Inform and show consequences - e.g. activity and involvement will be stored	ST, Overview, Feedback	CT
Show Attributes of Authentication Credentials	ST, Overview, Grouping, Comparison	3P, KYC, AV

- Authenticate for Service (KYC, CT, II, AV)

Task Name	Task Type	Reference UC
Authenticate (Log In, ...)	IT, Single Selection, Control	CT, KYC, II, AV, 3P
Chose way of authentication from multiple options	IT, Single Selection, Filtering, Control	3P, KYC, II, AV
Use different platforms /means of authentication / identification ²	IT, Single Selection, Filtering, Control	II, AV, 3P

3.8.3 Signing

- Signing Display (CT)

Task Name	Task Type	Reference UC
Show encryption status of a document (show encryption level?)	ST, Overview, Feedback	CT
Show documents or contract have been signed or verified by someone	ST, Overview, Feedback	CT, II
Inform individual about processing of personal information (by signing s.th.)	ST, Overview, Feedback	CT, (II)

² e.g. by eID-Card + PIN, by password only, by PKI-Card

- Signing (CT)

Task Name	Task Type	Reference UC
Sign a document or contract	IT, Control, Edit	CT, II
Encrypt/Decrypt a Document (by signing)	IT, Control, Edit	CT, II

3.8.4 Attribute Handling

- Attribute Display (KYC, AV)

Task Name	Task Type	Reference UC
Show required attributes for service (affirmations/declarations)	ST, Overview, Feedback, Generate Alerts, Grouping	KYC, AV
Show Optional attributes	ST, Overview, Grouping	KYC, AV
Verify attributes and display to user	ST, Feedback	AV, KYC
Refuse attributes and display to user	ST, Feedback, Generate Alerts	AV, KYC
Show status of anonymity	ST, Feedback	AV
Show threat of compromising anonymity per attribute	ST, Feedback, Generate Alerts	AV

- Handle Attributes (KYC, AV)

Task Name	Task Type	Reference UC
Conform / release (required AND/OR certified) attributes	IT, Multiple Selection, Edit, Filtering, Control	KYC, AV
Choose attributes to be released	IT, Multiple Selection, Edit, Filtering, Control	KYC, AV
Release anonymous attributes	IT, Multiple Selection, Edit, Filtering, Control	AV

3.8.5 Error Handling

- Display (KYC)

Task Name	Task Type	Reference UC
Show error message (KYC)	ST, Feedback, Generate Alerts	KYC

- Error Handling (KYC)

Task Name	Task Type	Reference UC
Do undo / rollback or recover from error where applicable	IT, Edit, Control	KYC
Stop a transaction to recover from error	IT, Edit, Control	KYC
Get further information on error message	IT, Detail On Demand	

3.8.6 Information & Help

- Get Information & Help

Task Name	Task Type	Reference UC
Display additional information or help usage of the system (e.g. like What is security? Why is it important? What is identity theft...)	ST, Feedback, Overview	
Get Information as a developer for services including FutureID client	ST, Overview	

- Actively get Help and Contact, Participate

Task Name	Task Type	Reference UC
Contact developer team	IT, Control	
Send Feedback to client or desired functionality	IT, Edit, Control	
Submit change request (as open source client)	IT, Edit, Control	
Submit Code	IT, Edit, Control, UT, Problem Solving, Planning	

4. User-Task Matrix

4.1 Rationale and Methodology

The user-task matrix brings together and joins the previous analyses of the personas with the task analysis. Each one of the identified common tasks from (section 3.8) is matched with the six personas (section 2). The user-task matrix can help to identify the importance of an individual task, identify special requirements of user groups and choose features that might be assigned high priority. By identifying functionalities that might be especially hard for users, it can help to balance the ease of learning with the ease of use.

4.2 Structure

Each user-task matrix is sectioned from the overall thematic areas that have been identified for the common tasks (section 3.8). Starting on the left column, System Tasks (ST) are indicated in blue, Interaction Tasks (IT) are shown in green. In each list, the System Tasks are listed before the Interaction Tasks.

The second column contains the estimated frequency of use (relative measure to other tasks):

- FL: Low, FM: Medium, FH: High
- Mentions (direct or indirect) of individual task in number of use cases (see above): U1, ..., U5 (see section 3.8 for the use case names)

Tasks that were not mentioned frequently, but are of special consideration (e.g. error handling), are marked as SC.

The following columns contain the estimated relative difficulty for the individual user shown in red-difficult, yellow-medium and green-easy. The System and Interaction Tasks refer to the following:

- For system tasks the estimate equates to the difficulty of correctly understanding what is shown without further explanation or direct help given.
- For interaction tasks this equated to the difficulty of correctly following through (doing) and rough correct estimation of consequences (meaning) without explanation or direct help.

