



## WP30 - Fundamentals

### D30.2 – Error Handling

Document Identification	
Date	04.05.2015
Status	Draft
Version	0.3

<b>Related SP / WP</b>	SP3 / WP30	<b>Document Reference</b>	D30.2
<b>Related Deliverable(s)</b>	D33.*, D34.*	<b>Dissemination Level</b>	PU
<b>Lead Participant</b>	TUD	<b>Lead Author</b>	Moritz Horsch
<b>Contributors</b>	Moritz Horsch (TUD) Christof Rath (TUG), Davidf Derler (TUG), Trenton Schulz (NRS), Andreas Schuller (IAO), Jerzy Szczebak (CA)	<b>Reviewers</b>	

This document is issued within the frame and for the purpose of the FutureID project. This project has received funding from the European Unions Seventh Framework Programme (FP7/2007-2013) under grant agreement no. 318424

This document and its content are the property of the FutureID Consortium. All rights relevant to this document are determined by the applicable laws. Access to this document does not grant any right or license on the document or its contents. This document or its contents are not to be used or treated in any manner inconsistent with the rights or interests of the FutureID Consortium or the Partners detriment and are not to be disclosed externally without prior written consent from the FutureID Partners.

Each FutureID Partner may use this document in conformity with the FutureID Consortium Grant Agreement provisions.

## Abstract

A sophisticated error handling is crucial for any application. On the one hand, it is important for developers because it enables finding and fixing errors more easily and thus making the implementation more convenient. On the other hand, it is important for users because it strengthens the user acceptance and usability of the application. This deliverable provides guidelines for developer to use the logging capability and the graphical user interface of the FutureID client to realize a sophisticated recoding and displaying of arbitrary errors. We focus on the eSign component (cf. WP33) of the client and list all potential errors that might occur during the signature creation and verification. More precise, we describe the cause of the errors and explain how they are handled.

<b>Document name:</b>	Error Handling					<b>Page:</b>	1 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## Document Information

### History

Version	Date	Author	Changes
0.1	04.05.2015	Moritz Horsch	Created document structure
0.2	06.05.2015	Andreas Schuller	Added section Generic and other error messages
0.3	22.05.2015	Trenton Schulz	Added Related Work

<b>Document name:</b>	Error Handling	<b>Page:</b>	2 of 18				
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## Table of Contents

Abstract	1
Document Information	2
Table of Contents	3
Table of Figures	4
Table of Listings	5
1. Introduction	6
1.1 Terminology	6
1.1.1 Key Words	6
1.1.2 Abbreviations and Notations	6
1.1.3 Terms	7
1.2 Related Work	7
1.2.1 Windows User Experience Interaction Guidelines	7
1.2.2 OS X Human Interface Guidelines	7
2. Exceptions	9
3. Generic and other error messages	13
3.1 PIN-related	13
3.2 Network-related	13
3.3 Smartcard-related	14
3.4 Unknown / Generic Error	15
4. Logging Interface	16
5. Graphical User Interface	17
6. Bibliography	18

<b>Document name:</b>	Error Handling	<b>Page:</b>	3 of 18				
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## Table of Figures

No table of figures entries found.

<b>Document name:</b>	Error Handling					<b>Page:</b>	4 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## Table of Listings

No table of figures entries found.

<b>Document name:</b>	Error Handling				<b>Page:</b>	5 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## 1. Introduction

The FutureID project builds a comprehensive, flexible, privacy-aware and ubiquitously usable identity management infrastructure for Europe. It integrates existing eID technologies, trust infrastructures, emerging federated identity management services, and modern credential technologies. It creates a user-centric system for the trustworthy and accountable management of identity claims.

### 1.1 Terminology

This section describes the meaning of the most important words used in this document to precise communication and to provide a common understanding.

#### 1.1.1 Key Words

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [1].

#### 1.1.2 Abbreviations and Notations

This section itemizes the abbreviations and notations used in this document.

- DSS      Digital Signature Services
- OASIS    Organization for the Advancement of Structured Information Standards

<b>Document name:</b>	Error Handling				<b>Page:</b>	6 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

### 1.1.3 Terms

This section provides descriptions for selected terms that are used in this document. The descriptions are taken from the FutureID terminology [2].

TBA

## 1.2 Related Work

### 1.2.1 Windows User Experience Interaction Guidelines

In an article about error handling<sup>1</sup>, the Microsoft user experience guidelines offer some overview of the graphical design of error messages as well as the formulation of error texts.

