

Key Principles

seL4 Foundation

A project under The Linux Foundation

The seL4 Microkernel



seL4 is a high-assurance, high-performance microkernel developed, maintained and formally verified by the Trustworthy Systems Research Group at CSIRO's Data61, and owned by General Dynamics Mission Systems and CSIRO, and currently offered under an open source GPL v2 license. It is a member of the L4 family of microkernels, and is the world's most advanced, highest-assured operating-system kernel. seL4 has been comprehensively formally verified: a rigorous process to mathematically prove that its executable code correctly implements only the behaviour allowed by its specification. The development of seL4-based systems, on top on the seL4 *kernel*, is supported by the seL4 *ecosystem*: frameworks, tools, infrastructure and libraries of components.

Establishing the seL4 Foundation

We propose establishing the seL4 Foundation as a project under The Linux Foundation with a view to creating a sustainable model for the seL4 kernel and ecosystem to be further developed through an open community, and to make official versions of the seL4 kernel available for open adoption, while providing clarity and certainty as to its level of formal verification.



The Linux Foundation is home to many of the technologies that run society and industry, and its mission is to protect, promote and defend open collaboration on Linux and other open source technologies. As a project of The Linux Foundation, the seL4 Foundation will be able to access best practices, methodologies, core support programs, and open source experts, for addressing the needs of contributors, users and solution providers.

This document has been prepared in order to progress discussions with other seL4 stakeholders, and to assist us as we progress our discussions with The Linux Foundation to establish the seL4 Foundation.

Key Principles

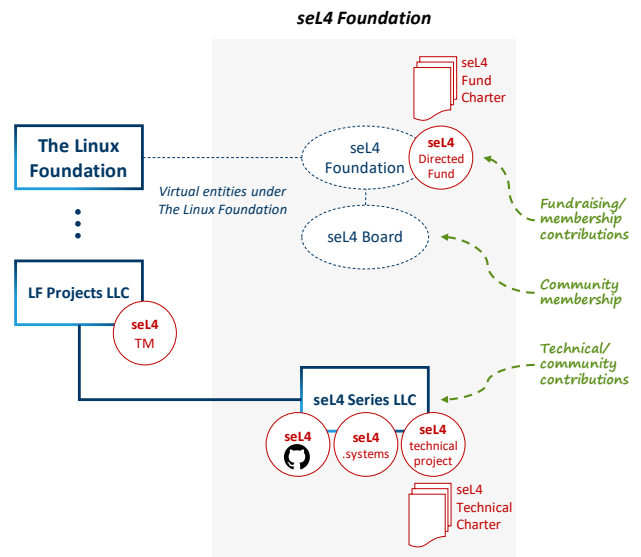
The seL4 Foundation is intended to be structured and governed to promote the following key principles:

- Neutral and community-based.** The seL4 Foundation will provide a long-term, independent support for the seL4 kernel and the seL4 ecosystem, by enabling the collaborative community-based development, availability and adoption of the seL4 kernel. This includes providing a familiar structure (ie. under The Linux Foundation) for membership and raising funds to support its activities, and building the community of developers, adopters, training, and expertise. The seL4 Foundation will aim to represent the perspectives of all main actors of the seL4 community (kernel developers, kernel verifiers, ecosystem developers and adopters) in the technical and general governance of the seL4 kernel and the seL4 Foundation.

- Grow adoption.** The seL4 Foundation will enable and grow adoption of seL4 by supporting the evolution and verification of the seL4 kernel and supporting the growth of the seL4 ecosystem needed to ease the development of seL4-based systems.
- Brand promotion and protection.** The seL4 Foundation will provide official releases of the seL4 kernel with clear associated verification statements, to promote the use of seL4 as a competitive advantage, with clear traceability to the sources of the code and the proofs.

The seL4 Foundation will be underpinned by 2 key documents: the Fund Charter, and the Technical Charter (see Diagram 1 below), both of which must be approved by The Linux Foundation. The seL4 Fund Charter and Technical charter are almost entirely modelled on the standard approach for Linux Foundation projects.

Diagram 1: Proposed structure



seL4 Fund Charter

- Membership.** The seL4 Fund Charter establishes the seL4 Directed Fund. Members may nominate for membership of the seL4 Directed Fund as set out in Table 1 (below). Members must be corporate members (at any level) of The Linux Foundation, must pay the Linux Foundation's annual membership fee, and must agree to The Linux Foundation's antitrust policy. Annual membership fees will be paid into the seL4 Directed Fund. In recognition of their significant contribution to seL4, Data61's Trustworthy Systems Research Group will be a permanent premium member.

