

Systems and Automotive WG

WG SIG Annual Updates 2026

Feb 11th, 15:40-16:05 UTC

Philipp Ahmann, ETAS GmbH



ELISA
Enabling **Linux** in
Safety Applications

Aerospace · Automotive · Linux Features

OS Engineering Process · Safety Architecture · Systems · Tools

Lighthouse · Space Grade Linux

Presentation is split in two parts

Systems WG



Automotive Update



Light on Automotive WG

Automotive is currently operated as part of Systems WG (*due to capacity reasons*)

Automotive topics within Systems WG:

- HPC, ECU centralization & mixed-criticality
- Regular AGL exchange and participation
- Progressing towards AGL SoDeV from SDV EG



Photo by Ben on Unsplash

Systems WG



Systems WG Definition

- The Systems WG aims to enable other working groups within ELISA
- Put the other WGs safety claims towards Linux in a wider system context.
- Build a reproducible example system based on real-world architectures,
- Implemented fully based on open source technologies.

**The Systems WG encourages interactions with other projects,
which either also help enable safety use cases with OSS
or plan to make use of mixed-criticality system elements
as a base for their product lines.**

Linux in Safety Critical Systems

***"Assessing whether a system is safe,
requires understanding the system sufficiently."***

- Understand Linux within that system context and how Linux is used in that system.
- Select Linux components and features that can be evaluated for safety.
- Identify gaps that exist where more work is needed to evaluate safety sufficiently.

Achievements 2025



What we have done in Systems WG

- Started Lighthouse-SIG (session tomorrow) on “Open Source Best practices standard”
- Promoted “Railways WG”. Not yet formed, but story continues
- Worked on “Continuous Compliance” with ARM and InfoMagnus Use GitHub to have a trace from test to code on updates using SBOMs
- CVE Report and SBOM from Yocto added to CI (medial WG)
- Presented initial OSS safety-critical landscape and certification pathways

Leave ELISA towards broader ecosystem

- Evaluated “Standards Atlas” and how it ties to Systems and can help people not able to access all standards
- Alignment with Eclipse Automotive Process WG
- AGL SoDeV started taking over the Systems WG architectural concept

Plans 2026



Cross WG activities examples

ELISA:

- What is quality actually? → Work together on this with OSEP
- How does safety monitoring work? → LFSCS & Architecture
- CI improvements → Tools

OSS community:

- Bring in the safety config from Xen into the ELISA example system
- Update Zephyr domain to latest (LTS) release into ELISA example system

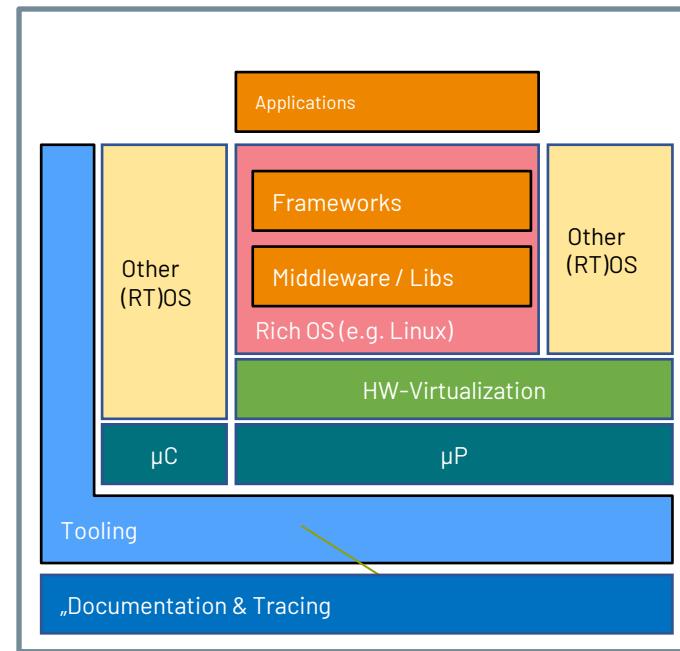
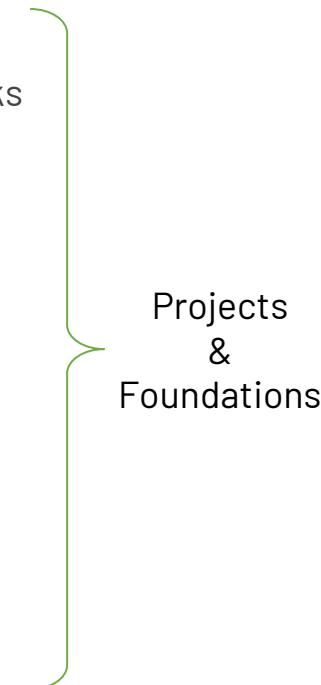
Started and ongoing activities

- Create a safety critical Open Source landscape page
- Railways SIG formation
- Automotive: SoDeV collaboration
 - Update the meta-elisa for IC demo to latest state
 - Integrate meta-elisa into SoDeV for IC part
 - Include telltale monitoring in Zephyr.
 - Goal: Implement safety-monitoring for the Instrument Cluster in AGL SoDeV
- AI in safety systems?

