



TAEF – Test Automation Exchange Framework

Final presentation



TAEF Team

13th of March 2023



- Short Introduction (TO)
- Project Presentation (etamax space)
 - 1) Background & Objectives
 - 2) Technical Overview: EUDART
 - 3) Technical Overview: Testing Libraries
 - 4) Demo
- Conclusion & Future Work

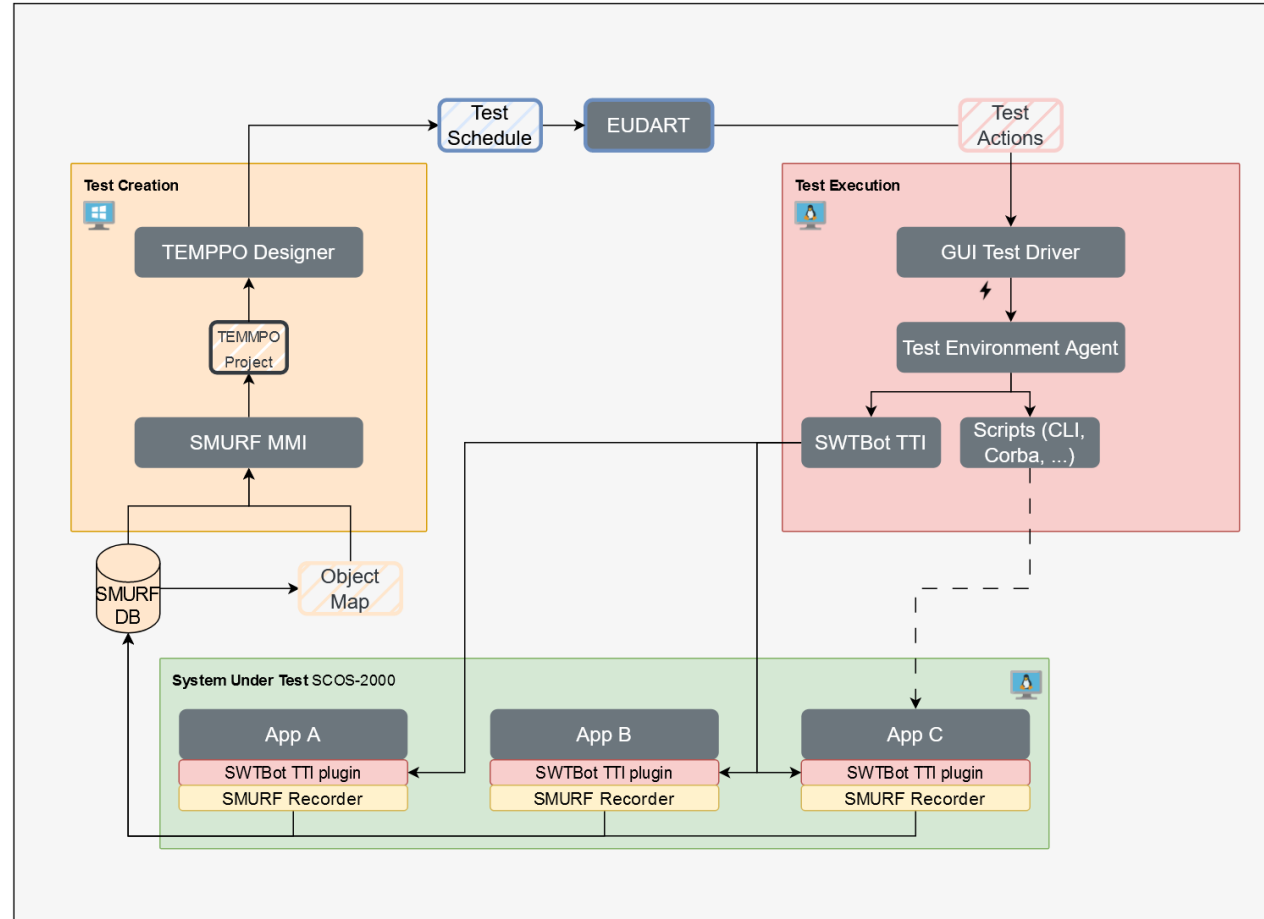
The current test automation framework (ART) is heavily focused on the validation of SWT-based applications like SCOS-2000. New technologies are being employed for the new generation of ground segment software. These technologies are more and more web-based.

