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ABBREVIATIONS

EC	European Commission	**National Interoperability Framework(s)**	NIF(s)
EIF	European Interoperability Framework	**NIFO**	National Interoperability Framework Observatory
EIS	European Interoperability Strategy	**PEGS**	Pan-European E-government services
EPA(s)	European Public Administration (s)	**OSEPA**	Open Source Software Usage by European Public Administrations
EUPL	European Union Public Licence	**OSI**	Open Source Initiative
FOSS	Free/ Open Source Software	**OSOR**	The Open Source Observatory and Repository for European public administrations
GPL	General Public Licence	**OSS**	Open Source Software
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens	**RACTI**	Research Academic Computer Technology Institute
ICT	Information & Communication Technologies	**R&D**	Research and Development
IT	Information Technology	**SaaS**	Software as a Service
LGPL	Lesser General Public Licence	**SME(s)**	Small and Medium Enterprise(s)

EXECUTIVE SUMMARY

This document provides policy recommendations on issues and challenges pertaining to the use of Free and Open Source software (FOSS) by European Public Administrations (EPAs). The aims of this policy recommendation paper is to contribute in providing policy orientations and proposed actions that can help governments, public administrations and European institutions fully harvest the benefits of open source. Recommended policy actions are based on review of the current policy framework and on stakeholder experiences, particularly in the context of the OSEPA project of which this paper is a foreseen strategic output.

The EU-funded INTERREG IVC OSEPA (Open Source Software Usage by European Public Administrations) project aims to promote a debate on assessing and facilitating the uptake and integration of Free and Open Source Software (FOSS) in the IT infrastructures of public administrations.

Public administrations have the mission of best allocating available resources in a socially responsible, transparent and economically efficient manner. FOSS, being a public resource based on non-rival use rights and allowing for lower entry barriers in software development, offers public stakeholders a set of cost-effective, re-usable tools and resources that can give impetus to innovation, entrepreneurship and economic growth. Moreover, public organisations have a major role in the European software market as mass scale software "consumers" with specialised needs and requirements.

In this context, adopting software environments in public IT infrastructures sector is not a neutral, "technical" process but a highly political and strategic one with various implications and policy aspects to be considered in decision making.

Regional authorities and public administrations could valorise the open source potential on bottom-up approach by fully integrating FOSS solutions in their regional development

planning, internal administrative processes and educational networks. On a local or regional level a faster penetration and sustainable use of open source can be achieved by clearly outlining needs and wants through public procurement and by directly engaging local communities in open source environments.

National governments should support public administrations and particularly small and medium size organisations in using open source in effective and sustainable ways providing guidance, resources and reusable software tools and components through national reference centres and repositories. They should also establish clear legal and institutional frameworks to eliminate software discrimination in public tenders and monitor the implementation of certain principles and requirements such as openness, reusability and interoperability of data, software and systems in full compliance with the European frameworks and guidelines.

On an EU-wide level, there should be more straight forward policies for the implementation of defined requirements and specifications on openness, reusability and interoperability combined with the coordination and fine-tuning of the national strategies of the member states. Successful cases of open source integration on a regional or national level should be highlighted, communicated and valorised through EU-wide networks such as OSOR (osor.eu). The European software strategy as articulated through official policy documents should be constantly updated or revised where needed in order to reflect software market realities, industry driven achievements and public stakeholder needs. Moreover, research and development policies should leverage Europe's competitive advantage in open source development by investing in regional innovation clusters and FOSS-based entrepreneurship.

I. INTRODUCTION

I.I. SCOPE AND CONTEXT

What is this document about?

This paper investigates policy issues and challenges that are raised in relation to the assessment, sustainable use and effective integration of Free and Open Source software (FOSS) in the public sector and provides recommendations for policy measures and actions that can help governments and public administrations fully harvest its benefits. Proposed policy actions are based on review of current policies and on stakeholder experiences, particularly in the context of the OSEPA project of which this paper is a foreseen strategic output.

The OSEPA project

The EU-funded INTERREG IVC OSEPA (Open Source Software Usage by European Public Administrations) project aims to promote a debate on assessing and facilitating the uptake and integration of Free and Open Source Software (FOSS) in the IT infrastructures of public administrations.

The potential of FOSS stresses the critical role of public authorities

Open source software, holding a strategic position in knowledge economy, reaffirms the critical role of governments and regional authorities in establishing strategies for integrating effective and sustainable IT solutions in the public sector towards economic growth and social welfare.

Public authorities have the mission of allocating often limited resources among competing areas and priorities in a socially responsible, transparent and economically efficient manner.

FOSS, being a public resource based on non-rival use rights and allowing for lower entry barriers in software development, offers public stakeholders a set of cost-effective, re-usable tools and resources that can give impetus to innovation, entrepreneurship and economic growth.

Moreover, public services, organisations and territorial administrations collectively represent a major software user with great impact on the software market. In this sense, software selection in the public sector is not a neutral process but highly political and strategic one; various collateral implications and policy aspects should be considered in order to reach the best possible decisions.

Within this context, this document outlines the policy framework, describes available options and expected benefits and proposes certain policy actions that can enable policy makers to better assess FOSS as a strategic choice offering competitive advantages for the public sector. It is specifically aimed at:

1) *Policy makers in governments and public administrations:* government officials, elected representatives, senior managers and decision makers in local and regional authorities.

2) *IT managers and heads of procurement departments* in governments and public administrations.

3) *Social economy actors and institutions*: NGOs, policy institutions, professional associations and networks, civil society organisations, FOSS communities and networks (e.g. developers, volunteers), non-profit foundations.

I.II. TERMS AND DEFINITIONS

Free and open source software

Although there are different definitions of free and open source software, there are some basic principles[1] on which FOSS relies on. These refer to:

FOSS is software that can be freely used, modified and re-distributed based on source code accessibility

- the freedom to run a software program for any purpose
- the freedom to study and modify a software program by accessing its source code
- the freedom to distribute copies of a software program, whether modified or not

Despite different approaches or variations, the terms "free" and "open source" software are used interchangeably throughout this document to refer to software that is developed as a public resource, based on non-excludable, non-rival use rights and properties.

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[1] These "freedoms" and principles are defined by the Free Software Foundation: http://www.gnu.org/philosophy/free-sw.html and the Open Source Initiative: http://www.opensource.org/osd.html

Defining "FOSS policies"

Public policy refers to a plan, a principle or course of action undertaken by a government through its administrative or executive branches in order to address a series of issues in a legally and institutionally consistent manner.

Defining "FOSS policies"

The term "FOSS policy" is used in this document to describe policy measures, actions and implementation plans with regard to the assessment, use and adoption of free and open source software by governments and public sector organisations. A "FOSS policy" may either refer to an official policy document issued by a government body or to a set of actions and initiatives undertaken by various public stakeholders (e.g. local governments, regional authorities).

Public procurement

Defining public procurement

Public procurement refers to the process used by governmental bodies, national agencies, regional and local authorities and public administrations to buy products and supplies, services and public works.

Procurement procedures take up a great part of a public organisation's budget, operational activities and administrative processes. Having to do with spending of taxpayers' money they also have to be conducted under certain rules and specifications.

I.III. DOCUMENT OUTLINE

This document comprises of three main parts and a conclusive chapter.

Part 1: FOSS policy issues

Part 1 presents the main policy issues and aspects relating to the use of FOSS in the public sector and explains the need for required measures and actions.

Part 2: FOSS policy framework

Part 2 provides a review of the current policy framework relating to open source within the EU context. FOSS related policy implementation levels and areas are defined.

Part 3: FOSS policy recommendations

Part 3 proposes certain policy measures and actions in assessing, adopting and further integrating FOSS in public IT infrastructures as a viable choice and a means to improve public services, provide opportunities for regional development and promote openness and innovation.

PART 1: FOSS POLICY ISSUES

1.1. WHY IS FOSS IMPORTANT? THE NEED FOR POLICY MAKING

Software is everywhere

Either integrated in the operational tasks of businesses and organisations, or embedded in systems and products, software is omnipresent in most economy sectors and is now a driving force for the European ICT industry fostering innovation and productivity, supporting growth and creating jobs.

The European software market is the second largest n the world

The European software market, including both software products and related services has risen from 228.6 billion € in 2008 to 231 billion € in 2009 and is expected to reach 264.8 billion € by 2012.[2] It also employs more than 2.75 million people. These figures make Europe (EU27) the second largest software market on a global scale.

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[2] Sources: a) Rönkkö et al., "*Software Industry Survey 2010*", Aalto University, School of Science and Technology. November 19, 2010.
b) F. Giron et al., "*Economic and Social Impact of Software & Software-Based Services. D2. The European Software Industry*". Pierre Audoin Consultants (PAC), July 30, 2009. Available at: http://cordis.europa.eu/fp7/ict/ssai/docs/20090730-d2-eu-ssbs-industry_en.pdf

FOSS is one of the main drivers of the software market	Free and open source software, produced, distributed and supported by enterprises and by thousands of community developers is one of the main drivers of the software market with a remarkable growth and increasing share. According to the UNU-MERIT study in 2006 European firms with 565,000 employees and €263 billion in annual revenue invested an estimated €1.2 billion in OSS development.[3] In a more recent study on software's economic impact commissioned by the European Commission[4] the FOSS share in the European software market is estimated, on a baseline scenario to exceed 5% in 2013 with an increasing trend up to 2020.
FOSS is continuously growing	FOSS is expected to continue penetrating the market based on both its inherent features and capabilities as well as on current developments in the ICT sector and the market environment. The increasing penetration of open source in an ever changing and expanding software market environment that is driven by rapid technological developments raise a series of challenges for policy making on an EU-wide level.
Open source comes as a response to the needs of businesses and public stakeholders	The growth of open source comes as a response to the needs of businesses and the public sector. In the case of public administrations these needs are to be met under certain conditions and requirements that promote economic development and serve social welfare.

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[3] It also estimated the 'notional value' of OSS investment in Europe at €22 billion. See Ghosh, R. A, *Study on the: Economic impact of open source software on innovation and the competitiveness of the Information and Communication Technologies (ICT) sector in the EU*, Final report (European Commission, November 20, 2006).UNU-MERIT 2006.

[4] Giron F.et al., *Economic and Social Impact of Software & Software-Based Services. D2. The European Software Industry.* Pierre Audoin Consultants (PAC), July 30, 2009.

Within this scope, there is a need for coherent, up-to-date policies, on a regional, national or EU level that address the various aspects of open source in the public sector.

Policy making and implementation relating to open source software in the public sector covers a wide range of areas and objectives: open access and e-inclusion requirements, fair market competition and non-discrimination in software procurement, standardisation and interoperability frameworks, research and development funding, IT security. Several national or EU policies relating to these issues have been defined in the last years and are constantly revised and updated to meet current development in the European software market and industry.

