Project acronym: OSEPA

Project name: Open Source software usage by European Public Administrations

Project code: INTERREG IVC, 0918R2

Document Information:

Document title: Good Practice Guide covering various aspects of FOSS usage by European Public Administrations. 1st (interim) version.

Date of Delivery: 11.05.2011

Component: CP3

Component Title: Exchange of experiences

Component Leader: University of Sheffield

Distribution (Restricted/Public): Restricted to the consortium

Nature: Report

History Chart

Date	Changes	Cause of change	Implemented by
11.05.2011	Initial Document	N/A	Research Academic Computer Technology Institute

Authorisation

No.	Action	Partner	Date
1	Prepared	Research Academic Computer Technology Institute	11.05.2011
2	Approved		
3	Released		

Disclaimer

The information in this document is subject to change without notice.

Table of Contents

Abbreviations

BSD	Berkeley Software Distribution	MMS	Multimedia Messaging Service
CMS	Content Management System	MOODLE	Modular Object – Oriented Dynamic Learning Environment
DNS	Domain Name System	MS	Microsoft
EDP	Electronic Data Processing	NFS	Network File System
EPA(s)	European Public Administration(s)	OCS	Open Source software inventory next generation
EUPL	European Union Public License	ODF	Open Document Format
FOSS	Free / Open Source Software	OGC	Open Geospatial Consortium
GIMP	GNU Image Manipulation Programs	OpenLDAP	Open source implementation of the Lightweight Directory Access Protocol
GIS	Geographic Information Systems	OS	Operating System
GLPI	Gestionnaire Libre de Parc Informatique/ Information resource manager	OSEPA	Open Source software usage by European Public Administrations
GNU	Gnu's Not Unix	OSS	Open Source Software
GPL	General Public License	OTRS	Open Source helpdesk and IT service management
GUI	Graphical User Interface	PC	Personal Computer
ICT	Information and Communication Technologies	PDF	Portable Document Format
IDABC	Interoperable Delivery of European eGovernment Services to public Administrations, Business and Citizens	RACTI	Research Academic Computer Technology Institute
IT	Information Technology	SMS	Short Message Service
KDE	Key Desktop Environment	TCO	Total Cost of Ownership
KEDKE	Central Union of municipalities and communities of Greece	WFS	Web Feature Service
KVM	Kernel based Virtual Machine	WMS	Web Map Service
LGPL	Lesser General Public License		
LTSP	Linux Terminal Server Project		

Summary

This document is a Good Practice Guide on the various aspects of integrating free and open source software (FOSS) systems and applications in European Public Administrations (EPAs). The guide was developed on the basis of the experiences shared and the case studies collected by the consortium members of the OSEPA project that aims to assess the spread of FOSS usage by EPAs. 19 case studies on open source software usage by various organisations in different technical implementation fields (e.g. operating systems, office suites, databases, server, Geographic Information Systems) were reviewed, analysed and evaluated according to predefined evaluation criteria, score thresholds and ranking schemes. Following the methodology and definitions that were adopted, 12 out of 19 collected cases have been identified as good practices and are presented in this guide. Guidelines and recommendations that sum up the main conclusions and lessons learned arising from these cases are provided in three sections (management guidelines, technical guidelines and sustainability guidelines) covering the full cycle of a FOSS project (planning and preparation, implementation, support and continuation). Good practices highlighted and main lessons learned include: setting clear and measurable objectives, selecting technically mature FOSS solutions that fit specific organisations, choosing proper licensing models, preparing and involving the organisation's staff, estimating costs and risks, using open standards, taking into account source code modification and compatibility issues, keep evaluating and supporting FOSS solutions and reaching out to peers, central agencies and the open source community.

This is the 1st interim version of the Good Practice Guide that is foreseen to be updated with new evidence and case studies through further experience exchange within the OSEPA consortium. The guide is intended to be used as a reference guide for tested, proven-effective FOSS solutions and practices by all interested parties and stakeholders in public administrations wishing to assess the feasibility or plan the implementation of a FOSS solution in their organisation.

