OSEE Public Draft Framework

Working Draft

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Open Source
Ecosystem Enabler
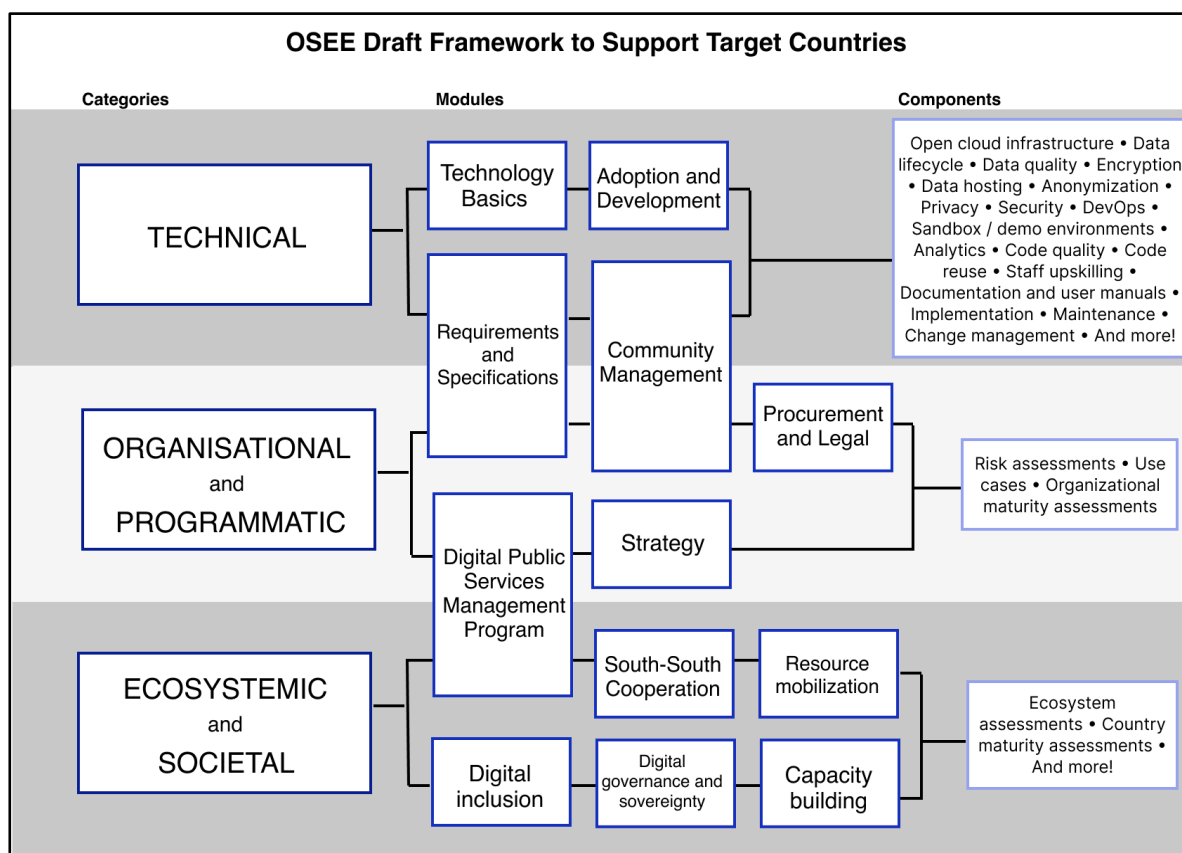
*Building digital public
services for impact*

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OVERVIEW

OSEE Draft Framework to Support Target Countries

Categories	Modules	Components

TECHNICAL — Technology Basics, Adoption and Development, Requirements and Specifications, Community Management

ORGANISATIONAL and PROGRAMMATIC — Requirements and Specifications, Community Management, Procurement and Legal, Digital Public Services Management Program, Strategy

ECOSYSTEMIC and SOCIETAL — Digital Public Services Management Program, South-South Cooperation, Digital inclusion, Digital governance and sovereignty, Resource mobilization, Capacity building

Components (Technical): Open cloud infrastructure • Data lifecycle • Data quality • Encryption • Data hosting • Anonymization • Privacy • Security • DevOps • Sandbox / demo environments • Analytics • Code quality • Code reuse • Staff upskilling • Documentation and user manuals • Implementation • Maintenance • Change management • And more!

Components (Organisational): Risk assessments • Use cases • Organizational maturity assessments

Components (Ecosystemic): Ecosystem assessments • Country maturity assessments • And more!

Open-Source Ecosystem Enablement Framework aims to provide practical guidance to governments and institutions on using, sustaining, and sharing open-source solutions and DPGs. It is based on insights from a community of experts, analysis of successful open-source initiatives, and documented best practices from different sectors and countries.

The framework is composed of three **general categories** that aim to address different aspects of open-source implementation in countries and institutions:
- **Technical**
- **Organisational and programmatic**
- **Ecosystemic and societal**

For each category, a set of **modules** provides practical guidance, recommendations, and materials for action-oriented training and capacity building to support stakeholders' efforts in meeting essential requirements and engaging in crucial activities related to a given category.

Finally, a series of **relevant components** are highlighted under each category to emphasize the importance of considering various factors when developing activities and policies to promote open-source adoption and ecosystem growth.

Organisational and Programmatic Category

Implementing open-source solutions and Digital Public Goods (DPGs) within government and institutional frameworks requires a well-structured approach to organizational and programmatic considerations. This category is crucial because it addresses the foundational elements that support the sustainable integration of open-source initiatives into public sector operations. Effective management programs, strategic planning, and well-defined procurement and legal processes form the backbone of open-source adoption. These elements ensure that organizations are equipped with the necessary governance frameworks and operational competencies to navigate the complexities of implementing open-source solutions. Once these organizational and programmatic aspects are established, it becomes vital to consider broader ecosystemic and societal factors to ensure inclusivity, sustainability, and community engagement.

DIGITAL PUBLIC GOODS MANAGEMENT PROGRAM

While deploying an open-source DPG, any country will have to set up an Open Source Program Office (OSPO). Table below lists various roles and user profiles which can exist in an OSPO along with their composition

Roles	Profiles	Composition
Strategic Units in an OSPO		
Strategy / management	Government minister Chief Information Officer (CIO) Chief Security Information Officer (CISO)	1 CIO at Government level 1 CIO in each Ministry 1 CISO at Government level
Fundraising	Funders (Unilats, Multilats, Development Banks) Fundraising Team	Fundraising Experts at Country Level
Service design	Service designer UX/UI Designers	Internal / Contract / External Consultants can be onboarded here if required
Procurement / IT strategy	Digital Procurement Manager	Internal / Contract / External Consultants can be onboarded here if required

Roles	Profiles	Composition
Legal and Policy	Legal Policy Officer Data Protection Officer	Internal / Contract / External Consultants can be onboarded here if required
Capacity Building	Training and Development Specialist Knowledge & Content Development Officer	Internal / Contract / External Consultants can be onboarded here if required
Performance and Monitoring	Monitoring & Evaluation Officer Performance Analyst	Internal

STRATEGY

Scope and purpose:

At the organisational level, i.e. broader than any one tool or software application, an open source software strategy defines the business model(s), ethos, approaches, purposes and risk mitigation tactics for the ingestion, build and release of OSS tools, applications and packages. Note that while there are many existing guides on OSS strategies, the information below attempts to highlight topics that are unique or especially relevant to those in low- and middle-income countries (LMICs). The last section of this page links to other OSS strategy guides.

