

‘CTRL_S’ – A security tool for SESAR’s design in security approach

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CTRL_S evolution

- Need for a common SRA methodology
- Beside the methodology a need for a tool to speed up the SRA process.
- CTRL_S is a result of 16.06.02 effort
 - Requirements and proposals for change made by 16.06.02 partners
 - Core product developed by Winsland
- Winsland is a part of the 16.06.02 team since 2012
- Until 2013 / 2014 no tool for SRA in line with SESAR SecRAM
 - SRAs were stored and produced in different formats
 - Mainly as a text files with tables and figures

- 2013 / 2014 - Winsland issued a semi-automatic model based on MS Excel
 - Used by DFS
 - Used by Winsland
- 2014 – work on CTRL_S had started

SecSAM_steps_v48_1st - Microsoft Excel

Úvod

Domov

Rozloženie stránky

Vzorové

Údaje

Zobrazit

Vytvoriť

Prilepiť

Škrtnúť

Číslo

Formátovať

Štýl buniek

Vložiť

Odstrániť

Formát

Zoradiť a Najst

Najst a vybrať

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CTRL_S evolution

Define impact on C, I, A

Area	C	I	A
Personnel	0	0	0
Capacity	0	0	0
Performance	0	0	0
Economic	0	0	0
Branding	0	0	0
Regulatory	0	0	0
Environment	0	0	0
Refresh	0	0	0
	C	I	A
	MAXIMUM		

SecRAM steps_v48_test - Microsoft Excel

SúborDomovVložiťRozloženie stranyVzorceÚdajePosúdiťZobraziťVývojár

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CTRL_S evolution

- MS Excel tool drawbacks

- Excel tool was

Define impact on C, I, A

Area	C	I	A
Personnel	0	0	0
Capacity	0	0	0
Performance	0	0	0
Economic	0	0	0
Branding	0	0	0
Regulatory	0	0	0
Environment	0	0	0
Refresh	0	0	0
	C	I	A
	MAXIMUM		

