mondaine
Proof of Concept

Deliverable D3.1

ESDL Governance and Roadmap

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Table of Contents

1 *Introduction*

This document provides an overview of the Energy System Description Language (ESDL) roadmap including its governance model and potential financial and business viability options beyond the end of the MONDAINE PoC project.

The ESDL governance model describes the roles that ESDL community members can take on along with the decision-making process. It provides the basic guidelines for contribution within the ESDL ecosystem and the processes for communicating and sharing within the core project team and wider community. It is based on templates and suggestions by the OSS Watch (Ross Gardler, 2013).

The ESDL roadmap gives an overview of the path along with the identified associated options to ensure ESDL viability and economic self-sufficiency.

1.1 Intended Audience

The intended audience of this document are, at first level, the members of the project's consortium and those from TKI funding scheme tasked with reviewing the project's results and its progress towards meeting its agreed upon objectives and milestones.

Ultimately though the target audience is the entire ESDL community that is being formed, including both its potential users and contributors.

1.2 Relations to other Project Activities

This document is the cornerstone of the sustainability plans regarding the ESDL project and its community.

1.3 Document contents

The remainder of the report is organized as follows:

- Section 2 briefly outlines the ESDL project's objectives and how it is managed;
- Section 3 describes the formal roles and their authority within the ESDL community;
- Section 4 presents the available support processes and channels critical to the sustainability of the ESDL project;
- Section 5 discusses the decision-making process;
- Section 6 provides the guidelines of the contribution process;
- Section 7 concludes this report with an outlook for future developments and potential financial structures.

2   Overview

ESDL is a modelling language created for modelling the components in an energy system and their relations towards each other. ESDL aims to become the generic language used to model the complex, dynamic structure and behaviour of energy systems resulting in a harmonized way of modelling energy data, so as to enable reusability and interoperability.

ESDL is still under continuous development with new versions being released periodically. Source code, documentation and all related information can be found on GitHub:

https://github.com/energytransition/ESDL

The ESDL project is an open-source project created and currently managed internally within TNO. As such, during this initial phase of the project, we have opted for a governance model closer to the so-called "**benevolent dictatorship**", where the decision-making process is centrally controlled with the support and advisory role of valued and established contributors.

Similarly, the current contribution model is best described as the "cathedral style" in which a small core of dedicated sources is responsible for the continuous update and growth of the project.

The governance model followed has been designed as a lightweight process to guide the managing of the ESDL community in a clear and transparent way. We are not aiming for an all-encompassing solution but rather focus on meeting the needs of the core stakeholders while still being of interest to the rest. In doing so, we are remaining flexible enough to accommodate new directions as the product progresses and matures.

ESDL is not a marketable product in and of itself and as such encompasses no real commercial value. Its value lies in others making use of it; so the goal would be ensuring its adoption becomes as wide as possible. Therefore, in the long term and as the project evolves to higher maturity levels, we should aim for maximised participation towards either a more bazaar-like contribution or governance model that promotes meritocracy also in the strategic decision making process with the community actively managing the daily operation of the project. However, it is strongly recommended that the evolution path followed should remain always alongside one of the two available dimensions: either contribution or governance model. As such, considering the characteristics and development history of the ESDL project, the selected approach is to move alongside the governance model dimension.

For the time being, the benevolent dictatorship is filled in by TNO, as being the single organisation performing the centralised control. The ESDL team within TNO is led by *Edwin Matthijssen*. TNO is therefore responsible for leading the development of the project and has the executive power in the strategic and operational decision making process. The project lead is nevertheless guided and advised by both the **Community Council** and **Technical Board** whose members are appointed through a meritocratic process. The community actively contributes to the day-to-day maintenance of the project with disputes being resolved by the project lead ensuring the project progresses in a coordinated way. In turn, it is the community's job to guide the decisions of the project lead through active engagement and contribution.

Eventually, the project lead will become the chairperson with the bulk of decisions delegated to the Community Council and Technical Board.