An OSS strategy can cover any or all of:
● Business model(s) - grant funding, institutional funding, SaaS, customer support for custom builds or add-on services, government contracts, or other revenue streams to ensure financial sustainability.
● Internal management and engagement - innersource governance, staff feedback, cross-team or cross-functional checks, executive / organisation leader engagement
● (External) Community management and engagement - external contribution governance, connecting with customer / consumer base, feedback triage and response
● How OSS can solve for an organisation's needs i.e. to fill gaps not met with existing tools
● Achieving economies of scale
● Meeting socioeconomic needs of the community or customer base, including language translation and device compatibility

Business Model Spotlight: DHIS2

DHIS2 is one of the best-known digital public goods (DPG). DHIS2 receives institutional funding from several governments and organisations to build and release its core software and optional add-on features. This in turn has spurred an ecosystem of companies throughout sub-Saharan Africa and South Asia who generate revenue by helping governments and nonprofits implement and customise their DHIS2 instance.

Target Audience:

Type of Company or Organisation	Target Audience
Large governmental org	Organisational leaders or managers working in a similar function as an open source programme office (OSPO) **OR** who have the budgetary, personnel or other authority to create an OSPO.
Small governmental org	Business manager or maintainer of an OSS tools **OR** who are considering using, building or releasing OSS
Large enterprise	Organisational leaders or managers working in a similar function as an open source programme office (OSPO) **OR** who have the budgetary, personnel or other authority to create an OSPO.
Small or medium enterprise	Organisational leaders or managers working in a similar function as an open source programme office (OSPO).
Informal community or individual	Business manager or maintainer **OR** who are considering using, building or releasing OSS.

Acquired Competencies:

Competencies	Description
Costing Labour versus licences	Public sector stakeholders need to develop the ability to accurately assess and compare the costs associated with labour (e.g., development, maintenance, and support) versus the costs of proprietary software licences. This includes understanding Total Cost of Ownership (TCO), evaluating the long-term savings from using open-source software, and the potential hidden costs of both options. Costing labour versus licences - especially in low- and middle-income countries (LMICs) where labour is relatively cheap, there could

	be significant cost advantages of using, building or releasing OSS instead of procuring proprietary licences for the same purpose. Therefore, a strategy advocating for OSS that is unique to LMICs is to cost out labour versus licences to demonstrate potential savings.
Capacity Building	It is crucial to build internal expertise in managing, deploying, and developing open-source software. This includes training staff on the specific tools and technologies used, fostering a culture of continuous learning, and understanding the open-source community dynamics. Capacity building should also involve developing skills in software development, systems integration, and IT management. Research has shown that investing in OSS directly results in investing in local labour capacity, whereas investing in licence procurement diverts that money to an external company or organisation. This can be especially advantageous in LMICs, where hiring opportunities with large tech companies are limited.
Platform and tool selection	Stakeholders must be equipped to evaluate and choose the appropriate open-source platforms and tools that align with the organisation's strategic goals. This involves conducting a needs assessment, understanding compatibility and interoperability, evaluating community support, and considering the sustainability and security of the open-source solutions.
Software contribution governance	Establishing and managing governance structures for contributing to open-source projects is essential. This includes understanding the legal implications of contributing code, managing intellectual property rights, and ensuring compliance with open-source licences. Stakeholders also need to develop processes for internal code review, contribution approval, and community engagement.
Security and risk management	Stakeholders need to develop a deep understanding of the security risks associated with open-source software, including potential vulnerabilities and how to mitigate them. This involves implementing best practices for secure software development, conducting regular security audits, and staying informed about updates and patches from the open-source community.
Change management	Successfully integrating open-source solutions requires effective change management strategies. Stakeholders should be able to plan and execute the transition from proprietary to open-source systems,

	addressing resistance to change, communicating benefits, and ensuring that the workforce is adequately prepared for new workflows and processes.

Dependencies and Overlaps:

- Hard legal requirements, including laws of the country in which your organisation is based or operates
- Cultural norms, including what your organisational leadership, board of directors, staff and customers / beneficiaries expect
- Organisational gaps that can be bettered with an OSS strategy, including staff collaboration, staff skills, data maturity, and overall software development capacity

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Organisational and Programmatic > Digital Public Services Management Program	Maturity Assessment	Transformations | United Nations Development Programme Digital Maturity Assessment – Lao PDR 5 Levels Of Digital Government Maturity E-Government Maturity Model for Sustainable E-Government Services from the Perspective of Developing Countries	Strategy / management	Content freely available, need to provide attributions
Organisational and Programmatic > Strategy	Digital Strategy and Roadmap	Digital India Harnessing Digital - The Digital Ireland Framework e-Estonia		Content freely available, need to provide attributions

		Data and Digital Government Strategy Gobierno de México		

COMMUNITY MANAGEMENT

Scope and Purpose

This module seeks to address the lack of adequate training and support for open-source communities. To address this, we will launch a community that is focused on providing education, training, and support for starting, managing, and growing an open-source community.

The first thing the community will focus on is orientation. The goal is to ensure that every participant and potential member understands the importance of the community and establishes a solid foundation for future growth.
- Goal and values of the community
- Role definition and clarity
- Effective communication channels
- Continuous learning and Adaptation

Once each member has been familiar with the orientation, Community Onboarding can follow and these will act as support for the community which will include but not be limited to :
- Open Source Documentation
- Open Source Design
- Open Source Data Science
- Open Source Marketing and Funding
- Open Source Programs and Specialized Projects
- Burnout and Mental Health

The goal is to bring the community closer together, fostering better teamwork and learning opportunities for everyone involved. We want every member to be able to improve their skills, refine their strategies, and make a bigger impact in the world of open-source software. To achieve this, there will be provision of various resources, running of workshops, and offering mentorship programs to help community members gain the know-how they need. Essentially, we're helping to fill the gaps in education, training, and support needed to build, run, and grow open-source communities.

Another goal of the community is to provide Collaborative opportunities and knowledge sharing across a variety of domains as mentioned above: including documentation, design,

data science, marketing, funding, and specialised projects. The community will allow members to learn from one another and collectively improve their skills and impact.

Because the community is likely to be large and not everyone will be physically present, to aid the development of a collaborative system. the community can be hosted in an enabling environment such as:

Small/ Informal	Large/ Formal
WhatsApp	Slack
Telegram	Zulip

As the community grows bigger and larger, there can be consideration to expand to other regions so as to aid global collaboration and also bring new perspectives to the table.

Target Audience

This module is destined for community managers, project managers, communication departments, fresh graduates and also, students in educational institutions since we are just starting up and setting up the community, etc.