1.2. THE ROLE OF PUBLIC ADMINISTRATIONS

Based not only on their institutional status and mission, but also on their position in the software market environment, governments and public administrations have a critical role to play in terms of software supply in general and open source use and penetration in particular.

*Governments and public administrations are both **big influential software users** and **policy makers***

Government bodies and public organisations collectively form a critical, mass-scale software consumer and end-recipient of associated IT services with significant influence on software product specification and licensing agreements. Depending on their scale, organisational profile and the specialised administrative and operational tasks they have to undertake (e.g. e-government services, tax administration, human resources management), public organisations often seek custom developed IT services and software solutions that can be tailored to their specific needs and that they are often shared and identifiable between different departments and organisations. FOSS, allowing for maximum customisation and re-use, brings certain advantages that need to be assessed on a wider, IT policy level.

Moreover, due to their public service orientation, public agencies and administrations have also to reinforce and themselves comply with certain principles and requirements such as open access and availability of public data, transparency in public funding and spending, fair market competition and accountability to citizens.

FOSS is a potential enabler of public policy objectives

Due to its features as a public good with non-rival use rights, free and open source software directly relates to these policy

objectives as a potential enabler pertaining to societal, economic and strategic aspects as described below.

1.3. SOCIAL ASPECTS

1.3.1. PUBLIC DATA OPENNESS AND E-INCLUSION

Openness and "e-Inclusion" refer to the indiscriminate, unhindered access of all citizens to public information and e-government services. Government departments and public administrations are obliged to facilitate the access of citizens to public data and to support information exchange mainly through the adoption of open platforms, standards and technologies.

Opting for a software environment also defines a strategy for openness

Open standards and platforms should be implementable in both open source and proprietary systems and applications. When opting for a specific software environment, however, public administrations also define the level and extent of openness allowed by software features and functionalities. Potential risks and barriers to accessibility such as data lock-ins are critical factors to be considered. Open source software, natively supporting a wide range of open standards and being highly customisable particularly relates to the requirement of openness and accessibility.

1.3.2: TRANSPARENCY AND ACCOUNTABILITY

FOSS particularly relates to policy priorities on openness and transparency

It has been argued that the citizen's right to information goes as far as scrutinising the procedures under which information was generated and processed.[5] In this sense, software should also be well documented in all its technical features and adopted through open and transparent procurement and selection procedures in order to promote competition fairness, public information accessibility and accountability. Software system architectures, features and functionalities should be as visible as possible so they can be benchmarked, evaluated and modified if needed to meet the particular needs of public organisations. FOSS, providing, by definition, access to its source code and allowing public stakeholders to assess specific software modules and features is central to the openness and transparency priority thus raising a serious challenge for public stakeholders and decision makers.

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[5] Also see R. A Ghosh et al., Free/Libre and Open Source Software: Survey and Study. Part 2B: Open Source Software in the Public Sector: Policy within the European Union (International Institute of Infonomics University of Maastricht, The Netherlands, June 2002).

1.4: ECONOMIC ASPECTS

1.4.1: COST EFFECTIVENESS AND LONG TERM BENEFITS

Cost saving is a critical aspect

One of the most critical aspects and a strong motivation driver for public administrations when opting for open source is that of cost cutting in terms of software licence purchasing. FOSS, based on a free use and distribution licensing model can help public administrations significantly reduce the cost of acquiring software.

FOSS is not cost-free

FOSS, however, should not be considered as cost-free and decision making for public spending should refer to all associated, direct or indirect costs (e.g. service subscriptions and licence agreements, required upgrades and extensions, technical support, training and maintenance fees).

Open source needs wider assessment policies

Open source also raises the need for wider assessment policies that go beyond a cost analysis basis and include expected benefits and gained advantages on a mid and long term scale such as software reusability and vendor independence.

1.5: STRATEGIC ASPECTS

1.5.1: LOCAL CONTROL AND INDEPENDENCE

Avoiding lock-ins is a strategic priority

Avoiding data and vendor lock-ins is a critical strategic priority for any public organisation planning to acquire IT systems and applications. Not heavily relying on external providers for data security and not being tied up to specific software products and vendors are two key factors for national governments and public administrations wishing to maintain a certain level of independence. Such independence can be achieved in more than one ways combining both open source and proprietary features. Open source, however, provides a higher level of control and flexibility over software thus offering a potential advantage in terms of technological independence.

Open source provides increased control over software

Whether governments and public administrations should rely on proprietary software vendors or invest in custom developed, open source solutions that can be maintained by in-house skills and resources, is a complex issue to be analysed within a wider strategic orientation in IT policy.

PART 2: FOSS POLICY FRAMEWORK

2.1. POLICY IMPLEMENTATION LEVELS AND AREAS

Three policy implementation levels: regional, national, EU

Legal and institutional frameworks regulating software policies and practices touch upon a wide range of implementation levels and areas.

Three main implementation levels are defined and used in this document in order to describe policies and policy makers:

- *Local / regional level:* municipalities, local governments and regional authorities

- *National level:* national governments, agencies and associations, parliaments, legislative bodies.

- *EU-wide level:* the European Commission, the European Council, the European Parliament, European agencies and observatories.

In the EU context, the principle of subsidiarity requires that political decision making is made on the lowest possible administrative and political level. EU legislation can only occur in areas that have not been addressed or have been inadequately addressed by regional or national policies implemented by

Member States.

Within this framework, there are several national legislative acts, EU Directives, European Commission Communications, government action plans, frameworks and guidelines that regulate software use and acquisition in the public sector. Fewer official documents specifically or exclusively address open source as a policy issue.

Five policy implementation areas

For the purposes of this document five policy implementation areas that relate to FOSS have been defined:

- *Data openness and reusability:* policies on the openness and accessibility of data and public sector information, strategies for the interoperability of e-government services and the reusability of software solutions and components in the public sector.

- *Licensing, procurement and software market policies*: policies for software licensing and procurement, rules and procedures for public tenders, fair market competition.

- *FOSS adoption, integration and sustainability:* policies on assessing, adopting and integrating open source as a sustainable solution for governments and public administrations.

- *Research & innovation:* policies for investing in open source R&D as a means to support innovation, entrepreneurship and regional development.

- *Training and education:* policies for the educational use of FOSS and its integration in learning environments.

Figure 1. FOSS policy implementation areas

Europe is highly active in open source initiatives and in policy making for software

During the last years Europe has intensively engaged in developing policies and implementing initiatives on open source whether on a regional, national or EU-wide level. According to a recent report on global government open source policies,[6] Europe is the most active open source policy maker in the world with 163 open source initiatives out of a recorded 354 (46%).

Some of the most recent key policy initiatives that also relate to certain aspects of FOSS are:

- 2003: Public Sector Information Directive (2003/98/EC)

- 2004: Public Procurement Directive (2004/18/EC)

- 2004: European Interoperability Framework, 1st version.

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[6] *Government Open Source Policies* (Center for Strategic and International Studies, March 2010). See Figures 2 and 3.

European Union
European Regional Development Fund

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- 2006: Commission Communication on "Interoperability for Pan-European eGovernment Services"

- 2007: Lisbon Ministerial Declaration

- 2007: i2010 initiative

- 2010: Commission Communication on the "European Interoperability Strategy" and the "European Interoperability Framework" (final version)

- 2010: Commission Communication: a Digital Agenda for Europe.

With the exception of EU Directives that have been transposed to national legislative acts and therefore acquired a mandatory status most of these policy documents have an advisory status to national governments and public administrations.

Moreover, although acknowledging the potential of open source in meeting the targets of a European software strategy and ICT, most of these policy documents highlight policy objectives and requirements that tend to be technology neutral. Specific policy priorities that have been put forward such as openness of systems or interoperability of e-government services may be associated but do not exclusively refer to open source systems and applications. In this sense, they should be considered rather FOSS-related than open source policies.

The same applies for the National Interoperability Frameworks (NIFs) that have been developed in most Member States as a response to the European Interoperability Framework (EIF). According to the 2009 Overview of the National Interoperability

Framework Observatory[7] 13 countries out of the EU27 have published their own NIFs while several more are in progress.

There are, however, cases of national strategies, government action plans and policy documents that specifically refer to open source as a policy issue. Some of the most recent examples are:

- 2009: "Open Source Software and the Public Sector". Denmark.[8]

- 2009: "Open Source, Open Standards and ReUse: Government Action Plan". UK.[9]

- 2008: "Open Source Software for the Development of the Spanish Public Administration. An overview". Spain.[10]

- 2007: "The Netherlands in Open Connection. An action plan for the use of open standards and open source software in the public and semi-public sector". The Netherlands.[11]

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[7] "Overview of the National Interoperability Frameworks" (National Interoperability Framework Observatory, IDABC, March 18, 2009).

[8] The National IT and Telecom Agency, Denmark, January 2009. http://www.itst.dk

[9] The Cabinet Office, UK, 2009. http://interim.cabinetoffice.gov.uk/media/253407/Open%20Source%20Final.pdf

[10] Cenatic: National Observatory of Open Source Software, 2008. http://www.epractice.eu/files/media/media2407.pdf

[11] The Ministry of Economic Affairs, November 2007. https://noiv.nl/files/2009/12/Action_plan_english.pdf

