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Project:RO-FSCH – 2 Extending the implementation of the National Signaling Information System (SINS) at the National Level

Contract:2.1 "Implementation of the National Signaling Information System at the National Level"

Deliverable: SINSApp20110809-01

Microdesign notes

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SINS-Notes microdesign attached SinsApp build. 20110809-01

1 Introduction

1.1 PURPOSE

This document provides a comprehensive view of the changes made within the SINS build number SinsApp.20110809-01 from 09 Aug 2011.

1.2 COVERAGE AREA

The following will explain the changes in SINS contained in the table below:

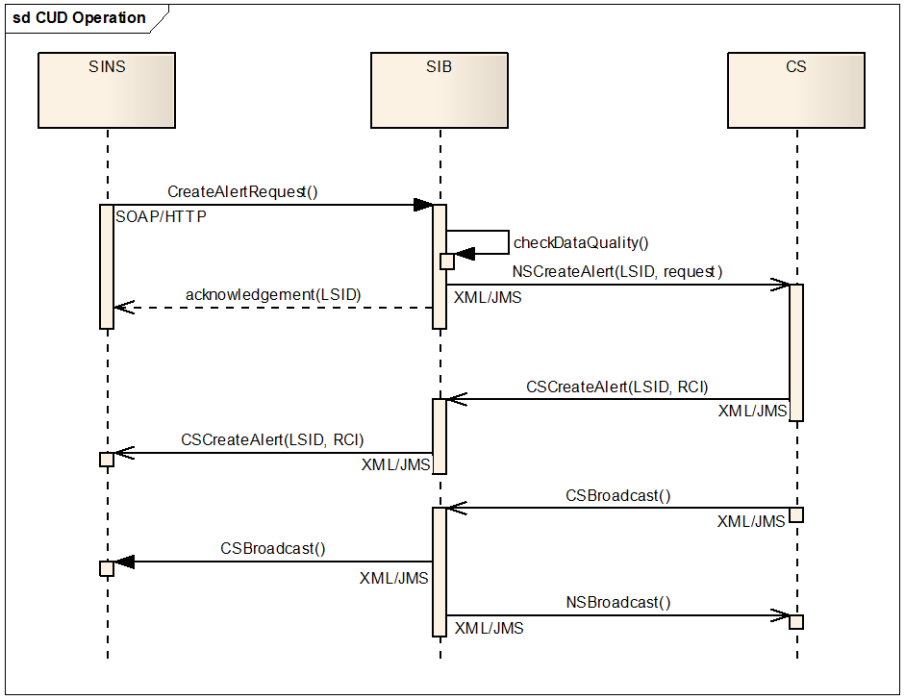
Modified functionality	Description
createdalert	a. In relation to Steria, when creating an alert, the identity with alias number = 0000 should always be marked as MainIdentity (modification requested in the meeting with the authorities and SIB – Steria before evaluation)
	b. Retry mechanism in SIB-Steria to retrieve the Schengen ID from SIS1+, when it gives error 2010.
	c. Updating the status of signals on all asynchronous responses issued by SIB Steria due to their incoherence (synchronous - error, asynchronous error, broadcast - success, etc.)
	d. Alert creation schemes made available by SIB also received binaries. At a large size of these, the SIB cracks. Changed process by HASHing binaries on Create Alert.
Updatealert	e. Modification of the alert update process during the transition period to the SISII Central System to no longer update the signaling expiration date and to give a warning that this operation must be done through the ChangeExpiryDate Operation.
	f. The process should allow updates to be made on expired alerts in SINS (related to SIS1+). The implementation process of strict SISII business rules.
	g. Retry mechanism with SIB for obtaining SchengenID from SIS1+ due to errors in production.
	h. If the alert is not created at CS.SIS and there is a change of interest from Schengen to National, this should no longer go through SIRENE validation.
	i. Updating the status of the signals on all the asynchronous responses issued by the SIB, due to their incoherence (synchronous - error, asynchronous error, broadcast - success, etc.)

