DigitOpen

Supporting the digital transformation of MSMEs and the Third Sector through open-source

DigitOpen Guidelines and Recommendations for sustainability and transferability

WP4 – Capacity Building

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Executive summary

The DigitOpen Guidelines offer practical guidance for VET providers, policymakers, and supporting organizations to ensure the long-term sustainability and transferability of open-source software (OSS) adoption in Micro, Small and Medium Enterprises (MSMEs) and Third Sector Organisations (TSOs) across Europe.

They are based on extensive research conducted in six European countries, combined with stakeholder consultations and piloting of OSS tools and training resources, ensuring that the recommendations are grounded in real organizational needs and operational realities.

The Guidelines emphasize that successful OSS adoption goes beyond technical implementation. They highlight the importance of integrating open-source tools and culture into organizational strategies, training curricula, and daily practices, while addressing human, institutional, and policy-related dimensions. Thanks to a modular and adaptable approach, the Guidelines enable organizations to replicate and contextualize training content according to local labor markets, sectoral needs, and digital maturity levels.

Trainer development, community engagement, and continuous feedback are presented as essential mechanisms for sustaining initiatives and fostering knowledge sharing beyond the lifetime of individual projects. In addition, the Guidelines provide practical recommendations to embed sustainability into organizational processes, including alignment with strategic objectives, creation of supportive policies, ongoing monitoring through key performance indicators, and participation in open-source communities.

This approach ensures that OSS adoption is not a one-time activity, but a dynamic process that strengthens organizational capacity, resilience, and autonomy. Overall, the DigitOpen Guidelines aim to empower MSMEs, TSOs, and VET ecosystems to make use of open-source solutions in a way that promotes digital inclusion, collaborative learning, and long-term impact, creating ecosystems that are innovative, adaptable, and capable of continuous improvement.

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1. Introduction

Digital transformation has become a key driver for innovation, efficiency, and sustainability across Europe. For Micro, Small and Medium Enterprises (MSMEs) and Third Sector Organisations (TSOs), digital tools are no longer optional, but essential to ensure organisational resilience, effective service delivery, transparency, and long-term viability. At the same time, many organisations within these sectors continue to face structural constraints, including limited financial resources, reduced access to specialised ICT skills, and strong dependency on proprietary software solutions.

In this context, Open-Source Software (OSS) represents a strategic opportunity. OSS can support cost reduction, flexibility, interoperability, transparency, and technological sovereignty, while enabling organisations to adapt digital tools to their specific missions and operational needs. However, despite growing policy attention at European and national level, OSS adoption among MSMEs and TSOs remains uneven and often limited to basic or informal uses, such as website management or isolated productivity tools.

The DIGITopen project was developed to address this gap by supporting the digital transformation of MSMEs and TSOs through capacity building, awareness raising, and the promotion of open-source solutions aligned with organisational needs. The project recognises that OSS adoption is not only a technical matter, but a strategic, organisational, and skills-related challenge, requiring targeted guidance and supportive policy environments.

These DigitOpen Guidelines aim to support policy makers, VET providers, support organisations, and intermediary bodies in creating enabling conditions for the effective adoption and use of open-source software by MSMEs and TSOs. Building on:

a) A cross-country empirical study conducted in France, Italy, Spain, Greece, Poland, and Estonia,
b) Feedback collected through stakeholder consultations and pilot tools,
c) And an analysis of existing training offers and policy frameworks,

the Guidelines translate research evidence into actionable recommendations that can be adapted to different national and organisational contexts.

Rather than promoting OSS as a one-size-fits-all solution, the document emphasises a needs-driven, pragmatic approach, acknowledging the diversity of digital maturity levels, organisational missions, and sectoral realities across Europe.

The primary target groups of these Guidelines are:

1) Micro, Small and Medium Enterprises (MSMEs),
2) Third Sector Organisations (TSOs), including social enterprises, associations, and NGOs,
3) Vocational Education and Training (VET) providers and organisations supporting skills development.

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The Guidelines also address policy makers and public authorities at local, regional, and national level, as well as intermediary organisations (e.g. networks, hubs, chambers, cooperatives) that play a key role in supporting digital transformation. The scope of the document covers:

a) Awareness and strategic positioning of OSS,
b) Skills and capacity-building needs,
c) Training design and delivery approaches,
d) Governance, risk management, and sustainability aspects,
e) Alignment with European and national digital and open-source policies.