Figure 2. Open source policy initiatives by world region in the 200-2009 period (Total initiatives=354). **Source:** *Government Open Source Policies. Center for Strategic and International Studies, March 2010.*
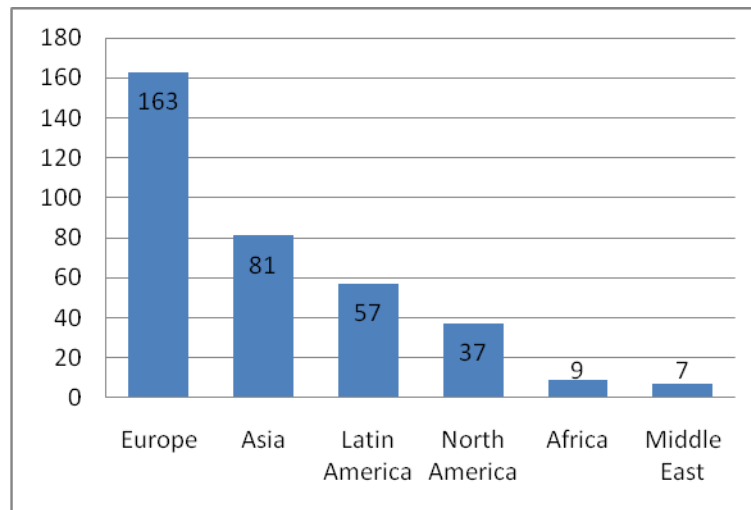
Figure 3. Number of open source policies in Europe according to policy type. **Source:** *Government Open Source Policies. Center for Strategic and International Studies, March 2010.*
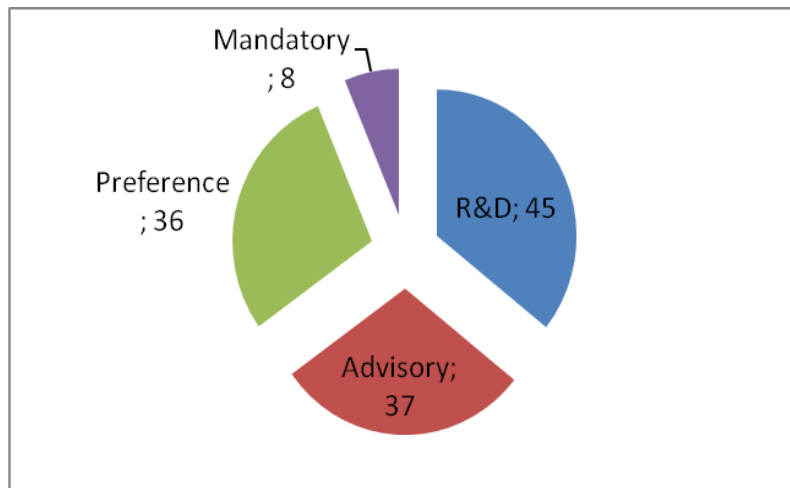
Figure 4. The status of National Interoperability Frameworks in the EU27 countries. **Data source:** Overview of the National Interoperability Frameworks. National Interoperability Framework Observatory / IDABC, 2009.
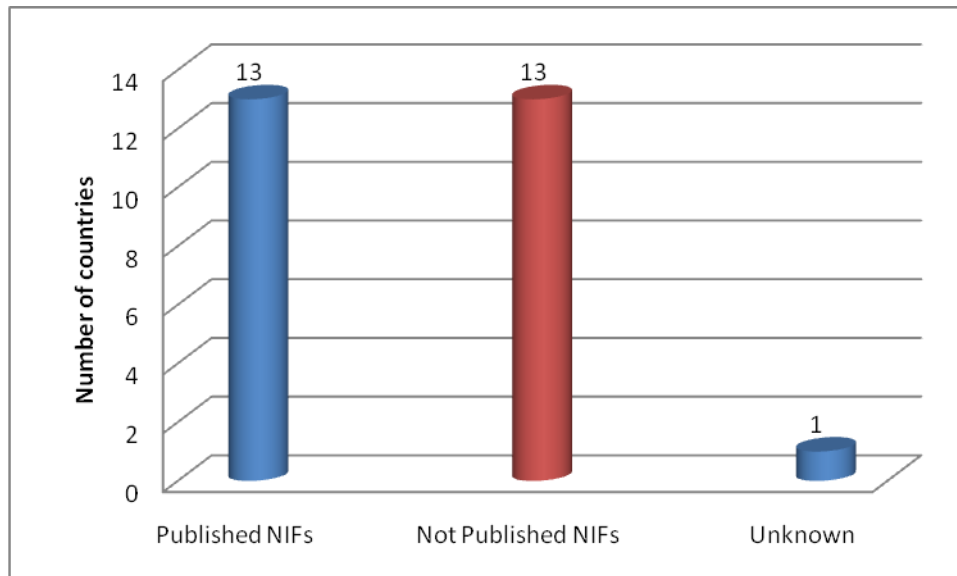
2.2. STRENGHTS AND WEAKNESSES: ASSESSING FOSS POLICIES

Most EU member states have either shaped, revised or have under development software strategies that include open source as a key factor of policy making.

There is political will expressed in most countries on a national level to support open standards and adopt open data policies and schemes. This is expected to facilitate a further integration of open source solutions by public administrations.

Europe acknowledges the potential of open source

The European Commission also foresees open source as a critical driving force for strengthening Europe's position in the software industry and as an enabler to the need for openness and interoperability.

In this perspective, the strengths of open source or FOSS related policies in the EU context are:

- political decision making and commitment on a high level (e.g. the European Commission)

- specification on an EU level of underlying principles and requirements for software features and functionalities (e.g. open standards and platforms, interoperability, reusability) that are also fully implementable by open source software

- ongoing public consultation with both public stakeholders and the industry

- ongoing development and revision of national software strategies based on defined EU policy schemes such as the

European Interoperability Framework.

- support and monitoring on a EU level through dedicated observatories and networks (e.g. National Interoperability Framework Observatory, OSOR)

Although being highly active, European policy making on software also suffers from certain weaknesses particularly in putting forward and implementing roadmaps and unified mechanisms to specifically support and further integrate open source in public IT infrastructures as a means towards social inclusion, innovation and development. Some of the policy aspects in which there is still great progress could be grouped as follows:

- most high level (e.g. the European Commission) policy documents do not specifically refer to objectives and priorities for open source.

- most high level policy documents have not a mandatory but rather an advisory status

- there is a lack of homogeneity and coordination between national and EU policy frameworks for open standards and open source software.

- current policies maintain a sporadic open source integration that progresses at different paces. Certain countries or regions seem to lead the way, applying, on some occasions, more advanced or ambitious policy plans than those recommended at the EU level.

- there is a lack of clear institutional frameworks on a national level (e.g. national agencies, monitoring mechanisms) to ensure that requirements, mandatory

standards and objectives on open standards and open source are fully implemented by all stakeholders.

- existing policies have not ensured efficient public procurement monitoring mechanisms to eliminate software discrimination practices in public tenders.[12]

- software procurement policies do not fully exploit the collective influence of public administrations in the software market as an extensive base of software "consumers" to benefit from market competition

- current policies do not efficiently promote a culture of trust and awareness on open source that is still lacking among public administrations and should be promoted through active policies on training and education.

- current European policies for software and R&D do not fully reflect the realities of the software industry and Europe's competitive advantage in FOSS development. There is great progress to be made in promoting open source production and entrepreneurship through research and innovation clusters.

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[12] As shown by the 2009 and 2010 OFR Procurement Monitoring Reports, software discriminating practices still hold a significant percentage in public tenders (22% in 2009, 13% in 2010). See: *OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010* (Open Forum Europe, May 2011), www.openforumeurope.org.

PART 3: FOSS POLICY RECOMMENDATIONS

OSEPA proposes 24 policy actions in 5 policy areas

This part of the document provides proposed actions and policy recommendations on aspects and issues pertaining to the assessment, adoption and integration of open source software by European Public Administrations. Based on policy review and analysis, OSEPA highlights 24 recommendations on policy initiatives and actions, grouped in five broad FOSS policy areas as defined in the previous section:

1. *Data openness and reusability*

2. *Licensing, procurement and software market policies*

3. *FOSS adoption, integration and sustainability*

4. *Research & innovation*

5. *Training and education*

Figure 5. Proposed actions by policy area (Total=24)
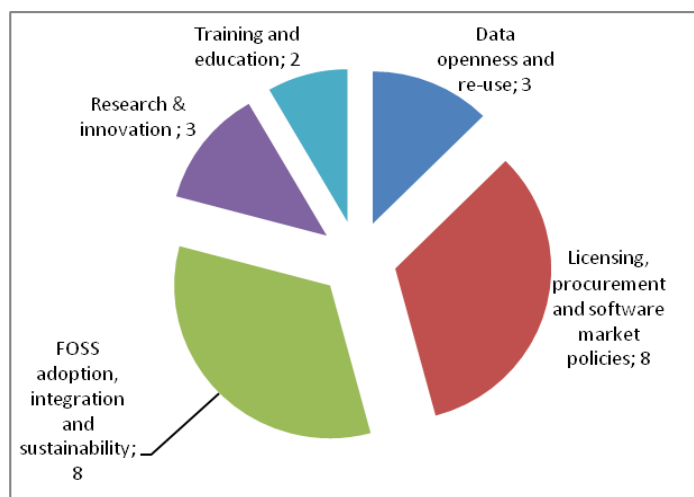
The policy measures and actions proposed in this section mostly focus on

European Union
European Regional Development Fund

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Recommended policies focus on European public administrations

territorial public administrations acknowledging the great potential of open source solutions for regional growth and interregional cooperation.[13] As pointed out in a previous report on EU open source policies,[14] open source tends to gain increased penetration in the public sector through bottom-up processes, as also shown by several good practice cases in the context of the OSEPA project.[15] Government departments and public administrations, being able to describe desired software solutions and set their own requirements through procurement procedures, can directly adopt open source solutions on a practical level or even implement large scale migration projects throughout the IT infrastructures of entire units or departments.

Towards a European Software Strategy that makes the most of open source

Despite this emphasis on the regional/national level, however, the interconnectedness of policy levels and frameworks is also taken into account. Policy needs and dependencies, potential synergies and joint strategies on a national and EU level are highlighted where applicable. This is deemed as necessary since collaboration and coordination initiatives throughout all policy levels is needed in order to achieve homogenous implementation towards a unified European Software Strategy that can capitalise on the open source potential.

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[13] Also reflecting the scope and character of the OSEPA project (INTERREG IVC Programme).

[14] Ghosh, R. A et al., *Free/Libre and Open Source Software: Survey and Study. Part 2B: Open Source Software in the Public Sector: Policy within the European Union* (International Institute of Infonomics University of Maastricht, The Netherlands, June 2002).

[15] Good Practice Guide Research Academic Computer Technology Institute, "Good Practice Guide covering various aspects of FOSS usage by European Public Administrations" (1st version). Deliverable of the OSEPA project, implemented by the Research Academic Computer Technology Institute (GR) 11/05/2011.