1. What is this guide about? Introduction

1.1. Scope and use of the Good Practice Guide.

The Good Practice Guide on FOSS usage by public administrations is based on the experiences of the OSEPA consortium and aims to:

> 1. *highlight good practices on integrating FOSS solutions in public administrations*
>
> 2. *provide guidelines, recommendations and lessons learned on various aspects of FOSS usage by public administrations based on good practice cases*
>
> 3. *further promote the identification and exchange of good practices among stakeholders*

This document is intended to be used as a starting point, or a reference guide for proven-effective, transferable FOSS solutions and practices by all members of the OSEPA consortium. It was produced within sub-task 3.6.2 "Production of Good Practice Guide based on the experiences of the consortium" of Component 3 ("Exchange of experience") in the OSEPA project.

The guide is also to be used by all and all interested parties and stakeholders in public administrations who are interested in:

> 1. *assessing the feasibility of provided FOSS solutions in their organisation*
> 2. *planning a migration to FOSS applications in their organisation*
> 3. *adopting specific FOSS solutions in their organisations*
> 4. *developing custom-built FOSS applications for their organisation*
> 5. *partnering with software developers / external consultants in developing/adopting FOSS solutions for their organisation*

As defined in the Task Allocation List of the Partnership Agreement between KEDKE (Central Union of Municipalities and Communities of Greece) and the OSEPA partners regarding the implementation of task 3.6 (Good Practice Guide on FOSS uptake among EPAs), FOSS related practices have been collected by the consortium applying the methodology developed by OSEPA partner City of Schoten which has also listed them in a catalogue of case studies published within the partnership. In the next implementation stage, the methodology for evaluating collected practices and developing the Good Practice Guide was defined by OSEPA partner Research Academic Computer Technology Institute (RACTI). This 1st version of the Good Practice Guide, to be published by OSEPA partner RACTI, will be updated by OSEPA partner City of Schoten with new practices reported within the OSEPA consortium.

Chapter 2 of this document provides the context and background of developing the Good Practice Guide and presents the basic features of the methodology used to evaluate collected case studies and highlight good practices. Chapter 3 provides guidelines, recommendations and lessons learned based on the collected case studies. Appendix A includes a list and short description of all good practice case studies that have been identified so far in the context of the OSEPA project.

1.2. Good Practices in FOSS: terms and definitions.

The term "public administrations" refers to territorial organisations, such as ministries, municipalities, communes, provinces and prefectures, of non-territorial public institutions, for example universities, academic centres, schools and social security services and hospitals. For the purposes of this guide, the terms "public administrations" and "public organisations" have the same meaning and scope of use.

Free and/or open source software (FOSS) programs are programs whose licenses give users the freedom to run the program for any purpose, to study and modify the program, and to redistribute

copies of either the original or modified program (without having to pay royalties to previous developers).

The term "open source software solution" is defined as a procedure, method or technique that has been adopted for the solution of a problem with the use of open source software tools, and that has shown at least some evidence of effectiveness. For the purposes of this catalogue, the terms "open source software solution" and "open source software practice" have the same meaning and scope of use.

FOSS practices cover a wide range of public organisation tasks and operations: document management, communication and networking, administrative workflow management, e-government services, tourist services and information portals, e-learning and education, IT system administration and security, taxes and finance, human resources management.

These needs are covered by a wealth of available FOSS solutions and applications: office suites, e-mail clients, project management applications, groupware, file sharing tools, network and communication utilities, administration systems, database management applications, graphics suites, Computer Aided Design (CAD) and Geographic Information Systems (GIS), data security and software development tools.

Practices (i.e. procedures, techniques or methodologies) that seem to work within organisations are further defined according to their proven level of effectiveness, wider implications and transferability. Some of the most frequent terms used to describe such practices are: ***promising practices***, *demonstrated practices*, ***replicated practices***, ***lessons learned***, *best or* ***good practices***.

Promising practices are programs and activities that have been used for certain periods of time within an organization and indicate, at an early stage, a potential of becoming widely applied long-term solutions. The effectiveness and transferability of promising practices however, is evaluated on a preliminary basis and not proven according to any result indicators.

"Lessons learned" is a category referring not only to tested, effective practices but also to "things no to do" or mistakes to be avoided in future implementations.