Role in Community	Description:
Software Engineers	We propose a diverse audience in terms of gender, geography, seniority, and occupational status. And Community Managers who actively maintain or contribute to open-source software will be included. The community can be something that will start up in a university, with the end goal of spreading across to get the right audience and bringing together industry experts, in forming a bigger community and hosting conversations about the challenges and potential solutions to specific issues in the open-source space for each community member.
Data Analysts	
Program Managers	
Technical Writers	
Product Designers	
Developer Advocates	
All of the above/ Students	

And Community Managers who actively maintain or contribute to open-source software will be included.

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> *Why a university?*
> Most students who are doing something in tech are either revolving around being a software engineer, a product designer, a technical writer, or even a program manager who is also running a community or two in the same university. We also have the

opportunity to leverage the existing communities in the school to get a wider audience and grow our open-source community. which is something that is not as common as other type of communities

Acquired competencies:

In this module, the trainee will acquire the following competencies:

Competency	Description
Identify, build and grow the open-source community	This will involve understanding how to set up and grow an open-source community. It's going to entail understanding who the audience is, how to attract them, and how to keep them interested over time.
Manage the open-source community over a project lifetime	This competency is going to make sure that the community stays active. it entails establishing rules, resolving conflict, and keeping members engaged and motivated
Tool community	This will be about selecting and using the right tool to support the community operations. either communication platforms or other software to facilitate to facilitate collaboration and productivity

Dependencies and overlaps:

This module overlaps with Community Management aspects dealt with in the Technical category. See the Technical category for more details on complementary community management aspects, such as Management Tools training.

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Organisational and Programmatic > Community Management	Understanding Community Development Principles	Training on Community Development | Devimpact Institute	Strategy / management (Community Management)	Paid Course

	Stakeholder Engagement Strategy			
	Project Management for Community Development	PMP Certification for Project Managers in the Public Sector - Red Learning		Paid Course
	Benefits of Community Management Training for Public Sector Project Managers	New online course on effective community management is a simple guide for councillors and public | United Nations Development Programme		Content freely available, need to provide attributions

PROCUREMENT AND LEGAL

Scope and Purpose:

Procurement describes the process of acquiring a service once a need has been identified. Procurement includes the processes of risk assessment, seeking and evaluating alternative solutions, contract award, delivery of and payment for the property or services and, where relevant, the ongoing management of a contract and consideration of options related to the contract. Value for money is the core principle governing public procurement, and is supported by the underpinning principles of efficiency and effectiveness, competition, accountability and transparency, ethics and industry development. Open source software results in long term efficiencies by preventing lock-in and vendor dependency. It also procedurally enforces transparency and relatedly accountability.

This document describes the legal and procedural aspects of acquiring open source software or building open source software for government service delivery. The scope of this document is specifically on procurement of **open source software** in the public sector and should be read along existing resources on best practices in public procurement.

Target Audience:
- Any project or product managers conceptualising or designing a project since what they are able to use or build is within the boundaries of the laws of the country.

- Legal and policy professional who can advise on what is legally possible to use in a project, and also harmonise regulation to align with the goals of open source software development.
- Procurement Managers, (if the role exists), should have a good understanding of open source technical solutions being delivered such as IT networks, operating systems and hardware solutions.
- Accounting team

Role	Description
Legal and Policy Professionals	**Benefits**: Improved ability to advise on legal aspects of open-source adoption and harmonise regulations with open-source development goals.
Project or Product Managers	**Benefits:** Enhanced understanding of legal boundaries and opportunities within the context of open-source software.
Procurement Managers	**Benefits:** Enhanced knowledge of open-source technical solutions and the procurement processes required to implement them effectively.
Accounting Team	**Benefits:** Increased capacity to manage financial aspects of open-source projects, including budgeting, cost analysis, and financial reporting.

CONSIDERATIONS:

Procurement Software:
The procurement process itself can be carried out using an open source software such as OpenProcurement.

Licence Related:
A licence governs how software is used and distributed. An open source licence has the same legal weight as the terms of use or terms and conditions of proprietary software. Violation of open source licence terms can result in lawsuits. Hence, project teams must carefully consider the licences of existing open source software they use in their work, as well as the licence under which they release their software.

When using more than one open source service, one should check that licences of the different providers are compatible, i.e. that they can be combined in one product and distributed together.

> *Compliance with Data Privacy Laws*:
> The open source software should be compatible with the data privacy laws of the country, if one exists. The service might also be subject to data privacy regulations of other jurisdictions. For example, the European GDPR extends to European citizens all over the world, regardless of country of residency.

Acquired Competencies:

In this module, the trainee will acquire the following competencies:

Competency	Description
Value-for-money assessment	**Understanding Total Cost of Ownership (TCO):** While one of the key advantages of most open-source solutions is that they do not have an upfront licensing cost, public sector stakeholders need the ability to evaluate not just the initial cost but also ongoing costs (maintenance, updates, support, etc.) associated with setting up and customising open-source solutions.
Capacity to Run/Integrate Open-Source in Public Procurement	**Understanding Open-Source Licensing:** Stakeholders should be well-versed in various open-source licenses, their implications, and compliance requirements. **Procurement Process Integration:** Skills to integrate open-source options into standard public procurement processes, including how to structure requests for proposals (RFPs) that accommodate open-source solutions. **Vendor Evaluation:** Capability to evaluate vendors based on their ability to support open-source technologies and adherence to open-source principles.
Capacity to Recognize and Address Legal Challenges	**IP and Legal Compliance:** Ability to identify and manage intellectual property (IP) rights issues related to open-source software, ensuring compliance with relevant legal frameworks. **Contractual Considerations:** Skills to draft and negotiate contracts that address open-source use, including clauses on warranties, liabilities, and support. **Data Privacy and Security:** Understanding the implications of open-source solutions for data privacy and security in the public sector.
TBC	TBC

Dependencies and Overlaps
- Capacity Building: There will be need for capacity building on knowledge of open source projects and open source licensing
- Ecosystemic
- Requirements and specifications

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Organisational and Programmatic > Procurement and Legal	Policy, Contractual Obligations, Transparency and Accountability	New Open Source law in Switzerland | Joinup Open Source in the Public Sector (Germany/Europe)- some spotlights	Procurement and Legal	Content freely available, need to provide attributions
Organisational and Programmatic > Procurement and Legal	Licensing Compliance, Source Code Disclosure, Intellectual Property Considerations, Regulatory Compliance, Risk Management	Public Sector and Open Source		Content freely available, need to provide attributions

REQUIREMENTS AND SPECIFICATIONS

Scope and Purpose:

Requirements and specifications act as the foundation for designing, developing, and delivering any high-quality product to meet the end user's needs and expectations.

In this framework, the "Requirements and Specifications" module outlines the essential criteria, standards, and specifications necessary for the effective adoption, management, and contribution to open-source solutions for a country. Serving as a comprehensive guide, it

provides clear directives and objectives to attain for stakeholders engaged in deploying open-source technologies.