Figure 6. Proposed actions by policy level (total=24)
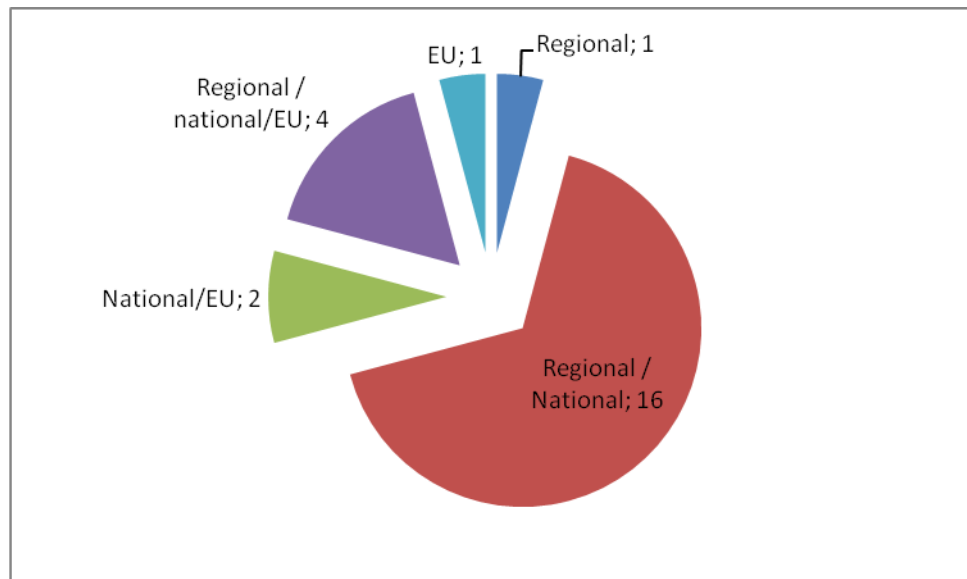
Proposed policies and actions either directly or indirectly relate to the promotion of trust and awareness and the increased penetration of FOSS in public IT infrastructures across Europe. With open source expected to significantly increase its market share in the following years, it is obvious that adopting and fine-tuning FOSS-relevant policies on issues such as open standards and interoperability frameworks, software licensing and procurement or R&D, is critical for strengthening Europe's position within the software sector.

3.1. DATA OPENNESS AND REUSABILITY

3.1.1: **RECOMMENDATION 1:** USING OPEN STANDARDS ON A "COMPLY OR EXPLAIN" BASIS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 1. Data openness and reusability

Needs and background

The need for openness in public administrations

The use of open standards facilitates interoperability and data preservation, particularly in public administrations which, due to their obligations, have to maintain large datasets and heavily rely on document-based communications with citizens. There is now a common understanding among public administrations in Europe that they should rely on open formats for electronic document exchange and storage, not imposing, in this way, the use of specific technological solutions or software products citizens, businesses and other administrations.[16] Moreover, open standards lie at the heart of an "open and neutral" internet as defined in the EU digital agenda. In order to ensure web accessibility and foster internet innovation, open standards should be used and implemented on a wide basis in the public sector.

Policy documents: 1. European Digital Agenda. 2. The European Interoperability Strategy. 3. The European Interoperability Framework (EIF)

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[16] According to a recommendation included in the revised European Interoperability Framework (2010). Also see: "Conclusions and recommendations on Open Document Formats", Pan-European eGovernment Services Committee (PEGSCO) 2006.

Openness of systems and specifications[17] is defined as a basic principle for delivering interoperable pan-European e-Government services (PEGS) in the revised European Interoperability Framework.[18] The EIF includes a specific recommendation stating that: "*public administrations should aim for openness when working together to establish European public services, while taking into account their priorities and constraints*".[19] The EIF allows for a certain degree of flexibility on the openness level of the standards used, defining that intellectual property rights related to standards may be implemented either in proprietary or open source software, applying both FRAND (fair, reasonable and non-discriminatory) and royalty-free schemes.

Open source and open standards

In this context, the terms "open source" and "open standards" should not be treated as equivalent. A full -as possible- adoption of open standards, however, is a critical factor for shaping a policy on open source or planning a migration project. Moreover, open source systems and applications, natively supporting open standards and allowing for maximum customisation, provide a valued added feature in terms of data openness and interoperability.

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[17] The term "open specifications" is used as an alternative to "open standards" in the EIF.

[18] The first version (v.1.0) of the EIF was published in 2005 and since then has gone through a process of public consultation and revision.

[19] "European Interoperability Framework (EIF) for European public services. Annex 2 to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services'" (ISA, the European Commission, 2010).

Recommendation

Opting for the highest possible level of openness

Public administrations are urged to ***opt for the highest possible level of openness*** whether using open source or proprietary systems and applications. In cases where required open standards are not available, thus opting for less open alternatives, public administrations should ***provide sound justification for non-compliance***. This approach has been adopted by the Dutch Government as the "***comply or explain***" policy.[20]

Adopting a "comply or explain" policy

An openness policy should apply to all technologies and stakeholders

Public administrations willing to implement open standards based on their needs through open source technologies and on a royalty free basis, would meet openness requirements while also being in full compliance with the EIF. In any case, ***a compliance policy for open standards should consider all available platforms and technologies***, whether proprietary or open source that could support the implementation of such standards also providing justification for all decisions made. Such a policy would also mean that all peer organisations and involved stakeholders would be expected to implement agreed and clearly defined open platforms and specifications in order to commonly ensure a higher level of interoperability.

Benefits

The benefits of openness

By adopting a "comply or explain" policy, governments and public administrations can have practical and long-term benefits on several aspect and levels:

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[20] As described in "The Netherlands in Open Connection" Government Action Plan, 2007.

- reaching higher interoperability and improving information exchange between departments, services and peer stakeholders
- speeding-up administrative and decision making processes
- improve services provided to citizens
- increasing the level of e-inclusion among citizens
- facilitating a smooth transition for a potential migration to open source systems and applications.

3.1.2: **RECOMMENDATION 2:** FINE-TUNING INTEROPERABILITY STRATEGIES

Policy level: Regional ☐ National ☑ EU ☑

Policy area: 1. *Data openness and re-use policies*

Needs and background

The need to align interoperability strategies

The interoperability of software-based public services through the use of open standards and platforms has been defined as a high level strategic priority in the EU in two key policy documents that were included in an EC Communication in 2010, [21] also considered basic elements of the European Digital Agenda:[22] the "European Interoperability Strategy" and the "European Interoperability Framework" (EIF). Several National Interoperability Frameworks (NIFs) have been developed and published in recent years in response to this European policy objective.[23] This has posed, at the same time, however, a risk of fragmentation and lack of homogeneity as not all

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[21] Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: "Towards interoperability for European public services". Brussels, 16.12.2010. Annexes, I and II.

[22] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Digital Agenda for Europe.", August 26, 2010, http://ec.europa.eu/information_society/digital-agenda/index_en.htm.

[23] According to the overview of the National Interoperability Frameworks, provided by the National Interoperability Framework Observatory. 14 NIFs have been published in Member States and Candidate Countries so far.

NIFs cover all four levels of interoperability[24] or are fully aligned with the revised EIF.

Recommendation

This risk needs to be addressed through ***coordination and monitoring mechanisms on an EU level*** such as the National Interoperability Framework Observatory (NIFO) that has been setup by the IDABC[25] in order to compare, analyse and assess national interoperability strategies in Member States and the Community. ***Policy initiatives should also be undertaken by national governments*** in order to make sure that NIFs:

- refer to all levels of interoperability
- reflect the standardisation needs of public stakeholders
- are in line with active frameworks in other member states
- are fully compliant with the revised European Interoperability Framework

All applied national strategies on interoperability should be in compliance with the basic principles set by the EIF relating to openness, reusability, transparency, technological neutrality and adaptability.

Benefits

By undertaking joint initiatives and developing common policies on interoperability based on their needs and requirements, public administrations will be able to:

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[24] as defined in the EIF: legal, organisational, semantic and technical interoperability.
[25] http://ec.europa.eu/idabc/en/document/7796.html

the public sector

- put forward their software standardisation needs

- identify implementation for open standards and platforms

- identify open source solutions that can implement such standards

In doing so, they can also contribute in:

- facilitating a homogenous implementation of open standards in the public sector in all member states.

- delivering interoperable public services across Europe

3.1.3: **RECOMMENDATION 3:** DEFINING MONITORING AND SUPPORT MECHANISMS FOR OPENNESS AND REUSABILITY

Policy level: Regional ☑ National ☑ EU ☑

Policy area: 1. Data openness and re-usability

Needs and background

Implementation weaknesses pose a need for monitoring mechanisms

Although the principles of data openness and re-usability have been put forward as priorities on the highest possible poly level through the European Interoperability Strategy (EIS), implementation is not equally strong or homogenous on a national and regional level. Interoperability requirements and re-usability recommendations included in the European Interoperability Framework are not legally binding for Member States[26] and therefore their implementation is not perceived as mandatory. Relevant EU legislation such as the Directive 2003/98/[27] for public sector information re-use, although providing a legal framework does not ensure, in itself, a full compliance and uniform implementation across Member States.

Implementation weaknesses significantly undermine the objective of open systems and applications in public administrations and in this sense, also reduce the penetration potential of open source

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[26] Since they are not transposed into national legislative Acts

[27] Directive 2003/98/EC of The European Parliament and of the Council of 17 November 2003 on the re-use of public sector information.

software which is a key enabler of openness, reusability, sharing and collaboration of tools and solutions.

Recommendation

During the last years there have some successful examples of monitoring instruments and support centres for openness and reusability on a European level. The National Interoperability Framework Observatory (NIFO) has been setup by the IDABC[28] in order to monitor NIFs on a EU-wide basis. Another successful case is that of OSOR[29] which serves both as a repository and support centre for the sharing and re-use of open source solutions by European public administrations. Such ***EU-wide support and monitoring centres should be used as integral parts of EU policy implementation on openness and reusability.***

EU monitoring and support centres such as NIFO and OSOR should be further promoted

Similar mechanisms should also be developed or further supported on a national or regional level in order to make sure that open standard and reusability requirements are clearly defined and presented to all stakeholders and are fully implemented across the public sector. National or regional authorities should not simply monitor the implementation of defined requirements but also provide a knowledge basis and support resources for making standards, available options and technologies clear and accessible to all stakeholders. A good example of this is the Danish National Software Knowledge Centre[30] and the "softwareborsen.dk" website it launched in 2007 for the exchange and reuse of FOSS among public authorities.

National support centres for software openness and reusability should be also developed

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[28] http://ec.europa.eu/idabc/en/document/7796.html
[29] www.osor.eu
[30] Established by the Ministry of Science in 2006.

Benefits

Monitoring policies can maximise software interoperability and reusability among public administrations

Adopting a policy for coordination, monitoring and support of software openness and reusability on a national or regional level is expected to:

- ensure a consistent and homogenous implementation of open standards and reusability requirements across the public sector in compliance with the EIF.

- guarantee a minimum level of interoperability of e-government services (Government-to-Government and Government-to-Citizen) between different departments and organisations on a regional, interregional and national level.

- maximise the reusability and transferability of software solutions and components among public administration reducing, as a consequence, all relevant costs.

- facilitate the adoption of trusted and reliable open source software that meets defined criteria, needs and specifications.

- facilitate the definition of national roadmaps for interoperability

- encourage a culture of openness software reusability within public administrations

3.2. LICENSING, PROCUREMENT AND SOFTWARE MARKET POLICIES

3.2.1: **RECOMMENDATION 4:** DEFINING A CLEAR LICENSING POLICY

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. Licensing, procurement and software market policies

Needs and background

Why have a licensing policy?