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2. The DigitOpen project

Third sector organizations (TSOs) in many EU countries, including voluntary and community organizations, social enterprises, mutuals, cooperatives, and micro, small and medium enterprises (MSMEs), lag significantly in digital capacity. Contributing factors may include a shortage of suitable funding, very low income and lack of skills. Digital transformation for these organizations is inevitable. Without the necessary digital skills, knowledge, and tools, they will struggle to support their communities effectively and remain sustainable. The main objective of DigitOpen is to support a more modern, dynamic, committed, and professional environment inside the TSOs and MSMEs and by utilizing the open-source (OS) approach to boost their digital transformation. This will be achieved by integrating good practices and new methods and tools including digital capabilities into daily activities, in line with identified individual needs and organizational objectives.

2.1 The DigitOpen background

Open-source tools facilitate decentralised decision-making by enabling the shared use of resources and, consequently, granting greater autonomy in the development of practical solutions that benefit the wider community.

Through the co-creation of content, knowledge, priorities, and actions, a form of collective intelligence emerges—one that is more closely aligned with the needs and realities of organizations. This participatory process empowers individuals to contribute actively, supported by the community, to the development of innovative and meaningful solutions within their specific ecosystem.

While the migration to particular software environments (e.g. Linux) or the adoption of open-source technologies is relevant, the transition to a digital solution constitutes a secondary priority. The essential priority is the cultivation of awareness regarding the reasons behind such transitions, the collective selection of tools, and the shared definition of the collaborative culture that the community seeks to foster.

As shown in the DIGITopen Joint Research Report, an empirical study conducted in six European countries (France, Italy, Spain, Greece, Poland, and Estonia) to assess the current adoption of Open-Source Software (OSS) by Micro, Small and Medium Enterprises (MSMEs) and Third Sector Organisations (TSOs), as well as their training needs, barriers, and expectations, while OSS is widely discussed in technical and policy circles, practical adoption patterns and capacity gaps among MSMEs and TSOs remain underexplored. The report therefore aimed to generate evidence-based insights to inform the design of training curricula, capacity-building actions, and policy guidelines supporting OSS adoption.

The surveyed organisations were predominantly small and micro entities, with limited internal IT capacity and constrained financial and human resources. Across all countries:

a) A large share of organisations employ fewer than 10 staff members.

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b) Many TSOs and MSMEs do not outsource IT services, relying instead on non-specialised internal staff.
c) Digital tools are already used in daily operations, but often without a clear strategic approach to software selection or digital transformation.

This structural profile strongly influences both the perceived benefits of OSS and the obstacles to its adoption.

The research showed that OSS is already present but unevenly adopted across the target groups: between 40% and over 70% of surveyed organisations report using at least one OSS solution.

OSS is most commonly used for websites (e.g. CMS platforms such as WordPress), server and database management, basic management or productivity tools. Advanced or strategic uses (e.g. cybersecurity, digital fundraising, impact reporting, CRM) remain limited or absent, despite high interest.

Importantly, many organisations use OSS without being fully aware that the tools are open-source, indicating a low level of conceptual understanding rather than outright resistance. At the same time, future intentions to adopt OSS are high in all countries, suggesting strong latent demand if barriers can be addressed.

A central finding across all countries is the lack of awareness and understanding of OSS characteristics. Many respondents report difficulties in:

- Distinguishing OSS from proprietary software

- Understanding licensing models and legal implications

- Recognising the strategic value of OSS beyond cost reduction.

Another major need concerns the alignment between OSS adoption and organisational objectives. MSMEs and TSOs struggle to:

- Identify which OSS tools are relevant to their specific operational needs

- Integrate OSS into existing workflows

- Make informed decisions that link technology choices to long-term sustainability.

Across all six countries, respondents highlight limited technical know-how as a major barrier. This does not necessarily refer to advanced programming skills, but rather to:

- Basic configuration and use of OSS tools

- Maintenance and updates

- Troubleshooting and user support

- Understanding security and data protection implications

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The findings of the DIGITopen research demonstrate that OSS adoption among MSMEs and TSOs is not primarily a technological challenge, but a capacity-building and organisational learning challenge. Effective guidelines and policies should therefore:

a) Be grounded in real organisational needs and constraints
b) Focus on practical usability rather than technical complexity
c) Combine awareness-raising, skills development, and strategic support
d) Promote OSS as an enabler of sustainability, autonomy, and resilience

2.2 The DigitOpen ecosystem

The DigitOpen ecosystem has been built on the existing networks promoting OSS and the activities carried out during the project (research, piloting and development) which encouraged the participation and engagement of new stakeholders belonging to partners networks. In order to fully involve these stakeholders in the project and widen its impact, a questionnaire and focus groups were implemented in partner countries with the aim of integrating stakeholders' inputs in this document. Below, a summary of the co-design activities is presented.

