

ENCO SOFTWARE GMBH I Lortzingstr. 9 I D-81241 MÜNCHEN

SOX Security Feature Documentation

TARA User Guide

Author: Rustam Achundov

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX

Seite 1 / 25



Introduction

Threat and Risk Analysis. The TARA module of SOX supports you in listing your security needs and assembling security reviews.

SOX provides the following norms and guidelines for determining the security level according to the level definitions from each respective norms.

- SAE J3061 (SAE)
- ISO/SAE 21434 (ISO)

You can work with different variants and operation statuses.

Seite 2 / 25



Step-by-Step Guide

This guide leads you step-by-step through the creation of a Threat and Risk Analysis.

Creating a new TARA file

Precondition: A SOX project was created and the workbench perspective is active.

1. Go to the Repository view and right-click on the TARA folder in the project.



fig. 1 New TARA file context menu.

- 2. Choose New > New TARA File.
 - ► The "New TARA file" dialog opens.

O New TARA	\ file	—		×
New TARA f	ile			
😣 Please fill	in all mandatory fields			
Target folder	Projects/TestProjekt/TARA	6	Brov	vse
Filename			4	
Norm	ISO_21434			5
Profile	ISO 21434 (Standard)		6	~
Description				~
Objective				
1			7	
				\sim
Foundation				\sim
?	8 Einish		Cancel	I

fig. 2 New TARA file dialog.

Seite 3 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



- 3. Click on **Browse...** and choose TARA as target folder.
- 4. Enter a filename for the TARA file.
- 5. Choose the security norm you want to create your TARA according to.
- 6. Choose the security profile.
 - ▶ The Standard Security Profile is the implemented Profile from EnCo
- 7. The Description, Objective and Foundation fields are optional and can be used for detailed descriptions of the TARA document.
- 8. Click on **Finish**.

 \rightarrow A TARA file will be created and added to the TARA folder.

Creating new Ratings

Before defining Threats and rate them, a new Rating row has to be created.

Precondition: A TARA file was created and is active.

Ratin	gs (J3061_SAE))											E E 🖪	📰 📰 📑 🗙	X
type f	ilter text					Filter using re	gular expressions	Automatical	ly set state "rated/u	inrated"					
Drag	column to group														
					Th	Threat 📢		Haz	Hazard		Impact Level		4		
	BID	Status	Priority	Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety	Financial	Operational	Privacy and Legislation	Description	
	∇	•	- V	7	7	V	7	-	-	-	•	•	•	Y	
1	TRA3	Unrated	*												

fig. 3 TARA editor tool bar add empty rating

Add an empty Rating by clicking the plus icon at the TARA editor tool bar.

Seite 4 / 25



Creating Threats

Threats can be created either directly in the TARA and in the Security Goal View.

Precondition: A TARA file was created and is active.

Creating Threats directly in the TARA

The following steps are explaining how to create a Threat directly in the TARA.

Ratin	gs (J3061_SAE)	1							
type f	ilter text					Filter using reg	gular expressions	Automatical	ly set state "rated/unra
Drag	column to group								
					Th	reat	4	Haza	ard 🖣
	BID	Status	Priority	Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario
	Y	-	5	7 7	V	V	Y	•	-
1	TRA1	Unrated		TestThreat 🗸	1				
					🔘 New threat				
					Threat				4
					Create a new t	hreat			
					Name	TestThreat			3
					Description				~
									4
					Asset				5
					Threat category				6 🗸
					?		Save & proceed	в ок 7	Cancel

fig. 4 Defining Threats in TARA

1. Double Click on the Threat Cell and fill in the name of the Threat

Confirm the name of the Threat with Shortcut Ctrl + Return or with a click on a free space in the TARA

- 2. The "New Threat" dialog appears
- 3. The name of the Threat is automatically filled in
- 4. Add a Description (optionally)
- 5. Choose an Asset (if possible)
 - ▶ If Assets were identified before (e.g. in the System Modeler) than choose an Asset
 - ▶ If there are no Assets identified before, don't choose an Asset and confirm the Threat
- 6. Select a Threat Category (regarding to STRIDE)
- 7. Confirm the Threat by clicking on "OK"

A Threat was created with a Threat ID. The Threat is shown in the Security Goal View under the Security Goal

"orphaned threats" because there is no Security Goal that is connected with the Threat.