Software licensing is a critical aspect for the public sector in terms of providing the context in which software may be used, distributed or modified. This is particularly important for public administrations that either plan to implement projects requiring re-use or modification of software products and components or even release their own custom-built software solution. Lack of awareness on different licence types and licensing issues often leads public administrations to single vendor lock-ins or to a discrimination against open source solutions.

Recommendation

Specifying a licensing policy

Auditing licence types and choosing a proper license (e.g. GNU-General Public Licence family, European Union Public Licence, proprietary licences) according to product use and distribution strategies, although probably a time-consuming process, it ***should be part of the overall IT policy applied by public***

administrations. Reading, reviewing and understanding licensing schemes and conditions of use should be treated as equally important as the acquisition of software itself. Major, most widely open source licences (GPL, LGPL, BSD, EUPL) clearly define terms on the use, integration, modification and redistribution of the software code.

Governments and public administrations could specify the conditions and prerequisites of software licences according to their desired level of control over software. A software licence adoption policy could be based on a number of criteria some of which may be particularly weighted for governments and public administrations:

- unlimited access to source code
- unlimited usage of the software
- right to reproduce and distribute an unlimited amount of copies
- right to modify the software
- right to reproduce and distribute an unlimited amount of copies of the modified software version under the same license restrictions

Terms of use, warranties and indemnities should be also specified and reviewed, especially throughout the procurement process.

Benefits

The benefits of a clear licensing policy

A clearly specified software licensing policy can greatly help public administrations in:

- selecting software solutions based on desired features and

defined criteria.

- getting suitably licensed software solutions through public tenders.
- adopting trusted and reliable open source solutions
- better serving their needs and requirements regarding software use, re-use, distribution and modification
- ensuring compliance with the current legal framework

3.2.2: **RECOMMENDATION 5:** DEVELOPING COMMON LICENSING POLICIES ACROSS THE PUBLIC SECTOR

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. Licensing, procurement and software market policies

Needs and background

Why develop common licensing policies?

Several units, departments and agencies across the public sector whether on a regional or national level share specific software needs and requirements or have a common understanding on desired features and properties of software solutions. Policies on software licensing, however remain largely fragmented not reflecting shared needs and agendas.

Recommendation

Shaping shared licensing strategies for shared needs and objectives

Public administrations with shared objectives and similar organisational needs should jointly develop "one to serve all" licensing policies for software. In this way they could strongly

put forward common wants and needs on software and develop a shared knowledge basis on licensing issues as a firm, common ground for selecting best value for money solutions.

Benefits

The benefits of shared licensing strategies

Adopting shared licensing strategies based on common needs and mutual understanding would help public administrations to:

- better serve their software requirements based on their operational tasks and organisational needs.
- maximise the reusability and transferability of acquired software components and applied solutions
- reduce the cost of software licence purchasing and updating.
- promote a uniform software licensing regime across public sector networks or associations (e.g. regional or national associations of municipalities) based on a commonly accepted licence type such as the European Union Public Licence.

3.2.3. **RECOMMENDATION 6:** MONITORING TENDERS FOR SOFTWARE DISCRIMINATION PRACTICES

Policy level: Regional ☐ National ☑ EU ☑

Policy area: 2. Licensing, procurement and software market policies

Needs and background

Why monitor public tenders?

There is still progress to be made in eliminating discriminating practices in public tenders that mostly favour proprietary, packaged software and large-scale vendors. According to the last OFE procurement monitoring report,[31] a 13% out of the monitored public tenders made an explicit reference to a proprietary software trademark, thus excluding open source or proprietary alternatives. Open Forum Europe (OFE), based on its annual procurement reports, has urged procurement authorities across the EU to ensure that: (a) no predatory behaviour occurs and (b) procurement follows open standards as a crucial factor for software interoperability.[32]

Recommendation

Software procurement should be open to fair competition

In order to ensure fair market competition and transparency in software procurement processes ***public tenders should be monitored for discrimination factors and practices on both a national and a European level.*** Public procurement officials and

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[31] OpenForum Europe, *OFE Procurement Monitoring Report: EU Member States practice of referring to specific trademarks when procuring for Computer Software Packages and Information Systems between the months of February and April 2010* (OpenForum Europe, May 2011), www.openforumeurope.org.

[32] Ibid.p.11.

decision-makers have to take a series of measures and initiatives in opening up procurement procedures to all providers, including SMEs. By making sure that public tenders do not discriminate against certain technologies, software delivery models or suppliers, existing entry barriers can be removed.

Benefits

Opening up software procurement to more offerings and providers

Applying a monitoring policy for software discrimination practices should be considered an effective way of:

- reducing the risk of vendor lock-ins
- ensuring fair market competition and transparency in public tenders
- removing barriers for small or medium size open source providers
- increasing market competition and software solution offerings

3.2.4. **RECOMMENDATION 7:** UPDATING PROCUREMENT FRAMEWORKS AND PROCEDURES

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. *Licensing, procurement and software market policies*

Needs and background

The need to update procurement frameworks

Software procurement rules, guidelines and legal frameworks have to reflect the needs of regional or national public authorities, respond to current economic or technological developments while

also being in full compliance with relevant EU Directives.[33]

Recommendation

Governments and public administrations should update or adjust, where needed, foreseen requirements and ***procedures for software procurement*** and public tenders, in order to both meet changing organisational needs and reflect the dynamics of the rapidly growing software market.

Benefits

By keeping software procurement frameworks and procedures up-to-date, public administrations can make sure that:

- their current needs and wants are properly reflected
- possible entry barriers for emergent technologies or innovative software products and solutions are removed
- no specific technologies or software suppliers, whether open source or proprietary, are excluded.

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[33] Directive 2004/17/EC, Directive 2004/18/EC.

3.2.5. **RECOMMENDATION 8:** AN "EQUAL CONSIDERATION" POLICY: BALANCING NEEDS AND OPTIONS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. *Licensing, procurement and software market policies*

Needs and background

The need for a balanced policy

Governments and public administrations should balance between serving their own wants and needs and discriminating against specific products and alternatives when outlining desired software features or opting for a specific solution.

Defining needs, not trademarks

Naming specific software products and trademarks that are linked to a single vendor or to a limited number of suppliers is a bad practice that is also against national and EU regulations. The needs, requirements or specifications, however, of public administrations should be reflected and they could be defined in the form of technical requirements, desired functionalities or additional services. In case naming a trademark cannot be avoided, foreseeing for "equivalents" is the best way to prevent discrimination. Not providing an option for alternatives or "equivalents" usually excludes open source solutions in favour of proprietary software products.

Recommendation

Open source and proprietary software on an "equal footing"

Public administrations should consider both open source and proprietary solutions on an "equal footing", based on competitive advantages and desired features. An "equal consideration" policy based on a fair treatment of both open

source and proprietary solutions is likely to increase market offerings and available options. Considering open source alternatives, for example, can put pressure on proprietary software suppliers to provide better offers, adjusted to the organisation's needs. Even if opted for open source software, examining the support provided by closed-source suppliers can help better shape required specifications and additional services for open source providers wishing to enter the market. On some occasions, a mixed mode of both open source and proprietary software and related services may be the possible choice for a specific organisation. Based on their needs and priorities, public administrations could define various software features and properties as weighted evaluation criteria (e.g. source code availability, right to distribute, reuse and modify, certified support and security)

Benefits

The benefits of an "equal consideration" policy

Adopting an "equal consideration" policy can enable public administrations to:

- increase market competition and offered software solutions
- select the most fitting software solutions on a best-value-for money basis
- opt for open source solutions if providing value added features or specific benefits
- ensure fair market competition and transparency
- reduce single vendor dependence and lock-ins

3.2.6. **RECOMMENDATION 9:** REQUIRING COMPLIANCE WITH INTEROPERABILITY FRAMEWORKS IN PUBLIC TENDERS.

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. *Licensing, procurement and software market policies*

Needs and background

The need for compliance

It is of critical importance, especially for public agencies and administrations to make sure that their public money is spent on interoperable solutions that will keep public data safe, accessible and retrievable in the long-term. The best way to achieve this is to include open standards and interoperability requirements in procurement procedures. This is a critical factor that is often overlooked by government agencies and public organisations resulting into problems and difficulties in data handling and exchange over time.

Equally important is the fact that not setting open standards as a priority clearly favours closed-source suppliers that do not comply with open standards requirements but rather provide their own proprietary, locked standards on which a public organisation will depend its data management. This can result to both data and vendor lock-ins.

Recommendation

Public administrations should include open standards and interoperability requirements in tenders in a clear and justified way. A public organisation should specify, for example, that standards, interfaces, protocols or file formats implemented by the supplied solution must meet the open standard requirements. Some basic open standard properties that can be defined are:

- standards can be delivered by all suppliers and equivalent technologies.
- standards are developed and documented following open, transparent procedures.
- there are no restrictions regarding the re-use of standards.

Compliance with National Interoperability Frameworks should be included in the procurement criteria where applicable.

Benefits

Setting a policy for including interoperability requirements in public tenders is critical for public administrations since it provides a basis on which to:

- reduce the risk data and vendor lock-ins.
- open the field for more software solution providers
- equally consider open source solutions
- extend the use of open standards and increase interoperability in public administrations
- ensure the implementation of National Interoperability Frameworks

3.2.7. **RECOMMENDATION 10:** SETTING A "RE-USE INSTEAD OF RE-BUILD" PRIORITY IN PUBLIC TENDERS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. Licensing, procurement and software market policies

Needs and background

The need for reusability

Maintaining the right to re-use software systems and applications within different departments of a public organisation or even throughout entire sections of the public sector on a national level is a critical decision-making factor in terms of avoiding vendor lock-ins and ensuring interoperability.

Recommendation

Setting reusability as a procurement requirement

According to the European Interoperability Framework, **public administrations** "*are encouraged to reuse and share solutions and to cooperate on the development of joint solutions when implementing European public services*". They are also urged to "*develop a component-based service model, allowing the establishment of European public services by reusing, as much as possible, existing service components*".[34] Following the requirement for sharing and reusing software solutions, *public administrations should include clear specifications and criteria for the reusability of software components in public tenders.*

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[34] "European Interoperability Framework (EIF) for European public services". Annex 2 to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions 'Towards interoperability for European public services". Pages: 12-13. Available online at: http://ec.europa.eu/isa/strategy/doc/annex_ii_eif_en.pdf

Benefits

<table>
<tr><td>Benefits for
public
administrations</td><td>By including reusability criteria in public tenders, public administrations will be able to:</td></tr>
</table>

- maximise the sharing and re-use value of purpose-built software components across the public sector.