Table 1: Membership classes

Membership Class	Annual Membership Fee
Premium Members	US\$100,000
General Members	
<ul style="list-style-type: none"> >5,000 employees 500 to 4,999 employees 100 to 499 employees <100 employees 	<ul style="list-style-type: none"> US\$30,000 US\$20,000 US\$10,000 US\$3,000
Associate Members	No cost

- **Purpose of the seL4 Directed Fund.** The seL4 Directed Fund is intended to support the development, availability and adoption of the seL4 kernel (including documentation, testing, integration, verification and the creation of other artifacts that aid the development, deployment, operation or adoption of the seL4 kernel). The Linux Foundation will have custody of the seL4 Directed Fund (and will retain an administrative fee), but the Fund will be applied pursuant to directions by the seL4 Board.
- **seL4 Board.** The seL4 Board will aim to remain community based and representative of the different necessary disciplines and contributors (kernel developers, kernel verifiers, ecosystem developers, and adopters). The Board will be comprised of at least 5 persons as follows:

Table 2: Board composition

Board member	Appointed by
3 members	Data61's Trustworthy Systems Research Group
1 member	Each premium member
1 member to represent general members	General members to elect annually from a pool of candidates nominated by general members
Chair of the seL4 Technical Steering Committee	Ex officio

To enable the efficient establishment of the seL4 Foundation, it is proposed that the initial seL4 Board be comprised of the following individuals, for an initial term, ending 1 year after establishment or earlier once 20 premium or general members have joined the seL4 Directed Fund.

Table 3: Initial board composition

Individual	Organisation
Gernot Heiser, June Andronick and Gerwin Klein	Data61's Trustworthy Systems Research Group
John Launchbury	Community member
Sascha Kegl	Hensoldt Cyber
Dan Potts	Ghost Locomotion
At the end of the initial term, it is expected that all members will have regard to the need to retain continuity, background and memory as the Board transitions to the composition described in Table 2 above.	

Procedural rules for the seL4 Board will be set out in the seL4 Fund Charter. It is intended that decisions will be made by consensus, and that no member will seek to exclude another for competitive reasons.

The seL4 Board will be responsible for things such as:

- raising funds for specific projects, and approving budgets and directing the use of the seL4 Directed Fund;
- overseeing all seL4 Directed Fund business and community outreach matters and work with The Linux Foundation on any legal matters that arise;
- establishing advisory bodies, committees, programs or councils to support the seL4 Directed Fund and seL4 Technical Project;
- establishing any conformance programs from the Technical Project (including in relation to verification), approving as a Committer any person who does not modify or commit source code, documentation or other technical artifacts in the Technical Project's repository, but who otherwise provides technical leadership to the Technical Project, and approving any recommendations from the TSC for policies and processes for contributions;
- establishing policies and rules in relation to the use of any seL4 Trade Marks; and

- publishing use cases, user stories, websites and priorities to help inform the ecosystem and technical community.

seL4 Technical Charter

- **seL4 Technical Project.** The Technical Charter establishes the seL4 Technical Project, which will be responsible for the development, availability and adoption of the seL4 kernel (including documentation, testing, integration, verification and the creation of other artifacts that aid the development, deployment, operation or adoption of the seL4 kernel).
- **seL4 Technical Steering Committee (TSC).** The seL4 TSC will be comprised of Committers, who have the ability to modify/commit the seL4 source code, documentation or other technical artifacts in the seL4 GitHub repository, or who provide technical leadership to seL4 and are approved by the seL4 Board. The Chair will be elected by members of the seL4 TSC.

Procedural rules for the seL4 TSC will be set out in the seL4 Technical Charter. It is intended that decisions will be made by consensus, and that no member will seek to exclude another for competitive reasons.

The seL4 TSC will be responsible for things such as:

- coordinating the technical direction of the seL4 Technical Project and establishing a code of conduct for the Project;
- approving project or system proposals;
- organising and removing sub-projects;
- creating sub-committees or working groups to focus on cross-project technical issues and requirements;
- appointing representatives to work with other open source or open standards communities;
- establishing community norms, workflows, issuing releases, and security issue reporting policies;
- making recommendations to the seL4 Board for policies and processes for contributions to the seL4 kernel and codebase, including in relation to in-bound and out-bound intellectual property licensing;
- coordinating marketing, events, or communications regarding the seL4 Technical Project.

Next steps

We take stakeholder views seriously and wish to incorporate any feedback in relation to the establishment of the seL4 Foundation into our discussions with The Linux Foundation, and into the arrangements for establishing the seL4 Foundation. We will keep key stakeholders informed as the establishment of the seL4 Foundation progresses.

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