Main goals of the activity

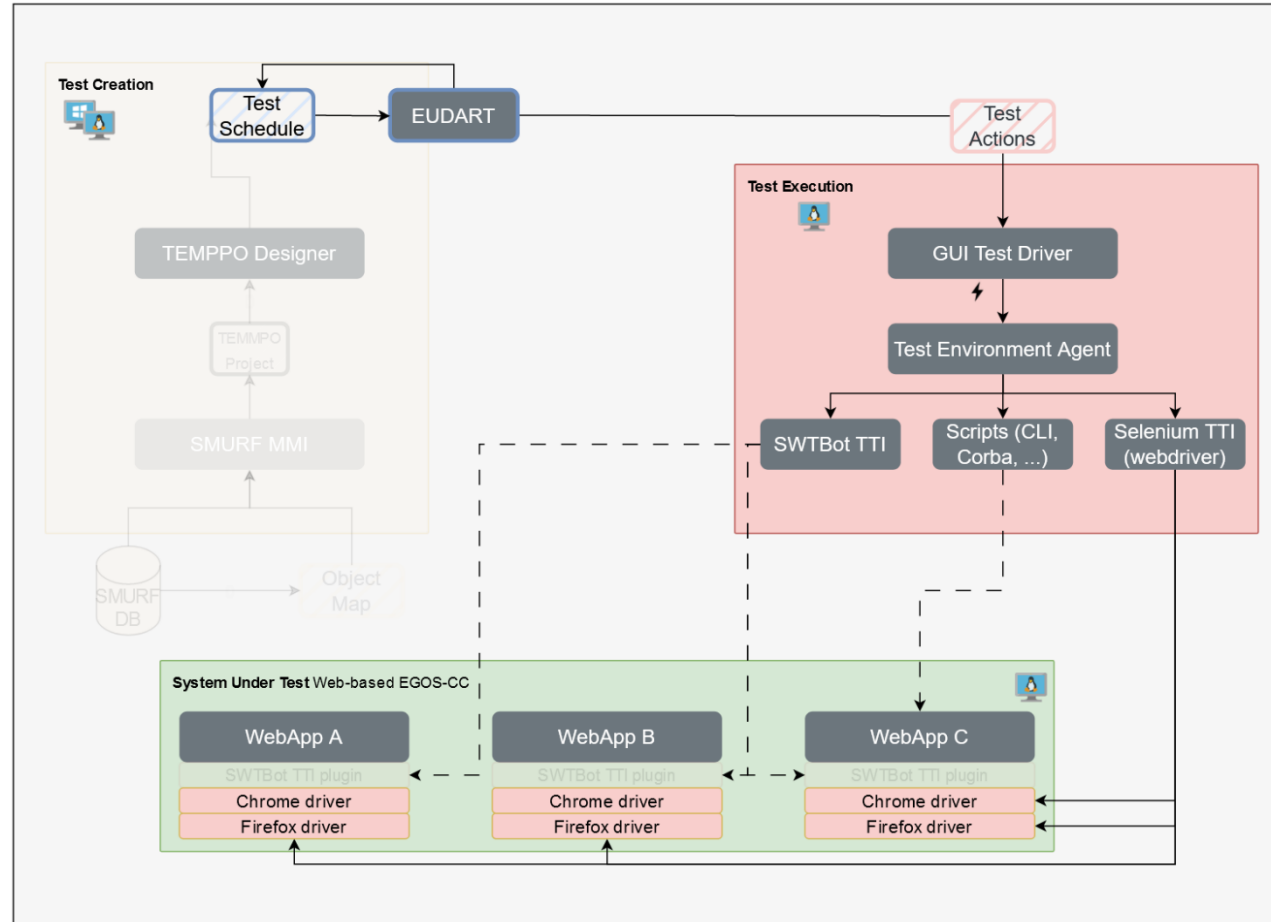
- Update and enhance the existing test automation tools to see if they can be used with the new generation of software ground segment software
- Shorten the loop from test creation to test execution
- Interact with other existing tools from the EGS-CC ecosystem
- Bring framework closer to the ESA Community License requirements