ESDL is licensed under the Apache License 2.0, a permissive license whose main conditions require preservation of copyright and license notices. Currently, TNO is the copyright holder. For more information, please refer to:

Anyone that wishes to become involved with the project either as ESDL user or committer should contact directly TNO using the project's communication channels as given within the Support section.

3 Roles & Responsibilities

In the following subsections, we briefly describe the roles identified within the project along with the level of commitment required and how one seeks to engage in each role.

Following the template of OSS Watch (Ross Gardler, 2013), the following roles are defined within the ESDL project, from the lowest level of engagement and impact, to the highest:

- **Users** – everyone who uses ESDL in their projects, but does not (directly) take part in its development process
- **Contributors** – users who are more engaged with the project
- **Committers** – contributors who provide valuable input for ESDL's potential development
- **Benevolent Dictator** – ESDL's leader, in charge of the decision-making and development

The following subsections describe each of the roles in more detail (staring with the benevolent dictator), its responsibilities, scope of work, and potential growth along the roadmap. Everyone who uses, contributes, develops or steers ESDL is a part of the **ESDL community**. Currently, one can have multiple roles, as they often overlap.

3.1 Benevolent Dictator

For ESDL, TNO is the driving force behind ESDL development. At the moment the most active team members in the discussion about ESDL changes are Edwin Matthijssen and Ewoud Werkman. As a team they have the last word in terms of its strategy and approach; but also ensuring that there is a consensus and high level of engagement from the community. This is accomplished by being able to have a helicopter view of the short-term and long-term strategy while bringing together seemingly and potentially conflicting interests of all important stakeholders.

3.2 Committers

These are the contributors whose input and feedback is valuable to the project; high level of expertise and understanding of specific aspects critical to the project.

Committers have no authority over the general direction of the project but they do have the responsibility to support and guide the benevolent dictator in making well-informed decisions. However, they do have the ear of the project lead. It is a committer's job to ensure that the lead is aware of the community's needs and collective objectives, and to help develop or elicit appropriate contributions to the project. Often, committers are given informal control over their specific areas of responsibility, and are assigned rights to directly modify certain areas of the source code. That is, although committers do not have explicit decision-making authority, they will often find that their actions are synonymous with the decisions made by the lead.

The more influential committers or contributors, along with the project lead, form the Technical Board. In particular, a committer who shows an above-average level of contribution to the project, particularly with respect to its strategic direction and long-term health, may be nominated to become a member of the Technical Board. The Technical Board is in charge of the decision-making regarding potential ESDL extensions, and discussions on implementation details, as is further explained in Section Decision making process. The implementation process is performed by the **ESDL Core Team**, consisting of the most influential committers.

3.3   Contributors

Contributors provide valuable input but still have no authority in making direct changes to the project. In general terms, they work less closely or often with the project than committers do and their contribution is more of a supportive nature.

Contributors engage with the project through communication tools, such as email lists, and via reports and patches attached to issues in the issue tracker as supported within GitHub.

Some contributors will already be engaging with the project as users, but will also find themselves doing one or more of the following:

-   supporting new users (current users often provide the most effective new user support)
-   reporting bugs
-   identifying requirements
-   writing documentation

As contributors gain experience and familiarity with the project, they may find that the project lead starts relying on them more and more. When this begins to happen, they gradually adopt the role of committer, as described above.

3.4   Users

Everyone else who uses ESDL in their projects is considered a user; without them there is no ESDL project.

From their ranks it would be beneficial to have a couple that can act as ESDL "evangelist". They should be encouraged to participate in the project via users workshops and roundtables to ensure that ESDL developments are going hand in hand with market needs. Partners for the MONDAINE consortia should be encouraged to continue their involvement with ESDL

Ideally, the more influential users and ambassadors of ESDL (the so called evangelists) would be in the Community Council. The growth path from a user to a contributor to a committer depends on the projects worked on, the level of engagement in and commitment to the ESDL project. For now, users that can become Community Council members include TNO and its project partners, and the new requirements (can potentially) arise from the projects worked on.