The stakeholder consultation report presents the results of a stakeholder questionnaire and focus groups conducted to inform the design of the DIGITopen Sustainability and Transferability Guidelines. The consultation aimed to ensure that the guidelines respond to real needs, constraints, and expectations of organizations involved in vocational education and training (VET), third-sector activities, and micro, small and medium-sized enterprises (MSMEs), particularly with regard to the adoption and long-term use of open-source digital tools.

The questionnaire was distributed among external stakeholders across several European countries and focused on:

- Priority thematic areas for the guidelines

- Preferred formats and types of guidance

- Sustainability and continuity mechanisms for open-source initiatives

- Additional expectations to improve usability and policy relevance

A total of 32 valid responses were collected and analysed qualitatively and quantitatively in addition to 17 participants who attended the focus group in France and 6 participants who attended the focus group in Italy. Inputs were received from five EU countries. This geographical diversity supports the transferability ambition of the DIGITopen guidelines and ensures that findings are not limited to a single national or institutional context.

The respondents represent a balanced ecosystem of actors directly involved in digital skills development and open-source adoption:

- VET providers: 17

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- MSMEs: 15
- Third Sector Organisations (TSOs): 8
- Other (VET providers with policy, public authority roles, students, IT companies): 13

The dominance of VET providers reflects their central role in mediating digital innovation towards TSOs and MSMEs, while the strong presence of practitioners (MSMEs and TSOs) grounds the results in operational realities rather than purely academic or policy perspectives.

Respondents were asked which subjects the DIGITopen guidelines should emphasize most. The results show a clear hierarchy of needs, highlighting practical and sustainability-oriented concerns.

The most frequently selected priority concerns onboarding and user support. Stakeholders stressed the importance of:

1) Step-by-step adoption pathways
2) Clear guidance for first-time users
3) Reduction of technical and psychological barriers

This indicates that initial engagement and early user experience are perceived as decisive factors for successful adoption, especially among organizations with limited digital capacity.

The second major priority relates to sustainability practices, understood not only in financial terms but also in:

a) Organisational continuity
b) Staff turnover management
c) Long-term maintenance of tools and knowledge

Respondents clearly signalled that open-source adoption often fails not at the pilot stage, but after the end of projects or external support.

Many respondents highlighted the value of peer-to-peer learning and communities of practice, including:

- Shared problem-solving spaces

- Exchanges between VET providers and practitioners

- Mutual support among organizations at different maturity levels

This confirms that open-source adoption is perceived as a social and organisational process, not merely a technical one.

Although less frequently selected as a standalone priority, transferability across contexts and policy-level recommendations were often combined with other themes. This suggests that stakeholders value policy guidance when it is grounded in operational experience, rather than abstract or prescriptive frameworks.

Respondents expressed a strong preference for practical, modular, and reusable formats, including:

a) Toolkits and operational guidelines
b) Case studies and real-life examples

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c) Checklists and step-by-step roadmaps

Rather than requesting extensive theoretical documentation, stakeholders emphasised the need for actionable resources that can be easily adapted to different organisational sizes and sectors. In terms of content focus, respondents indicated that VET providers could best support TSOs and MSMEs through:

a) Practical implementation guidance
b) Capacity-building approaches
c) Translation of technical concepts into accessible language

This reinforces the role of VET actors as bridges between digital innovation and everyday practice.

A key section of the questionnaire addressed how to prevent drop-off after initial adoption. Responses converged around several recurring practices:

1) Alignment with organisational strategy
2) Open-source tools should not be treated as experimental add-ons but integrated into core workflows and decision-making processes.
3) Continuous capacity building

One-off training is insufficient; respondents stressed the importance of ongoing learning opportunities and internal knowledge transfer. Clear internal documentation was repeatedly mentioned as a safeguard against staff turnover and loss of expertise.

Sustainability improves when open-source initiatives are not dependent on a single “digital champion” but distributed across teams. These findings directly informed the guideline sections dedicated to organisational embedding and long-term governance of open-source solutions.