Seite 5 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



👕 Projekt Sicherheitsziele 💛 Security goals 🛛 🔲	Ablage	' 🗆
Security Goals/Security related objects	Direct assign	Se
 [SCG1] orphaned threats [V1] [->1 0->] [TH1] TestThreat [V1] 		

fig. 5 Threat assignment to Security Goal "orphaned threats"

Creating Threats in Security Goal View

The following steps are explaining how to create a Threat in the Security Goal View.



fig. 6 Defining Threat in Security Goal View

- 1. Right Click on the Security Goal
- 2. Select "New"
- 3. Select "Threat"
 - ▶ The "New Threat" dialog from fig. 4 appears. Fill in the fields to create the Threat.
 - ▶ The Threat can be chosen now in the TARA in the Threat column

Seite 6 / 25



Creating Assets

Assets can be defined either in the System Modeler and directly in the TARA.

Creating Assets in the System Modeler

The following steps are explaining how to create an Asset in the System Modeler.

	1	7.507
		Comment
		{?} Constraint
«Asset» 2		/ Context Link
		A Dependency
	1	📲 SOX SystemEl 👳
	E	SystemElement
0	×	🖷 SOX Functions 🛛 👳
Applicable Stereotypes: Applied Stereotypes:		 Function
Stereotype Information ^ AASSet 6		 Malfunction
Block SysML::Blocks::Block		🍖 Diagnosis
Component safety::Component		SafetyFunction
ConstraintBlock SysML::ConstraintBlocks:		G SecurityFunction
🖾 Diagnosis safety::Diagnosis	Û	📲 SOX Require 👳
FailureMode Safety:FailureMode Safety:FailureMode	л	Package
Punction safety::Function		Requirement
GovernmentFunction safety::GovernmentFunctio		SafetyGoal
InterfaceBlock SysML::PortsAndFlows::Int 🗸		atisfy
×		& DeriveReat
		📲 SysML Edges 🛛 🗠
		PartAssociation
OK Cancel		Containment Link
		Allocate
	1 V	. Copy
<	>	
🔲 Properties 🛛 🗿 History 🛅 Ablage 🏲 Baselines 🗢 Suspect Mar 🛛 🗹 Verknüpfung 🗹 Verknüpfung 🗟 Aufgabenzuc) Ž Pr	ojektaufga 📄 🗖 🗖
		1
SysML 1.4 Applied stereotypes:		
UMI Set (from safety)		
Comments		
Profile		
Style		
Appearance		
Rulers And Grid		

fig. 7 Defining Assets

- 1. Create an Element in the UML/SysML Modelling Base
- 2. Name the created Element
- 3. Select Profile
 - Asset is a Stereotype. It has to be selected in the Stereotype Selection
- 4. Click on the plus icon to select the Asset stereotype
- 5. Select the Asset stereotype in the left box and move it with the arrow that shows to the right box
- 6. The Asset stereotype was moved to the right box
- 7. Confirm the choice with "OK".

▶ The stereotype of the element was switched to Asset and can be used in the TARA for defining Threats

Seite 7 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Creating Assets directly in the TARA

The following steps are explaining how to create an Asset directly in the TARA.

Precondition: A TARA file was created and is active.

Ratir	gs (J3061_SAE)											
type	ilter text						Filter using reg	ular expressions	Automatical	ly set state "rated/u	inrated"	
Drag	column to group											
					Т	hreat		•	Hazi	ard 📢		
	BID	Status	Priority	Threat	Asset	Thr	eat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety	F
	∇			Y	1		∇	Y	-	-		-
1	TRA1	Unrated		[TH1] TestThreat [V1]	TestAsset2	·	🔘 New asse	t				×
					TestAsset [->1 (0->]	Asset Create a ne	w asset				2
							Name	TestAsset2				2
							Further stere	otyp				4
							?			5 ок	Ca	ncel

fig. 8 TARA editor tool bar add empty rating

- 1. Double Click on the Asset Cell and fill in the name of the Asset
 - ► Confirm the name of the Asset with Shortcut Ctrl + Return or with a click on a free space in the

TARA

- 2. The "New Asset" dialog appears
- 3. The name of the Asset is automatically filled in
- 4. Add a further stereotype (optionally)
- 5. Confirm the Threat by clicking on "OK"

An Asset was created. The Asset is shown in the PSS View, in the Model Explorer and the Repository View.

Seite 8 / 25

▶ The Asset is automatically connected with the Threat.



Defining Potential vehicle threats

Note

SOX provides catalogs which contain standard values for the situation parameters. But you also can define individually catalogs and values. Read the chapter Customized Choice Lists for more information.