"Good", "best" or "effective" practices are different terms used to refer to processes or methodologies that have proven to be effective in a specific context (e.g. organisational department, implementation field, geographic region) and show strong evidence that there might be also effective in different contexts (e.g. organisational settings, regions) and various cases.

In the context of the INTERREG IVC programme, a "good practice" is defined as "an initiative (e.g. methodologies, projects, processes and techniques) undertaken in one of the programme's thematic priorities which has already proved successful and which has the potential to be transferred to a different geographic area. Proved successful is where the good practice has already provided tangible and measurable results in achieving a specific objective".[1]

A good practice is also defined in terms of having direct, demonstrable impact within different organisational or geographic settings, if transferred.

---

[1] Page 2 of the Interreg IVC programme manual.

2. How was this guide developed? Context and background.

2.1. Collecting practices

Case studies of FOSS practices implemented in various European public administrations were collected through the communication networks and available resources of the OSEPA consortium. A purpose-developed online questionnaire was used for the reporting of the OSEPA practices.[2] The questionnaire consisted of the following thematic sections:

1. *Organisation profile*
2. *Description of the oss solution*
3. *Management issues*
4. *Technical issues*
5. *Impact/ benefits/ results*
6. *Transferability issues*

Out of a targeted number of 36 practices to be reported by OSEPA partners (3 per partner), 19 practices were collected representing a 52,78% response rate.[3] The 19 identified practices were included and presented in a "Catalogue of case studies on open source software".[4]

---

[2] See "Report on the methodology and the tools for investigating partners' practices on FOSS usage" by the city of Schoten.

[3] This is the number of practices that were recorded recorded by 12 November 2010. Since this is an ongoing process its expected that the number will raise with new practices to be reported throughout the OSEPA project's duration.

[4] Delivered by OSEPA partner City of Schoten.

2.2. Evaluating practices

Practices included in the "Catalogue of case studies on open source software" formed a body of collected evidence out of which good practices were highlighted. Identified practices and case studies were investigated, analysed and evaluated according to the "Planning report setting out the methodology and criteria with which partners' practices will be examined and synthesized", delivered by OSEPA partner Research Academic Computer Technology Institute (RACTI). Evaluation stages were

FOSS practices were examined and evaluated within specific fields in order to assess their appropriateness as good practices and to classify them accordingly. These fields, set according to definitions and prerequisites of what should be considered a good practice, also taking into account the specificities and objectives of the OSEPA project were grouped as following:

> 1. *Solution impact on acknowledged problems.*
> 2. *Achieved objectives and produced results.*
> 3. *Previously applied evaluation.*
> 4. *Problems encountered in implementation.*
> 5. *Number of Involved staff and organisational departments.*
> 6. *Source code modification.*
> 7. *Use of own resources.*
> 8. *Transferability.*

The evaluation of practices was applied in four indicative stages:

> 1. *Reviewing of collected practices*
> 2. *Evaluating practices through predefined criteria.*
> 3. *Setting score levels for each practice*
>   *according to defined weights and thresholds for each evaluation field.*
> 4. *Assign practices to ranking groups / classification categories*

The evaluation criteria that were used to differentiate and rank FOSS practices were linked and structured as shown in the following table:

Table 1. FOSS Practices evaluation fields and criteria.

Evaluation fields	Evaluation Criteria	Objectives
Solution impact	Level of Solution impact	Assess whether an implemented practice addresses widely acknowledged issues and problems also shared by other organisations in different regions and settings
Achieved objectives and produced results	Type of achieved objectives and produced results	Identify the type and character (e.g. measurable, validated) of objectives achieved and results produced by a specific practice
Previously applied evaluation	Type and level of previously applied evaluation	Identify the type and level of any previous validation and evaluation (e.g. internal, external, preliminary, systematic)
Problems encountered in implementation	Extent of problems encountered in implementation	Assess the extent of encountered problems and difficulties that have hindered a practice's implementation
Involved individuals or organisational departments	Number of involved individuals or organisational departments.	Identify the extent and adoption scale of a practice within the organisation in which it has been implemented
Software development and customisation	Level of software development and customisation	Assess the level of software development or modification required by an implemented practice
Use of own resources	Extent of using own resources	Assess the level on which a practice has been implemented by in-house staff and resources or has been assigned to external associates
Transferability	Level of transferability	Assess a practice's potential or proven record of being transferred to different geographic contexts and organisational settings

19 practices, implemented by 17 organisations in 7 European countries were reviewed and evaluated.