This module focuses on defining and documenting various requirements and specifications pertinent to the adoption and utilisation of open-source software. Its primary purpose is to ensure that the open source project governing bodies follow a structured approach in:

- Selecting appropriate open-source licences baked on requirements
- Adhering to technical standards
- Ensuring compliance with security and privacy regulations
- Documenting contributions comprehensively
- Actively engaging with the open-source community
- Establishing robust training and capacity- building initiatives
- Implementing mechanisms for continuous evaluation and improvement

By addressing these critical aspects, this module aims to facilitate seamless integration and effective management of the open-source solution

Target Audience:

The target audience for this module typically includes:

Role	Description
Developers and Engineers	They require detailed technical specifications to guide the implementation of features and functionalities within the project.
Project Managers	They need a clear understanding of the project's requirements and specifications to effectively plan and coordinate development efforts, allocate resources, and track progress.
Product Owners and Stakeholders	Product owners and stakeholders, including clients, sponsors, and end users, need to understand the product requirements and specifications to ensure that it meets their needs and expectations.
Quality Assurance Team	They rely on requirements and specifications to design test cases, validate software functionality, and ensure that the product meets quality standards.
Technical Writers	They use requirements and specifications to create user manuals, API documentation, and other technical documentation that helps users understand and use the product effectively.

Open source Community	Members of the open-source community who contribute to or use the project benefit from clear requirements and specifications, as it guides them on how to contribute to the project and understand its capabilities.
System Integrators	System integrators go through the requirements and specifications to customise the solution.
Third-Party Developers	They need to understand the specifications to integrate with other systems or extend their functionality.

Acquired Competencies:

Competencies	Description
Licensing Selection Based on Requirements	Stakeholders need to develop the ability to choose the most appropriate open-source licences that align with the project's specific requirements. This includes understanding different open-source licences (e.g., GPL, Apache, MIT) and their implications on software usage, modification, distribution, and integration with other software. Legal expertise in software licensing is essential for this competency.
Adhering to Technical standards	It is crucial to ensure that open-source solutions adhere to established technical standards, both industry-wide and specific to the public sector. Stakeholders must be able to identify relevant standards (e.g., ISO, W3C, IEEE) and ensure that selected software meets these standards for interoperability, scalability, and sustainability. This also includes understanding the importance of open standards in software development.
Compliance with Security and Privacy Regulations	Public sector stakeholders must ensure that open-source software complies with all applicable security and privacy regulations. This involves a thorough understanding of relevant laws and frameworks, such as GDPR, FISMA, and NIST standards. Skills in risk assessment, secure software development, and data protection are critical to maintaining compliance and safeguarding sensitive information.
Comprehensive Documentation of Contributions	Documenting contributions to open-source projects in a comprehensive and standardised manner is essential. Stakeholders should develop skills in writing clear, detailed documentation that includes code changes, rationale, implementation details, and testing results. This documentation is vital for maintaining transparency, facilitating collaboration, and ensuring that contributions

	are easily understood and maintained over time.
Active Engagement with the Open-Source Community	Effective integration of open-source solutions requires active and ongoing engagement with the open-source community. Stakeholders should build skills in community participation, including contributing to discussions, submitting patches, reporting bugs, and collaborating on project roadmaps. This engagement helps ensure that public sector needs are considered in the development of open-source software.
Training and Capacity Initiatives	Establishing and maintaining robust training programs and capacity-building initiatives is essential for successful open-source adoption. This includes developing training curricula for staff, organising workshops, and providing ongoing support to ensure that all team members are proficient in using and contributing to open-source projects. Capacity-building should focus on both technical skills and understanding the open-source ecosystem.
Continuous Evaluation & improvement mechanisms	Implementing mechanisms for the continuous evaluation and improvement of open-source solutions is vital. Stakeholders should develop the ability to monitor software performance, assess user feedback, and conduct regular audits to identify areas for enhancement. This includes setting up processes for software updates, patch management, and performance benchmarking, ensuring that the solutions remain effective and up-to-date.

Dependencies and Overlaps:

Modules	Description
Community Management	Requirements & Specifications are generally built based on inputs from the community. Community ensure that diverse voices are heard and, - Requirements reflect the needs and priorities of the community - Specifications are reviewed and validated by the community for completeness, clarity, and relevance
Capacity Building	Clear and precise documentation with version control is vital for onboarding new team members in open-source projects. It acts as a comprehensive resource for understanding project features and empowers team members to contribute effectively.

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Organisational and Programmatic > Requirement and Specifications	Reference Architecture	ServiceNow Digital Government Interoperability Platform Reference Architecture	Service Design	Content freely available, need to provide attributions
Organisational and Programmatic > Requirement and Specifications	Service Catalogue	Government Services Catalogue Service Catalogue Creating a list of services		Content freely available, need to provide attributions
Organisational and Programmatic > Requirement and Specifications	Service Prioritisation	Adopt-govstack/service-prioritization		
Organisational and Programmatic > Requirement and Specifications	Requirement Documentation	Building great open source documentation Documentation as an Open Source Practice | DigitalOcean How to write effective documentation for your open source project	Service Design	Content freely available, need to provide attributions
Organisational and Programmatic > Requirement and Specifications	Specifications	Standard for Public Code Key Insights from "The European Public Sector Open Source Opportunity"	Service Design	Content freely available, need to provide attributions
Organisational and Programmatic > Requirement and Specifications	Validation and Verification	Verifying open source software	Service Design	Content freely available, need to provide attributions

Relevant Components:

- Open cloud infrastructure
- Data lifecycle
- Data quality
- Encryption
- Data hosting
- Anonymization
- Privacy
- Security
- DevOps
- Sandbox / demo environments
- Analytics
- Code quality
- Code re-use
- Staff upskilling
- Documentation and user manuals
- Implementation
- Maintenance
- Change management

Ecosystemic and Societal Category

After addressing the organizational and programmatic components, the focus naturally extends to the broader ecosystemic and societal impacts of open-source and DPG initiatives. This category emphasizes the importance of fostering an inclusive and supportive environment that enables open-source solutions to thrive within society. Digital inclusion, resource mobilization, capacity building, and considerations around digital governance and sovereignty play a crucial role in ensuring that the benefits of open-source initiatives are equitably distributed. By addressing these aspects, governments and institutions can create the necessary conditions for widespread adoption and support, allowing open-source solutions to not only be implemented but also to contribute positively to social development and digital empowerment.

DIGITAL INCLUSION

Scope and Purpose:

Digital Inclusion entails the intentional provision of access to opportunities and rights facilitated by digital communication and services for all people – regardless of the barriers and threats such as age, ability, gender, location and security. Digital inclusion is based on a human rights, multi stakeholder and whole-of-society approach, that seeks to eliminate structural and social inequalities with a view to advance the well-being of all members of society.

From the perspective of the Open Source Ecosystem Enabler (OSEE), creating digital ecosystems that are inclusive for all - including women, the elderly, individuals with disabilities, and those in low-connectivity areas or with varying literacy levels - requires broad societal collaboration and intentional design.