Most respondents indicated that the proposed scope of the guidelines already addressed their main needs, with many explicitly answering that no additional elements were required. This suggests a strong alignment between the DIGITopen conceptual framework and stakeholder expectations.

The questionnaire results clearly demonstrate that the DIGITopen Sustainability and Transferability Guidelines are grounded in validated stakeholder needs. The consultation confirms that effective policies and guidelines for open-source adoption should:

- Prioritise onboarding and early support mechanisms

- Address sustainability as an organisational and human issue, not only a technical one

- Promote collaborative learning ecosystems

- Support transferability through adaptable, practice-based tools

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3. Guidelines for sustainability and transferability

3.1 Supporting long-term adoption of Open-Source (OS) culture and resources

The sustainability and transferability of the DigitOpen methodology depend not only on the open licensing of resources but on the ability of VET institutions, TSO and MSMEs to embed OS culture into organisational practices, pedagogical frameworks, and long-term digital strategies. The project's ecosystem — which includes the Toolkit of 7 modular OSS learning units covering management, marketing, cybersecurity, event planning and more, an online MOOC and Self-Assessment Tool — provides a replicable foundation that can be applied by VET centres, adult training providers, trainers, and continuous VET systems seeking to enhance digital skills in cost-effective and scalable ways.

Transferability is enabled when OS approaches are *adopted, adapted, and amplified* — not merely replicated. Likewise, sustainability requires planned mechanisms for ongoing maintenance, updating of materials, community-driven enrichment, and the existence of supportive policy and organisational conditions. The following guidelines respond to these two dimensions.

3.2 Principles enabling transferability in VET

To facilitate replication and uptake across diverse VET ecosystems (initial VET, IVET, continuing VET, CVET and lifelong learning), the DigitOpen approach should be rooted in the following principles:

Pillar	Why it matters in VET
Openness & Reusability	Ensures materials remain adaptable to new sectors, regions and learner groups.
Modularity & Scalability	Allows institutions to adopt the Toolkit progressively — one module, one tool, one competency at a time.
Contextualisation	VET providers can reshape modules to local labour needs, sectors (crafts, health, culture, MSMEs), and digital maturity levels.
Skills-first, not tool-first approach	Sustains transferability by focusing on digital concepts rather than brand-specific tools.
Community and shared governance	Ensures growth of knowledge commons[1] beyond the project lifetime.

These principles are fully aligned with core pillars of the EU Open-Source Strategy (2020–2023), particularly **Think Open, Share, Contribute, Stay in control**, and can be directly applied to training design, curricula and continuous VET programmes.

[1] The term "knowledge commons" refers to information, data, and content that is collectively owned and managed by a community of users

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3.3 Operational guidelines for transferability in VET and CVET

1. Modular integration into existing curricula

Use the Toolkit and the MOOC not as a standalone course, but as training blocks integrated into:

- VET teacher training programmes
- adult learning digital skills pathways
- upskilling and reskilling programmes for workers
- cross-sector continuous training schemes

Each module (management, cybersecurity, marketing etc.) can be embedded into national CVET catalogues as micro-credentials or ECVET-attributable units.

2. Localisation and sectoral contextualisation

Institutions should adapt case studies, exercises and examples to:

- specific labour markets of their region
- sector-based VET tracks (tourism, manufacturing, social economy, health, culture)
- language and digital literacy levels
- alternative OS software more relevant/known/suitable for the organizations' needs

Transferability increases when learners recognise direct relevance to their work and economic ecosystem.

3. Train-the-Trainer pathways for scalability

Sustainability depends on trainer capacity, not only learner access. VET providers should maintain:

- a certified trainer pool able to deliver OS-based modules
- peer-mentoring structures for newly trained instructors
- national / regional OS educator networks

This ensures that the Toolkit and the online training course does not remain confined to one cohort or cycle.

4. Community-based knowledge expansion

DigitOpen materials are OS-licensed and therefore expandable. Providers should be encouraged to:

- upload localised versions, improvements, translations
- contribute new exercises, tutorials, or sector-specific examples
- participate in OS community hubs and repositories

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This approach mirrors the OS development cycle observed in the Toolkit ecosystem and ensures continuous renewal of learning content.

3.4 Sustainability conditions for long-term integration

To ensure DigitOpen survives beyond project funding, VET ecosystems, TSOs and MSMEs need both institutional and systemic enablers.