Table 2. Geographic distribution of collected practices.
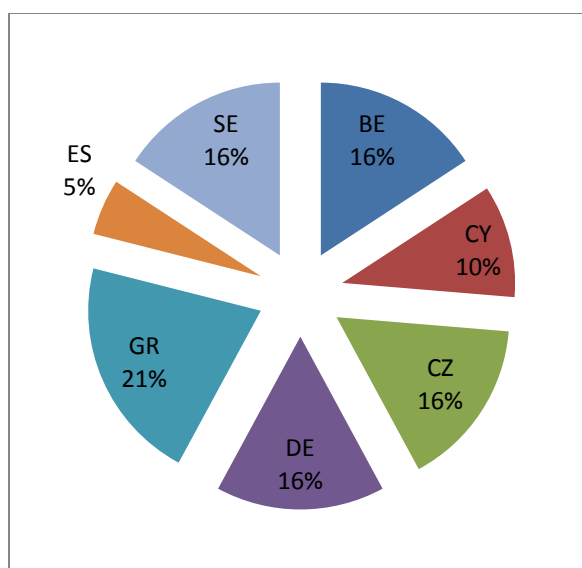
Collected practices refer to various technical implementation fields, uses and types of applications as indicatively shown in Table 3.

European Union
European Regional Development Fund

SEPA
Open Source software usage by
European Public Administration

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

Table 3. Practices by technical implementation field.

Practices by technical implementation field

■ Operating system   ■ Database   ■ Internet application
■ Application platform   ■ Office application   ■ Administrative application
■ Other
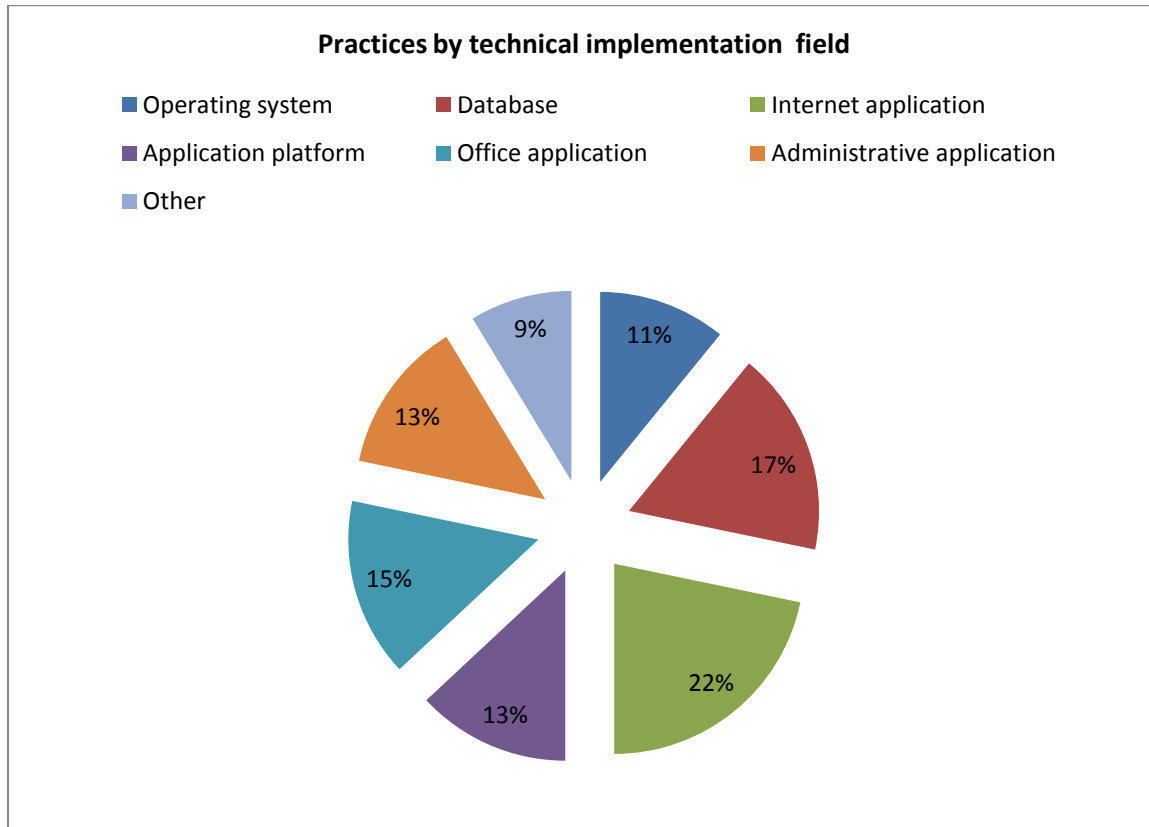
2.3. Listing and updating good practices