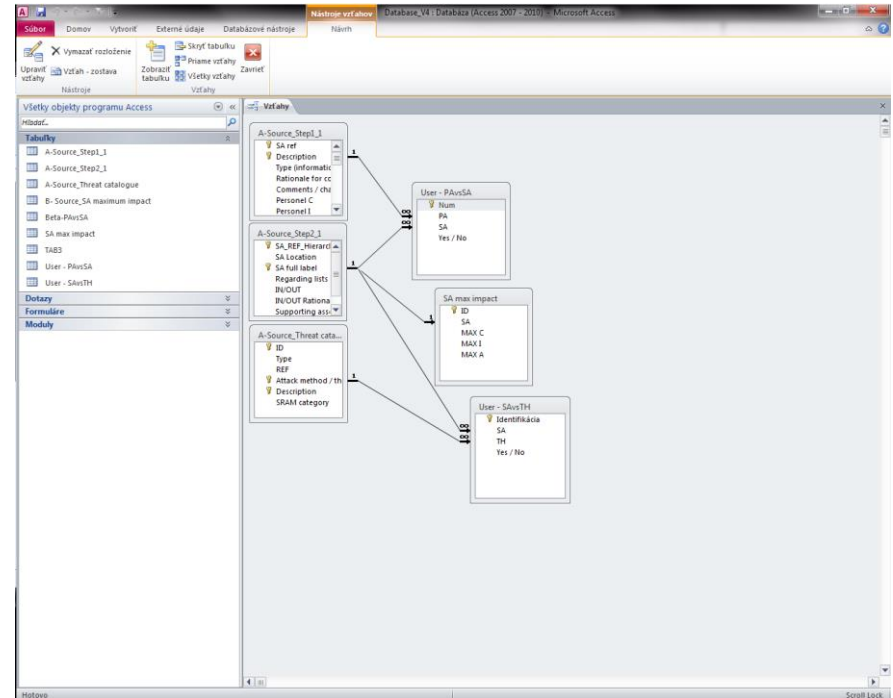
SecRAM steps_v48_test - Microsoft Excel

SúborDomovVložitRozloženie stranyVzorceÚdajePosúdiťZobraziťVývojár

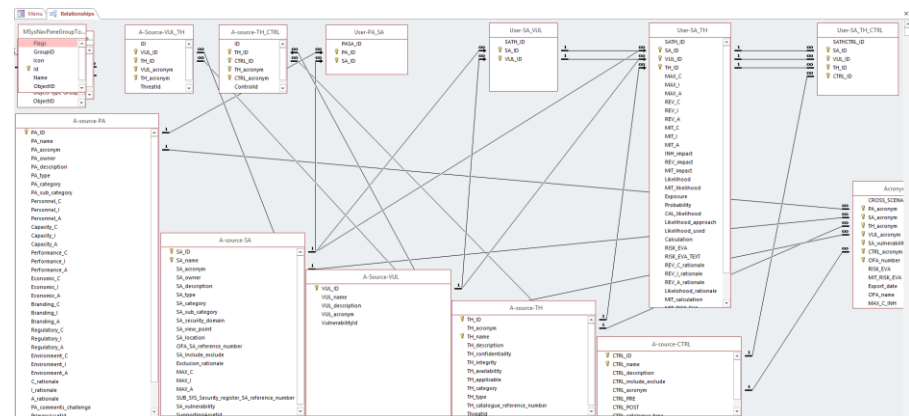
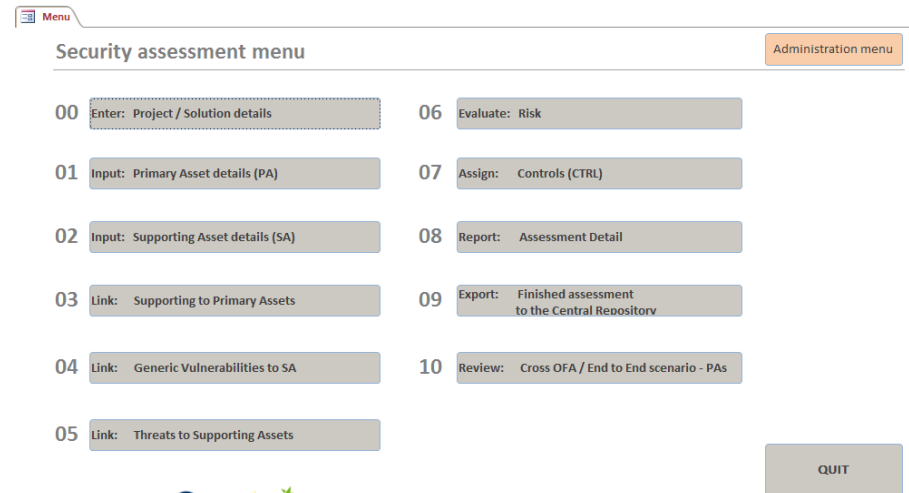
Calibri11

CTRL_S evolution

- Experience and knowledge invested into CTRL_S
- Methodology translated into MS Access database
- Model tailored for SESAR SecRAM
 - SESAR Security Risk Assessment Methodology

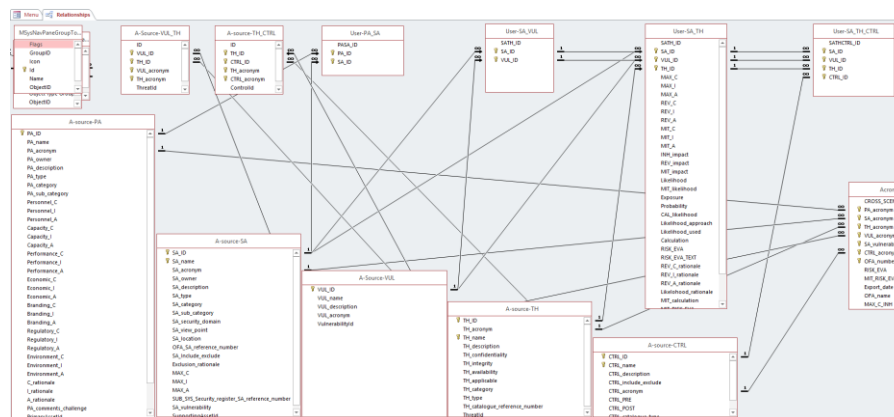
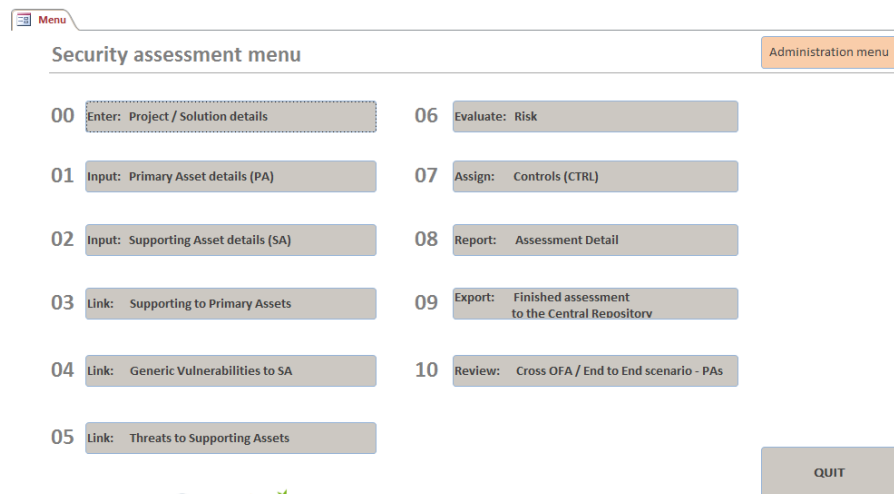