Precondition: Threats were created.

Potential vehicle threats can be defined either with or without Choice Lists.

Defining Potential vehicle threats without a Choice List

By defining potential vehicle threats without a Choice List, the threats can just be used in the SOX Project, where the potential vehicle threats were created.

	Th	reat	•	Haz	ard 📢		
Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario		
\forall	V	V	Y	-	-	O Add list entry	x
(TH1) TestThreat [V3]	• TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	1		Add a new list entry to a catalog	
				no effect Add list entry Ct Select choice list	trl+Shift+M 2	Catalog Value	3
						3	4 OK Cancel

fig. 9 Defining potential vehicle threats not with a Choice List

- 1. Double Click in the potential vehicle threat cell
- 2. Select "Add list entry" or use the Shortcut

► When you don't have a safety related Threat (e.g. when the Attacker just want private dates),

just select "no effect"

- 3. Fill in the potential vehicle threat in the value box
- 4. Confirm the potential vehicle threat with "OK"

Defining Potential vehicle threats with a Choice List

Note

Choice Lists are a specific kind of catalogs.

By defining potential vehicle threats with a Choice List, the potential vehicle threats has to be defined one time

and can be used across multiple SOX Projects.

Seite 9 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Different potential vehicle threat kinds can be defined with the Choice List and only specific potential vehicle threats can be shown.

- 1. Double Click in the "potential vehicle threat" cell
- 2. Select "Select choice lists..."
- 3. The "Choice list selection" dialog appears

▶ When they are already created Choice Lists, select them and confirm with "OK"

- 4. Select "Add new catalog"
- 5. Select the Target folder of the Choice List (with Browse...)
- 6. Enter the name of the Choice List
- 7. Enter a Description (optionally)
- 8. Confirm the choice with "Finish"
- ► Select the new created Choice List and confirm with "OK"
 - 9. Select the plus icon to add new potential vehicle threats to the created Choice List
 - 10. Add the name of the potential vehicle threat
 - 11. If more potential vehicle threats should be created, select "OK and next"
 - 12. When no more potential vehicle threats should be created, confirm with "OK"
- ► Go back to the TARA to select the new created potential vehicle threats
- ► To create new potential vehicle threats in the TARA for the Choice List, select "Add list entry"

Seite 10 / 25



	Th	reat	4	Hazi	ard 🖣	
Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	
V	∇	V	∇	-	-	
[TH1] TestThreat [V3]	TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	1		
				no effect H Add list entry Ct Select choice list	rl+Shift+M s 2	
Choice list selection		– 🗆 X	0			
ease select from the c PotentialVehicle Project catalog:	hoice lists of type < <sox2.h Threat Effects</sox2.h 	a.effects>>	New choicelist ② Please fill in all mane	datory fields		
			Target folder			5 Brow
			Catalog ID			
			Name			
			Description			
4 Add ne	select <u>A</u> ll	Deselect All	(?)		8 <u>Einish</u>	Cancel
2)	OK	Cancel				
picelist entries						
PotentialVehicleT	hreatCatalog					
64d0f55f-91a7-45	ica-aa03-2224bebad1ad					
pe <sox2.ha.effects></sox2.ha.effects>	: (English) 🔺 I	inglish (Default)	Description	7		
	Y	Ŷ	7	9		
O New entry			×			
			10			
New entry			10			
New entry	all mandaton (field-					
Please fill in	all mandatory fields	ind next	Cancel			

fig. 10 Defining potential vehicle threats with Choice Lists

Defining Hazards

Note

SOX provides catalogs which contain standard values for the situation parameters. But you also can define individually catalogs and values. Read the chapter Customized Choice Lists for more information.

Seite 11 / 25

Precondition: Threats were created.

Hazards can be defined either with or without catalogs.

Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Defining Hazards without a catalog

By defining potential vehicle threats without a Choice List, the threats can just be used in the SOX Project, where the potential vehicle threats were created.

	Th	reat	•	Hazar	d 🕨					
Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety				
\forall	V	Y	Y	-	-			Add list entry		×
(TH1) TestThreat [V3]	••• TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat	-	1		Add a new list entry to a catalog		
					Add list entry	Ctrl+Shift+M lists	2	Catalog Ulaue		3
								?	4 ОК Салсе	el

fig. 11 Defining Hazards not with a catalog

- 1. Double Click in the Hazard cell
- 2. Select "Add list entry" or use the Shortcut

When you don't have a safety related Threat (e.g. when the Attacker just want private dates),

don't entry a value to the cell and let it unfilled.