Out of 19 case studies, 12 practices fulfilled all minimum requirements and were evaluated as "good" representing a rate of 63,1%. Although most practices showed potential in certain fields, only those reaching the threshold set for each evaluation field.[5]

It should be noted that the selection of good practices was exclusively based on the evidence collected through the OSEPA online questionnaire for the identification of open source practices and the resulting catalogue of case studies.

Case studies that were not included in the list of good practices, were evaluated as non eligible on the basis of:

- ***incomplete information*** *provided by the organisation in certain fields or questionnaire sections*
  or
- ***irrelevance*** *of implemented FOSS solution to public administrations and similar organizational profiles or*
  or
- ***low overall*** *score or failure in one of the **evaluation** fields.*

It is foreseen, however, that this first, interim version of the Good Practice Guide will be updated by OSEPA partner City of Schoten with new practices that will be reported and collected by the OSEPA consortium. Therefore, already identified practices could be re-submitted with additional

---

[5] See the "planning report setting out the methodology and the criteria with which partners' practices will be examined and synthesized". Deliverable implemented by OSEPA partner Research Academic Computer Technology Institute.

or corrective information in order to be re-evaluated and included in the final version of the good practice guide.

Practices that were identified as good were listed according to technical implementation fields and categories of open source systems and applications.[6] Categories of open source systems and applications were broadly defined according to the taxonomy used in IDABC publications[7], also taking into account the categorisation applied in the practice identification questionnaire. Of course, this classification scheme is not, in any case, complete and is planned to be updated with new categories and added practices.

The updating of the Good Practice Guide will take place in the following indicative stages:

1. *Dissemination of the 1st version of the Good Practice Guide*

2. *Feedback on the 1st version of the Good Practice Guide from OSEPA partners.*

3. *Collection of new practices and updated data within the OSEPA consortium.*

4. *Evaluation and classification of new collected practices*

5. *Drafting and publication of the final, updated version of the Good Practice Guide*

---

[6] See APPENDIX.

[7] The IDA Open Source Migration Guidelines, November 8, 2003. Accessible at: http://ec.europa.eu/idabc/servlets/Doc5621.pdf?id=1983

3. FOSS guidelines for public administrations: good practices and lessons learned in OSEPA

This section aims to highlight good practices, outline lessons learned and provide recommendations arising from the identified good practice cases collected through experience exchange in the OSEPA project. Various aspects and implementation cases of FOSS applications, tools and platforms, met in a wide range of public organisations are covered.

Practices and recommendations described in this section are not to be seen as a complete list of dos and don'ts or as practical guidelines providing a blueprint for implementation. They are intended, however, to be used as a starting point, or a reference guide for tested, proven-effective practices of integrating open source software solutions in public IT infrastructures as documented through shared, useful experiences of different public organisations across Europe.

As shown in most of the cases identified so far in the OSEPA project, previous experience, guidance and support on using FOSS for various tasks and issues in different technical implementation areas, public administration scales and settings are valuable in shaping firm IT strategies, managing transition and planning migration projects.

Under this premise, practices, lessons learned and recommendations included in this section sum up and were based on:

1. Gathered responses from public administrations to the OSEPA questionnaire for the identification of FOSS practices.
2. Best methods and strategies as identified in practices that showed high levels of effectiveness and transferability.
3. Identified risks and pitfalls to avoid, implementation problems and lessons learned of all collected practices.