Table 1 shows the proposed list of those fulfilling the roles of the project lead and members of the Technical Board and Community Council, along with their contact information.

Role	Name	Contact info
Project lead	Edwin Matthijssen	edwin.matthijssen@tno.nl
Technical Board Members	Ewoud Werkman Bob Ran	ewoud.werkman@tno.nl bob.ran@tno.nl
Community Council Members	Arun Subramanian Mondaine (PoC) partners • Chael Kruip (Quintel) • Arendjan van der Neut (Geodan)	arun.subramanian@tno.nl

Table 1. ESDL roles and contact information.

4 Support

All the participants in the community are encouraged to provide support for new users within the project management infrastructure. This support is provided as a way of growing the community. Those seeking support should recognise that all support activity within the project is voluntary and is therefore provided as and when time allows.

A user requiring guaranteed response times or results should therefore seek to purchase a support contract from a vendor. (Of course, that vendor should be an active member of the community.)

However, for those willing to engage with the project on its own terms, and willing to help support other users, the community support channels are ideal. Currently requests and issues are handled by the built-in support processes within the GitHub.

The main communication channels are:

- ESDL online documentation (https://energytransition.gitbook.io/esdl/)
- The GitHub page of the ESDL project (https://github.com/EnergyTransition/ESDL)
- ESDL class documentation (https://energytransition.github.io/)
- The ESDL article on the TNO website: A grip on the energy transition with ESDL

As ESDL evolves, we expect the project's GitHub to be more actively used by the ESDL community, submitting and discussing issues and feature requests.

5 Decision making process

In accordance to the guidelines of the benevolent dictatorship model we are following, the final word is the one of the project lead. If the community chooses to question the wisdom of the actions of a committer, the project lead can review their decisions by checking the email archives, and either uphold or reverse them.

Figure 1 depicts a typical decision-making process for changes in ESDL with respect to the governance model proposed.
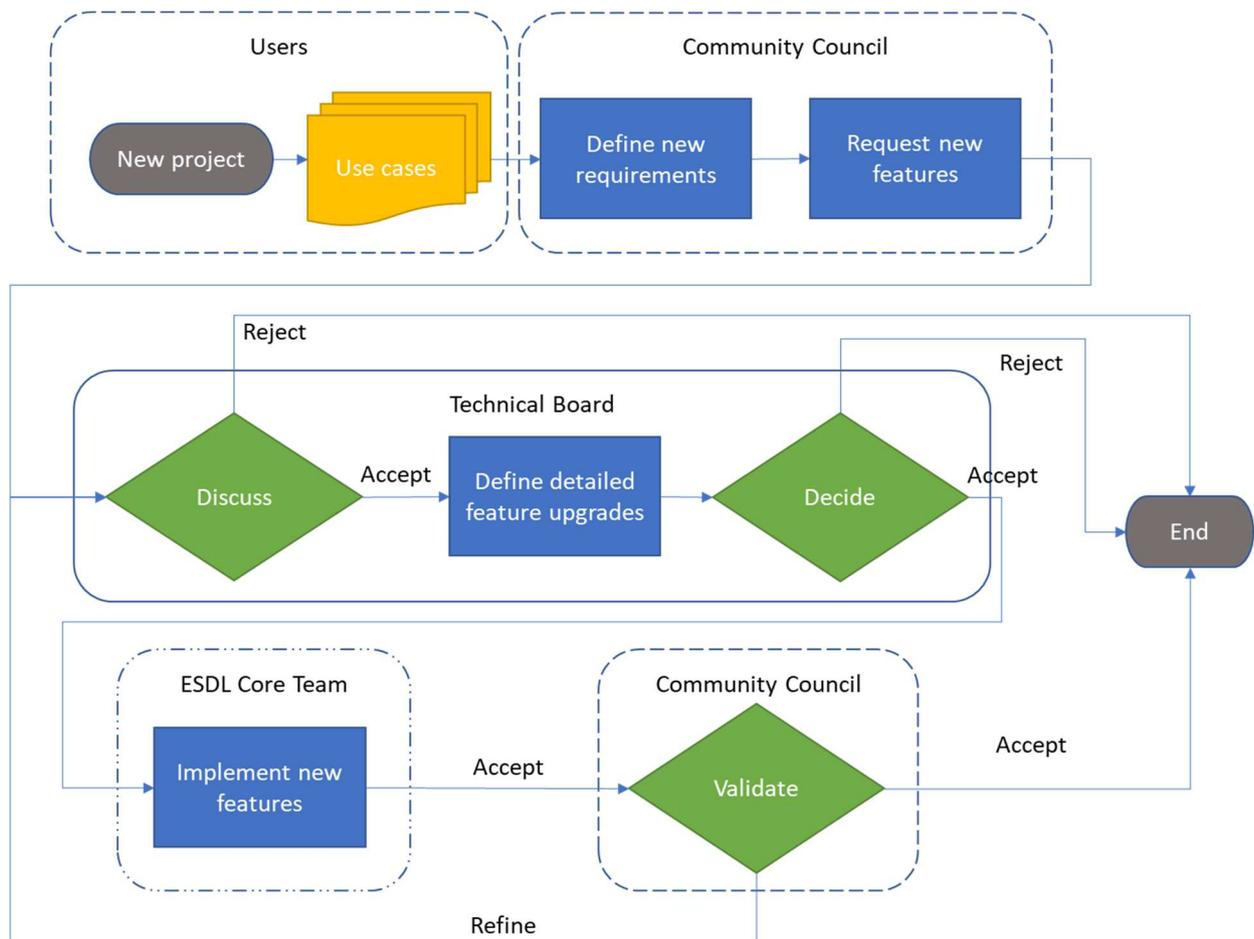