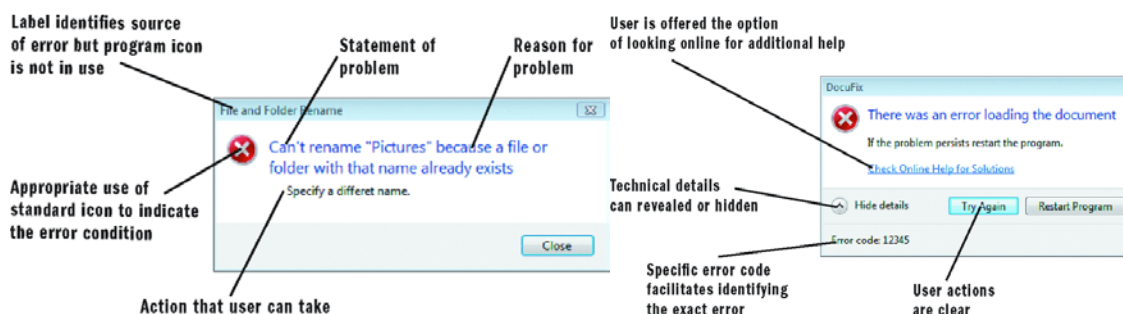


Figure 1 Some structural error message examples from Microsoft, depicting important error dialogue elements

Furthermore, the resource describes the following general ideas needed to be included in a written error description:

- Identify the cause
- Use plain language
- Provide details and guidance
- Orient the user

The above description of Microsoft's guidelines overlaps with the general error handling guidelines<sup>2</sup> provided by the Nielsen Norman group.

### 1.2.2 OS X Human Interface Guidelines

Apple has long written human interface guidelines for its platforms. Currently, this includes Mac and iOS. Their main goal with the guidelines is provide a consistent experience for

<sup>1</sup> <https://msdn.microsoft.com/en-us/magazine/dd347820.aspx>

<sup>2</sup> <http://www.nngroup.com/articles/error-message-guidelines/>

Document name:	Error Handling				Page:	7 of 18	
Reference:	D30.2	Dissemination:	PU	Version:	0.3	Status:	Draft



users and that an app will “integrate seamlessly into this [OS X] environment, while at the same time providing custom functionality and a unique user experience<sup>3</sup>.”

Naturally part of these guidelines cover error messages boxes or *alerts*<sup>4</sup> as they are OS X. The key points that an alert should include on OS X are:

An alert *message* that provides a short summary of the error

*Informative text* that provides a longer description and additional information about what can be done about it or its consequences

Buttons for dealing with actions. The buttons should have verbs instead of saying simply “Yes” or “No” as it makes it more obvious what will happen when a user presses the buttons. The guideline also includes information about how the buttons should be positioned (which of course are opposite of the order they should be presented in Windows)

The icons in the alert should also include the app’s icon to help identify where the origin of the alert.

Apple’s guidelines for alerts on iOS<sup>5</sup> follow similar ideas from the desktop, but they emphasize reducing alerts (including providing strategies to avoid using them) and brevity of text. If an alert must be used, they stress to use short, concise text to avoid including the informative text. They also suggest “as long as you use a friendly tone, it’s better to be negative and direct than it is to be positive but oblique.”

---

<sup>3</sup><https://developer.apple.com/library/mac/documentation/UserExperience/Conceptual/OSXHIGuidelines/index.html>

<sup>4</sup><https://developer.apple.com/library/mac/documentation/UserExperience/Conceptual/OSXHIGuidelines/WindowAlerts.html>

<sup>5</sup><https://developer.apple.com/library/ios/documentation/UserExperience/Conceptual/MobileHIG/Alerts.html>

<b>Document name:</b>	Error Handling				<b>Page:</b>	8 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## 2. Exceptions

This section provides the list of exceptions that might be thrown within the eSign component. We explain the cause and for each exception and specify messages to handling the error. Please note that all exceptions are based on the class `org.futureid.client.addons.esign.exception.BaseException`.

Exception Class	<code>RequestTransformingException</code>		E1
Cause	Occurs in case of an erroneous OASIS DSS request.		
Comment	i.e. Malformed Request		
Message	EN	The signature request sent to the FutureID client is in an unknown format. Please contact the service or software provider.	
	DE	Die an den FutureID Client geschickte Signaturanforderung ist in einem unbekanntem Format. Bitte kontaktieren Sie Ihren Dienst- oder Softwareanbieter.	