According to the United Nations, Digital inclusion is defined as "equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere". UNDP further defines inclusive digital transformation as a thoughtfully designed and implemented change process that puts people at the centre of digital transformation to leave no one behind. It aims to build a more responsive, agile, transparent and accessible society that has four main characteristics. It addresses the needs of the most poor and vulnerable, including those not connected; Mitigates the tendency of digital transformation to exacerbate existing inequalities; Empowers underrepresented groups to take part in a meaningful way; and Protects people from the adverse effects of digital technologies

To achieve digital inclusion, it is important to measure the extent to which digital projects or ecosystems are inclusive and to identify areas that require intervention. There exists an

established criteria and tools for monitoring and evaluating the opportunity and barriers. The assessment criteria is aligned to the Sustainable Development Goals (SDGs) and the role of digital tools to accelerate the achievement of outcomes. Of particular interest is the role of digital public goods (DPGs) - open source software, open data, open AI models, open standards and open content - in achieving inclusion through the SDGs. OSEE therefore seeks to deploy these open-source tools to build inclusive digital ecosystems by addressing developing countries' needs and contributing to the advancement of the Sustainable Development Goals (SDGs). The deployment includes knowledge, skills, tools, content, platforms and community spaces for access to health, education and other digitally-enabled services without discrimination.

At a country level, the general digital inclusion process begins with country assessments or analysis to identify opportunities and barriers to achieving an inclusive digital ecosystem. The baseline identified through the assessment will be later used in monitoring and evaluation of the strategy, policy, regulations, infrastructure and other interventions towards an inclusive digital ecosystem. The evaluation tools and interventions should regularly enable the inclusion of vulnerable persons including the elderly, those hindered by disability, poverty, rural and urban dwellers, migrants, refugees, youth, women and children. The need for continuous evaluation has resulted in the development of UNDP's Digital Readiness Assessments, GenderMag, SDG Impact Assessment Toolkits and Digital Inclusion Evaluation Toolkits, among other tools. There is a need for the deliberate application of these tools to open source software initiatives.

This module aims to provide an in-depth overview on how to develop strategies, policies, regulations, multi-stakeholder participation, multidisciplinary approaches, infrastructure and mobilise resources for inclusive open source digital ecosystems.

Target Audience:

This module is intended for all national policy makers, regulators, open source solutions designers, code contributors, community volunteers and project implementation teams. It is relevant to all other developers and users.

Role	Description
Community Leaders	The training should provide community leaders with the skills and knowledge to identify local digital inclusion barriers, mobilise resources, and engage community members in digital initiatives, ensuring broader participation and impact.
Vulnerable Groups Representatives	Empowered to participate in the development and implementation of digital inclusion strategies. They should learn how to engage in policy discussions and advocate for their needs in digital inclusion initiatives, ensuring that their perspectives are included in the

	decision-making process.
Policy Makers	Policy makers within governments should enhance their understanding of how to develop inclusive digital policies and strategies aligned with SDGs.
Non-Governmental Organisations (NGOs)	The Framework will help NGOs understand and utilise digital tools and frameworks to support marginalised groups, ensuring that their initiatives align with and contribute to national digital inclusion strategies and the SDGs.
Civil Society Organizations (CSOs)	Should gain insights into the use of digital inclusion evaluation tools and how to advocate for inclusive digital policies and practices that support vulnerable groups with leveraging open-source for their needs.
Educational Institutions	Educational institutions will learn how to incorporate digital inclusion strategies into their programs, ensuring that students and community members are equipped with the skills and knowledge needed to participate in and benefit from the digital economy.

Acquired Competencies:

Competencies	Description
Conducting Digital Inclusion Assessments	Participants will acquire the ability to perform comprehensive digital inclusion assessments at a country level to identify opportunities and barriers within the digital ecosystem. This competency includes understanding how to use tools such as the UNDP Digital Readiness Assessment and SDG Impact Assessment Toolkit to evaluate factors like infrastructure, access, and policy. The focus will be on assessing the inclusion of vulnerable populations, such as marginalized groups, rural communities, and people with disabilities.
Strategy and Policy Development for Digital Inclusion	Participants will learn to design, develop, and implement digital inclusion strategies and policies that align with national goals and international standards. This competency involves understanding how to craft strategies that foster equitable access to digital services and infrastructure for all, particularly marginalized groups.

	They will also learn how to ensure that policies are inclusive, sustainable, and able to adapt to evolving technological trends.
Designing Inclusive Open-Source Software Solutions	This competency focuses on equipping participants with the skills to design and promote open-source software initiatives that prioritize inclusivity. Learners will explore how to use open-source platforms to address barriers faced by vulnerable populations and how to apply tools to ensure that software solutions meet the diverse needs of all users.
Developing Multidisciplinary Approaches for Digital Inclusion	This competency involves understanding how to integrate diverse disciplines such as information and communication technology (ICT), public policy, law, and social sciences in developing holistic digital inclusion solutions. Participants will learn how to leverage cross-sectoral knowledge to address complex digital inclusion challenges in a comprehensive and effective manner.

Dependencies and overlaps:

This module addresses cross cutting issues of digital inclusion and all is relevant to aspects of open source projects ranging from Technical or design approaches to Organisational issues such as strategy and procurement to Eco-systemic issues of resource mobilisation and capacity building. It therefore overlaps with all other modules.

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Ecosystem and Societal > Digital Inclusion	Digital Inclusion - Accessibility	DIGITAL INCLUSION IN A DYNAMIC WORLD	Service Design	Content freely available, need to provide attributions
Ecosystem and Societal > Digital Inclusion	Digital Inclusion - Relevance and Digital Skills	Full article: Strengthening digital inclusion through e-government: cohesive ICT training programs to intensify digital competency	Service Design	Content freely available, need to provide attributions

RESOURCE MOBILISATION

Scope and Purpose:

Resource mobilisation is the process of enabling a project to have the necessary resources for rollout, maintenance, optimization and sustainability. In the realm of open source initiatives, this can encompass a wide range of resources, including funding, human capital, technical expertise, and supportive infrastructure. Robust resource mobilisation is key to the long-term stability and effectiveness of any open source project, especially when being deployed within the complexities of a government setting.

Open source projects are the foundation of technological innovation. Historically, they've been the bedrock upon which countless software applications, frameworks, and platforms have emerged, driving progress across various industries. In recent years, governments around the world have started to recognize the potential of open source technologies, not only in terms of cost savings but also as a means of fostering innovation. However, the success of these projects hinges on an often-overlooked aspect—effective resource mobilisation

This module aims to provide and in-depth overview on how to mobilise and secure resources such as (but not limited to) funds, human resources, licences, tools, cloud credits required for successful and sustainable open source project rollouts.

Target Audience:

Role	Description
Procurement Officers in Government Agencies	Procurement officers can gain the knowledge and skills to identify, evaluate, and procure robust, secure, and customizable open-source solutions (OSS) that meet the needs of their agencies while adhering to relevant regulations and policies.
Donor Agencies	Donor agencies can gain insights into the potential impact of their financial contributions, learn how to support OSS projects through one-time or recurring donations, and better understand the importance of funding open-source initiatives to drive digital transformation and innovation.
International Development Institutions	Teams at international development institutions can build capacity to spearhead and coordinate international efforts to develop, implement, and sustain OSS

	projects, fostering collaboration and resource-sharing among countries and organisations.
Billing Managers in Open Source Communities	Billing managers can learn best practices for managing finances within OSS communities, ensuring that resources are allocated efficiently and sustainably to support ongoing development and maintenance of open-source technologies.
Fundraisers in Technology Innovation Agencies	Fundraisers can learn new techniques and approaches to secure funding from forward-thinking companies and individuals dedicated to driving digital transformation within public services through open-source solutions.
Budgetary Policy Makers	Budgetary policy makers can gain a comprehensive understanding of the benefits and challenges of OSS adoption, enabling them to develop and implement policies that support the integration of open-source software into government operations and ensure adequate budget allocation for OSS projects.