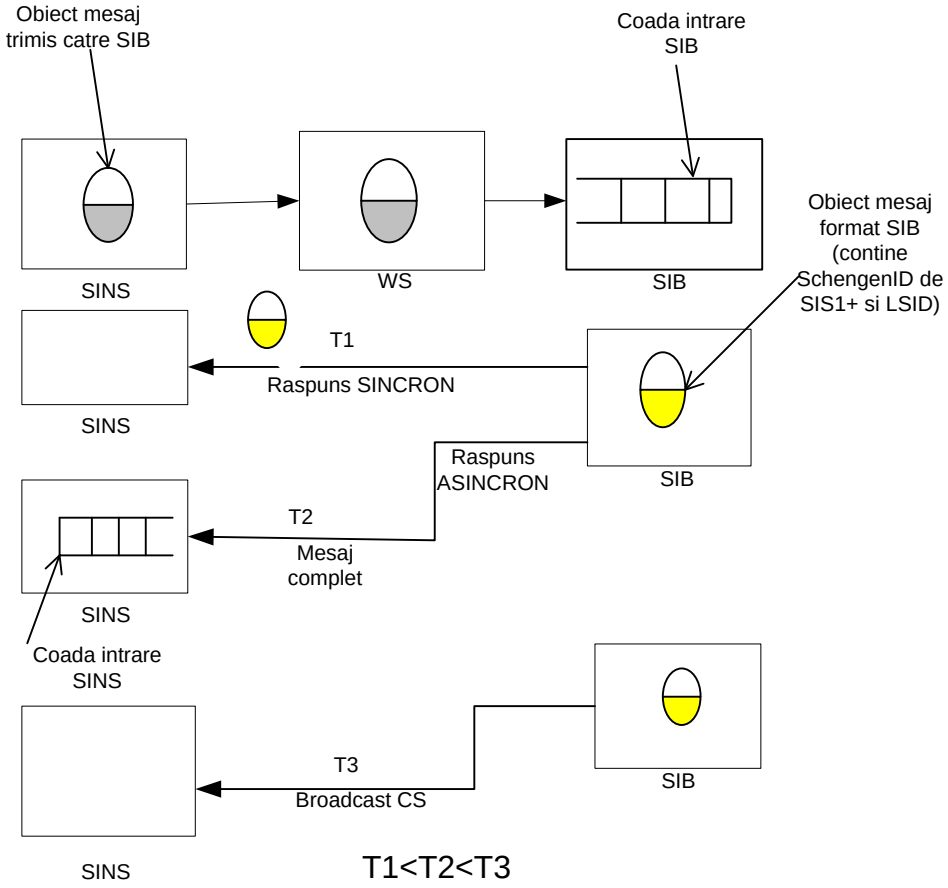
Deletealert	j. The modification of the alert data process should take into account that the existing alerts in SINS are not migrated to the central system. We were not informed that in the central system the migration is done gradually by types of signals and no more than x signals per minute. The process did not take into account such manifestations.
	k. Modification of the delete alert process in the sense that the delete will no longer pass to SIRENE upon validation if the alert of Schengen interest has not also been sent to CS.SIS
	l. Modification of the entire process of automatically deleting expired alerts (its total rewriting) - jobs can be started by national authority, type of alert, and interest.
Change Expiry Date	m. Modifying the expiry date change process in order to take into account the SIS1+ business rules.
	n. Modification of the update process in the asynchronous database when the alert is of Schengen interest and transmitted to CS.SIS. The update was initially done synchronously, but due to errors in production, it was necessary to make this change in order to maintain consistency between SINS and SIB.

2 Architectural explanations

2.1 B. RETRY MECHANISM IN SIB-STERIA TO RETRIEVE THE SCHENGENID FROM SIS1+, WHEN IT GIVES ERROR 2010

The transmission flow of the message object between SINS and SIB is the one in the diagrams below:





Extraction of SchengenID from SIS1+ and LSID is done on the SINCRON response.
However, very often, communication between SINS and SIB fails for various reasons, receiving ERROR 2010 or TimeOut in SINS.
To correct this problem, a retry mechanism was introduced for SIB-Steria that works as follows: in case of a failure with ERROR 2010, SINS tries to retransmit the message a maximum number of times set in the SteriaCUDOperationsMaxRetry configuration variable.
At this moment, SteriaCUDOperationsMaxRetry = 5.
Thus, the probability of obtaining in SINS, on the SINCRON Steria response, the object with SchengenID of SIS1+ is maximized.
The respective mechanism was added in the "createAlert" method of the SteriaFacade class.

2.2 C. UPDATING THE STATUS OF SIGNALS ON ALL ASYNCHRONOUS RESPONSES ISSUED BY SIB STERIA DUE TO THEIR INCOHERENCE (SYNCHRONOUS - ERROR, ASYNCHRONOUS ERROR, BROADCAST - SUCCESS, ETC.)