Exception Class	<code>ResponseTransformingException</code>		E2
Cause	Occurs in case of an erroneous OASIS DSS response.		
Comment	i.e. Malformed Response		
Message	EN	The signature response sent to the FutureID client is in an unknown format. Please contact the service or software provider.	
	DE	Die an den FutureID Client geschickte Signaturantwort ist in einem unbekanntem Format. Bitte kontaktieren Sie Ihren Dienst- oder Softwareanbieter.	

Exception Class	<code>MoreThanOneRefUriOmittedException</code>		E3
Cause	OASIS DSS related (cf. [3])		
Comment	See E1.		

Exception Class	NotSupportedException		E4
Cause	Occurs when requested operation is not supported		
Comment			
Message	EN	The requested operation is not supported.	
	DE	Der angeforderte Vorgang wird nicht unterstützt.	

Exception Class	UnknownProfileException		E5
Cause	Occurs when requested signing/verification profile is unknown		
Comment	If possible, list profile, what exact signature format is expected.		
Message	EN	<p>The requested signature profile is not supported. Please try again with another configuration.</p> <p>The supported signature profiles are: ....</p> <p>B: learn more (link to a FutureID info Website)</p>	
	DE	<p>Das angeforderte Signaturprofil wird nicht unterstützt. Bitte versuchen Sie es mit einer anderen Konfiguration.</p> <p>Die unterstützten Signaturprofile sind: ....</p> <p>B: erfahren Sie mehr (Link zu einer FutureID info Website)</p>	

Exception Class	UnknownSigTypeException		E6
Cause	Occurs when requested signature type is unknown		
Comment	If possible list the specified type needed.		
Message	EN	<p>The specified signature type is not supported.</p> <p>The supported signature types are: ....</p> <p>B: learn more (link to a FutureID info Website)</p>	
	DE	Das angegebene Signatortyp wird nicht unterstützt.	

<b>Document name:</b>	Error Handling	<b>Page:</b>	10 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU
<b>Version:</b>	0.3	<b>Status:</b>	Draft

		<p>Die unterstützten Signaturtypen sind: ....</p> <p>B: erfahren Sie mehr (Link zu einer FutureID info Website)</p>
--	--	---

Exception Class	XPathException	E7
Cause	Occurs when specified xpath is erroneous	
Comment	See E1.	

Exception Class	InvalidRefUriException	E8
Cause	Occurs when RefURI resolution fails.	
Comment	See E1.	

Exception Class	ExtensionException	E9
Cause	Occurs when the extension to long term formats fails.	
Comment	Feature needs running timestamping server	
Message	EN	FutureID could not create the extended signature. Please try again at a later time or check your extended signature settings.
	DE	FutureID konnte die erweiterete Signatur nicht erstellen. Bitte versuchen Sie es zu einem späteren Zeitpunkt oder überprüfen Sie Ihre erweiterten Signatureinstellungen.

Exception Class	SALException	E10
Cause	Occurs when exception occurs during interaction with SAL.	
Comment	Troubleshoot Button to website	
Message	EN	The signature could not be created.

		<p>If the problem persists, restart the FutureID client and check if your card reader is installed properly.</p> <p>B Troubleshooting</p>
	DE	<p>Die Signatur konnte nicht erstellt werden.</p> <p>Wenn das Problem weiterhin besteht, starten Sie den FutureID Client neu und überprüfen, ob Ihr Kartenleser richtig installiert ist.</p> <p>B Fehlersuche</p>

Exception Class	SigningException		E11
Cause	Occurs when the signature creation failed (SAL Exception passed as child exception).		
Comment	See E10		
Exception Class	VerificationException		E12
Cause	Occurs when failure occurs during verification.		
Comment	Provide reason if possible		
Message	EN	FutureID could not verify the signature. The file might be corrupted.	
	DE	FutureID konnte die Signatur nicht überprüfen. Die Datei ist möglicherweise beschädigt.	

Exception Class	ASiCException		E13
Cause	Occurs when provided ASiC Container is corrupted.		
Comment	See E12.		

Exception Class	ASiCValidationException		E14
Cause	Occurs when ASiC container validation failed.		
Comment	See E12.		

### 3. Generic and other error messages

#### 3.1 PIN-related

Cause	User entered wrong PIN.	
Comment	Smart Card usually allows 3 attempts.	
Message	EN	The PIN you entered was incorrect. You have x attempts. Please try again.
	DE	Die eingegebene PIN ist falsch. Sie haben x Versuche. Bitte versuchen Sie es erneut.