- Late 2014 / January 2015 - CTRL_S connection to a cloud repository was tested
- Late 2015 / May 2016 – CTRL_S finalized
 - Application functional with all steps of SecRAM implemented
 - The cloud Central Repository operational
 - 32bit / 64bit version
- April 2016 / Jun 2016 – final de-bugging



CTRL_S evolution

- September 2016
 - 6 OFAs' SRAs in the central repository
 - circa 4000 result records
 - 132 PAs
 - 263 SAs
 - 80 THs
 - 31 VULs
 - 93 CTRLs
- No effort left to conduct more SRA in CTRL_S

[illegible]

CTRL_S Functions

CTRL_S functions 1/2

- First steps - Defining details for

- OFA / Project / Solution

- PAs

- Name
- Description
- Impacts
- ...

- SAs

- Name
- Description
- Location
- ...

Menu Primary Asset input form

Primary Assets input form

Import PAs from the catalogue

Create new Primary Asset

Create abbreviation for new Primary Asset

Primary Asset Name

Primary Asset Type

Primary Asset Description

Primary Asset Unique abbreviation

Primary Asset Owner

Comments Challenge

Define impact on C, I, A

Area	C	I	A
Personnel	0	0	0
Capacity	0	0	0
Performance	0	0	0
Economic	0	0	0
Branding	0	0	0
Regulatory	0	0	0
Environment	0	0	0
Refresh	0	0	0

C I A
MAXIMUM

Enter rationale for C, I, A impact for this primary asset

Confidentiality

Integrity

Availability

Primary asset list overview

DONE

Menu Supporting Asset input form

Supporting assets input form

Import SAs from the catalogue

Create New Supporting Asset

Create abbreviation for new Supporting

Supporting Asset Name

Supporting Asset Description

Supporting Asset Unique abbreviation

Supporting Asset Owner

Supporting Asset Location

Sub-system of

Include in the risk assessment?