Previous related EU guidelines and recommendations on the use and adoption of FOSS in the public sector were also taken into account.

Guidelines, critical issues and recommended actions, as described in this section, broadly refer to three main aspects that should be always considered when planning, implementing or maintaining FOSS solutions in a public organisation:

> ### 1. management guidelines:
>
> *Planning and funding, licensing, cost estimation, project monitoring and risk management, in-house implementation and external expertise, staff training.*
>
> ### 2. technical guidelines:
>
> *Hardware requirements and software components, source code modification, software development and customization of applications, compatibility, open standards and interoperability, data safety and preservation*
>
> ### 3. sustainability guidelines:
>
> *Evaluation, language support & documentation, end-user / community involvement, continuation and extension.*

They also refer to the full life-cycle of planning, implementing and maintaining a FOSS solution within a public organisation:

> ### 1. Planning & preparation
>
> ### 2. Implementation
>
> ### 3. Support, evaluation & continuation

3.1. MANAGEMENT GUIDELINES

3.1.1. Addressing a shared problem

Solutions to common needs and problems are more likely to be shared.

Addressing a problem that is also acknowledged by other organisations can significantly increase the rate of available know-how resources and support as shared problems often have shared solutions. As clearly shown in many identified cases, practices addressing an inter-regional or "universal" need referring to everyday tasks and activities (e.g. text processing and office applications) are more easily adopted and more likely to be transferred to other organisations.

3.1.2. Setting clear objectives and expected results

The City of Freiburg set the objective of migrating from MS word 2003 to OpenOffice 3.21 in 2.000 client computers. Setting a measurable target was one of the key-factors of the project's success.

It has been proven that in many cases, while projects were successfully implemented, end-users were not overall satisfied partly because the project objectives were unclear or the expectations too high. In planning a FOSS project, it is crucial to set certain objectives to be reached and measurable results to be achieved. In this way, the means and actions towards achieving objectives can be more specifically determined and the project's success can be directly validated. Moreover, high expectations leading to end-user dissatisfaction that could even risk the continuation of the implemented practice can be avoided.

3.1.3. Choosing a solution that best fits the organisation

When it comes to free and open source software tools and applications there are no one-size-fits-all solutions. There is a remarkable wealth of available software application resources in a wide range of technical implementation areas. In most occasions, there are several choices for a single task, whether administrative or non-administrative. Moreover, FOSS products offer the flexibility of custom-building of software components to meet the needs of any given organisation. Offered solutions should be carefully reviewed in the light of available human and technical resources, targeted end-users and overall organisational needs. Small or medium size organisations (e.g. Local Police of Brasschaat BE, Vindeln Municipality, SE) have significantly different needs and features compared to large organizations or national agencies and institutions (e.g. OSS Alliance, CZ, University of Cyprus, CY) that refer to thousands of end-users or stakeholders. Differences also occur in terms of organizational profiles (e.g. cities and municipalities, academic institutions, regional authorities, national agencies).

3.1.4. Understanding how FOSS licensing works

Licensing is an important aspect of any open source software project 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 source code modification or even release their custom-built solution as a contribution to the open source community. Choosing a proper license (e.g. GNU General Public License, BSD licenses, Eclipse Public License) according to product, use and distribution strategies might prove to be a time-consuming process that should be taken into consideration by EPAs. EUPL (European Union Public License) license provides a valid, legal tool in

EUPL (European Union Public License) license provides a valid, legal tool in which to distribute software to be used by many other providers including public administrations.

which to distribute software and it has been selected by various successful projects that are included in this guide.

3.1.5. Assessing organisational strengths and limitations

> *A balanced strategy, involving both in-house implementation and external expertise, where needed, seems to be effective.*

Defining organisational strengths and limitations is crucial in determining the right strategy for implementing a FOSS solution, either by using own resources or asking for the support of external consultants. Public administrations with in-house technical staff that is skilled enough to develop manage and support a FOSS solution on a day-by-day basis may opt for internal implementation seeking independence from vendors and external consultants. In order to mitigate possible risks, however, internal skills and capacities should not be overestimated, limitations of available resources should be carefully considered and external support should be asked, if needed. This is particularly the case for FOSS solutions that require a high level of technical expertise in software development, source code modification and infrastructure maintenance. Avoiding, where possible, technically demanding and over-complicated projects may potentially reduce reliance on external consultants. In any case, public administrations should carefully assess task complexity, internal capacity and vendors providing support for FOSS products and application suites. As shown in many good practice cases, a balanced strategy, involving both in-house implementation and external expertise, where needed, seemed to be more effective.

