ELISA OSEP working group updates

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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
  - Can open source software projects apply the processes expected by safety standards?
  - Can these processes be applied to open source as part of safety-related projects?
  - **Our Goal**: Create reusable resources for use by safety projects involving Linux
- Have historically focussed on safety analysis and argumentation
  - What value can Linux add as part of a safety application, and what are the risks involved?
  - How can we better understand the roles that Linux may have in such use cases?
  - On what basis can we argue that Linux is suitable for use in such roles?
- Discussions and topics are frequently more wide-ranging!
  - Technical topics, such as Linux Memory Management [1] and Kernel Self Protection [2]
  - Methodologies, quality, standards, software engineering principles, etc.

[1] https://github.com/elisa-tech/wg-osep/pull/38 [2] https://github.com/elisa-tech/wg-osep/pull/44

Key topics and activities in 2025

- Can we expect FOSS projects to comply with safety standards?
  - Always challenging because FOSS projects *mostly* emphasise collaboration and contribution over rigorous processes and ‘command-and-control’ project management
  - **Conclusion**: Not reasonable or realistic to expect Linux and other FOSS projects *that do not have a safety focus* to apply the software engineering processes expected by safety standards
- ‘Safe Linux’ versus ‘Using Linux safely’
  - Document how Linux is used *as part of a safety-related system* and develop a *safety case* to identify and *address the risks* associated with this
  - Contribute *solutions* and *enhancements* upstream to address specific risks or limitations
  - Use open projects such as Eclipse Trustable Software Framework[1] to *complement* safety standards, applying their *objectives* to open source software engineering practices

[1] *https://projects.eclipse.org/projects/technology.tsf*

Key topics and activities in 2025 (*continued*)

- Approach for publishing peer-reviewed material
  - Applied initially for OSEP material, but intended as general approach for ELISA
  - Using Criteria for Open-Source Documentation Evaluation[1]
  - Provide user-friendly documentation rather than just files in a git repository
    - *Publish to web: https://directory.elisa.tech and https://osep.elisa.tech*
- Establishing a basis for claims or assertions that we make about Linux
  - Based on 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 these objectives part of the review criteria for material to be published

[1] *https://osep.elisa.tech/Criteria-Documentation-Evaluation.html*

Plans for 2026

- Review and publish more material
  - Using the peer-review criteria and approach established last year
  - Convert existing contributions[1] already in the project GitHub repository
  - Several existing pull requests[2] that need review and editorial input!
- Write about ELISA's approaches, conclusions and unresolved questions
  - What has been discussed, and where has consensus has been reached?
  - What approaches have been tried, and what did we learn from them?
  - Where do differences of opinion remain, and what are the various perspectives?
- Explore new topics!
  - New participants and topics for discussion are always welcome!

[1] *https://github.com/elisa-tech/wg-osep/tree/main/Contributions* [2] *https://github.com/elisa-tech/wg-osep/pulls*

Get involved

- Join weekly meetings
  Thursdays @ 14.00 UTC (see https://lists.elisa.tech/g/osep/calendar for details)
- Join the mailing list
  https://lists.elisa.tech/g/osep
- Join the ELISA server on Discord
  OSEP General Chat : https://discord.gg/GCQPsUTv *OSEP Topics*: https://discord.gg/6NGzeHbK
- Read documentation and review pull requests
  Docs: https://osep.elisa.tech/ *PRs*: https://github.com/elisa-tech/wg-osep/pulls
- Propose topics for discussion
  On the mailing list, in Discord, and for the agenda of weekly meetings

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Questions?