Figure 1. Decision-making process for implementing changes

As a result of a new project, and based on its use cases, the Community Council defines a new set of requirements that lead to new features in ESDL. The Community Council submits the request for new features to the Technical Board, which then discusses the potential feature upgrades in detail, and makes a decision on whether or not the request is accepted. If the features are accepted, they are worked out in detail by the Technical Board. The accepted features are implemented by the ESDL Core Team, and validated by the Community Council. In case the implemented features do not match the original requirements, the process of discussion is reiterated, and features are refined.

6   Contribution process

Theoretically, anyone can contribute to the project, regardless of their skills, as there are many ways to contribute. For instance, a contributor might be active on the project's GitHub and use the issue tracker, or might supply patches.

For the time being and in practice, this process is managed internally within TNO. The ESDL Core Team consists of:

- Edwin Matthijssen
- Bob Ran
- Ewoud Werkman
- Arun Subramanian

All contributions are monitored and controlled by the core team to ensure that they respect coding and documentation standards along with legal concerns. A contribution is accepted only if it passes the approval of the Technical Board.

The Community Council is leveraged to discuss new features and issues.

7 ESDL Roadmap

Figure 2 outlines the basic components of the ESDL sustainability plans with the definition of the governance and contribution models being the starting point. Indeed a critical first step, already
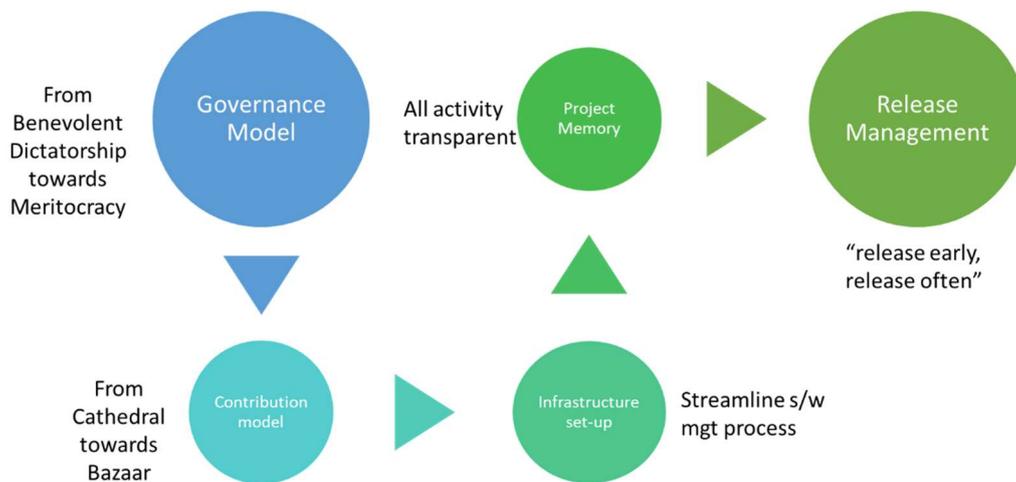