- 3. Fill in the Hazard in the value box
- 4. Confirm the Hazard with "OK"

Defining Hazards with a catalog

By defining Hazards with a catalog, the Hazards has to be defined one time and can be used across multiple SOX

Projects and in the HARA. Hazards, that were defined in the HARA, can be used in the TARA as well by activating

the catalog and selecting the needed Hazards.

Different Hazard kinds can be defined with the catalog and only specific Hazards can be shown.

- 1. Double Click in the "potential vehicle threat" cell
- 2. Select "Select choice lists..."
- 3. The "Choice list selection" dialog appears

▶ When they are already created catalogs, select them and confirm with "OK"

Seite 12 / 25

- 4. Select "Add new catalog"
- 5. Select the Target folder of the catalog (with Browse...)
- 6. Enter the name of the catalog
- 7. Enter a Description (optionally)
- 8. Confirm the choice with "Finish"



- Select the new created catalog and confirm with "OK"
 - 9. Select the Hazard icon to add new Hazards to the created catalog
 - 10. Add the name of the Hazard
 - 11. Add a Description
 - 12. If more Hazards should be created, select "OK and next"
 - 13. When no more Hazards should be created, confirm with "OK"
- ► Go back to the TARA to select the new created Hazards
- ► To create new Hazards in the TARA for the catalog, select "Add list entry"

	Th	reat	•	✓ Hazard					
Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety			
V		V	7		•				
TestThreat	••• TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat	·	1			
[10]									
					🕂 Add list entry C	trl+Shift+l			
					≡ Select choice lis	ts			
Choice list selection		– 🗆 X	Ø		- 0	×			
lease select from the c	hoice lists of type <hazard< td=""><td>> 3</td><td>New Hazard Catalog</td><td>l Idatory fields</td><td></td><td></td></hazard<>	> 3	New Hazard Catalog	l Idatory fields					
						_			
			Target folder		5 Brows	:e			
			Catalog ID						
			Description						
						7			
						_			
4 Add n	ew catalog Select <u>A</u> ll	Deselect All	Ţ	0	Einish Cancel				
O No entries available	e.								
(?)	OK	Cancel							
0									
atalog									
type filter text									
(☆ <> E									
					~				
	Mada				^				
	Add new	Hazard to [BC1] Ha	zardCatalog [V1]						
	🛄 (BC1)	HazardCatalog [V1]							
	🛄 [BC1] Add	HazardCatalog [V1] O Folder	Hazard						
	(BC1) Add Name	HazardCatalog [V1] O Folder	Hazard		10				
	IBC1) Add Name Sequence	HazardCatalog [V1] O Folder	Hazard		10				
	I (BC1) Add Name Sequence Description	HazardCatalog [V1] O Folder I number	Hazard		10				
	(BC1) Add Name Sequence Description	HazardCatalog [V1] O Folder I n	Hazard		10				
	(BC1) I Add Name Sequence Description	HazardCatalog [V1] Folder I number n	Hazard		10				
	Hazard Va	HazardCatalog [V1] Folder I number n riants	Hazard		10				
	Add Name Sequence Description Hazard Va Child obje	HazardCatalog [V1] O Folder I number iniants ts	Hazard		10				
	Add Add Name Sequence Description Hazard Va Child obje	HazardCatalog [V1] O Folder I I I I I I I I I I I I I	Hazard		10				
	Add Add Name Sequence Description Hazard Va Child obje	HazardCatalog [V1] O Folder I I I I I I I I I I I I I	Hazard		10				
	Add Name Sequence Description Hazard Va Child obje	HazardCatalog [V1] O Folder I I I I I I I I I I I I I	Hazard		10				
	Add Name Sequence Description Hazard Va Child obje	HazardCatalog [V1] O Folder I n n iants text text	Hazard	13	10				
	[BC1] I Add Name Sequence Description Hazard Va Child obje type filter (?)	HazardCatalog [V1] O Folder Innumber iniants test test	Hazard override	13 OK Co	10 11				

fig. 12 Defining Hazards with Catalogs

Seite 13 / 25

Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Note

Note that the Hazards are shown in the PSS View. To reuse Hazards in other SOX Projects, you have to create in the Public folder (Choice-List) a Hazard Catalog. Then just add the catalog in the TARA.