Safety Critical Open Source Landscape

Motivated by the Systems WG activities

- Requirement tools
- Documentation frameworks
- Traceability tools
- Testing frameworks
- Build tooling
- Compiler
- Hypervisor
- (RT)OS
- Container
- Middleware
- Frameworks
- IDEs
- ...



Exemplary safety-critical open source project & initiative selection ... spot check



Open Source Safety Critical Landscape

Middleware	Iceoryx	Eclipse S-CORE	Open AD Kit
RTOS & OS	Zephyr	Eclipse ThreadX	AutoSD
Virtualization	Xen	L4Re	seL4
Compiler/language	Ferrocene		LLVM Qualification WG
Req. Tools	BASIL	StrictDoc	Sphinx-needs
Frameworks	Eclipse Trustable		SPDX Safety Profile WG
Initiatives	ELISA	Safety Critical Rust Consortium	
	SOAFLIE		

Exemplary safety-critical open source project & initiative selection

Note: Mapping may have some (smaller) inconsistencies

Idea: <https://landscape.elisa.tech>

Bring a collection of notes and examples in a web based landscape



<https://github.com/lf-energy/lfenergy-landscape>

Railways

Railways: Approaching an additional industry...

- Several meetings to discuss working group formation
- Started at FOSDEM 2025
- Continued at FOSDEM 2026
- Proposal is to start a SIG as part of Systems WG
- Next meeting considered for e/o Feb or b/o March 2026
- Meeting will be shared via LinkedIn once date is confirmed



Automotive

meta-elisa on its way to 2026 and AGL SoDeV

What is happening:

- Currently under update to latest AGL release
- Update docker container for better system compatibility
- Rework for closer match to AGL flow using repo tooling
- Planned to be merged within next 2 weeks.

<https://github.com/elisa-tech/meta-elisa>

<https://github.com/elisa-tech/wg-automotive>



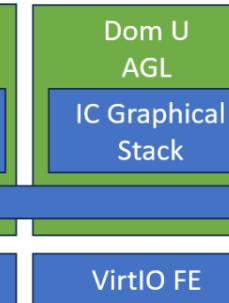
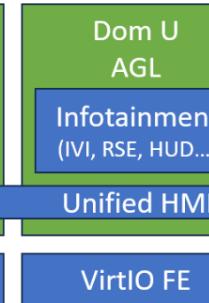
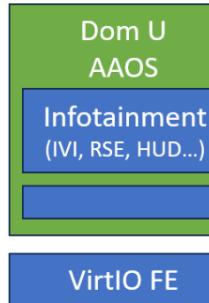
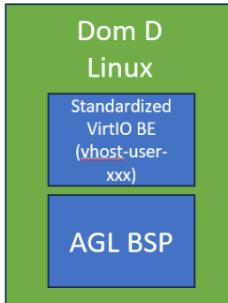
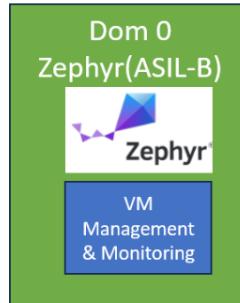