Figure 2. Sustainability plans for ESDL

undertaken with this report, is to determine and clearly state the *governance model* of the ESDL project that establishes the groundwork for the project to shape and communicate with its community developments on its strategies and policies. Identification of the fit-for-purpose governance model often goes hand-in-hand with the definition of the *contribution model*, that is how ESDL community members are expected to contribute. Usually this is simply a set of clear guidelines of how each member may contribute along with the identification of the structures involved. The latter must be supported by the community's *infrastructure* that streamlines the software management aspects of the project along with all necessary tools, processes and communication channels. To ensure transparency and build trust from within the entire ESDL community, all activity must be continuously and consistently documented and recorded to build the *project memory*. Such activity may include a complete and up-to-date record and prioritization of issues brought up by the user's community, discussions on strategic decisions and approach, project communication and dissemination. The last piece that should be put in place is setting up a *release management* process. As a rule of thumb for open source projects to be successful and facilitate third-party engagement, one should "release early, release often". In doing so, one increases the chances that ESDL value gets recognised, builds trust among the members of the community, shows commitment to its success, resolves early bugs and hiccups that can harm ESDL reputation. Release management is a recurrent task to ensure that all contributors follow the process, develop and maintain release build scripts, ensure all legal issues are addressed and the quality of each release is good enough for users to install and run easily.

The ESDL roadmap considers both the organizational, and the development evolution of ESDL. To ensure the potential and the value of ESDL are clear, several practical steps have to be taken in the upcoming period:

- Improve visibility through an improved web page:
  - Explicitly stating the open-source nature of the project
  - List all the projects and partners, along with the links to project results
- Extended and detailed documentation, tutorials for programming with ESDL, use cases, ESDL-based libraries (e.g. pip package)

- Get feedback from other companies: organise a meeting with Mondaine partners to get feedback on how they see the progress of ESDL, organize a talk during Expert Group session to get feedback from other energy transition consultancies what they see as necessary to start using ESDL in their applications
- Organise workshops not only to raise awareness but also to promote adoption via structure working sessions to get feedback from the potential user community
- Extend the models and create more tools around ESDL
- Technical review: ensure (and be explicit) that there is no IP infringement
- Add license and copyright notices, as well as documentation describing what it is and how it can be used (in source code files and the root directory)

Governance roadmap

- Year 2020: The project lead is Edwin Matthijssen, the Technical Board and the Community Council are formally established; the Technical Board is internal to TNO, and the Community Council consists of the most engaged TNO groups and partners that work on ESDL-related projects such as MONDAINE and MONDAINE PoC.
- Year 2021: The project lead becomes the chairperson of the Technical Board. Other companies also join the Technical Board, the Community Council extends to the companies that work with ESDL, but not necessarily collaborate directly with TNO.

7.1 Towards Economic Self-Sufficiency

Eventually the ambition is to build a robust, lively, open community around ESDL with its steering committee established either as an "ESDL non-profit foundation" or "ESDL Consortium". However, this should be seen as the last phase of the evolutionary trajectory the ESDL project is to undergo.

Indeed currently, ESDL is developed and maintained internally within TNO and financed through different projects that use ESDL for their use cases, subsidized by national and European funding schemes. As the project matures, the governance model moves from that of the Benevolent Dictator to Formal Meritocracy, while the ESDL community grows. Therefore, at that stage other financing models should be considered. Considering ESDL nature and evolution so far two solutions are proposed: forming a consortium and potentially transforming it to a foundation. The final decision depends on currently set objectives and expected plans.