🖫 Model Explorer 🛄 Catalogs 🛛 🗦 Object List	🖻 🔩 🗸 🗖 🗋
Model Explorer Catalogs & E Object List Control Catalogs Control Catalogs Project catalogs: Project Project catalog: Characteristics Project catalog: Driving dynamics Project catalog: Driving dynamics Project catalog: Place Public Project catalog: Place Public Project catalog: Place Public Project catalog: Place Public Public	Driving dynamics

fig. 13 Context menu Move to.

Evaluation of the Security-/Performance Level

SOX will have two different TARAs according to two different norms and guidelines:

- SAE J3061 (SAE)
 - Evaluations for Impact Level
 - Safety
 - Financial
 - Operational
 - Privacy and Legislation
 - o Evaluations for Threat Level
 - Expertise
 - Knowledge about TOE
 - Window of Opportunity
 - Equipment
- ISO/SAE 21434 (ISO)
 - Evaluations for Impact Level
 - Safety
 - Financial
 - Operational
 - Privacy and Legislation
 - Evaluations for Attack Feasibility Level
 - Elapsed Time
 - Expertise
 - Knowledge about TOE

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX

Seite 14 / 25



- Window of Opportunity
- Equipment

Make a double-click to into the cell to edit the value to the key parameters (for Impact, Threat and Attack Feasibility Level) for the TARA according to SAE J3061 and ISO/SAE 21434.

Impact Level and Threat Level Rating according to SAE J3061



fig. 14 Impact Level Rating parameter values and Description text entry (for SAE J3061 and ISO/SAE 21434)

	Threa	t Level	•					
Expertise	Knowledge about TOE	Window of Opportunity	Equipment	Description	TL sum	Thre	at Leve	el (TL)
-	-	-	-	V	\forall			7
-	•	-	×					
				📝 Enter text		_		×
Layman	Public	Critical	Standard					0
Proficient	Restricted	High	Specialized	11 ⁻				
Expert	Sensitive	Medium	Bespoke					
Multiple experts	Critical	Low	Multiple bespokes					
								\$ \$
				<				>
					ОК		Canc	el

fig. 15 Attack Level Rating parameter values and Description text entry (for SAE J3061)

Seite 15 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



			Impac	t Level	•			
	Damage Scenario	Safety	Financial	Operational	Privacy and Legislation	Description	IL sum	Impact Level (IL)
	7	7	-	-	-	· 7	Y	Y
📝 Enter text	- 🗆 X				ſ	📝 Enter text	- 0	×
	^	Negligible	Negligible	Negligible	Negligible			^
		Moderate	Moderate	Moderate	Moderate			
		Major	Major	Major	Major			
		Severe	Severe	Severe	Severe			
<	>					<		>
	OK Cancel						OK Cancel	

Impact Level and Attack Feasibility Rating according to ISO 21434

fig. 16 Damage Scenario, Impact Level Rating parameter values and Description text entry (for ISO 21434)

			At	tack Feasibility Rati	ng	•		Attack Feasibility	Attack Feasibility
	Threat Scenario Elapsed Time		Specialist Knowledge of the Expertise Component		Window of Opportunity	Equipment	Description	Sum	Level
	\forall	•	•	-	-	-	Y	\forall	\forall
The forestant		1					V Entertext		~
< <u>Entertect</u>	OK Cancel	< 1 week < 1 month < 6 months <= 3 years > 3 years	Layman Proficient Expert Multiple experts	Public Restricted Confidential Strictly Confidential	Unlimited Easy Moderate Difficult/None	Standard Specialized Bespoke Multiple bespokes	c.	OK Cancel	

fig. 17 Threat Scenario, Attack Feasibility Rating parameter values and Description text entry (for ISO 21434)

Note

The Impact, Threat and Attack Feasibility Level will calculate automatically after the Level Ratings. The columns "x sum" will show the sum of the parameter values and the "x Level" will show the Level according to the calculation matrix.

Seite 16 / 25



Creating Security Goals

Security Goals can be created either directly in the TARA and in the Security Goal View.

Precondition: Threat was created and the Security Level was calculated (values of parameter of Impact and Threat/Attack Feasibility Rating were selected).

Creating Security Goals directly in the TARA

The following steps are explaining how to create a Security Goal directly in the TARA.