- facilitate collaboration and communication between peer units and organisations

- reduce overall software purchasing costs.

- maximise the effectiveness and transferability of applied software solutions.

- encourage the development of open source solutions tailored to the specific needs of public administrations.

3.2.8. RECOMMENDATION 11: DEVELOPING JOINT PROCUREMENT POLICIES TO CREATE A CRITICAL MASS OF OPEN SOURCE DEMAND.

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 2. *Licensing, procurement and software market policies*

Needs and background

<table>
<tr><td>The impact of
public
administrations
in the software
market</td><td>Governments and public administrations are among the largest buyers of software with a wide impact on the software market in terms of demand and requirements setting. This potential of</td></tr>
</table>

turning increased market competition to their own benefit, however, is not yet fully exploited through joint policies and combined initiatives on the level of describing needs, setting standards and requirements and defining procurement and selection criteria.

Recommendation

Developing joint procurement policies for improved open source supply

Public administrations are strongly urged to form stakeholder networks and develop common procurement policies that can have an effect in software market supply on a regional or national level in offering reliable open source solutions through increased competition.

Public organisations with similar organisation needs and shared objectives should work together in defining shared procurement requirements and software selection criteria that could increase offering of open source solutions.

Benefits

Joining forces in public procurement to increase trust and reliability on FOSS solutions

Public administrations have a lot to gain from joining forces with peers in procuring open source software. FOSS has not yet reached its full potential in public procurement and therefore national agencies, NGOs and public organisations keep providing guidelines and information resources on open source procurement policies through dedicated stakeholder networks, groups and consortia (e.g. OSOR.eu). Involvement in such communities and networks will not just facilitate software procurement processes but will also help increase the reliability and trust on open source software itself.

Adopting such policies on a regional or national level can lead to a series of benefits:

- increased market competition will lead to better offerings from large-scale software vendors
- lower market entry barriers and business opportunities for local or regional developers and providers, SMEs that will be able to provide open source solutions.
- a "large buyer" effect can lead software supply to more efficient ways to cover public sector needs and requirements.

3.3. FOSS ADOPTION, INTEGRATION AND SUSTAINABILITY

3.3.1. RECOMMENDATION 12: DEVELOPING FOSS ADOPTION PLANS AS PART OF WIDER IT STRATEGIES

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. *FOSS adoption, integration and sustainability*

Needs and background

The need for integrated planning in FOSS adoption

As shown by several cases, poorly planned open source migration projects or isolated initiatives have increased failure risks and reduced sustainability chances for adopted FOSS solutions.

If properly planned and integrated with wider strategies, FOSS adoption projects are more likely to succeed and produce results for public administrations.

Recommendation

Planning a wider strategy for FOSS based on organisational needs and available resources

Governments and public administrations are urged to develop integrated plans that can facilitate FOSS adoption within their entire infrastructures based on organisational needs and available resources. Planning a wider strategy for FOSS adoption and sustainability should include estimated risks and clearly set objectives, foreseen costs and expected benefits. A FOSS adoption plan should also be adjusted to the scale, IT architecture and organisational profile of the public organisation it is developed for. Offered solutions should be reviewed in the light

of available human and technical resources, existing software systems and applications, targeted end-users and overall organisational needs. Small or medium size organisations have significantly different needs and features compared to large organisations or national agencies and institutions that refer to thousands of end-users or stakeholders.

Benefits

Making the most of open source through proper planning

Integrating FOSS solutions within a wider IT policy planning framework is expected to:

- facilitate a smooth migration to open source systems and applications
- maximise the effectiveness and sustainability of adopted FOSS solutions

Such an effective planning can help public administrations leverage the full potential of open source on a long term basis.

3.3.2. RECOMMENDATION 13: ADAPTING INTERNAL PROCESSES TO OPEN SOURCE ENVIRONMENTS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. *FOSS adoption, integration and sustainability*

Needs and background

The risk of poor FOSS integration

The integration of open source systems and application in public IT infrastructures often fails due to the fact that public administrations are unable to cope with the features, requirements or specificities of open source operating environments. Lack of training and awareness and the incompatibility of internal processes and operational tasks with adopted solutions significantly raise failure risks. This is particularly true for public administrations that have locked their software needs to specific proprietary products or to a single vendor.

Recommendation

Adopting internal processes to different software environments

In order to ensure independence and flexibility, ***public administrations should be able to integrate not just proprietary but also open source systems in their IT architectures and organisational structure. Internal processes and operational tasks should be adjustable both to the proprietary and open source models for software development and support.***

European Union
European Regional Development Fund

SEPA
Open Source software usage by
European Public Administration

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

Benefits

Benefits for public administrations

By defining a policy for fine-tuning internal processes to meet both open source and proprietary requirements, governments and public administrations can have an advantage in:

- ensuring a high level of flexibility on selecting the best possible software environment fitting their profiles and criteria
- achieving a high level of independence from specific vendors or technologies
- assess and adopt open source solutions based on a clear view of internal needs and processes
- smoothly integrate open source systems and applications

3.3.3. **RECOMMENDATION 14:** CLARIFYING THE LEGAL AND INSTITUTIONAL FRAMEWORK

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. *FOSS adoption, integration and sustainability*

Needs and background

Lack of a clear framework undermines FOSS integration

When adopting or migrating to open source solutions, public administrations are often involved in time consuming and burdensome bureaucratic processes that can hinder or delay

implementation. A large scale open source migration project implemented in the entire IT infrastructure of a government or a public organisation may involve several units, departments or agencies in terms of jurisdiction (e.g. IT departments, public procurement agencies) This raises a need for policies that can significantly simplify processes for integrating open source in public IT infrastructures.

Recommendation

Governments should provide a clear framework for open source

National or local governments should provide coherent and updated legal and institutional frameworks for open source development licensing and adoption in the public sector.

Legal requirements and the institutional roles and responsibilities of all organisations involved in IT policy planning and software procurement should be clearly defined and known to all stakeholders.

Speeding up the process of FOSS integration

Defining one-stop centres for open source support on a national or regional level[35] is an effective policy to speed up the pace of open source integration and re-use within the public sector.

Benefits

A clear framework can maximise open source sustainability

Having a clear as possible legal and institutional framework on all aspects of open source will be a significant contribution in:

- speeding up the integration of open source solutions in the public sector.

- setting up quality assurance and implementation

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[35] Such as the Danish National Software Knowledge Centre.

mechanisms for both open standards and open source software.

- supporting the quality and sustainability of applied solutions.

3.3.4. RECOMMENDATION 15: PROVIDING GUIDANCE AND SUPPORT TO SMALL AND MEDIUM SIZE ORGANISATIONS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. *FOSS adoption, integration and sustainability*

<u>**Needs and background**</u>

Why is guidance and support needed?

As shown by experiences shared in the OSEPA project, [36] support

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[36] As commented in the case of the migration project undertaken by the City of Freiburg: "*the contribution of higher governmental officials through directives, guidelines and policies is a major success factor*". See the OSEPA Good Practice Guide, 1st version.

from central, national agencies or higher governmental instruments is considered to be a great help to small or medium scale public organisations with limited resources attempting a transition to open source. Lack of guidance, resources, strategic orientation and political support could undermine the sustainability of open source migration projects in small scale organisations.

Recommendation

Providing guidance, resources and support to small organisations

National governments, central agencies and regional administrative centres should provide guidance and support to small and medium organisations considering FOSS adoption plans and migration projects. Such a support should not restrict to funding but it should also include the specification of standards and requirements, guidelines, documentation and knowledge resources, consensus building and stakeholder motivation.

Benefits

What would be the benefits for small scale organisations?

Joint initiatives and collaborations under an "umbrella" agency can attract more potential adopters and increase the transferability of best practices between small scale organisations. More specifically higher political support and guidance can greatly contribute in:

- speeding up and encouraging the adoption of open source

solutions in small and medium public organisations with less staff or technical resources.

- valorising reusable FOSS components and solutions among small scale organisations.
- guranteeing the quality and sustainability of FOSS solutions.
- ensuring a homogenous integration of open source software on all levels of the public sector.

3.3.5. RECOMMENDATION 16: INVOLVING STAFF THROUGH FOSS TRAINING AND AWARENESS.

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. FOSS adoption, integration and sustainability

<u>Needs and background</u>

Why involve staff?

Open source migration projects often fail due to limited involvement of staff and users. Motivating and involving a large number of staff, an entire department of even an entire organisation in integrating a FOSS solution is the best way to ensure that end-users are going to actively participate, share experiences and keep on using the systems or applications introduced. Personal involvement empowers staff and provides a

sense of responsibility to best use, maintain and improve adopted systems and applications.

Recommendation

Involving staff is a success factor for FOSS policies.

Governments and public administrations are urged to plan actions and initiatives for raising awareness and training their staff in open source systems and applications as a critical aspect for the effectiveness of their open source policies.

Benefits

Maximising the longevity of open source solutions

Supporting staff involvement in the adoption, use or even customisation of open source tools and applications is an effective mid and long-term policy for public agencies and administrations in terms of:

- reducing failure risks in large scale open source migration projects
- achieving a full integration of adopted FOSS solutions in internal processes and IT infrastructures
- maximising the effectiveness and longevity of adopted FOSS solutions
- enhancing trust and awareness on open source among staff
- advancing staff's ICT skills

3.3.6. RECOMMENDATION 17: BEYOND COST ANALYSIS: DEFINING A FOSS ASSESSMENT POLICY

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. *FOSS adoption, integration and sustainability*

Needs and background

Why have a FOSS assessment policy?

Adopting and integrating open source software systems and applications in an organisation's IT infrastructure is a long process that should be continuously monitored and evaluated in terms of end-user satisfaction, cost-effectiveness and improvement in various operational fields (e.g. productivity and performance, vendor independence, enhancement of IT system security and administration). Evaluating a FOSS project through predefined standards and criteria (e.g. technological maturity and reliability, total amount of cost savings) and by getting both internal feedback and -if possible- external expert opinions is the best way to make sure that all identified risks and weaknesses will be addressed and benefits will have a long-term impact within the organisation. In addition, tested and evaluated FOSS projects that produce validated results are more likely to be replicated in similar contexts and public IT infrastructures.

Recommendation

Estimating both costs and long term benefits

Governments and public administrations should develop a full assessment policy for adopted open source solutions considering

both costs and long-term benefits. Projecting not just the costs but also the expected benefits for the full life-cycle of systems and applications both on a mid-term and long-term horizon in relation to the IT policies and strategic planning of public organisations, is essential in order to fully assess FOSS as a competitive and viable solution.