Institutional sustainability measures

Action	Outcome
Appoint OS-responsible staff roles or units	Ensures long-term maintenance, not one-off adoption.
Introduce OS procurement and digital-training policies	Reduces vendor lockdown; aligns with public money = public code.
Create feedback loops with teachers and learners	Allows iterative improvement of modules.
Adopt hybrid/blended delivery	Encourages ongoing learning and peer exchange.

Systemic sustainability measures (particularly relevant for national and regional VET authorities)

- integrate OS modules into national continuous professional development catalogues
- recognise OS-related micro-credentials in qualification systems
- embed OS guidelines in digitalisation strategies for TVET schools
- allocate funding for shared open repositories, national GitLab/Joinup-like hubs
- align with the European Commission *Reuse and Share* principle to avoid resource duplication

3.5 Measuring sustainability and transferability

KPIs are essential to monitor long-term sustainability and transferability. Suggested indicators:

KPI Category	Example Indicators
Uptake	Nº of VET institutions adopting at least one Toolkit module
Transferability	Nº of sectors / regions where modules are adapted
Sustainability	Frequency of updates, number of trainers certified

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Community growth	Nº of shared contributions back to the knowledge commons
Learner impact	Increase in digital proficiency, OSS usage rates

Data collection should combine platform analytics (MOOC), qualitative reporting, peer-review feedback and long-term tracking of VET learner outcomes.

3.6 Sustainability Roadmap (post-project)

A suggested phased pathway for institutions:

1. **Adopt** → Use one module to replace a proprietary solution
2. **Adapt** → Localise Toolkit content, translate, sector-customise
3. **Integrate** → Embed OS into VET curricula, teacher training, micro-credentials
4. **Scale** → Train trainers, replicate in other centres or regions
5. **Contribute** → Share new resources, case studies, updates to the community

The final step — *contribute* — is the core long-term sustainability driver. Transferability becomes systemic only when users become contributors.

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4. Recommendations for VET providers

The conclusions presented below regarding the advantages of adopting open-source (OS) technology and culture in VET education are derived from the development of the DigitOpen Toolkit, as well as from desk research and field research conducted across partner countries. This process included the review of open-source technologies and resources, the design of curricula, training modules, and learning materials, the subsequent analysis of the piloting phase of the DigitOpen Curriculum and Toolkit and the results of the SAT testing.

OS application in VET should be considered in two distinct categories:

(1) Open Educational Resources (OERs) and

(2) Open-Source Software (OSS).

While software may itself be classified as an educational resource, we argue that OSS constitutes an autonomous category, as the open-source philosophy originates from software development practices. The integration of open-source tools in VET empowers all stakeholders to exercise greater control over the resources they use and produce. It encourages informed decision-making concerning future individual and collective choices and supports the capacity of VET providers to innovate collaboratively and sustainably.

The adoption and sharing of OERs has demonstrated clear added value, as evidenced during the DigitOpen piloting stage. Building training modules from existing resources generated a three-fold benefit for both the partnership and the broader educational ecosystem:

a. Partners were able to adapt and contextualise materials from an already high-quality baseline.

b. By updating and improving existing resources, they contributed back to the community.

c. The collaborative development process produced time efficiencies and enriched the material through diverse pedagogical perspectives and approaches.

The use of open-source technologies in VET-providing organisations offers multiple advantages:

a. Fosters a culture of collaboration, inclusion, and openness at both internal and external levels.

b. Ensures sustainability, accessibility, and transferability of generated content and software through open-source licensing models.

c. Promotes innovation through transdisciplinary competence development and experiential pedagogies such as learning by doing and learning to learn.

d. Enables networking and knowledge exchange with other OS-oriented organisations and communities.

e. Reduces dependency on proprietary vendors and generates economies of scale in daily operations.

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f. Supports the formation and maintenance of sustainable Communities of Practice through open access to shared resources.

g. Contributes to positive societal transformation by encouraging more ethical, transparent, and participatory practices.

Investing in OS adoption and policy development generates cumulative shared knowledge, strengthening a growing ecosystem of learning, innovation, and community participation with long-term educational, social, and economic impact.