🔘 New secur	ity goal					×					
New security	goal						Security				
						2	Security level	Security goal	Secure state		
Name	βecurityGoal					3	- ISOLOW	- SecurityGoal	Y		
Secure State					4			Ţ			
Norm	ISO_21434					\vee		100011			
Security level	QM					~		[SCG1] orpnaned	threats [VI][->I]U		
						_					
Name		Secure State		Safet	Norm						
<						>					
			5			_					
Ŷ		Save & proceed	OK		Cancel				>		

fig. 18 Creating Security Goals directly in the TARA

1. Double Click on the Security Goal cell and fill in the name of the Security Goal

► Confirm the name of the Security Goal with Shortcut Ctrl + Return or with a click on a free space in

the TARA

- 2. The "New security goal" dialog appears
- 3. The name of the Security Goal is automatically filled in
- 4. Add a Secure State
 - ► The Norm is automatically filled in and is according to the Norm of the TARA

▶ The Security Level is set per Default on QM because it will inherit the Security Level from the Rating

automatically

Seite 17 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



5. Confirm the Security Goal by clicking on "OK"

► A Security Goal was created with a Security Goal ID. The Security Goal is shown in the Security Goal View and the Threat that is connected in the Rating with the Security Goal. The Security Level is been inherited from the Rating of the Threat in the TARA.

► The Threat moves automatically to the Security Goal after connecting the Security Goal to the Rating



fig. 19 Security Goal in Security Goal View after creating Security Goal in TARA

Creating Security Goals in Security Goal View

The following steps are explaining how to create a Threat in the Security Goal View.

👅 Projek	t Sich	erheitsziele (🤍	Security goals 🕺		🗂 Ablage			
Security	Goals	/Security related G1] orphaned the	objects reats [V2] [->1 0-	>]	Direct assign	Security leve QM	I Secure S	tate
> 🛛 💛	۵	Threat	>	1				
	V	Security goal	2	Ø	Edit Safety Goal As	signments		
	🛃 Task 🛛 Alt+T				Edit	Enter		
	ç	Hyperlink	Alt+H	1	Add safety level Edit Safety Goal As			
	Comment Ctrl+Shift+C			6	Decompose	>		
				D	Сору	Ctrl+C		
				Show in	>			
	X			x	Export			
				X	Export selection			
					Properties		Ctrl+Enter	

fig. 20 Defining Threat in Security Goal View

- 1. Right Click in the Security Goal View
- 2. Select "New"
- 3. Select "Security Goal"
- ▶ The "New security Goal" dialog from fig. 18 appears. Fill in the fields to create the Security Goal.
- ▶ If several Security Goal should be created, select instead of "OK" "Save & proceed".
- ▶ The Security Goal can be chosen in the TARA in the Security Goal column.

Seite 18 / 25

EnCo Software GmbH Lortzingstraße 9 81241 München Germany Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



The User Interface

Below you see all the standard view in the TARA perspective. Remember that you can always (re-) open views by going to the menu bar and clicking **Window** > **Show View**. You can also arrange the views with drag & drop.