Format	Consortium	Work Breakdown
<ul style="list-style-type: none">- Duration of 18 months- Agile Software Development	<ul style="list-style-type: none">- etamax space (DE)- CGI (DE)- RHEA(DE)- ITTI (PL) – Consultant	<p>Engineering</p> <ul style="list-style-type: none">- Testing Framework analysis- OTX and EUDART XML compatibility analysis <p>Implementation</p> <ul style="list-style-type: none">- EUDART update/enhancement- ART-MMIT update/enhancement- Selenium Test Actions- EGOS-CC Test libraries- EGS-CC test libraries- OTX export (Atena-EUDART) <p>Testing</p> <ul style="list-style-type: none">- Validation of new test libraries using enhanced EUDART

ART - Context before TAEF activity



ART - Update and focus during TAEF activity



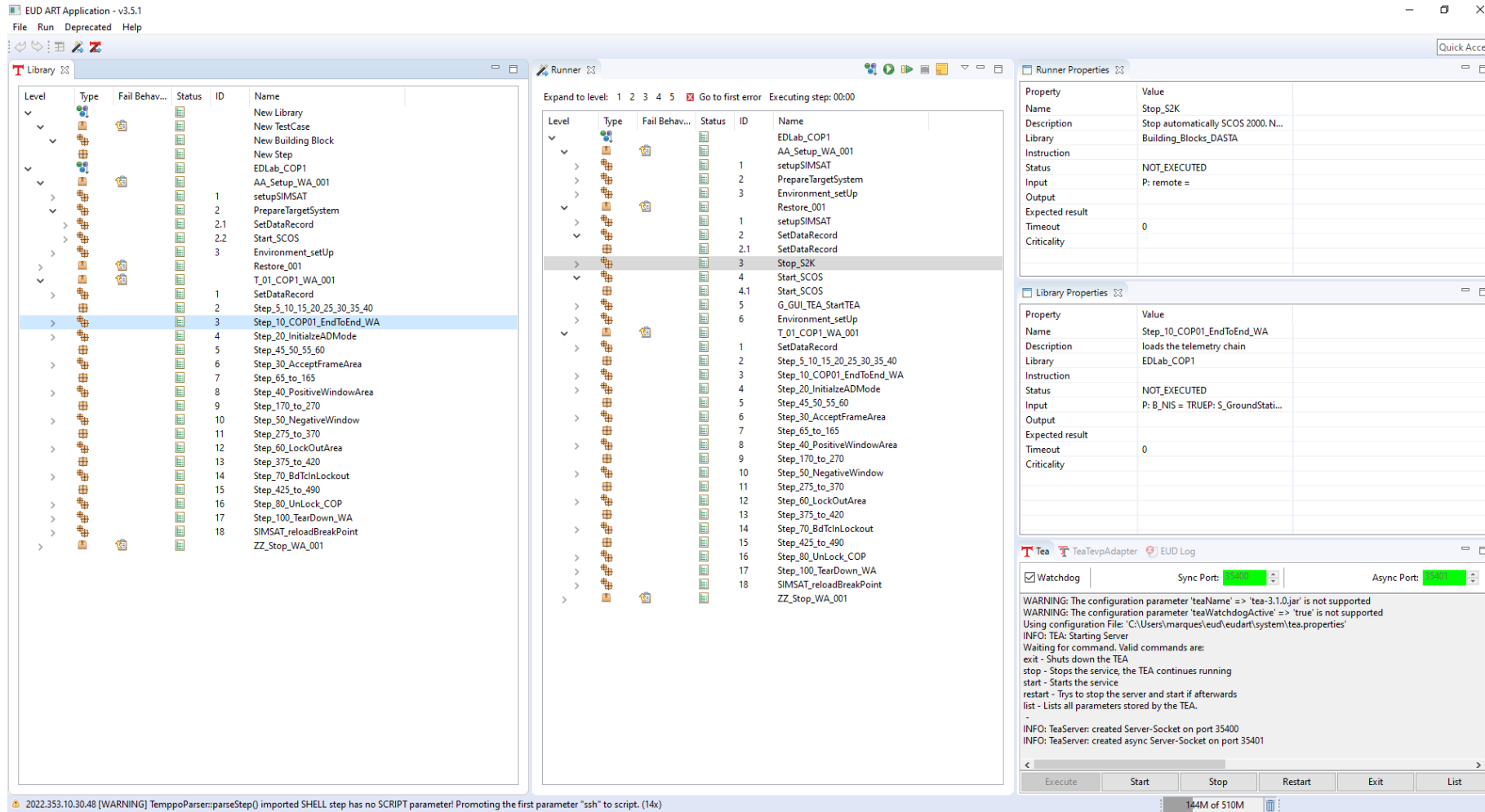
- EUDART

- Update of all the EUD libraries from EUD3 to EUD4 (OPEN 4.1.7)
- Upgrade to SLES15 baseline (previously SLES12)
- Update to Java 11 from Java 8
- Creation of an Eclipse-RCP target platform to achieve a stable build based on ESA's Nexus
- Alignment of headless maven build and eclipse development environment build
- Creation of CI/CD pipelines in Gitlab for build, test and deployment to Nexus
- Addition of build profile to build EUDART for Windows
- Disabling of unused components and clean-up of some of the legacy code
- Introduction of new perspective for creation of test cases based on existing test cases and exported tempo libraries

- ART/MMIT

- Introduction of generic TTIs using reflections to improve extendibility of framework
- Several bug fixes and updates of MMIT components like the GTD, TEA and the SWTBotTTI

EUDART – Test Creation Perspective



The screenshot displays the EUDART Application v3.5.1 interface, divided into several panes:

- Library Pane:** A tree view showing the test structure. The selected item is `Step_10_COP01_EndToEnd_WA` (ID 3).