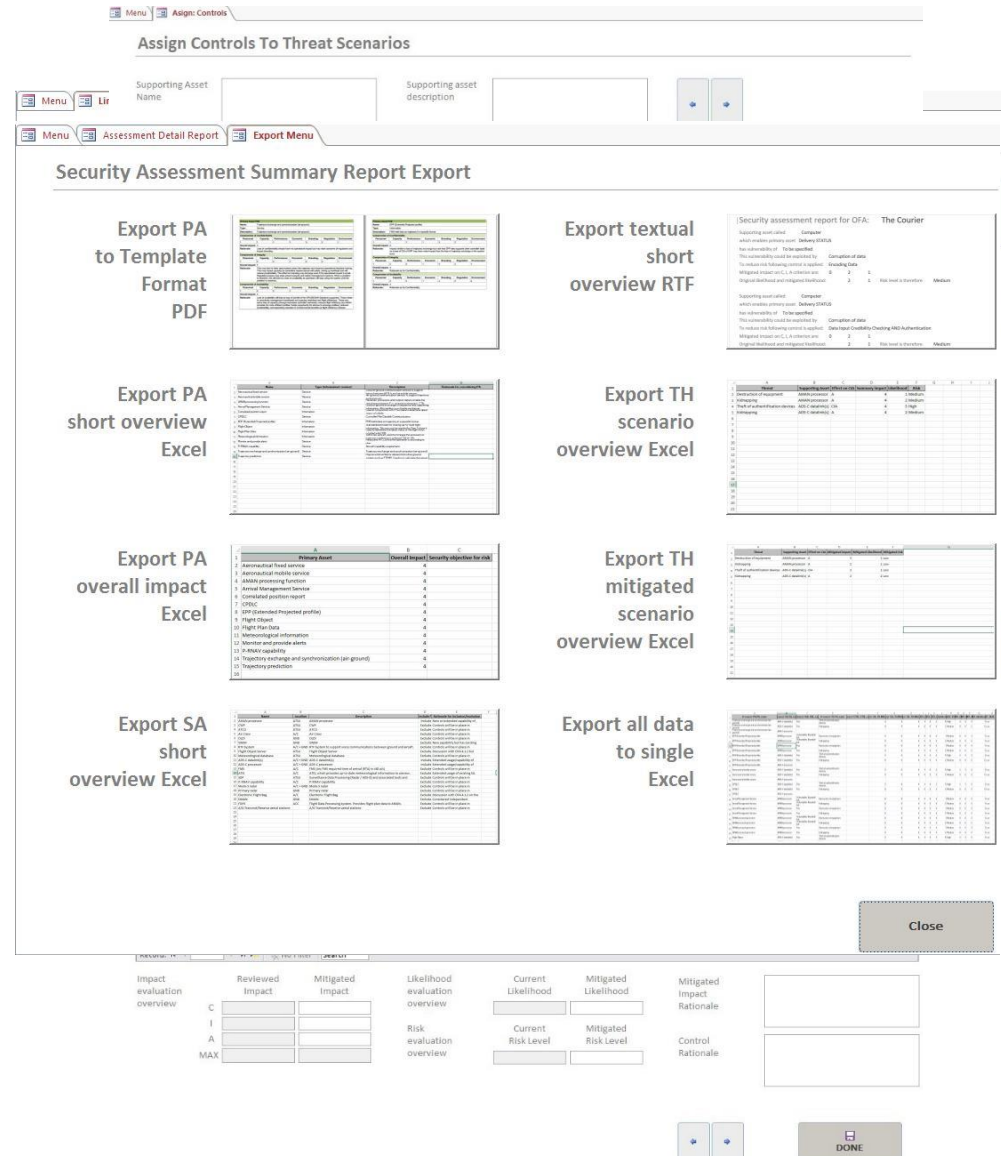
Rationale for inclusion or exclusion

Supporting asset list overview

DONE

CTRL_S functions 2/2

- Conducting SRA
 - Setting up dependencies between
 - PAs & SAs
 - SAs & Vulnerabilities
 - SA-VUL & Threats
 - SA-VUL-TH & Controls
 - Exporting results



The screenshot displays the 'Security Assessment Summary Report Export' window. At the top, there are tabs for 'Menu', 'Assessment Detail Report', and 'Export Menu'. Below the tabs, there are input fields for 'Supporting Asset Name' and 'Supporting asset description'. The main area contains several export options, each with a preview of the resulting report or data format:

- Export PA to Template Format PDF**: Shows a PDF preview of a report.
- Export textual short overview RTF**: Shows a preview of a report for 'The Courier'.
- Export PA short overview Excel**: Shows a preview of an Excel spreadsheet.
- Export TH scenario overview Excel**: Shows a preview of an Excel spreadsheet.
- Export PA overall impact Excel**: Shows a preview of an Excel spreadsheet.
- Export TH mitigated scenario overview Excel**: Shows a preview of an Excel spreadsheet.
- Export SA short overview Excel**: Shows a preview of an Excel spreadsheet.
- Export all data to single Excel**: Shows a preview of a large Excel spreadsheet.

