

# Systems and Automotive WG

**WG SIG Annual Updates 2026**

Feb 11<sup>th</sup>, 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

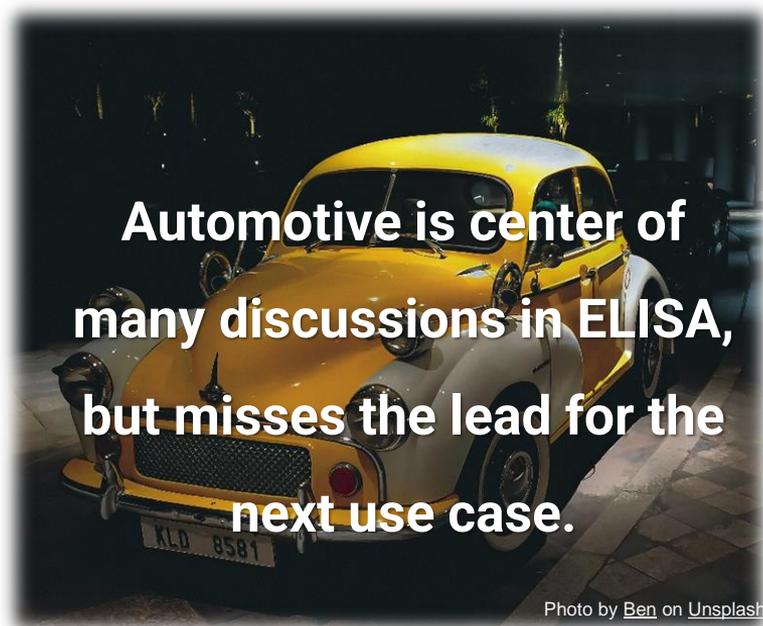


# Light on Automotive WG

**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





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# 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.



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# 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



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# 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

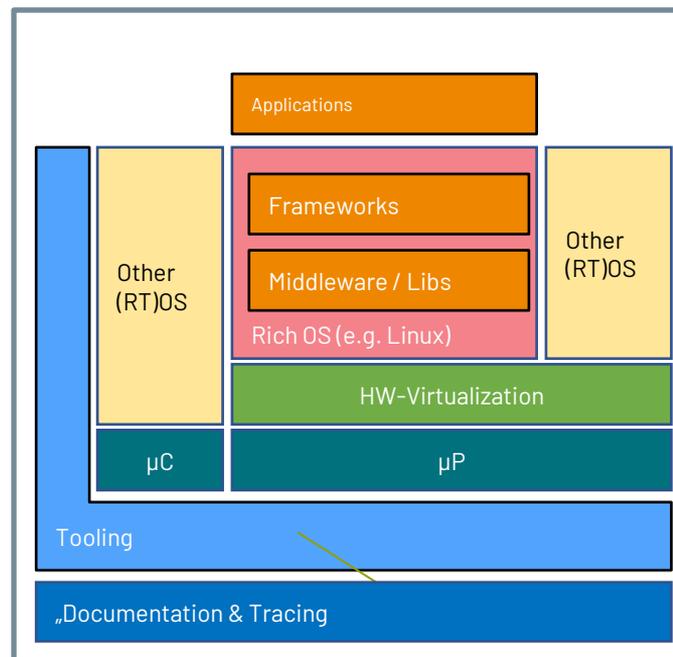
- Create a safety critical Open Source landscape page
- Railways SIG formation
- Automotive: SoDeV collaboration
  - Update the meta-elisa for IC demo to latest state
  - Integrate meta-elisa into SoDeV for IC part
  - Include telltale monitoring in Zephyr.
  - Goal: Implement safety-monitoring for the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

Projects  
&  
Foundations



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



# Open Source Safety Critical Landscape

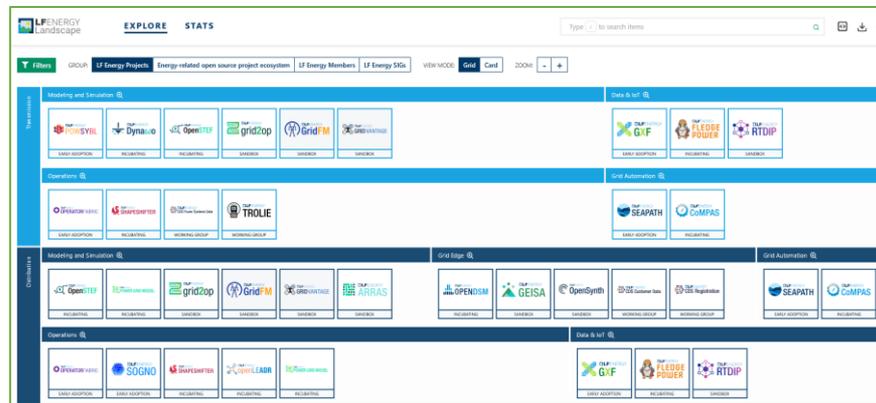
Middleware	Iceoryx	Eclipse S-CORE	Open AD Kit	
RTOS & OS	Zephyr	Eclipse ThreadX	AutoSD	
Virtualization	Xen	L4Re	seL4	
Compiler/language	Ferrocene	LLVM Qualification WG		
Req. Tools	BASIL	StrictDoc	Sphinx-needs	OpenFastTrace
Frameworks	Eclipse Trustable		SPDX Safety Profile WG	
Initiatives	ELISA	Safety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

## 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>



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# 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





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# 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 compatability
- 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>