- Runner Pane:** Shows the execution progress of the selected test. The current step is `Stop_S2K` (ID 3), which is highlighted. The runner is currently at step 3 of 5.
- Runner Properties Pane:** Displays properties for the selected step `Stop_S2K`.

Property	Value
Name	Stop_S2K
Description	Stop automatically SCOS 2000. N...
Library	Building_Blocks_DASTA
Instruction	
Status	NOT_EXECUTED
Input	P: remote =
Output	
Expected result	
Timeout	0
Criticality	
- Library Properties Pane:** Displays properties for the selected library item `Step_10_COP01_EndToEnd_WA`.

Property	Value
Name	Step_10_COP01_EndToEnd_WA
Description	loads the telemetry chain
Library	EDLab_COP1
Instruction	
Status	NOT_EXECUTED
Input	P: B_NIS = TRUEP; S_GroundStati...
Output	
Expected result	
Timeout	0
Criticality	
- Tea Log Pane:** Shows the output of the TeaServer. It includes a warning about unsupported configuration parameters and information about the server's status and ports.

```
2022.353.10.30.48 [WARNING] TempParser:parseStep() imported SHELL step has no SCRIPT parameter! Promoting the first parameter "ssh" to script. (14x)
WARNING: The configuration parameter 'teaName' => 'tea-3.1.0.jar' is not supported
WARNING: The configuration parameter 'teaWatchdogActive' => 'true' is not supported
Using configuration File: 'C:\Users\marques\eu\eu\dart\system\tea.properties'
INFO: TEA: Starting Server
Waiting for command. Valid commands are:
exit - Shuts down the TEA
stop - Stops the service, the TEA continues running
start - Starts the service
restart - Tries to stop the server and start if afterwards
list - Lists all parameters stored by the TEA.
-
INFO: TeaServer: created Server-Socket on port 35400
INFO: TeaServer: created async Server-Socket on port 35401
```