At the bottom of the window, there is a 'Close' button and a 'DONE' button. Below the main content area, there are several summary tables:

Impact evaluation overview	Reviewed Impact	Mitigated Impact	Likelihood evaluation overview	Current Likelihood	Mitigated Likelihood	Mitigated Impact Rationale
C						
I						
A						
MAX						

Risk evaluation overview	Current Risk Level	Mitigated Risk Level	Control Rationale

CTRL_S Knowledge Sharing

CTRL_S Knowledge Sharing

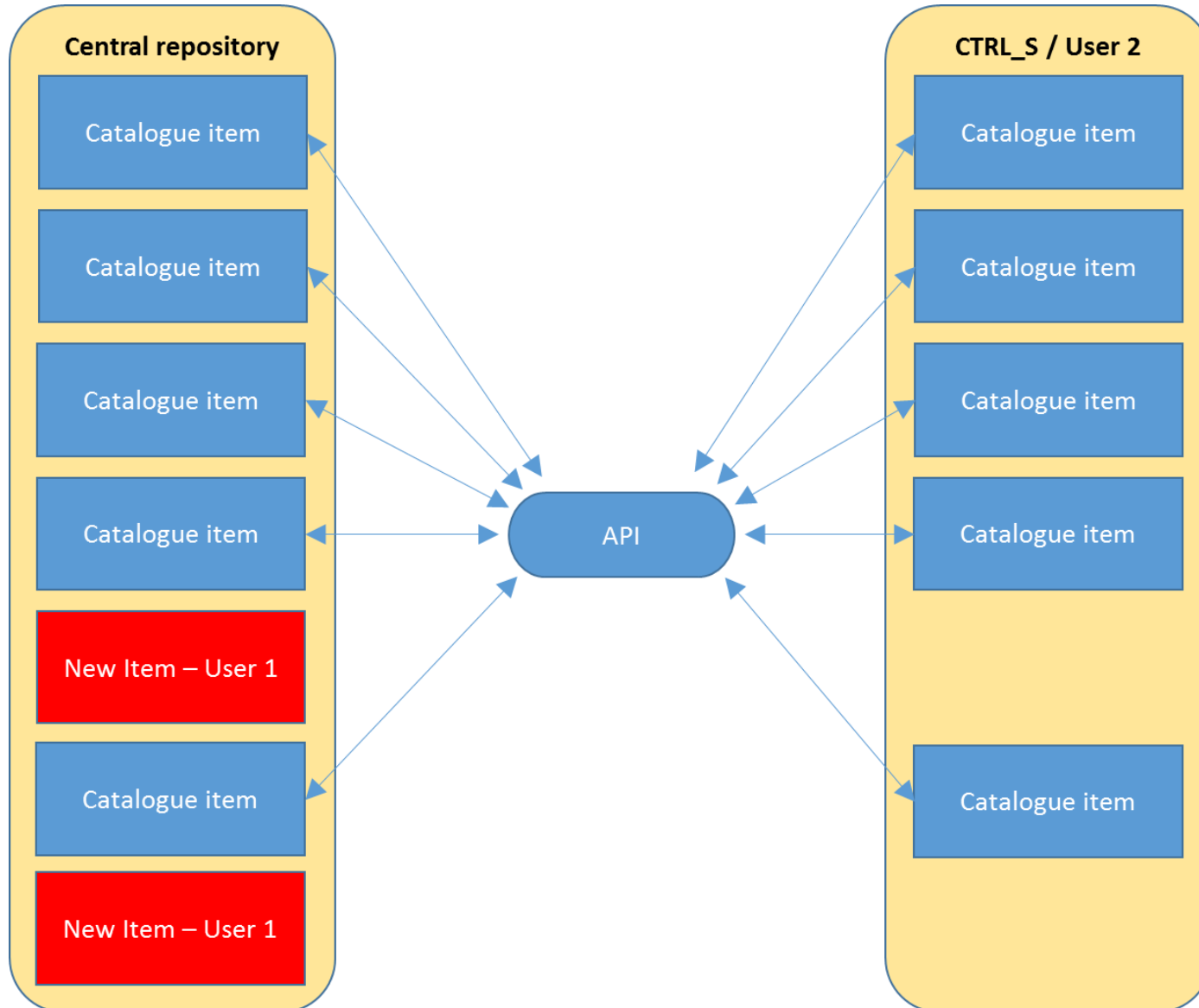
- Catalogue approach
 - Typically used to look up controls (NIST)

- CTRL_S
 - Primary assets
 - Supporting assets
 - Vulnerabilities
 - Threats
 - Controls
 - Threats – Vulnerabilities
 - Controls – Threats