Benefits

An assessment policy can maximise the effectiveness of open source solutions

By defining a coherent FOSS assessment policy based on clear evaluation criteria that reflect their specific needs and requirements governments and public administrations will be able to:

- reach informed decisions on opting for the best solutions on a best-value-for-money basis
- make sure that adopted open source solutions are technologically mature and reliable
- improve and fine-tune their IT and software procurement policies where needed
- leverage the full potential of open source

3.3.7. **RECOMMENDATION 18:** INTEGRATING FOSS AS A VEHICLE FOR REGIONAL DEVELOPMENT

Policy level: Regional ☑ National ☐ EU ☐

Policy area: 3. FOSS adoption, integration and sustainability

Needs and background

The FOSS potential for regional development

As shown in several case studies, there is a great potential for regional authorities and public administrations aiming to integrate free and open source software in their IT infrastructures as a strategic component for regional growth and development. A well planned full integration of FOSS solutions in different public service departments and organisations can help reduce operational costs, increase productivity and unchain capabilities with great effects in terms of regional development and economic benefits.

The case of Extremadura: a success story

The regional government of Extremadura (ES) provides a great success story on the potential that FOSS can bring on a regional level. The region of Extremadura has implemented, during the last years, a wide adoption and almost full integration of FOSS solutions in its public services and IT infrastructures.[37] By adapting open source platforms and applications to local needs through extensive localisation and customisation, Extremadura

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[37] With open source reaching up to 67% of all systems and applications. See: "ES: Open Source software widely used by the regional government of Extremadura —", 2011., http://www.osor.eu/news/es-open-source-software-widely-used-by-the-regional-government-of-extremadura/?searchterm=extremadura.

managed to engage more citizens and age groups (e.g. students, seniors) in e-government services while achieving, at the same time, a high level of control over software. According to the ICT Director of the Regional Government, in the case of Extremadura, open source has been as a vehicle to "sustainable and technologically independent development".[38]

Recommendation

Assessing FOSS as an enabling factor for regional development

As shown in the case of Extremadura a well planned, large scale migration of public services and IT infrastructures to open source, if combined with motivation drivers for staff, citizens and businesses (e.g. training, localisation of platforms, economic incentives) can prove to be a key factor for regional development.

Local governments and regional authorities are encouraged to assess open source as an enabling factor that can open up opportunities and valorise local strenghts as part of wider ICT based strategies for regional development.

Benefits

Integrating FOSS as a key component in regional development planning could enable local governments and regional authorities to:

- improve e-inclusion rates
- build up trust on the effectiveness and reliability of open

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[38] OSOR, "ES: CIO Extremadura 'open source key to development", 2011, http://www.osor.eu/news/es-cio-extremadura-open-source-key-to-development/?searchterm=extremadura.

source systems and applications among their staff and citizens

- open up opportunities for local businesses
- gain independence from proprietary vendors and technologies though higher local control over their own software solutions
- capitalise on their background and experience by transferring knowledge, support and FOSS-based solutions to more regions with similar problem-solving priorities

3.3.8. **RECOMMENDATION 19:** SUPPORTING PUBLIC ORGANISATIONS AS POTENTIAL FOSS PRODUCERS

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 3. FOSS adoption, integration and sustainability

Needs and background

FOSS removes entry barriers for potential producers

Providing a lower entry barrier for software development and distribution, FOSS enables public administrations to develop their own software solutions from scratch or extensively customise existing systems and applications, depending on their internal resources. In-house developed and localised software solutions that are tailored to the specific needs of organisations are not only more easily integrated but also transferable to similar contexts.

Recommendation

Public administrations are expected to develop, share and reuse software components and solutions

As clearly stated in the EIF, *European Public Administrations are strongly encouraged to develop component-based service models, and to share and re-use software solutions as much as possible.* Based on this recommendation, *public administrations should be given support*, not only on a policy level but also in terms of legal guidance, funding, resources and practical guidelines *in order to be able to become themselves FOSS producers and providers*.

Benefits

Public administrations can gain control as FOSS producers and re-distributors

AS FOSS producers, public administrations can:

- achieve higher efficiency and independence as producers of own, in-house software solutions
- jointly develop, share and re-use software components and solutions with peer organisations
- contribute to open source code quality and supply of reliable open source solutions

3.4. RESEARCH & INNOVATION

3.4.1. **RECOMMENDATION 20:** INVESTING IN FOSS RESEARCH AND DEVELOPMENT

Policy level: Regional ☑ National ☑ EU ☑

Policy area: 4. Research & innovation.

Needs and background

Combining the strengths of Europe in open source

Europe has a wide and active base of open source knowledge centres, SMEs and FOSS developer communities. It still fails to a great extent, however, to turn this advantage to large scale, commercialised open source projects and successful FOSS-based business strategies.

Recommendation

Promoting European FOSS development and entrepreneurship through R&D polcies

The European Union, in close collaboration with Member States and regional stakeholders should orientate R&D policies towards promoting FOSS development and entrepreneurship by investing in public-private partnerships, regional research

clusters and innovation hubs.

Benefits

Open source provides an ideal basis for developing innovative software products and combining different business models. Enabling different developers, IT companies and software firms to compete in open source products and solutions within innovation ecosystems can not only boost regional economy but also help improve Europe's strategic position in the software industry.

Investing in FOSS R&D centres and innovation hubs could lead to:

- regional economic growth
- new business opportunities for European IT companies, SMEs and public-private partnerships.
- innovating FOSS based tools and applications developed in Europe
- more open source solutions offerings for European governments and public administrations
- increased market penetration and higher innovation status for European businesses and developers in the global software industry.

3.4.2. **RECOMMENDATION 21:** REVISING THE EU SOFTWARE STANDARDISATION STRATEGY

Policy level: Regional ☐ National ☐ EU ☑

Policy area: ***4.*** *Research & innovation.*

Needs and background

Need to fine-tune software standardisation policy

EU policy making in this area should take into account both institutional and industry standard developers and the needs of key European stakeholders. As stated in a recent report for a "European Software Strategy", the Commission should: "*recognise the prominent role of industry fora and consortia in developing standards within the software market and take appropriate action.*"[39]

Need to map the standardisation needs of public stakeholders

A clear and more detailed mapping of the standardisation needs and areas that are most crucial for public European stakeholders (e.g. standards per market domain or technological domain, interoperability barriers) is also needed.

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[39] Industry expert group, *Playing to win in the new software market. Software 2.0: winning for Europe. Report of an industry expert group on a European Sotware Strategy.* P. vii. The European Commision, June, 2009. Available at: ftp://ftp.cordis.europa.eu/pub/fp7/ict/docs/ssai/European_Software_Strategy.pdf

Recommendation

The EU policy on software standardisation should revised based on:

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Revising the EU standardisation policy based on stakeholder need and industry realities

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- a clear and detailed mapping of the standardisation needs of public stakeholders (e.g. governments, public administrations)
- the need for openness of standards in the public sector
- an acknowledgement of standards developed by standardisation consortia and the industry.

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and combined with:

- initiatives for widening the European FOSS development base as a way to improve and speed up standard adoption mechanisms.

Openness neutrality and transparency should be respected

Any policy initiative on mapping ***standardisation*** needs and updating relevant frameworks ***should meet certain conditions of openness, technological neutrality and transparency.***

Benefits

A revised software standardisation policy would be more effective in:

A revised policy on software standards would better reflect the needs of public stakeholders and the reality of the software market

- addressing the software standardisation needs of public stakeholders across Europe.
- addressing European policy priorities on openness, technological "neutrality" and transparency.
- promoting FOSS use and development
- strenghtening the EU software industry

3.4.3. RECOMMENDATION 22: INVESTING IN INNOVATIVE SOFTWARE PRODUCTS AND SOLUTIONS.

Policy level: Regional ☑ National ☑ EU ☑

Policy area: 4. *Research & innovation.*

Needs and background

Open source will continue to rise and penetrate to new models such as SaaS

Open source is expected to have an increased market penetration in the following years based on its features and on emerging technologies and new software delivery models such as Software-as-a-Service. This trend raises a need of adapting open source policies to the changing software environment.

Recommendation

Governments and the EU should invest in innovative FOSS-based services

Public administrations, national governments and the European Unions should to meet the challenges raised by this new software environment by investing in open source as a key enabler of internet based software services.

Benefits

Public administrations have a lot to gain from new software delivering models

Public administrations and regional authorities in particular have a lot to gain from new decentralised, virtualised and scalable models for delivering software-based services as a way to improve the provision of e-government services while reducing costs or hardware requirements and software licence purchasing.

In this way, they could:

- reap the benefits of the further growth and penetration of FOSS in the software market

- develop innovative, cost effective software solutions for public administrations in Europe

- facilitate the integration of FOSS-based solutions in public administrations

3.5. TRAINING AND EDUCATION

3.5.1. **RECOMMENDATION 23:** INTEGRATING FOSS AS A MEANS TO INCREASE ICT SKILLS AND E-INCLUSION

Policy level: Regional ☑ National ☑ EU ☑

Policy area: 5. Training and education.

Needs and background

The FOSS potential can address the need for ICT skills in Europe

As clearly stated in the European Digital Agenda: "*Europe is suffering from a growing professional ICT skills shortage and a digital literacy deficit. These failings are excluding many citizens from the digital society and economy and are holding back the large multiplier effect of ICT take-up to productivity growth.*" [40] FOSS based itself on skill developing, learning and experimentation has a great potential as a training toolset. The skill setting value of open source has been acknowledged long ago by employers that are willing to recruit developers with an open source "exposure" background. Such a training value comes at significantly low cost either to individuals or public organisations and therefore it can be capitalised to increase digital literacy and professional IT skills for both staff and citizens. [41]

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[40] The European Digital Agenda (p.6)

[41] See: Ghosh, R. A., Krieger, B., Glott, R.and Robles, G., Free*/Libre and Open Source Software: Survey and Study. Part 2B: Open Source Software in the Public Sector: Policy within the European Union*. International Institute of Infonomics University of Maastricht, The Netherlands, 2002.

Recommendation

Governments and public administrations are urged to develop programmes and initiatives on FOSS training for staff and citizens through their capacities and infrastructures. The European Union should also fund and actively support FOSS training as means to address it deficit in ICT skills and digital literacy.

Benefits

Open source training can increase ICT skills and foster innovation

Providing opportunities for hands-on experience, simple exposure to open source systems and applications or even certified training to citizens and staff of public organisations can have several benefits on various levels:

- increasing the level of e-inclusion and digital literacy.

- increasing the level of professional ICT skills in public organisations

- supporting and expand a base of new open source developers

- enhancing trust and awareness on open source through expert training and certification for staff and citizens.

- fostering innovation on new internet-based modes for software delivery that are closely linked with developing new skills and knowledge.