EUDART – Library View

Level	Type	Fail Behav...	Status	ID	Name
√					New Library
√					New TestCase
√					New Building Block
√					New Step
√					EDLab_COP1
>					AA_Setup_WA_001
>					Restore_001
√					T_01_COP1_WA_001
>				1	SetDataRecord
>				2	Step_5_10_15_20_25_30_35_40
>				3	Step_10_COP01_EndToEnd_WA
>				4	Step_20_InitializeADMode
>				5	Step_45_50_55_60
>				6	Step_30_AcceptFrameArea
>				7	Step_65_to_165
>				8	Step_40_PositiveWindowArea
>				9	Step_170_to_270
>				10	Step_50_NegativeWindow
>				11	Step_275_to_370
>				12	Step_60_LockOutArea
>				13	Step_375_to_420
>				14	Step_70_BdTclnLockout
>				15	Step_425_to_490
>				16	Step_80_UnLock_COP
>				17	Step_100_TearDown_WA
>				18	SIMSAT_reloadBreakPoint
>					ZZ_Stop_WA_001

Property	Value
Name	AA_Setup_WA_001
Description	WA: not configuring the simulator
Library	EDLab_COP1
Instruction	
Status	NOT_EXECUTED
Input	
Output	
Expected result	
Timeout	0
Criticality	

Level	Type	Fail Beha	Statu	ID	Name
					SC11
					P001_011
				1	TA01_0003_000070_Raw_Data_Display
				1.1	SetupMonitoringTestcase
				1.1.1	Karaf_Query
				1.1.1.1	CallKarafTTI
				1.1.2	Setup
				1.1.3	UIF_open_Perspective
				1.1.4	PY_Wait
				1.2	PreparePacketsCheck_070
				1.3	InjectTelemetryPacket
				1.4	PerformPacketsCheck_070
				1.5	TeardownMonitoringTestca
					P002_008
					P002_009
					P003_004
					P003_005

- Disable
- Create breakpoint
- Continue test step SetupMonitoringTestcase
- Continue test case P001_011
- Continue test design SC11
- Create BEFORE**
- Create AFTER
- Create BELOW
- Delete building block SetupMonitoringTestcase
- Copy building block SetupMonitoringTestcase
- Paste BEFORE P001_011
- Paste AFTER P001_011
- Paste BELOW P001_011
- Refresh

- Create building block BEFORE P001_011
- Create test step FAIL BEFORE P001_011
- Create test step PASS BEFORE P001_011
- Create test step PROMPT BEFORE P001_011
- Create test step RCMD BEFORE P001_011
- Create test step RSOURCE BEFORE P001_011
- Create test step SHELL BEFORE P001_011
- Create test step SLEEP BEFORE P001_011
- Create test step VCHECK BEFORE P001_011
- Create test step VSET BEFORE P001_011

To support the creation of test cases for EGS-CC and EGOS-CC the following compatible with ART generic testing libraries were created

EGS-CC

- [TestItemsWebUI](#)
 - Generic web-based UI library containing basic actions like Click, Type, Drag, Drop, Open Browser, ...

EGOS-CC

New libraries and example tests for FBO, TFI and ASA components and updates to existing libraries

- [LibItemsMiconysCC](#)
- [LibItemsGen](#)
- [TestItemsJUICE](#)
- [TestItemsBepi](#)
- [TestExecutionEGOSCC](#)

Microsoft Teams

[TAEF] FP Demo prep

2023-03-09 14:36 UTC

Recorded by
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Conclusions

- The ART right now offers the possibility to have a **shorter loop from test creation to test execution**
- With the new testing libraries and SeleniumTTI the ART **supports testing of web-based applications** using the same type of workflow that is known from SWT-based testing
- EUDART is a tool that is fairly difficult to maintain and update
- Selenium can be used together with ART or standalone using test written in Python

Possible Future Work

- Further enhancement to EUDART to cover additional functionality provided by TEMPPPO Designer
- Development of a new generation testing framework tailored from the beginning to the new ground segment software systems and using state-of-the-art technologies

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