Primary assets

/ Primary assets Supporting assets Threats Vulnerabilities Controls Assessment results									
Total: 132									
Acronym	Name				Owner				
apitest	First primary asset				✓				
CDCPAI_AEID	Aerodrome Identifier Tag				✓				
CDCPAI_Threat	Vulnerability				Control Threat				
CDCPAI_Th_C_Act01	CRVUL_GEN	ne (airport) sc	PE 18	Th_C_Act01					
CDCPAI_Th_C_Act02	CRVUL_GEN	equipment con	PE 18	Th_C_Act02					
CDCPAI_Th_C_Act03	CRVUL_GEN	nformation	PE 18	Th_C_Act03					
CDCPAI_Th_C_Act04	CRVUL_GEN	performance In	PE 18	Th_C_Act04					
CDCPAI_Th_C_Com01	CRVUL_GEN	position infor	PE 18	Th_C_Fun01					
CDCPAI_Th_C_Com02	CRVUL_GEN	r view reprodu	PE 18	Th_C_Fun02					
CDCPAI_Th_C_Fun01	CRVUL_GEN	Demand	PE 18	Th_C_Fun03					
CDCPAI_Th_C_Fun02	CRVUL_GEN	ent Informati	PE 18	Th_C_Inf03					
CDCPAI_Th_C_Fun03	CRVUL_GEN	formation	PE 18	Th_P_Abu01					
CDCPAI_Th_C_Fun04	CRVUL_GEN	an Data and A	PE 18	Th_P_DoS01					
CDCPAI_PRRU	Precision runway appro				PE 18	Th_P_Per03			
CDCPAI_RUAN	Runway and Taxiway li				PE10	Th_C_Fun03			
CDCPAI_RUVI	Runway Visual Range				PE10	Th_C_Fun06			
CDCPAI_SuIn	Surveillance Informati				PE10	Th_C_Ser01			
CDCPAI_SUPO	Surveillance position a								
CDCPAI_TIIN	Time in UTC								
CDCPAI_VIAP	Visual approach slope /path...				✓				
CDCPAI_VIRE	Visual reproduction of aerodrome...				✓				
CDCPAS_AEFI	Aeronautical fixed service				✓				
CDCPAS_AeIn	Aeronautical Information Feature...				✓				
CDCPAS_AeMa	Aerodrome Map Information Service				✓				
CDCPAS_AEMO	Aeronautical mobile service				✓				
CDCPAS_AiAc	Airspace Access Service				✓				
CDCPAS_Aian	Airspace and Surface Structure...				✓				
CDCPAS_Aian2	Airspace and Surface Structure...				✓				