Cause	User entered wrong PIN repeatedly	
Comment		
Message	EN	The card has been blocked. For further information contact the card issuer.
	DE	Die Karte wurde gesperrt. Für weitere Informationen kontaktieren Sie den Kartenaussteller.

Cause	User inserts a blocked card.	
Comment		
Message	EN	The card has been blocked. For further information contact the card issuer.
	DE	Siehe oben

#### 3.2 Network-related

Cause	Network connection fails. Service could not be reached.	
Comment		
Message	EN	The service is unreachable. Check your Internet connection and try again.
	DE	Der Dienst ist nicht erreichbar. Überprüfen Sie Ihre Internetverbindung

<b>Document name:</b>	Error Handling	<b>Page:</b>	13 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU
<b>Version:</b>	0.3	<b>Status:</b>	Draft

		und versuchen Sie es erneut.
--	--	------------------------------

Cause	Local connection frontend-client fails.	
Comment	Out of scope, must be handled by external service / application.	
Message	EN	
	DE	

### 3.3 Smartcard-related

Cause	User selects one card and inserts another.	
Comment	Check current implementation how it's handled. Conveyed rather as info than dialogue?	
Message	EN	The card doesn't match the one selected in the client.
	DE	Die Karte entspricht nicht ihrer Auswahl.

Cause	Card does not meet requirements for signature.	
Comment		
Message	EN	The card you have entered doesn't have the required signature capabilities.  Please make sure that you have inserted a card that has the right capabilities.
	DE	Die eingegebene Karte verfügt nicht über die erforderliche Signaturfunktionen.  Bitte stellen Sie sicher, dass Ihre Karte den Anforderungen einer digitalen Signaturfunktion genügt.

Cause	Generic card issues. Card or card reader is broken. Hardware fails. User pulls out card during the process.	
Comment		

<b>Document name:</b>	Error Handling	<b>Page:</b>	14 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU
<b>Version:</b>	0.3	<b>Status:</b>	Draft

Message	EN	FutureID cannot communicate with the card. Please check that the card reader is connected and that the card is inserted properly.
	DE	FutureID kann keine Verbindung zur Karte herstellen. Bitte überprüfen Sie, dass der Kartenleser korrekt angeschlossen ist, und dass die Karte richtig eingelegt wurde.

### 3.4 Unknown / Generic Error

Cause		
Comment		
Message	EN	<p>The FutureID client has encountered an error. We are sorry for the inconvenience.</p> <p>Options:</p> <p>Please try again.</p> <p>Please restart the application.</p> <p>We have created an error report to let you tell us about that problem. B Send error report. B Cancel</p>
	DE	<p>Im FutureID Client ist ein Fehler aufgetreten. Wir entschuldigen uns für dafür.</p> <p>Optionen:</p> <p>Bitte versuchen Sie es erneut.</p> <p>Bitte starten Sie die Anwendung neu.</p> <p>Wir haben einen Fehlerbericht erstellt, der uns nähere Aufschluss über das Problem geben kann.</p> <p>B Fehlerbericht senden. B Abbrechen</p>

<b>Document name:</b>	Error Handling	<b>Page:</b>	15 of 18
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU
<b>Version:</b>	0.3	<b>Status:</b>	Draft



## 4. Logging Interface

This section provides details about the logging capability of the FutureID client and how it can be used by developers for error handling.

<b>Document name:</b>	Error Handling				<b>Page:</b>	16 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## 5. Graphical User Interface

This section provides details about the graphical user interface of the FutureID client and how it can be used by developers to display errors to users.

<b>Document name:</b>	Error Handling				<b>Page:</b>	17 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft

## 6. Bibliography

- [1] S. Bradner, *Key words for use in RFCs to Indicate Requirement Levels*, RFC 2119, 1997.
- [2] FutureID, *WP21 - Vision, Approach and Inventory, D21.1 - FutureID Terminology*, 2013.
- [3] OASIS, *Digital Signature Service Core Protocols, Elements, and Bindings*, Version 1.0, <http://docs.oasis-open.org/dss/v1.0/oasis-dss-core-spec-v1.0-os.pdf>, 2007.

<b>Document name:</b>	Error Handling				<b>Page:</b>	18 of 18	
<b>Reference:</b>	D30.2	<b>Dissemination:</b>	PU	<b>Version:</b>	0.3	<b>Status:</b>	Draft