By identifying and engaging these varied stakeholders, the resource mobilisation strategy can tap into a wide range of financial, material, and social capital to sustain and expand the impact of OSS rollouts.

Acquired Competencies:

Competencies	Description
Conducting Digital Inclusion Assessments	Participants will acquire the ability to perform comprehensive digital inclusion assessments at a country level to identify opportunities and barriers within the digital ecosystem. This competency includes understanding how to use tools such as the UNDP Digital Readiness Assessment and SDG Impact Assessment Toolkit to evaluate factors like infrastructure, access, and policy. The focus will be on assessing the inclusion of vulnerable populations, such as marginalized groups, rural communities, and people with disabilities.
Strategy and Policy Development for Digital Inclusion	Participants will learn to design, develop, and implement digital inclusion strategies and policies that align with national goals and international standards. This

	competency involves understanding how to craft strategies that foster equitable access to digital services and infrastructure for all, particularly marginalized groups. They will also learn how to ensure that policies are inclusive, sustainable, and able to adapt to evolving technological trends.
Designing Inclusive Open-Source Software Solutions	This competency focuses on equipping participants with the skills to design and promote open-source software initiatives that prioritize inclusivity. Learners will explore how to use open-source platforms to address barriers faced by vulnerable populations and how to apply tools to ensure that software solutions meet the diverse needs of all users.
Developing Multidisciplinary Approaches for Digital Inclusion	This competency involves understanding how to integrate diverse disciplines such as information and communication technology (ICT), public policy, law, and social sciences in developing holistic digital inclusion solutions. Participants will learn how to leverage cross-sectoral knowledge to address complex digital inclusion challenges in a comprehensive and effective manner.

Dependencies and overlaps

This module overlaps with the Capacity Building category. See the Capacity Building category for more details on technical and human resource mobilisation aspects

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Ecosystem and Societal > Resource Mobilisation	Resource Mobilisation / Funding	Summary of Resource Mobilization e-Course PARTNERSHIPS AND RESOURCE MOBILIZATION FOR DEVELOPMENT PROFESSIONALS Partnerships, Financing and Resource Mobilization for Sustainable Development | UNSSC | United Nations System Staff College	Fundraising	Paid Courses from UN Ecosystem

CAPACITY BUILDING

Scope and Purpose

According to [IBM and Red Hat](#), "Open source has become a movement and a way of working that reaches beyond software production. The open source movement uses the values and decentralised production model of open source software to find new ways to solve problems in their communities and industries." Additionally, the values of open source are peer-review, transparency, reliability, flexibility, lower cost, no vendor lock-in and open collaboration.

Any country which aspires to effectively implement an open-source policy and strategy needs to have a strong open-source ecosystem consisting of people, policies & strategies, processes, knowledge, technologies & solutions and all stakeholders including civil society. This ecosystem is generally within the government, the private sector, academia, open-source communities and society at large.

It is imperative that the country adopts a coherent Capacity Building strategy for these various categories of people in open-source-related skills and knowledge. Training courses can be technical in nature but it is also important to focus on the legal aspects of adopting open-source solutions, the organisational framework to maximise success and all other types of educational activities.

An open-source capacity building initiative caters for people with no prior knowledge of open-source but also caters to re-skill and up-skill those with prior skills and knowledge.

The main objective of capacity building would be to ensure that a critical mass of knowledgeable and skilled people exist within the country to contribute to creating and maintaining a strong open-source ecosystem.

While it is possible to implement open-source solutions from scratch (i.e. by developing an open-source software), it is more effective to reuse existing open-source solutions (Digital Public Goods / DPG) which are proven. This also enables capacity development for handling these solutions. Various repositories of proven open-source solutions exist e.g. the [Digital Public Goods Alliance](#) (a UN-endorsed multi-stakeholder initiative with objective to "unlock the potential of open-source technologies for a more equitable world") and [GovStack](#) (with objective to "lead the world in establishing the global toolkit for the digitalization of public sector infrastructure"). These two repositories are linked as "GovStack is part of the Digital Public Goods Alliance Roadmap, supporting governments to have capacity to deploy, maintain and evolve DPGs for digital public infrastructure, and the development of a vibrant digital ecosystem".

When trying to deploy an existing proven open-source solutions within a country, Governments tend to face multiple issues. These include:

- A lack of technology professionals such as systems analysts, system designers and systems implementers. These profiles are scarce in many low-to-middle-income countries and, if they are available, tend to work in private structures (making them expensive to recruit in government). In some countries, there are not enough skilled technology professionals to constitute an ecosystem strong enough to support the implementation but also the maintenance of DPGs over a number of years. Sometimes, small prototypes are developed but these can rarely be scaled and secured when needed. Additionally, existing training institutions, including universities, might not be providing appropriate courses to prepare the workforce to have the required skills.
- A lack of awareness of the benefits of DPGs in government especially at the level of decision makers. Technology decisions which may impact service delivery over many years might be done without consultation with end users, domain experts and technology experts, resulting in systems which are "easy" to procure (as this entails buying hardware, commercial software and maintenance services from well-known suppliers) but which rarely prove to be beneficial for users.
- A lack of regulations when it comes to procure products and services from an open-source ecosystem, compared to procurement activities when dealing with commercial companies. In some cases, existing regulations and practices will need to be changed. In some low-to-middle-income countries, a new legal framework will need to be established.
- A lack of understanding of the ethical aspects of computing such as data protection and privacy, citizen security and safety. Many technologically advanced countries have comprehensive regulations to protect their technology infrastructure and citizen data but this might not yet be the case in some low-to-middle-income countries. Furthermore, online services tend to require datasets to work and open-data can be very valuable.
- And, at the level of governance, a lack of best practices on how multiple agencies can collaborate to adopt existing DPGs and create new DPGs. In some cases, agencies operate at a level which limit their effectiveness for nationwide projects. For example, an agency operating under the aegis of a particular ministry may not have sufficient power to properly engage with other ministries which are higher in the hierarchy.

The Open-Source Ecosystem Enablement Framework (OSEEF) therefore address these issues by providing, for example, for:
- A holistic approach to create an ecosystem strong enough to support DPGs in the country: training institutions and universities might need to upgrade their courses, open source communities need to be created or supported if they already exist (such as user groups, forums, etc.), governments need to recruit more technology professionals and, probably, recruit from abroad if the required people are not available locally but with a short/medium-term plan to develop local capacity, etc.
- Decision makers and procurement officials in government need to be sensitised on the benefits and innovative aspects of DPGs. In some cases, procurement processes will have to be enhanced. The important notion of copyright and of licensing costs need to be properly understood but it is also important that people be aware of infrastructure costs and the need for support during implementation and maintenance. In other words, governments will need to be comfortable in managing the risks of adopting

DPGs, especially in many low-to-middle-income countries which do not have a lot of experience in technology projects.