CTRL_S Knowledge Sharing

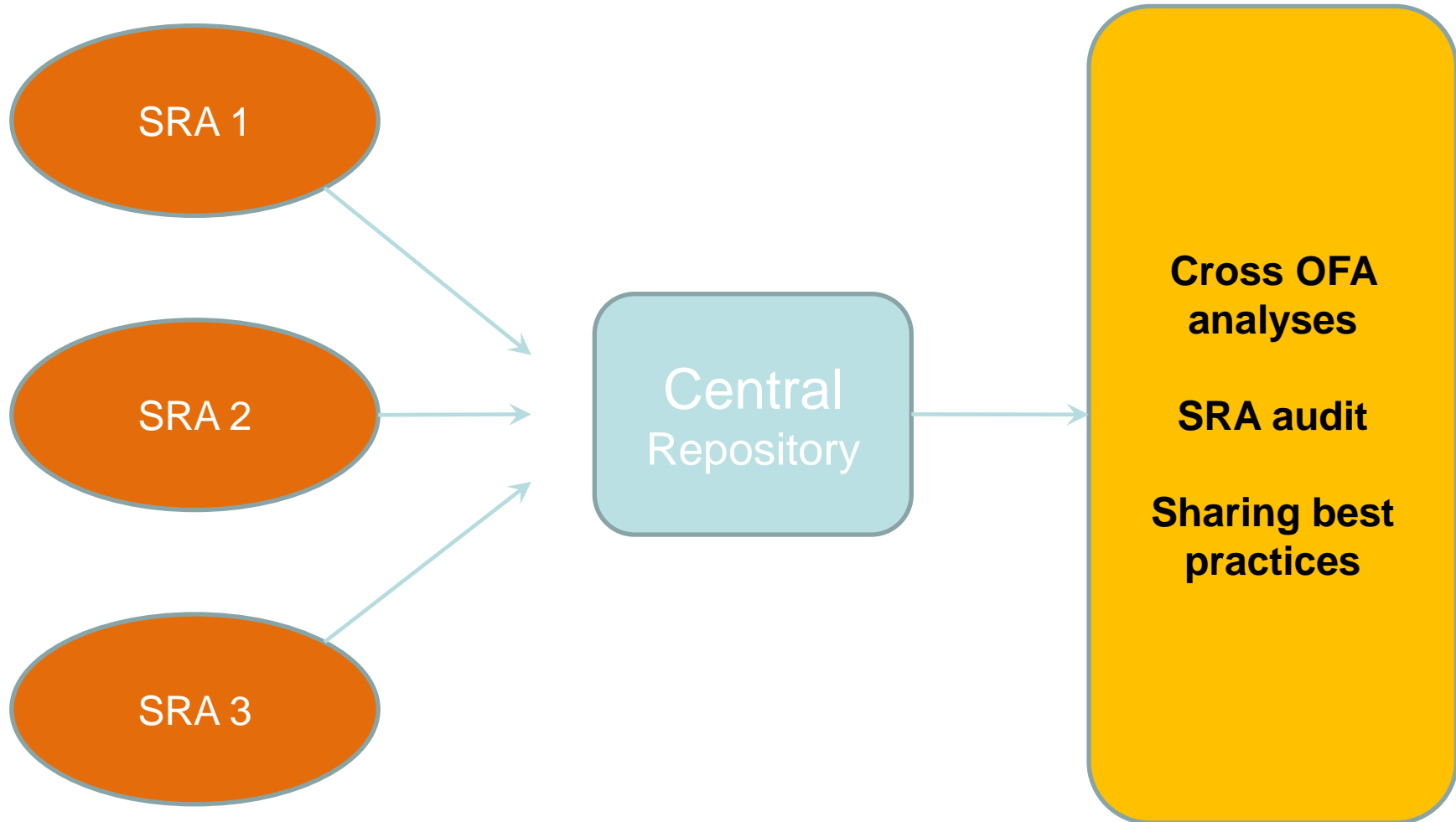




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2	2	2	0	0	0	2	0	0	0	2	32
2	2	2	0	0	0	2	0	0	0	2	32
1	1	2	0	0	0	2	0	0	0	2	21
1	1	2	0	0	0	2	0	0	0	2	21
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1	1	2	3	3	3	2	3	3	3	2	31
1	1	0	0	3	0	0	3	3	0	0	31
1	1	0	0	3	0	0	3	3	0	0	31

CTRL_S Knowledge Sharing

- Cross OFA analyses



CTRL_S Future Development

CTRL_S evolution

- Exploratory work - How to link the security assessment work to:
 - SESAR's European ATM enterprise Architecture (EATMA)
- How to link security at an architectural level?
 - E.g. Primary Assets linked to:
 - Service or Operational layer in EATMA
 - Supporting Assets linked to:
 - System / Technical layers in EATMA
 - Controls added to:
 - System / Technical architecture layer

‘CTRL_S’ – A security tool for SESAR’s design in security approach

Martin Hawley, Karol Gótz, John Hird, Chris Machin

CTRL_S Mini DEMO

CTRL_S_ARES : Database- C:\Users\KG\Desktop\CTRL_S_ARES.accdb (Access 2007 - 2016 file format) - Access

Sign in ? - X

File Create External Data Database Tools Tell me what you want to do

>> Menu X



Security assessment menu

Administration menu

00	Enter: Project / Solution details	06	Evaluate: Risk
01	Input: Primary Asset details (PA)	07	Assign: Controls (CTRL)
02	Input: Supporting Asset details (SA)	08	Report: Assessment Detail
03	Link: Supporting to Primary Assets	09	Export: Finished assessment to the Central Repository
04	Link: Generic Vulnerabilities to SA	10	Review: Cross OFA / End to End scenario - PAs
05	Link: Threats to Supporting Assets		

QUIT

SESAR P16.6.2
Security Database
Application



CTRL_S: Define Primary Assets

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File Create External Data Database Tools Tell me what you want to do