či Test	Projekt4[Main] 🗄													- 1	🗅 🍯 Overview 📕 PSS 🕄 👘 E
Rati	ngs (J3061_S	AE)													▲*≈***********
-	-														type filter text
type	filter text						eguiar expressions	L] Automatically s	et state rated/on	ated					
Drag	column to group													^	Safety goals
					П	nreat		Hazar	d	•	Im	pact Level		•	Security goals
	BID	Status	Priority	Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety	Financial	Operational	Privacy and Legislation	Description	 ✓ [SCG2] Security Goal [V3] [→1 [0→] ▲ [TH1] TestThreat [V4]
		Ÿ .	•							•	-	-		• 7	✓ Sar Project hazards
	TRA1	Unrated		[TH1] TestThreat [V4]	TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat	[HA1] TestHazard [V1]	Medium	Low	High	No impact	Safety: Because a risk of hurting people Financial: Light damage to	(HA1] TestHazard [V1] [TestTARA [Fffects
2	TRA2	Unrated	*	(TH2) Repudiation of Element [V1]	● TestAsset [->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat2		Medium	Medium	High	High	Safety: Because a risk of huting people Financial: Medium damage to the car Operational: Nothing will work around Privacy and Legislation: Data Storage will be hacked as well	no effect Potenial/ebicleThreat Potenial/ebicleThreat2 Potenial/ebicleThreat2 Potenial/ebicleThreat2 Notenial/ebi
	TRA3	Unrated	*	di [TH3] Information disclosure of private Data [V1]	••• [->1 0->]	Information disclosure	Confidentiality, Privacy	no effect		No impact	No impact	No impact	High	Safety: Just impact on private data frinancial: Just impact on private data Operational: Just impact on private data Privacy and Legislation: Private data of customer will be obtione	a
4	TRA4	Unrated	*												(TH1) TestThreat [V4]
5	TRAS	Unrated	*	*											TestProjekt4
Tes Mo	tTARA 💠	Kataloge 🗄 Obje	ktliste	-	Propert	ies 🚽 History	Task Assignmen	ts 📓 Project Tasks 🖬	fraces 💕 Trace G	raph 🗢 Suspec	t Marker				c >
			E 18: 1	1 IL E	" [SCG2]	Security Goal	[V3] [->1 0-	>]							3
× 🗈	SysML 1.4 model	1				Business ID C	(62							V	Sec als/Security related objects
	[SCG1] *Secu	inityGoal+ orphaned -	threats [->1 0->]		General	Name S	ecurity Goal								Scotl orphaned threats (v4) (->1 (0->)
	a «Asset» TestA	lsset [->1 0->]			Hyperlink	Description	hir Security Goal in a	made for choosing the Euro	ctionality of SOX						🛛 🌰 (TH1) TestThreat (V4)
Y	TARA	extara			Images		in second courter	nade for showing the run	countering of 50%.						
	a Asse	t= TestAsset2 [->1 0	->]		SysML 1.4	V Is	ou can add here a d this Security Goal e	etailed Description for you nough?	ar Security Goal.						
	[SCG2] «Secu	inityGoal- Security G	oal [->1 0->]		UML	D	o you need more Re	equirements for the Secur	ity Goal?						
> Es	«ModelLibrary»	Ecore Primitive Type	inive types		Comment	S ()									
					Profile										
				211	1Aa										
					1000										<

fig. 21 The User interface of the TARA module

- [1] TARA Editor
- [2] Overview/PSS
- [3] Security Goals View
- [4] Properties / History / Task Adjustments / Project tasks / Traces / Trace Graph / Suspect Marker
- [5] Model Explorer / Catalogs / Object lists

Seite 19 / 25

C ENCO

TARA Editor [1]

TARA explanation

*for TARA just according to SAE J3061 ** for TARA just according to the ISO/SAE 21434 *** for TARA according to the SAE J3061 and ISO 21434

*** There is a prioritization of each line in the "Priority" column (It is just for the User):

- 1 star (low)
- 2 stars (medium)
- 3 stars (high priority).

*** In the TARA editor the whole TARA is shown.

*** Threats have to be defined. Threats are a combination of Assets and the Threat Category.

Currently STRIDE Threat Categories are available.

** The Damage Scenario has to be determined. The Damage Scenario is an association between potential vehicle threats and the Hazards. The assessment of the Damage Scenario is carried out through the Impact Level.

** The Threat Scenario has to be determined. The assessment of the Threat Scenario is carried out through the Attack Feasibility Rating.

*** The Security Goal has to be defined. The Security Goal is determined as the inverse of a Threat. The Security Goal can be created directly in the correct cell. Add Security Goals and then their Secure State will be shown as well. The Threat will be automatically moved to the Security Goal in the Security Goal View.

Seite 20 / 25

Tel.: +49 [0] 89 716 775 890 Fax: +49 [0] 89 716 775 899 info@enco-software.com www.enco-software.com Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Context Menu of TARA

The Context Menu of the TARA shows a couple of functions.

	New	New Edit Change State					
	Edit						
-6	Chan						
	Show	in		>			
	Set "N	lo effect"					
	fig. 2	2 Context men	u in the TARA edi	itor			
	fig. 2	2 Context men	u in the TARA edi	itor			
	fig. 2	2 Context men	u in the TARA edi Alt+T	itor			
	fig. 2	2 Context men Task Hyperlink	u in the TARA edi Alt+T Alt+H	itor			

Precondition: TARA was created, Threats and Assets were defined

fig. 23 Context menu "New"

When clicking at "New" in the Context menu of the TARA, new Tasks, Hyperlinks and Comments can be added.

Edit

With Edit the cell can be edited.

Change State

With Change State the state of the Rating can be switched. It shows the User in which state the Rating is in the current time. The Default state machine rules is shown in fig. 24. The order and the selection of the states can be individualized as well.

Seite 21 / 25

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX





fig. 24 Default state machine rules

Show in

With show in, the Diagrams, where e.g. the Assets are shown, can be selected and the Assets will be shown directly in the Diagrams e.g. a FMEA.