The DigitOpen methodology demonstrates several key benefits of open-source-based approaches in VET education:

a. Shifts learning from product-based to concept-based knowledge (i.e., teaching principles rather than tools).

b. Reduces total cost of software acquisition and maintenance.

c. Makes digital learning tools more affordable and accessible for learners at home.

d. Allows for software customisation, adaptation, and reuse.

e. Extends the functional lifespan of older hardware through lightweight OS solutions, a critical benefit for organisations with limited funding.

f. Enhances learners' employability prospects, as open-source skills are increasingly sought after by both public and private sector entities.

The core principle of the open-source (OS) culture is that the aggregation of individual contributions generates superior outcomes. By reducing duplication of foundational work, collective development enables more advanced progress with lower overall resource investment. Moreover, this approach particularly benefits organisations with limited capacity to independently produce teaching materials, curricula, or educational resources, as they can draw upon materials already developed, tested, and validated by others.

The most important contribution that the OS approach can give to the digital upskilling of educators and learners is exactly the community-based approach: the constant development of resources carried out thanks to the continuous collaboration within the community.

To make such collaborative processes viable, transparency is indispensable, as is ensuring that the knowledge generated by educators adheres to the following criteria:

- Usability: intuitive and easy to apply from the user's perspective.
- Accessibility: universally accessible (for all users), functionally comprehensible, and technologically compatible across systems.

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- Flexibility, adaptability and reusability: applicable in diverse learning environments and contexts.
- Modularity: enabling segmentation into different didactic sequences.
- Interoperability: allowing classification, indexing and linkage with other resources.
- Portability: operable across multiple technological systems.

The DigitOpen initiative has actively implemented these principles, and the outcomes are evident. The MOOC now hosts an extensive, publicly accessible knowledge base that educators may freely use, adapt, and contextualise within their own learning environments. The open nature of these tools allows for continuous enrichment, facilitating the creation of new content, the exchange of experiences, and the expansion of shared knowledge.

DigitOpen project partners recognise that several of the recommendations formulated for policy makers are equally applicable to education providers. While the benefits of adopting an OS approach are substantial, insufficient preparation can lead to confusion and frustration if educators are not supported by the necessary skills. The most significant impact of open-source adoption is often observed in the long term; therefore, the transition may be demanding at the outset. Nonetheless, it can be implemented progressively—and, when reinforced by appropriate policies, can become highly effective.

In this spirit, the DigitOpen consortium proposes a step-by-step roadmap to guide institutions through the transition process:

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To support the roadmap, the DigitOpen SAT represent a key tool. Over 100 users tested the beta version of the SAT, an online tools which supports individual and organizations in assessing their current level with regards to digital transformation processes and open source software. These guidelines builds on the results of the SAT testing which was evaluated through an online questionnaire.

The SAT (Self-Assessment Tool) feedback questionnaire was designed to collect structured user feedback on the usability, clarity, relevance, and overall experience of the DIGITopen SAT. The objective was to assess whether the tool effectively supports VET providers, MSMEs, and Third Sector Organisations (TSOs) in reflecting on their digital and open-source readiness, while identifying strengths and areas for future refinement.

Across all core dimensions, the SAT received very high satisfaction scores, demonstrating that the tool is perceived as accessible, clear, and relevant. This confirms that the tool is user-friendly, even for users without advanced technical skills—an essential requirement for MSMEs and TSOs with limited digital capacity.

Based on both quantitative and qualitative results, the main strengths of the SAT include:

a) High usability: accessible and intuitive interface
b) Clear guidance: well-structured instructions that support autonomous use
c) Contextual relevance: questions aligned with the realities of VET providers, MSMEs, and TSOs
d) Balanced design: sufficient depth without overburdening users.

These strengths make the SAT a robust and transferable tool for supporting organisational reflection and dialogue on digital and open-source readiness.

The feedback confirms that the SAT:

1) Is fit for purpose as a self-assessment and awareness-raising instrument

2) Can be confidently used as a foundation for training pathways, guidance documents, and capacity-building actions

3) Supports a positive and empowering user experience, encouraging engagement rather than compliance.

Based on project experience and feedback collected during the piloting phase, the DigitOpen partnership puts forward the following recommendations:

- The OS approach enhances the digital skills of educators and supports the customisation of learning tools in cost-effective ways, responding more precisely to the needs of both educators and learners.
- Free and open sharing contributes to the enrichment of educational resources, fostering education systems that are more accessible, equitable and transparent.
- Blended learning environments—combining online and in-person activities—maximise the added value of OS, as benefits extend beyond skill acquisition to include community building and peer-driven knowledge exchange.