The same SINS-SIB Steria communication mechanism from 2.1 is used. Initially, you could receive ERROR 2010 on the SYNCRON response, but let's have a validated, correct message on the ASYNCRON response. In this case, the statuses in SINS will be updated correctly
without being able to be associated with an LSID and a SchengenID of SIS1+ in SINS (which were not received on the SINCRON response). In this way, desynchronized states appear that are saved in SINS.
To correct this problem, two mechanisms have been added that work together, M1 and M2:
M1: successful reception of the SYNCRON response is expected.
M2: There is a possibility that the ASYNCRON response and the CSBroadcast message arrive in reverse order, i.e. T3 <T2. In this case, the signaling will remain blocked in an error state.
The M2 mechanism ensures the consistency of saving signaling, regardless of the arrival order of the 2 messages, ASYNCRON and CSBroadcast.

2.3 D. ALERT CREATION SCHEMES MADE AVAILABLE BY SIB ALSO RECEIVED BINARIES. AT A LARGE SIZE OF THESE, THE SIB CRACKS. CHANGED PROCESS BY HASHING BINARIES ON CREATE ALERT.

A correction was made in the sense that the binaries are no longer sent to Steria, but only a checksum of the binary, more precisely the hash of the java object of the binary.
Thus, the risk of SINS-SIB communication failure is eliminated by building a gauge object
much diminished.

2.4 E. MODIFICATION OF THE ALERT UPDATE PROCESS DURING THE TRANSITION PERIOD TO THE SISII CENTRAL SYSTEM TO NO LONGER UPDATE THE SIGNALING EXPIRATION DATE AND TO GIVE A WARNING THAT THIS OPERATION MUST BE DONE THROUGH THE CHANGEEXPIRYDATE OPERATION.

The Update action can be performed manually through the SINS_WebUI graphic intervention, in which case the "Expiry Date" field update is blocked by excluding it when overwriting the base and displaying a warning message in the interface.

It was desired to implement this mechanism also for the case of modernized national systems, where communication with SINS is done through web services and is managed in the code of the SINS CENTRAL SERVICES module. The implemented mechanism involves checking the "Expiry Date" field in the checkExpiryDate function. Thus, it compares the current value of the "Expiry date" field sent in the Update message with the existing value in the database. If the value is different, it is executed
the update process for all fields that are updated, except for the "Expiration Date" field, which in the end is not part of the group of fields that actually overwrite the base through the persistence mechanism provided by AlertDAO. It was also implemented in this case, as in the case of Update ExpiryDate through the WebUI interface, the display of a warning message with Warning code = 6601 and the warning text:
"The expiration date has not been changed by the Update Alert process."

2.5 F. THE PROCESS SHOULD ALLOW UPDATES TO BE MADE ON EXPIRED ALERTS IN SINS (RELATED TO SIS1+). THE PROCESS IMPLEMENTS STRICT SISII BUSINESS RULES.

Normally, an expired flag will not exist in the system, because it willdeleted automatically.
However, in certain cases, the client requested that these alerts not be deleted, and moreover, that it be possible to update them and change the expiration date.

2.6 G. RETRY MECHANISM WITH SIB FOR OBTAINING SCHENGENID FROM SIS1+ DUE TO ERRORS IN PRODUCTION.

It is the same mechanism described in point 2.1, there being incorporated into the Create Alert process, and in this case, the Update Alert process.

2.7 H. IF THE ALERT IS NOT CREATED AT CS.SIS AND THERE IS A CHANGE OF INTEREST FROM SCHENGEN TO NATIONAL, THIS SHOULD NO LONGER GO THROUGH SIRENE VALIDATION.

The mechanism is implemented at the level of the WPS process server, where an additional check was introduced on the "Schengen Interest" field in the scheme of the "Update Alert" or "Delete Alert" message object. If the alert has not been confirmed to be created at CS, the respective process in WPS no longer sends the alert for validation to SIRENE.

2.8 I. UPDATING THE STATES OF THE SIGNALS ON ALL ASYNCHRONOUS RESPONSES ISSUED BY SIB STERIA DUE TO THEIR INCOHERENCE (SYNCHRONOUS - ERROR, ASYNCHRONOUS ERROR, BROADCAST - SUCCESS, ETC.)