🚗 Update in progress... 🤖



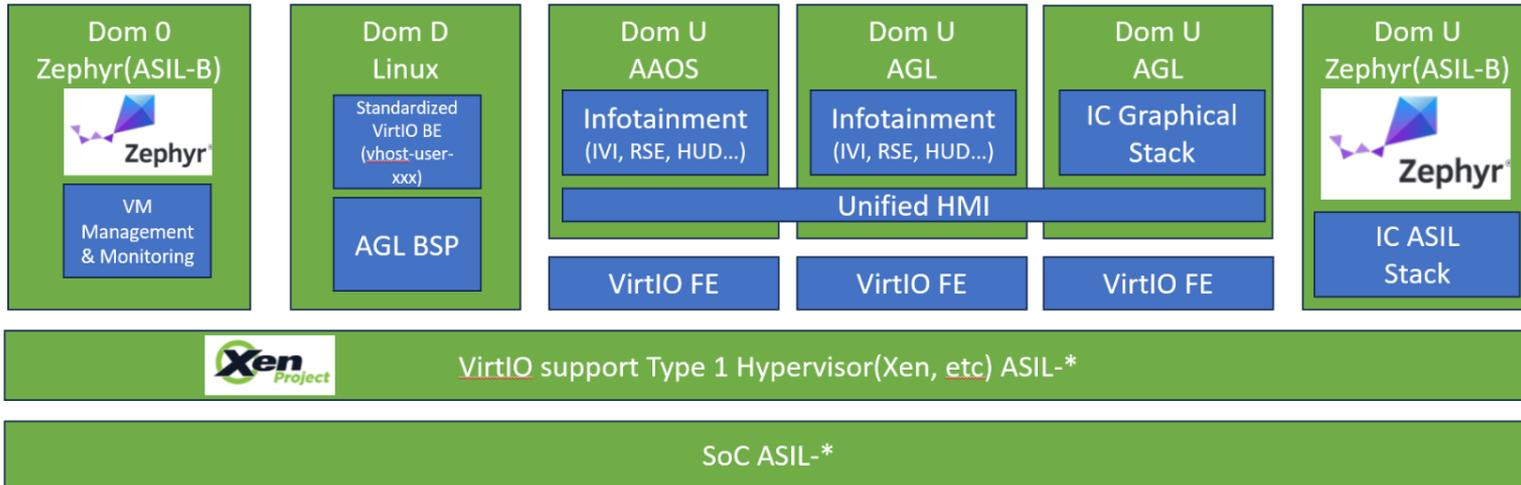


# AGL SoDeV – Architectural overview

Control Domain  
Monitoring,  
Start/Stop VM,  
Reboot PF

Driver Domain  
HW Access

Guest Domains



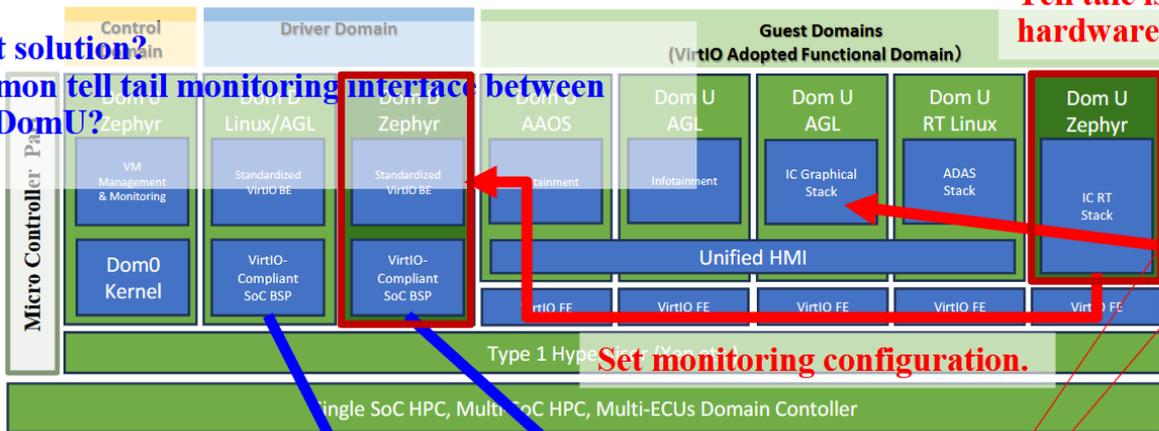


# Meta-elisa to find its way into SoDeV?!

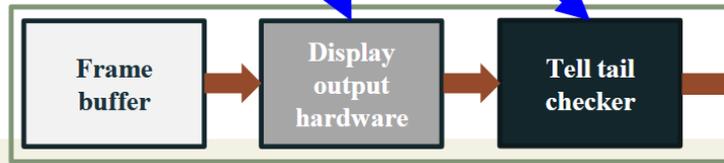
- How to achieve safety?
  - Example use case: Tell tale for instrument cluster.

**What is best solution?**  
**Create common tell tail monitoring interface between DomD and DomU?**  
**Others?**

**Tell tale is drawn by the hardware decoupled domain.**



**Set monitoring configuration.**





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# 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.



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# Call to action

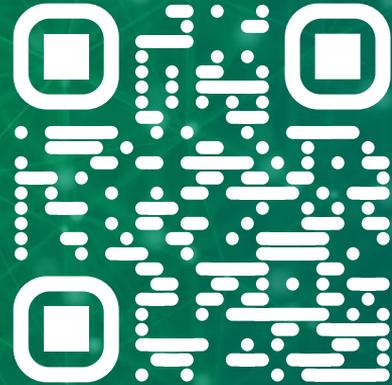
# Get Involved

- 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>



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# Thank you!



<https://elisa.tech>

# JOIN THE COMMUNITY

Our infrastructure and tools are open by default, so jump in and introduce yourself, ask questions and share ideas. Please consider this your invitation to participate.



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