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- Commitment to digital inclusion requires open knowledge practices, mutual support and community development—values inherent to the OS ethos and advantageous in comparison with proprietary educational models.
- Greater effort should be invested in the integration and reuse of OS materials to support the replication of training initiatives beyond individual project lifecycles, thereby strengthening European networks of adult educators in digital education.
- The gradual adoption of free and open-source software is only one component of this transformation; equally essential is the sharing of information, resources and source code, as well as participation in existing knowledge-commons communities where possible.
- A heightened awareness of the relationship between knowledge and power is vital: community-driven knowledge creation not only addresses local needs but also strengthens learner autonomy, freedom, and collective solidarity.
- explore OS culture and in particular the use of open source software,
- improve staff digital skills by participating in the DigitOpen training activity that is based on DigitOpen Toolkit
- improve knowledge and self-awareness about important topics and issues such as management, marketing, event planning, cybersecurity, etc.
- reflect about the choice of the tools used to support learning processes.

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5. Policy recommendations

The piloting of the DigitOpen MOOC demonstrated that the successful adoption of open-source (OS) resources depends directly on users' knowledge of the tools, methodologies, and materials available. Initiatives such as DigitOpen — alongside many similar efforts across Europe — have made alternative solutions visible, expanding awareness and providing educators with the skills and resources necessary to adopt OS approaches in their training practices. It is important to reaffirm that the objective of these guidelines is not to discredit proprietary software, but rather to enhance awareness of existing alternatives and provide guidance on how to employ them effectively.

The course offered a proven methodology, grounded in DigitOpen project outcomes, for delivering innovative and high-quality training modules featuring low-cost tools and resources. All methodologies presented can be easily adapted to diverse teaching contexts. Moreover, because the MOOC was delivered entirely online, it necessarily fostered digital skill development: participants were encouraged to experiment with unfamiliar tools, engage with peers, and introduce OS solutions within their professional networks. While an online course alone cannot guarantee comprehensive digital competence, the DigitOpen community — in conjunction with the wider OS ecosystem — can continue to support educators in advancing these skills further.

Policy makers — and more broadly, citizens — should be aware of how their choices influence issues of privacy, security, digital inclusion, knowledge ownership, and public return on investment. This awareness is particularly crucial when decisions involve education funded with public resources.

DigitOpen project partners view the OS approach as rooted in software development culture and therefore inherently connected to digital competence. Learning computing concepts is essential in enabling educators and learners to adapt flexibly to different tools and systems rather than remaining dependent on closed environments. The capacity for digital upskilling supported by OS is extensive, both technically and pedagogically, and benefits from the presence of user communities that contribute documentation, support, and continued development — an aspect characteristic of most open-source software.

The most transformative contribution of the OS model to digital upskilling lies in its community-driven knowledge production, sustained through continual collaborative development.

From this perspective, recommendations for policy makers reflect the advantages of OS technology and culture for the VET sector, with emphasis on educational policy design and implementation.

Policy Recommendations:

- Increase institutional and financial support for OS-based initiatives to amplify their positive social, educational, civic, environmental, and public-service impact.
- Enhance visibility of OS initiatives in VET education through opportunities to showcase practices at conferences, congresses, and public events, while encouraging participation of public-administration representatives to reinforce institutional backing.

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- Promote OS as a driver of curriculum and methodological innovation, aligned with EU priorities and likely to increase learner motivation, engagement, and performance
- Utilize OS to strengthen transparency and effective governance, reflecting core values shared by both public policy processes and OS culture.
- Recognise OS as a long-term cost-efficient solution, particularly for publicly funded institutions, applying the principle public money, public good: educational content and software financed with public resources should yield public benefit.
- Support the professional development of trainers and facilitators by promoting OS-based competence building, enabling institutions to deliver more advanced digital-skills training and enhancing digital literacy among European citizens.
- Foster OS-based knowledge ecosystems that allow high levels of localisation, personalisation, and reuse of resources, involving all stakeholders and contrasting with the limitations of proprietary software.
- Connect digital-skills acquisition with wider digital citizenship, empowering learners as contributors to commons-oriented knowledge rather than solely consumers of content — the fundamental ethos of OS culture.
- Embed explicit references to OS culture and technologies within EU frameworks, particularly the EU Digital Competence Framework, to build greater institutional awareness and visibility.
- Introduce legislation mandating that publicly funded educational content and software — especially within digital public spaces (e.g. Digipass in Italy) — be released under Free and Open Source Software licences.