It is the same mechanism described in point 2.2, there being incorporated into the Create Alert process, and in this case, the Update Alert process.

2.9 J. MODIFICATION OF THE ALERT DATA PROCESS SO THAT IT TAKES INTO ACCOUNT THAT THE EXISTING ALERTS IN SINS ARE NOT MIGRATED TO THE CENTRAL SYSTEM. WE WERE NOT INFORMED THAT IN THE CENTRAL SYSTEM THE MIGRATION IS DONE GRADUALLY BY TYPES OF SIGNALS AND NO MORE THAN X SIGNALS PER MINUTE. THE PROCESS DID NOT TAKE INTO ACCOUNT SUCH MANIFESTATIONS.

If a signal is not migrated to CS, it is of Schengen interest, created in SINS but not created in CS. For this case, the business flow was modified as follows:

- For reports to the person under Art. 95, the deletion is no longer sent for validation to SIRENE and de
  also, the deletion is no longer sent to the SC.
- For the other types of signals, the deletion is no longer sent to the CS.

In this way, the operations end with SUCCESS, without error or warning and without an unnecessary step to SIRENE.

2.10 K. MODIFICATION OF THE DELETE ALERT PROCESS IN THE SENSE THAT THE DELETE WILL NO LONGER PASS TO SIRENE UPON VALIDATION IF THE ALERT OF SCHENGEN INTEREST HAS NOT ALSO BEEN SENT TO CS.SIS

The mechanism implements the following rationale:
If an alert is not created at the CS and is of Schengen interest, if "Delete" is given to it in SINS, it is no longer necessary to send it to the CS because it should be deleted from there as well, so the step of sending to CS is unnecessary. The fastest solution is to eliminate signaling directly in SINS.

2.11 L. MODIFICATION OF THE ENTIRE PROCESS OF AUTOMATICALLY DELETING EXPIRED ALERTS (ITS TOTAL REWRITING) - JOBS CAN BE STARTED BY NATIONAL AUTHORITY, TYPE OF ALERT, AND INTEREST.

The mechanism is based on the creation of a job for deleting expired alerts at the WAS level.
The initial situation was characterized by the following aspect: the deletion job deleted ALL expired signals.

The modified deletion mechanism programmatically implements the following steps:

- job programming to delete certain types of signals according to a parameter filter
- effective deletion of signals at the time of execution of the scheduled job

The modification of the mechanism consisted in the introduction of the possibility of filtering expired signals subject to deletion, because the need to keep certain expired signals in SINS was understood.

2.12 M. MODIFYING THE EXPIRY DATE CHANGE PROCESS IN ORDER TO TAKE INTO ACCOUNT THE SIS1+ BUSINESS RULES.

In SISI, the maximum extension interval is considered from the date of the last change in CS and not from the current date, as it is in SINS. The change expiry date process has been modified in order to take into account the date of the last change in the CS for calculating the maximum extension interval.

2.13 N. MODIFICATION OF THE UPDATE PROCESS IN THE ASYNCHRONOUS DATABASE WHEN THE ALERT IS OF SCHENGEN INTEREST AND TRANSMITTED TO CS.SIS. THE UPDATE WAS INITIALLY DONE SYNCHRONOUSLY, BUT DUE TO ERRORS IN PRODUCTION, IT WAS NECESSARY TO MAKE THIS CHANGE IN ORDER TO MAINTAIN CONSISTENCY BETWEEN SINS AND SIB.

The mechanisms discussed are part of the ChangeExpiryDate process.
The old update mechanism on the synchronous response went through the following steps:

1. Update in BD SINS through the function sendChangeExpiryDateToCS
2. Update to CS; This update may crack due to various reasons, causing desynchronization between SINS and CS.
3. Return asynchronous response from CS and CSBroadcast (see also 2.1)

The new, improved mechanism has the update order reversed. Thus, the update is done first in CS and if it is confirmed with SUCCESS, it is also done in SINS, on the asynchronous response (arriving after the synchronous one), thus avoiding the desynchronization of the two bases.
The steps of the improved mechanism are as follows:

1. Check the Expiry Date in SINS through the sendExpiryDateToCS function
2. Trying to update to CS
3. At the moment of receiving the ASYNCHRONOUS response of SUCCESS, the Expiration Date is also updated in SINS.

The improved mechanism deals with both situations, namely reporting the person Art.95 and non-Art.95 reporting.