3.5.2: **RECOMMENDATION 24:** INTEGRATING FOSS IN THE EDUCATIONAL SYSTEM ON A REGIONAL / NATIONAL LEVEL

Policy level: Regional ☑ National ☑ EU ☐

Policy area: 5. Training and education.

Needs and background

FOSS can offer low cost, stimulating learning environments

The European shortage of advanced ICT skills and the priority for digital literacy and e-inclusion calls for a faster and direct integration of software based environments in national and regional educational systems.

Apart from providing itself a training tool for ICT skills, FOSS can offer low cost, stimulating learning environments through educational platforms and applications. On certain occasions FOSS penetration is faster and higher within the IT infrastructures of educational units and departments compared to other public

sector sections.[42]

There are several examples[43] in which national or regional authorities have moved their entire educational IT infrastructures to open source platforms as a way to reduce costs and develop localised and customisable learning tools and environments.

Recommendation

Governments and public administrations are urged to introduce or further integrate FOSS-based learning tools and environments in their educational systems and infrastructures.

Benefits

Through a policy for promoting FOSS-based learning, schools, educational units and administrative authorities will be able to:

- reduce the cost of buying educational software.

- develop or customise their own learning platforms independently without having to solely rely on proprietary software vendors.

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[42] This is the case in Spain. See: Cenatic: National Observatory of Open Source Software, *Open Source Software for the Development of the Spanish Public Administration. An Overview*. Spain 2008. Available online at: http://www.epractice.eu/files/media/media2407.pdf

[43] Such cases have been also reported in the OSEPA project (e.g. Extremadura, SE, Vinteln Municipality SE). See OSEPA Good Practice Guide, 1st version.

- provide open and customisable tools and platforms for ICT training and skill developing.

- provide a basis for an early awareness or adoption of open standards and open source software.

4. CONCLUSIONS: CHALLENGES FOR A EUROPEAN OPEN SOURCE STRATEGY

FOSS integration in public administrations depends on socio-economic factors and institutional frameworks

The use, adoption and integration of FOSS in the IT infrastructures of European governments and public administrations has not always followed the same pace or moved towards the same direction. Legal and institutional frameworks, social, economic and technological aspects are some of the differentiating factors that explain gaps or divides between regions and countries on the awareness and penetration level of open source.

Some countries seem to lead the way in defining FOSS-specific policies and implementing open source projects.

It is obvious that some countries are leading the way of open source integration in public IT infrastructures, either by implementing several migration projects or by having processed clear, FOSS-specific policies, frameworks and support centres.

Germany and Spain, for example, are highly active in terms of planning and implementing FOSS policies and initiatives throughout different scales and levels of public administration (e.g. from municipalities to the central government). In the case of Spain, the regions of Extremadura and Andalucia provide two remarkable cases that have highlighted concrete results and benefits by shifting entire administration units and department to open source. Spain has one of the more active and advanced

legislative framework in Europe.

The Netherlands, having set up a government action plan on open source and open standards,[44] and Denmark, providing support for the adoption and re-use of open source solutions through a dedicated software knowledge centre, are also two successful cases of advanced open source policies on a national level.

Regions and local governments may be more advanced in open source than national / EU policies

Moreover, on several occasions local or regional authorities seem to implement more advanced policies (e.g. the case of Extremadura, the City of Freiburg migration project) than the ones defined by national frameworks or official guidelines and documents of the European Commission.

Local and regional authorities are often better positioned to directly integrate open source systems and applications in their internal processes and IT architectures by clearly defining needs and specifications through public tenders. By adapting open source solutions to regional contexts through extensive customisation and localisation they can also see immediate effects and improvements in administrative tasks or in services delivered to local communities.

Successful regional cases in FOSS should be supported and made available to all public stakeholders

Successful cases of innovative open source solutions for regions and local communities should be supported and potentially transferred to more regions or replicated in similar contexts and implementation fields. An effective way of disseminating the results and re-distributing the software tools and components of such projects is through national or EU-wide channels and repositories such as OSOR (osor.eu). All European public

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[44] *"The Netherlands in Open Connection"* Government Action Plan, 2007

Public administrations should make the most of open source channels and repositories such as OSOR

administrations that are active in open source use and development should be strongly encouraged to use OSOR as a one-stop point for sharing open source experiences and re-using open source solutions on an EU-wide level.

Need for both high level policies and bottom-up implementation

In order to foster public sector innovation in open source, official, high level policies (e.g. Directives, interoperability frameworks, and recommendations) should be combined with an active support of local / regional open source projects and initiatives that could expand and multiply on a shared experience and good practice basis.

Closed, mixed or open EU strategies for software?

The Open Source Community Response to the Lisbon Ministerial Declaration[45] has highlighted three orientation scenarios for a European Software Strategy:

- closed: this scenario refers to an increasing dependence on existing closed business models that restrict to a software producer / software consumer relationship
- mixed or generic: in this scenario, FOSS continues to grow based on mixed policies. Its full potential, however is not harvested and certain opportunities are missed.
- voluntary or collaborative: in the collaborative or "open" scenario FOSS is acknowledged and valorised in its full

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[45] The Open Source Community, "Open Community Response to the EU Ministerial Declaration Delivered at the 4th Ministerial eGovernment Conference in Lisbon on 21 September 2007", 2007 http://ec.europa.eu/information_society/activities/egovernment/docs/lisbon_2007/open_community_response.pdf.

potential by both policy makers and the software market.

These three scenarios also reflect the software market reality in which closed (proprietary) and collaborative, open source models are combined into new mixed business strategies to deliver innovative software products and solutions.

Open source, expected to further grow and increase its market penetration in the following years, can provide new business opportunities, create jobs, save R&D costs, and contribute to the development of ICT skills and e-inclusion in Europe if reaching its full potential. Europe should shape a software strategy that could best capitalise on the open source capacities of its businesses, knowledge institutions and developer communities.

The level of openness and the mixture of policies towards such a unified European Software Strategy leveraging the full potential and competitive advantages of open source are yet to be defined. In any case, however, such a strategy cannot be effective if not reflecting the needs and experiences of European regions, local communities and public administrations.

5. ANNEX

5.1. BACKGROUND AND METHODOLOGY

The interest on the social and political aspects of open source has increased in recent years

Following the rapid growth of open source both in terms of market and industry, field experts, analysts and decision makers have increasingly focused on the socio-economic and policy issues of FOSS, moving beyond its technological aspects. During the last years, open source software has been acknowledged as a critical policy field in the European context and this has been reflected in various official and non official document and resources, EU funded research projects and initiatives. Although there has not been an official, unified strategy on open source, the European Commission has outlined a series of legal and policy frameworks and defined standards and requirements for software procurement and use, some of which directly refer to open source or include it as a strategic component. Within this context, policy review was based on a wide range of resources on all levels (local/regional, national, EU). Available resources were grouped in the following categories:

- **National and EU legislation** (e.g. EU Directives, national legal frameworks and legislative acts).
- **Official policy documents** (e.g. EU and national software strategies, policy frameworks, Government

Action Plans). Official policy documents may be either FOSS specific or may partially or indirectly refer to open source software (e.g. European Interoperability Framework, European Digital Agenda).

- **Non-official policy documents** (e.g. white papers, practical guidelines, studies and reports, resources from non-profit organisations and NGOs).

- **Policy initiatives and case studies:** policy actions and initiatives relating to FOSS mostly on a regional or national level (e.g. migration projects best practice cases)

- **Literature** (e.g. academic / research papers, studies and reports, articles and weblog publications).

Policies gathered and reviewed (including both policy documents and policy initiatives or case studies) derived from a wide range of information sources that are grouped as following:

- Online resources on EU official policy documents.
- Online resources on previous EU funded FOSS projects, studies and reports (e.g. FLOSS, COSPA, tOSSad).
- The OSOR (www.osor.eu) catalogue of publications and case studies.
- The OSEPA catalogue of collected good practice cases and related material.
- The National Interoperability Framework Observatory (NIFO) set up by the IDABC (Interoperable Delivery of European eGovernment Services to public Administrations, Businesses and Citizens).
- The Catalogue of the Government Open Source Policies surveyed by the Center for Strategic and International Studies (March 2010, 7th update).

- The report on "FOSS European and National Policies and Practices: analysis and recommendations". Deliverable of the OSEPA project implemented by Strovolos Municipality, CY. 18/02/2011.

Figure 7. Outline of the policy review scheme.
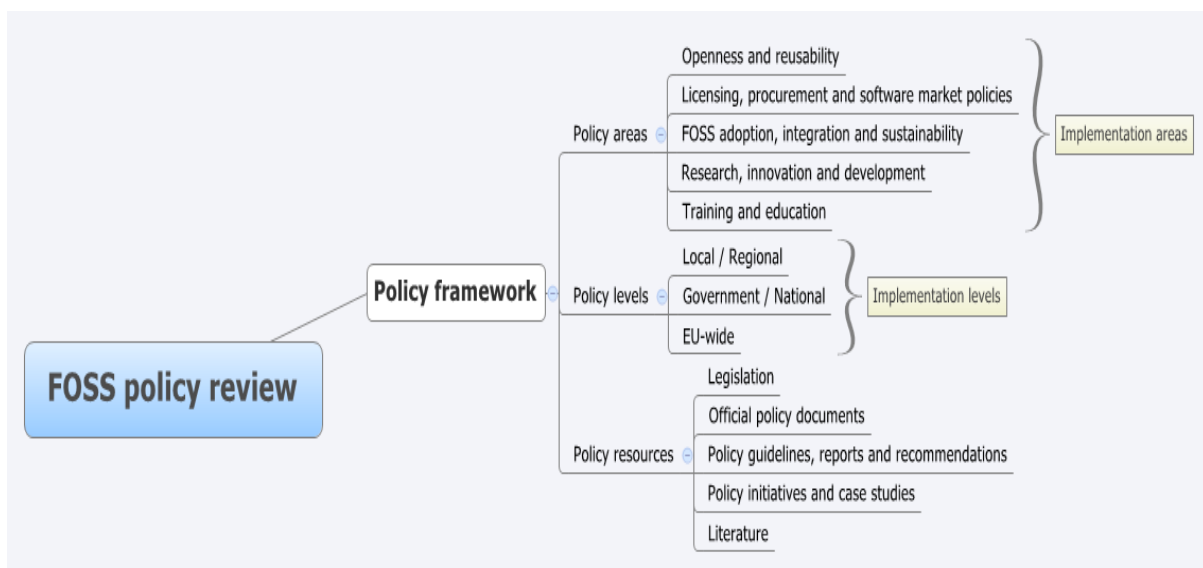
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[31]   The European Union Public Licence

http://www.osor.eu/eupl/

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(OSOR)

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http://en.itst.dk/

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http://www.cenatic.es/