

# ELISA OSEP working group updates

Paul Albertella (*Codethink*)



**ELISA**  
Enabling **Linux** in  
**Safety** Applications

Aerospace · Automotive · Linux Features

Medical Devices · Open Source Engineering Process

Safety Architecture · Space Grade Linux · Systems · Tools

# Working group introduction

- OSEP: Open Source Engineering Process working group
  - Developing common processes and frameworks for ELISA
  - Develop safety analysis approaches that can be applied and reproduced by others
  - Processes for drafting, reviewing and publishing results
- Have historically focussed on safety analysis
  - What value can Linux add as part a safety application, and what are the risks involved?
  - How can we describe these safety use cases, and analyse the role that Linux plays in them?
  - Can we use this to create widely applicable and reusable resources?
- Discussions are frequently more wide-ranging!
  - Technical topics, methodologies, quality, standards, software engineering principles, etc.

# Key topics and activities in 2024

- Expectations about using FOSS as part of a safety application
  - How can open source projects contribute towards safety arguments about the integrating system's properties (safety, security, quality)?
- Identifying and exploring specific topics for Linux
  - Design limitations or unspecified / uncontrolled characteristics
  - Strategies for addressing a topic
    - *Changes to Linux, mitigation in an integrating system (prevent, detect, react), or both*
  - Factors affecting the feasibility of a given strategy
    - *Complexity of the solution (what are we making a safety claim about?)*
    - *Size of 'target' (what does it need to protect or monitor?)*
    - *Size of 'attack surface' (what potential misbehaviours need to be analysed?)*

# Key topics and activities in 2024 (*continued*)

- Establishing a basis for assertions that we make about Linux
  - Repeatable research or investigations
    - *Describe how to model a potential fault (e.g. memory corruption) and explore its impact*
    - *Document sources of information used in writing a document*
  - Make this part of the review criteria for material to be published
- Approach for publishing peer-reviewed material
  - Applied initially for OSEP material, but intended as general approach for ELISA
  - Provide user-friendly documentation rather than just files in a git repository
    - *Using mkdocs to generate HTML and CSS content from Markdown inputs*
    - *Publish to web: <https://directory.elisa.tech> and <https://osep.elisa.tech>*
  - Next: Establish processes for submission and review, including reviewing criteria

# Plans for 2025

- Review and publish existing material
  - Restructure and peer-review material already in OSEP GitHub mainline or Pull Requests
    - e.g. *Interference Scenarios for an ARM64 Linux System*, *Memory Management Essentials*
- Write and publish new material
  - ELISA Documentation review and publishing process
  - Supply chain responsibility models for projects involving open source software
- Write about OSEP approach and objectives
  - Background and rationale; 'lessons learned' from previous attempts and discussions
  - Create repeatable and reusable resources for use by safety projects involving Linux
- Explore new topics!

# Possible collaborations

- Architecture working group
  - Planning to work on Kernel documentation for the tracing subsystem
- Other ELISA working groups
  - Use and contribute to document publication process
- Zephyr project
  - What can we learn from their work on functional safety?
- Eclipse Foundation
  - [Eclipse SCORE \(Safe Open Vehicle Core\)](#)
  - [Trustable Software Framework](#)

# Get involved

- Join weekly meetings
  - Thursdays @ 14.00 UTC (see [OSEP calendar](#) or [ELISA calendar](#) for details)
- Join the mailing list
  - <https://lists.elisa.tech/g/osep>
- Read and provide feedback on documentation
  - Comment on active Pull Requests
  - Create Issues or Pull Requests with corrections to merged content
- Propose topics for discussion and investigation
  - Either on the mailing list or to add to regular meeting agenda



**ELISA**

Enabling **Linux** in  
**Safety** Applications

**Questions?**