The DigitOpen policy recommendations align with a growing body of EU and national policies that promote software reuse, interoperability, digital sovereignty, transparency, and cost-effective digital public services. While DigitOpen focuses on VET ecosystems and the needs of MSMEs/TSOs, the same principles underpin European public-sector digital strategies: avoid vendor lock-in, enable reuse, strengthen cybersecurity and trust, and maximise public value from public investment.

At EU level, DigitOpen recommendations are consistent with:

a) European Commission Open Source Software Strategy (2020–2023), which promotes “think open / share / contribute / secure / stay in control” principles and strengthens the institutional culture of reuse and collaboration.
b) Interoperable Europe Act (Regulation (EU) 2024/903), which reinforces cross-border interoperability and cooperation in digital public services and supports the sharing and reuse of solutions across administrations.
c) Joinup and the Open Source Observatory (OSOR), which provide EU infrastructure for publishing, discovering, and reusing interoperability solutions and OSS in the public sector.
d) Open Data and PSI re-use framework (Directive (EU) 2019/1024), reinforcing the broader “public value through reuse” logic that also supports open, reusable digital solutions.
e) NIS2 cybersecurity framework (Directive (EU) 2022/2555), which increases expectations on risk management, supply-chain security, and operational resilience—areas where OSS adoption

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must be paired with capacity building and governance (exactly as highlighted by DigitOpen stakeholders).

Together, these EU instruments support DigitOpen's policy direction: institutionalise reuse, invest in skills and governance, and ensure OSS contributes to resilient, transparent and sustainable digital transformation.

The DigitOpen Guidelines, also take into account national policies:

- France has long-standing public-sector mechanisms that encourage OSS evaluation and adoption, notably, "The Socle Interministériel de Logiciels Libres (SILL)", a reference catalogue of recommended open-source tools for the French administration, coordinated within the state digital ecosystem. It provides a concrete national reference point for tool selection, standardisation, and reducing the perceived risk of OSS adoption—reinforcing DigitOpen recommendations on onboarding, curated tool lists, and institutional support.

- Italy provides one of the most explicit national frameworks for public-sector OSS reuse: AgID "Reuse and Open Source" framework and Guidelines on the acquisition and reuse of software for public administrations, implemented via Developers Italia to support publishing and reuse of software across the public sector. These instruments directly operationalise "public money → reusable public code" and provide governance models that can inspire VET and training ecosystems (e.g., repositories, licensing guidance, reuse-by-default logic).

- Spain has strong national structures supporting reuse and interoperability across public administrations: the "Centro de Transferencia de Tecnología (CTT)" as a national hub for sharing and reusing digital public solutions. This validates DigitOpen's emphasis on communities of practice and reuse infrastructures (catalogues, repositories, shared assets), and strengthens the rationale for policy recommendations on shared hubs, visibility actions, and cross-institution collaboration.

- Estonia has reinforced OSS as part of its broader digital strategy and public value logic: OSOR's 2025 update notes that Estonia's policies increasingly embrace OSS (e.g., within Digital Agenda 2030) and references legal/policy developments supporting the idea that software developed with taxpayers' money should be published under an open-source licence. Estonia's approach supports DigitOpen's recommendation to link OSS to digital sovereignty, efficiency, and long-term sustainability, while recognising that adoption requires clear governance and ongoing capacity building.

- Poland's OSS landscape is more mixed, but policy references exist—particularly around digital modernisation and reuse: OSOR country intelligence reports describe how OSS appears in national digital programmes (e.g., modernisation initiatives and reuse-oriented plans), while also noting uneven promotion over time. This reinforces the importance of DigitOpen's recommendations on visibility, institutional incentives, and capacity building to convert "potential" into systematic adoption—especially in contexts where OSS is permitted but not strongly mainstreamed.

- Greece has progressively matured OSS promotion in the public sector in recent years: OSOR's 2025 country intelligence report highlights a moderate but ongoing maturation in OSS promotion and development since 2020. National digital governance reforms and open-data implementation (e.g.,

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transposition of EU open data rules) illustrate the enabling environment for openness and reuse. Greece's trajectory supports DigitOpen's positioning of OSS as linked to transparency, inclusion, and public-value digital transformation, and strengthens the case for policies that fund and scale training, onboarding, and communities.

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