AGL SoDeV – Architectural overview

Control Domain
Monitoring,
Start/Stop VM,
Reboot PF

Driver Domain
HW Access

Guest Domains



VirtIO support Type 1 Hypervisor(Xen, etc) ASIL-*

SoC ASIL-*



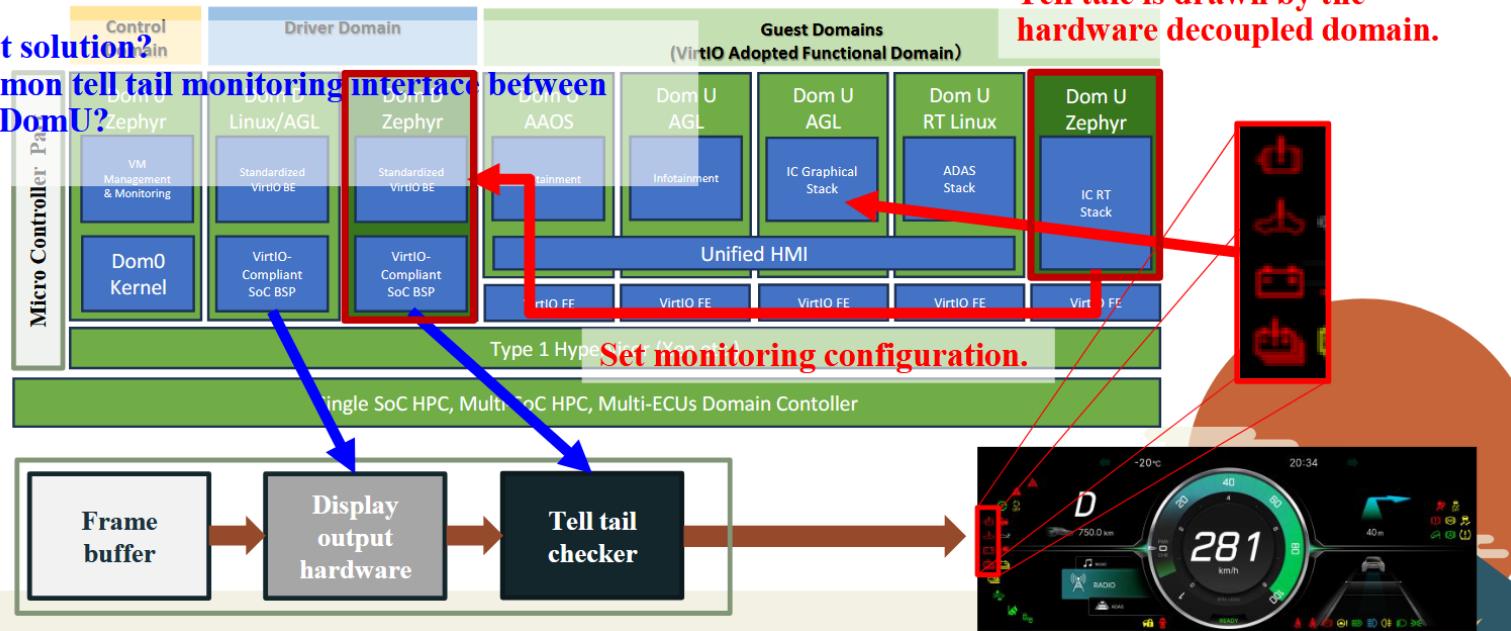


Meta-elisa to find its way into SoDeV?!

- How to achieve safety?
 - Example use case: Tell tale for instrument cluster.

What is best solution?

Create common tell tail monitoring interface between DomD and DomU? Others?



Systems WG in the wild

Presentations 2025

- **Embedded World Germany**

Open Source Software in Safety-Critical Applications: Challenges and Collaborative Solutions

- **OSS North America**

[Developing a Community-Driven Standard for Open Source Software Quality](#)

- **COSCUP Taiwan**

[The Way for Safe Systems Constructed by Open Source Software](#)

- **eLSA Symposium Germany**

Open Source in safety critical Products

- **OSS Japan**

[Decoding Safe\(ty\) Linux Architectural Approaches for Critical Systems](#)



Meet us in the wild 2026

Get in touch for example at:

- FOSDEM (already over)
- embedded world
- Eclipse OCX
- ELISA Workshop
- OSS Europe/Japan/...

More to be added after confirmation by
organizers.



Photo by [Paul Hanaoka](#) on [Unsplash](#)

Call to action



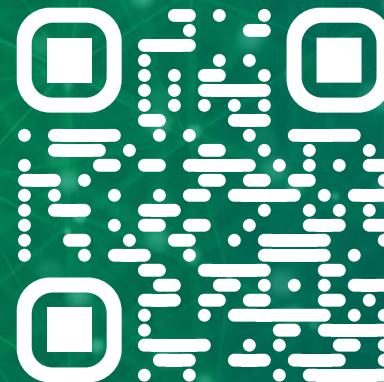
Get Involved

- System WG meets every other Tuesday 16:00 UTC
(15:00 UTC during DST)
<https://elisa.tech/community/meetings/>
- Mailing list(s)
<https://lists.elisa.tech/g/systems/>
<https://lists.elisa.tech/g/automotive/>
<https://lists.elisa.tech/g/lighthouse>
- Discord
<https://discord.gg/C4DDjNHS>
- Issues (or even better PRs) welcome!
<https://github.com/elisa-tech/wg-systems/>
<https://github.com/elisa-tech/meta-elisa>
<https://github.com/elisa-tech/wg-automotive>



Photo by Hannah Busing on Unsplash

Thank you!



<https://elisa.tech>

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