As a short-term solution, the Technical Board and the Community Council can transform into an ESDL Consortium, with the common strategic goal of ensuring continuous maintenance and usability of ESDL.

Consortium is not a separate legal entity. It is a group of legal entities (companies or a combination of private and public companies) established with a primary purpose to achieve a predefined business goal (a new infrastructural project, dissemination of new R&D) often not only in the interest of companies-members of consortium but also in the public interest. The basic framework for establishing a consortium is based on three phases: process of negotiating between legal entities interested in, preparing documents for establishing consortium (a letter of intention is the first step), and defining organisational and managerial structure in the consortium (Structures for Consortia Delivery of Public Service Delivery, 2016).

Consortium members can help promote ESDL and financially support its development. ESDL Consortium should meet on a regular basis to discuss potential updates and keep track of ESDL's

applicability in projects. In the ESDL consortium, TNO would act as the Lead Contractor, and the project partner companies as members.

In the future, the possibility of transforming the consortium into an ESDL (Open) Foundation can be considered. Foundations are a common legal structure in supporting the maintenance of open-source software, and are registered with the primary purpose of managing a specific asset in favour of public interest (Canovas, 2018). As ESDL can ensure integration of different energy models from different companies, it can therefore facilitate gaining more insight into energy transition scenarios and reaching sustainability goals of the Netherlands (e.g. RES). As this is of public interest, ESDL can be considered public good. The foundation acts as one legal entity, with no shareholders, but a governing board. With the ESDL (Open) Foundation, TNO would no longer have an upper hand in decision-making process. As this is a more extensive process, both in terms of time and legal procedures, this should be a long-term solution.

Figure 3 shows the proposed roadmap for the potential organizational and financial evolution of ESDL, with provisional years.
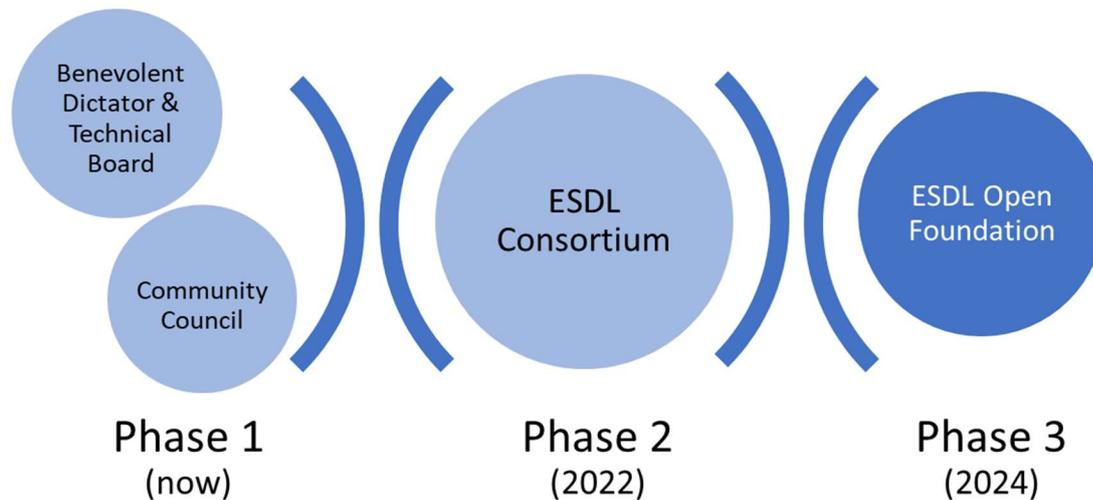

Figure 3. ESDL organizational and financial roadmap

We will continue our efforts towards further improving the project's management infrastructure and release management to support the evolution of ESDL by capitalizing on the effort available from within national and European funded projects where TNO participates.

8   References

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