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4.3 User-Task Matrix

Credential Handling:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Show Credentials	U4 / FH	Red	Yellow	Yellow	Green	Green	Green
Show Credential Attributes	U1 / FM	Red	Yellow	Yellow	Green	Green	Green
Grant Access to Credential Store	U1 / FL	Red	Yellow	Yellow	Green	Green	Green
Manage Credentials	U4 / FH	Red	Red	Yellow	Green	Green	Green
Select authentication credential	U4 / FH	Red	Yellow	Yellow	Green	Green	Green
Store credentials on mobile device or smart card	U1 / FL	Red	Red	Yellow	Yellow	Green	Green
Establish link between credentials and attributes	U1 / FL	Red	Red	Red	Yellow	Green	Green
Display certificate (to others), graphically present credential (barcode)	U1 / FL	Red	Red	Yellow	Green	Green	Green
Transmit credentials (to verification device, for others)	U1 / FL	Red	Red	Yellow	Green	Green	Green
Verify License / credentials (to others)	U1 / FL	Red	Red	Yellow	Green	Green	Green
Gain Access control to credential	U1 / FL	Red	Red	Red	Yellow	Green	Green

store				
Bind credential to device	U1 / FL			

Authentication:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Request Authentication in Service	U5 / FH						
Show strength /security of required or current authentication	U3 / FH						
Be granted/ denied access displayed to user	U2 / FH						
Inform and show consequences of auth.	U1 / FL						
Show Attributes of Authentication Credentials	U3 / FM						
Authenticate (Log In, ...)	U5 / FH						
Chose way of authentication from multiple options	U4 / FH						
Use different platforms /means of authentication / identification	U3 / FM						

Signing:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Show encryption status of a document	U1 / FL	Red	Yellow	Green	Green	Green	Green
Show documents or contract have been signed or by s.o.	U2 / FL						
Inform individual about processing of personal information (by signing s.th.)	U2 / FL						
Sign a document or contract	U2 / FM						
Encrypt/Decrypt a Document (by signing)	U2 / FL						

Attribute Handling:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Show required attributes for service (affirmations/declarations)	U2 / FM	Yellow	Green	Green	Green	Green	Green
Show Optional attributes	U2 / FM						
Verify attributes and display to user	U2 / FM						
Refuse attributes and display to user	U2 / FM						
Show status of anonymity	U1 / FL						

Indicate threat of compromising anonymity per attribute	U1 / FL	Red	Yellow	Green
Conform / release (required AND/OR certified) attributes	U2 / FM	Yellow	Green	Green
Choose attributes to be released	U2 / FM	Yellow	Green	Green
Release anonymous attributes	U1 / FL	Red	Yellow	Green

Error Handling:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Show error message (KYC)	U1 / SC	Red	Yellow	Yellow	Yellow	Green	Green
Do undo / rollback or recover from error where applicable	U1 / SC	Red	Red	Yellow	Yellow	Green	Green
Stop a transaction to recover from error	U1 / SC	Red	Red	Yellow	Yellow	Green	Green
Get further information on error message	U1 / SC	Red	Yellow	Yellow	Yellow	Green	Green

Information, Participation & Help:

		Sam	Liesl	Rita	Naja	Vincenzo	Charlie
Display additional information or help usage of the system (e.g. like What is security? Why is it	U0 / SC	Yellow	Yellow	Green	Green	Green	Green

important? What is identity theft...)						
Get Information as a developer for services including FutureID client	U0 SC	/	n.a.	n.a.	n.a.	n.a.
Contact developer team	U0 SC	/				
Send Feedback to client or desired functionality	U0 SC	/				
Submit change request (as open source client)	U0 SC	/	n.a.	n.a.	n.a.	n.a.
Submit Code	U0 SC	/	n.a.	n.a.	n.a.	n.a.

4.4 Conclusions

- **Credential Handling** is a part where different functionalities are stated in the five use cases. Due to this fact, several tasks were rated as being low frequency and rather uncommon for novice users. For these tasks, special consideration has to be put on explanatory interfaces and simple and clear descriptions in the user interface in order to reach all users. The most common functionality (like selecting a credential) should be distinguishable from less common use cases (e.g. through secondary views).
- **Authentication** itself is assumed as rather well known to all user groups. Since this functional area is important in all use cases and has a high frequency of occurrence, it is very important to have a thoroughly streamlined overall user experience. Here, the goal is to be able to provide smooth workflows that can provide as much effortless authentication as possible (but of course also clarify the necessary feedback, in the background).
- **Signing** of documents is prominently featured in one use case. Although this functionality is expected to be called with a low-medium frequency, it is expected to be used a lot for some user groups. For signing, it is important that the functionality and related UI is closely integrated with the service that offers the functionality.
- **Attribute Handling** is a functional area also prominently featured in some use cases. Current users might not be familiar checking and releasing their attributes in this manner, but the functionality described in the use cases is not very complex. Here, the importance is to make completely sure users understand and know what they are doing through the interface. Consequences of releasing unwanted or wrong attributes could be very harsh.

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- **Error Handling** is a cross –sectorial functionality. Although it is explicitly mentioned in only one of the use cases, it is a topic of special consideration. Being a security tool, some errors can have very big consequences or cannot be undone. In result, the focus for FutureID should be on providing clear information and error prevention.
- **Information, Participation & Help** is an area that has not been directly mentioned in the use cases but is also an important cross-section functionality. Here, the challenge will be to provide information and help that serves well for all different user groups. For frequently used functions, the common start should be very low. Participation in FutureID open source components should also be considered, but is of course rather relevant for expert users
- **Overall user considerations:** special consideration might have to be taken to the digital outsider and casual user groups. It will be important to have good defaults and try to have easy explanations and overviews. Frequently used functions should be very streamlined for an unobtrusive service experience. More advanced functions should be available to the more knowledgeable user groups (on secondary pages), maybe even with possibilities for personalization.

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