No effect

With no effect the potential vehicle threat status will be switched to "no effect" and the rating of the Impact and Threat/Attack Feasibility Level will be deleted.

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX

Seite 22 / 25



Drag column to group

Same values of the columns can be displayed in groups. For this drag a column [2] and drop it to the corner upper left [1].

😤 Testi	Projekt4[Main] 8	3												° 0
Ratin	gs (J3061_S	AE)												🗉 😑 🗱 🕎 🐺 🔶 🗰 🗵
type	ilter text					Filter using r	egular expressions	Automatically se	et state "rated/unra	ted"				
Drag column to group														^
		-			T	hreat		Hazard	i 4		Impa	ct Level	•	
	BID	Status	Priority	Threat	Asset	Threat Category	Security Attribute	Potential vehicle threat	Potential worst case scenario	Safety	Financial	Operational	Privacy and Legislation	Description
		⊽ 2	7	7 7		·		•						
	TRA1	Unrated		[TH1] TestThreat [V4]	TestAsset2 [->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat	[HA1] TestHazard [V1]	Medium	Low	High	No impact	Safety: Because a risk hurting people Financial: Light dam
2	TRA2	Unrated		(TH2) Repudiation of Element (V1)	->1 0->]	Repudiation	Non-repudiation, Freshness	PotentialVehicleThreat2		Medium	Medium	High	High	Safety: Because a risk of hurting people Financial: Medium damage to the car Operational: Nothing will work around Privacy and Legislation: Data Storage will be hacked as well
3	TRA3	Unrated	.*.	[TH3] Information disclosure of private Data [V1]	•• TestAsset2 [+>1 0+>]	Information disclosure	Confidentiality, Privacy	no effect		No impact	No impact	No impact	High	Safety: Just impact on private data Financial: Just impact on private data Operational: Just impact on private data Privacy and Legislation: Privacy and Legislation: Private data of customer will be stolen
4	TRA4	Unrated	*	4										De storen
5	TRA5	Unrated	*	8	00									~
۲														>
•[] Test	TARA 🕄													

fig. 25 TARA editor with grouped column

Greyed rows with the corresponding group names, displayed at the first column, will appear. They contain the corresponding ratings in a tree structure [3]. According to this groups can be expanded and collapsed. Further columns can be added to the groups' selection [1]. To ungroup, right-click on a group selection [1] and select ungroup by.

Overview and PSS View [2]

The Overview View is a part of the PSS View. The PSS View shows the whole Project Elements whereas the Overview View show only the elements implemented in the TARA. The Overview View of the TARA shows the same Categories like the Repository View of the TARA:

Seite 23 / 25

- Effects
- Hazards
- Rated Assets
- Rated Threats
- Referenced Security Goals

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX



Security Goal View [3]

The Security Goal View shows:

- Threats without an allocated Security Goal
 - ▶ These Threats are shown in Security Goal "orphaned Threats"
- Security Goal with no Threats
- Security Goal allocated with Threats from Rating
- Security Goal with created Threats (not to mix up with Threats from Rating)
- If Security Goal is assigned in a Threat

Note

A Security Goal can be allocated with multiple Threats but only one Threat can be allocated with one Security Goal

Model Explorer / Catalogs / Object lists [5]

Model Explorer

The Model Explorer shows every element and connection, that was defined. If elements encapsulated within each other, like a block has multiple parts in it, like in a standard Internal Block Diagram, than the overall Element is shown and you can click on the arrows on the left site of the element, to see the encapsulated elements. When elements are created in methods, like the TARA, there are folders with the methods names that inherits the created elements.

The Model Explorer shows:

- Folder of Methods
- Diagrams
- Security Goals
- Elements (e.g. Assets and Systemelements)(Stereotypes)
- Functions
- Malfunctions
- Connection between Elements

Seite 24 / 25

© ENCO



fig. 26 Model Explorer

Catalogs

There are three types of catalogs:

- Project catalogs
 - Specific catalogs for the SOX Project
- Public catalogs
 - Editable catalogs and catalogs, which were created in the SOX Project
 - ► These catalogs can be used in every SOX Project in a Repository
- System catalogs
 - ► These catalogs are not editable in SOX

▶ They are just editable by downloading them and manipulating them with an Editor and importing them again

Seite 25 / 25

Kontoverbindung: Bremer Sparkasse IBAN DE44290501010082531211 BIC: SBREDE22XXX