- In some countries, new data protection, cybersecurity and cybercrime regulations might be required. Additional regulations to promote open-data at the level of government might also be needed. Mobile and web app developers, for example, would welcome data from the government (properly secured, sanitised and licensed) to create valuable technology solutions for citizens. This is one good way to bridge the digital divide. Additionally, with the emergence of technologies such as automation and artificial intelligence, ethics has gained in importance. Citizen participation in these decisions might be encouraged by creating the appropriate forums for government and citizens to exchange views and opinions.
- Finally, concerning governance, the roles, responsibilities and reach of each collaborating Ministry or Agency need to be clearly defined as per best practices. It is also important to plan how the initiative and its governance structure will evolve over a number of years

The establishment of National Open Source Technical Facilities (OSTF) is therefore of paramount importance to act as the coordinator to mitigate the issues which may arise by making sure that the outlined solutions are implemented in a timely and effective manner.

Of course, it would be unreasonable to reinvent the wheel and, therefore, the Open-Source Ecosystem Enablement Framework (OSEEF) would need to contain a precise blueprint to set up a National Open Source Technical Facility (OSTF) based on similar successful structures in other countries.

For the maximum effectiveness of Capacity building, different kinds of training can be envisioned, from purely technical skills such as Linux and programming, to more organisational training such as requirements gathering and the specification of software. Legal training can also be envisioned and may range from the licensing aspects of open-source software and digital public goods to procurement aspects, intellectual property ownership and privacy issues.

Target audience

Role	Description
Technology Professionals (Systems Analysts, Designers, Implementers)	Capacity-building initiatives will focus on equipping these professionals with the necessary skills to implement, maintain, and scale open-source solutions within government sectors. This includes specialised training programs and certifications.
Decision Makers (Government Officials, Policy Makers)	Training for decision-makers will aim to provide insights into the strategic advantages of open-source solutions, successful case

	studies, and methodologies for incorporating user and expert consultations into decision-making processes.
Procurement Officers	Workshops and training sessions will be designed to familiarise procurement officers with the legal frameworks and regulatory changes needed to facilitate open-source procurement, including how to evaluate and select open-source vendors.
Legal and Regulatory Experts	Training for legal and regulatory experts will cover international standards and practices in data protection, privacy laws, and the development of regulations to safeguard technology infrastructure and citizen data in the context of open-source solutions.
Academic and Training Institutions	Engagements with academic institutions will focus on integrating open-source technology training into their curricula, creating certification programs, and fostering collaboration between academia, government, and the private sector.
Governance Bodies and Collaborative Agencies	Capacity-building for governance bodies will include training on governance models, collaborative frameworks, and strategies for fostering inter-agency cooperation to effectively adopt and sustain DPGs across multiple government ministries and departments.

Acquired Competencies:

Competencies	Description
Leveraging Partnerships for Resource Mobilization	Participants will gain the ability to build and sustain strategic partnerships with key stakeholders such as private sector companies, NGOs, and academic institutions. These partnerships can help secure non-monetary resources, such as technical expertise, research collaboration, and infrastructure support, which are crucial for the development and maintenance of open-source initiatives.
Strategic Funding Acquisition	Participants will develop the skills to identify, secure, and manage funding from diverse sources, including

	government budgets, international donors, public-private partnerships, and grants. This competency includes learning how to develop compelling project proposals and value cases for open-source initiatives, articulating their long-term benefits in terms of cost-efficiency, innovation, and sustainability.
Human Resource Planning and Allocation	This competency will equip learners with the knowledge to plan for and allocate the right human capital, including developers, project managers, and technical experts, to ensure the successful rollout and sustainability of open-source projects. It includes strategies for recruiting, training, and retaining talent in both government and external settings, ensuring that the project has the skills it needs to thrive.
Mobilizing In-Kind Contributions and Technical Expertise	Learners will acquire the competency to mobilize non-financial resources, such as technical expertise, software licenses, cloud credits, and access to specialized tools or data sets. They will also learn how to engage volunteers and foster community-driven contributions, which are often critical to the success of open-source initiatives, particularly in government settings where budgets may be constrained.
Maximizing Open Source Resource Networks	Learners will acquire the ability to tap into global open-source resource networks to support their projects. This includes understanding how to leverage the global developer community, open-source foundations, and specialized platforms for additional resources like mentorship, software tools, and peer support. This competency is vital in helping governments scale their initiatives by utilizing existing open-source ecosystems.

Dependencies and overlap:

Module	Description
Community Management	The initial group of people to train might be identified from existing open-source communities, even if such communities are small. Furthermore, trainees might be the ones who help further develop the ecosystem and make it stronger and more resilient.
Digital Inclusion	Trained people can themselves become trainers in the long run and help increasing the level of digital literacy of the whole population at the grassroots level.
Requirement and Specifications	Existing staff will be trained in topics such as open-source requirement gathering and the

	specification of open-source solutions.
Procurement and Legal	Existing staff in procurement processes will be trained in topics such as open-source procurement practices and on adapting existing regulations.
Digital Governance and Sovereignty	A major objective of Capacity building is to ensure that a country is capable of developing and maintaining its own open-source infrastructure and, thereby, increase its resilience and sovereignty.
Strategy	Capacity building, with its focus on creating a strong ecosystem of problem solvers using open-source solutions, is an important strategic component for any country.

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Ecosystem and Societal > Capacity Building	Capacity Building	Building the Foundations: Strengthening Technical Capacity for Digital Public Infrastructure in Government – Artha Global UN/DESA Policy Brief #117: Building the capacities of public servants to implement the 2030 Agenda | Department of Economic and Social Affairs Open source in government: creating the conditions for success	Capacity Building	Content freely available, need to provide attributions
	Monitoring and Evaluation	Ten Steps to a Results-Based Monitoring and Evaluation System Monitoring and evaluation of open government strategies | Government at a Glance 2017 | OECD iLibrary	Monitoring and Evaluation	

		Monitoring and Evaluation in the Development Sector - KPMG International		
		Monitoring and Evaluation in Health Sector	NIHFW		
		Fundamentals of Monitoring, Evaluation and Learning		

DIGITAL GOVERNANCE AND SOVEREIGNTY

Scope and purpose:

Sovereignty of a state in digital, cyber, space rests on the same foundations as the territorial sovereignty of a state: exercising supreme control over data and digital goods in public interests.

Civil rights and economic gains historically have been central to the definition of digital sovereignty, thus ensuring the democratic governance values drive the decisions concerning what data and technology to govern, who should govern what and who is responsible for the oversight.