Menu Primary Asset input form

Primary Assets input form

Import PAs from the catalogue

Create new Primary Asset

Create abbreviation for new Primary Asset

Navigation Pane

Primary Asset Name
Meteorology information

Primary Asset Type
Information

Primary Asset Description
Winds and temperatures data along approach

Primary Asset Acronym
OSPAI_Met_29/04/2016 10:54:17

Primary Asset Owner

Comments Challenge

Define impact on C, I, A

Area	C	I	A
Personnel	1	2	3
Capacity	0	0	0
Performance	0	0	0
Economic	0	0	0
Branding	0	0	0
Regulatory	0	0	0
Environment	0	0	0

Refresh

C	I	A
1	2	3

MAXIMUM

Enter rationale for C, I, A impact for this primary asset

Confidentiality

Integrity

Availability

Primary asset list overview

DONE

Record: 1 of 2 No Filter Search

Form View Num Lock

CTRL_S: Define supporting as.

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Sign in ? — □ ×

File Create External Data Database Tools Tell me what you want to do

Menu Supporting assets input form

Supporting assets input form

Import SAs from the catalogue

Create New Supporting Asset

Create abbreviation for new Supporting

Navigation Pane

Delete supporting asset

Supporting Asset Name

Aerodrome ATC Controller Human Machine Interaction Management System (CWP)

Supporting Asset Description

This functional block provides controllers with a graphical user interface and with the means to interact with the Aerodrome ATC system

Supporting Asset Acronym

SYS006

Supporting Asset Owner

Supporting Asset Type

Supporting Asset Location

Sub-system of

Include in the risk assessment?

Include

Rationale for inclusion or exclusion

Supporting asset list overview

DONE

Record: 1 of 1 No Filter Search

Form View Num Lock

[illegible]

CTRL_S: Assess Risk Level

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Sign in ? — □ ×

File Create External Data Database Tools Tell me what you want to do

Menu Evaluate: Risk

Risk Evaluation

View combinations without REVIEWED IMPACT assigned

View combinations without LIKELIHOOD assigned

Navigation Pane

Threat of

Supply chain attack

Enter rationale for reviewed impact on following criterion

Confidentiality

Enter the likelihood of this threat scenario occurring. Integer: 1 (low) to 5 (high)

5

Likelihood is specified

represents threat for Supporting Asset

Aerodrome ATC Controller Human M

Integrity

Enter comment on likelihood

exploiting following vulnerability:

General Vulnerability

Availability

Risk level is High

DONE

Refresh

*Inherited Impact

Enter value for Reviewed Impact

Confidentiality	0	0
Integrity	2	2
Availability	0	0
Maximum	2	2

* 0 represents the fact that the certain threat does not affect given CIA criterion

Record: 1 of 1 Filtered Search

Form View Num Lock Filtered

CTRL_S: Assign Controls

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File Create External Data Database Tools Tell me what you want to do

Menu Assign Controls

Assign Controls To Threat Scenarios

Supporting Asset Name: Aerodrome ATC Controller Human Machine Interaction Management System (CWP)

Vulnerability Name: General Vulnerability

Threat Name: Supply chain attack

Threat Description: Failure to ensure the security quality of the supply chain, for example of contract systems, sub-contract software or commercial

Impact evaluation overview

Reviewed Impact	Current Likelihood
C: 0	5
I: 2	
A: 0	
MAX: 2	

Likelihood evaluation overview

Risk evaluation overview

Current Risk Level: High

Controls available to assign:
to the Supporting Asset and the Threat above.
To select Supporting Asset to link, tick the check box.

Control Name	Control Description	Link to SA
*		<input type="checkbox"/>

Record: 1 of 1

Controls Assigned:
to the Supporting Asset and the Threat above

Refresh Link CTRLs to SATH pair

Control Name	Control description
Guards	Guards
Searches	Searches
*	

Record: 1 of 1

Form View

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Sign in ? — □ ×

File Create External Data Database Tools Tell me what you want to do

» Menu Administration Menu ×

Administration Menu

Synchronization

Synchronize: Refresh from Central Repository

Synchronize: Save to Central Repository

Threat Control Management

Manage: Vulnerability

Manage: Threat

Manage: Control

Edit: Threat exploitation of Vulnerability

Edit: Control use on Threat

CLOSE

Navigation Pane

Record: 1 of 1 No Filter Search

Form View Num Lock