Nowadays, there is an urgent call for expanding the scope of the digital sovereignty concept to first of all reflect the degree of divergence among countries worldwide on the definition of digital sovereignty linked to the variability across governance models and secondly, to include countries with non-European governance models. In fact, "as of 2022, the organisation Varieties of Democracy (V-Dem) classified approximately 88 of the world's countries as autocracies, home to 70% of the world's population" (source: https://worldpopulationreview.com/country-rankings/autocratic-countries). High diversity across countries national agendas, eg citizens empowerment *versus* national security *versus* economic gains, already resulted in complex, and often perceived as hard-to-sustain, international data and technology transfer agreements as well as fragmented, patchy, data protection.

According to Linux Foundation: "As a driver of digital sovereignty, OSS empowers governments to reduce dependencies, maintain control over processes, and foster a sustainable and inclusive digital infrastructure."

Open source software holds unique potential to achieve true agility between stakeholders influencing the decisions on the national critical digital infrastructure (eg privatisation, control by national security, etc,) and on the national data flow. Data protection and stability and traceability of the country's flow of data (e.g. organisational, consumer, health data) can gain significantly from the open source infrastructure. OS architectures lay new foundations for consistent and streamlined national and international regulatory frameworks and oversight on data and technology transfer/trade, so that to empower citizens, focus on national priorities and ensure productive and transparent private-public cooperation.

The purpose of this module is to summarise the governance mechanisms which could be implemented or enhanced by the open source software solutions and describe how those may ensure the state's sovereignty in the digital space.

Target audience:

Role	Description
Policy Makers	Training will cover the development and implementation of policies that support digital sovereignty, the role of open-source software in national security, and best practices for governance mechanisms that ensure state control over digital infrastructure.
National Cybersecurity Council	The module will provide insights into how open-source technologies can be integrated into national security frameworks, improving risk assessment, crisis response, and the overall security posture of the state in the digital realm.
State Departments of Technology / Innovation and/or Commerce	The module will address how these departments can leverage open-source technologies to foster innovation, create conducive regulatory environments, and develop partnerships that support the state's digital sovereignty goals.
National Security Council	This training will focus on the adoption of open-source cybersecurity tools, frameworks for national cybersecurity strategies, and methods to enhance collaboration between different cybersecurity stakeholders to protect national digital sovereignty.

Government IT Departments	Training for IT departments could focus on technical skills for implementing and maintaining open-source software, ensuring secure operations, and contributing to the state's digital sovereignty through robust IT practices.
Academic and Research Institutions	Engagements will cover the theoretical and practical aspects of digital sovereignty, encouraging academic institutions to participate in research that supports the development and implementation of open-source solutions for national benefit.
Civil Society Organizations (CSOs)	Training will equip CSOs with the knowledge to advocate for digital sovereignty, collaborate with government and private sectors, and support the adoption of open-source solutions to enhance national digital governance.

Acquired Competencies:

Competencies	Description
Digital Sovereignty and Policy Formulation	Stakeholders should develop the ability to draft and refine policies that align with the principles of digital sovereignty, balancing national priorities with the realities of global data flows and technological advancements. This competency requires an understanding of how open-source software can provide governments control over their critical infrastructure and how governance models can vary across countries. Participants should also be able to identify key policy gaps related to sovereignty and propose policies that ensure a country's control over its digital goods and data while engaging with international frameworks.
Oversight and Accountability in Open-Source Digital Governance	Participants should be equipped with skills to establish robust oversight mechanisms for open-source digital systems, ensuring transparency, accountability, and democratic governance values. This involves understanding who governs what within an open-source infrastructure, the roles of different stakeholders (government, private sector, civil society), and implementing effective checks and balances to oversee these processes. The emphasis will be on promoting governance models that support sovereignty while ensuring alignment with international standards and citizen empowerment.

Legal and Regulatory Frameworks for Sovereign Open-Source Software	Stakeholders will develop the ability to create or refine legal and regulatory frameworks that govern the use of open-source software within the context of national sovereignty. This includes examining existing regulations, determining necessary changes to protect digital sovereignty, and addressing challenges that arise from global and national data exchanges. The competency will emphasize building consistent, transparent legal structures that can integrate with international agreements while protecting national interests.
International Cooperation and Digital Sovereignty	This competency involves mastering the ability to navigate international data transfer agreements and collaboration efforts while safeguarding national sovereignty. Stakeholders will learn how to engage with international bodies, adapt open-source solutions to different governance models, and contribute to global digital frameworks that balance national interests with global cooperation. This includes the ability to critically assess the impact of international agreements on a nation's digital ecosystem and propose solutions that ensure continued control over data and technology flows.
Public-Private Partnerships and National Digital Ecosystems	Participants will learn how to establish effective public-private partnerships (PPPs) to foster the development of open-source digital ecosystems. This competency emphasizes the role of PPPs in building digital infrastructure that aligns with national interests, ensuring that private sector involvement in open-source projects supports public objectives such as transparency, accountability, and data control. The focus will be on encouraging sustainable collaboration models that respect sovereignty while enabling innovation and growth in the digital economy.

Dependencies and overlaps:

Module	Description
Strategy	an OSS strategy of an organisation would be created within the context of the country's approach to attain digital sovereignty, protect its digital and data assets and empower citizens.
Procurement and legal	Analysis of legal landscape, the standardisation of procurement procedures and further audits lay the foundation for coherent and transparent data and digital goods oversight. Not only ensuring that national citizens stay in control of their data,

	but also that national interests are at the centre in the cross border technology and data transfer.
Requirement and specifications	Regulatory and compliance part of requirements and specifications would provide the ultimate link in continuous alignment with translation of governance norms into the technical processes and infrastructure design.
Digital inclusion	Digital inclusion is a practical endpoint for monitoring and evaluation of the progress towards digital sovereignty. For instance failures in digital governance due to either gaps in digital/data oversight or policy shortcomings, may manifest in increased digital divide.
Capacity building	Building up OSS expertise within national multi-stakeholder policy making bodies with long-term focus on national civil interest is imperative for OSS-based implementation of digital governance and exercising digital sovereignty.

Examples of Training Materials:

OSEE Framework	Activities	Training Content	User Group	Licensing
Ecosystem and Societal > Digital Governance and Sovereignty	Digital Governance and Sovereignty	DPI-660: Digital Governance and Leadership in the Public Sector Data Sovereignty Seminar #2: Digital sovereignty in the new era of Internet Governance | BSoG Digital Governance and Sovereignty in a Fractured World: Competing States and Circulating Norms (DIGISOV) - Center for Internet and Society	Strategy / Management	Paid Programs from various Govt / Academic sources

		[Digital Government Senior Leaders' Programme – Welcome to NeGD |](#)		40

Relevant Components:

- Risk assessment
- Use cases
- Organizational maturity assessments

Technical Category

Once organizational frameworks and societal support mechanisms are in place, the technical aspects of implementing open-source solutions become a key focus. This category covers the practical requirements for successfully deploying and sustaining open-source technologies, including interoperability standards, technical infrastructure, software development, and data management. By addressing the technical considerations, governments and institutions can ensure that open-source solutions are robust, secure, and adaptable to changing needs. Moreover, attention to technical details supports the long-term sustainability of digital public goods and their ability to be continuously improved and adapted through open-source principles. The technical category, therefore, represents the final but crucial step in building a comprehensive, end-to-end approach to implementing and sustaining open-source solutions.

[Technical category to be completed]