3.1.6. Estimating and validating costs

> *"The migration project to OpenOffice … helped to save almost half a million Euros of licence fees. The total implementation costs are estimated between 50.000 and 99.000 €".*
> *The City of Freiburg, DE*

Cost reduction, particularly referring to software procurement cost, is among the main motives for a transition to open source software. Applying FOSS does not necessarily mean however, as often perceived, entirely cost-free solutions. Implementing FOSS solutions implies various types of costs that should be carefully analysed and estimated prior to implementation: staff training costs, technical support fees, management/administrative costs, external consultant fees etc. Providing an indicative scale of overall, both short term and long-term estimated costs prior to the implementation of a FOSS solution facilitates project funding, management and evaluation. Potential cost reduction should be also estimated and if possible validated upon completion of the project in order to assess its overall effectiveness.

3.1.7. Managing the risks

The OSEPA experience shows that in many FOSS projects, various organisational, managerial or technical problems that occurred had to be addressed on the spot, during implementation. Although this has not always prevented project success, it may have been the reason for delays or end-user discontent. It is therefore of great importance to determine what could possibly go wrong or pose a serious threat to the project's implementation. Adopting standardized ways and project monitoring tools and defining corrective actions or alternatives in case of failures should be an integral part of project planning and preparation. Various factors relating to human resources or technical issues should be foreseen: end-user unwillingness / resistance to change, hardware driver failures, software application bugs incompatibility, network infrastructure

European Union
European Regional Development Fund

SEPA
Open Source software usage by
European Public Administration

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

problems. Realistic time-planning and estimation of invested effort (person months) also minimizes the risk of running out of resources.

3.1.8. Preparing the staff for a smooth transition

Migration to a FOSS environment is not always well received if not explained and presented in a clear and thoughtful way to the organisation's staff. Preparing the staff through e-mail dissemination and awareness raising events, presentations, seminars and training sessions, info days and discussion meetings, is a good practice that, where applied, has helped end-users adopt changes.

> At the City of Schwaebisch "the staff was trained on the work so as to be able to operate with the OSS applications. At the end of the training courses they found their desktops ready for use. In the meantime, the administration was equipped with workplaces consisting of OSS applications".

Such an approach should be also applied on a "begin with the basics" basis. Introducing mainstream FOSS products in daily activities and providing hands-on experience with certain FOSS components and applications can minimize staff resistance to new practices and facilitate the integration of more complicated and demanding FOSS solutions. This is closely linked to the need for a clearly defined migration strategy that will either target user groups or individual users, depending on the organisation's size. Although a user-by-user approach could be suitable for pilot FOSS implementations, a user-group method would be more suitable for large-scale migration projects.

3.1.9. Caring for the needs and opinions of the end-users

"A public administration should work with active support to the end users". Municipality of Alingsås, SE

End-users, either internal staff within a public organisation or citizens as recipients of IT services, are the ones to define the success and sustainability of any FOSS solution and therefore planning and implementation of any FOSS project should reflect, as possible, their needs and expectations. Interaction with end-users should include a two way process: 1) providing support, guidance and training resources to users 2) getting feedback on the needs, views and experiences of users.

3.1.10. Fighting bureaucracy

The City of Schwaebisch encountered some "bureaucratic problems, such as the inadequate endorsement by the responsible departments for the migration to OSS".

In migrating to FOSS, public administrations are sometimes involved in burdensome administrative processes that can hinder or delay implementation. Clarifying as possible the legal and institutional framework between all agencies, organisations or departments that involve in IT policies, infrastructures and software procurement will speed up project implementation and facilitate its sustainable management.

3.2. TECHNICAL GUIDELINES

3.2.1. Making a full record of existing systems and applications.

The first step in introducing FOSS systems and applications in a department or organisation should be a full record of existing IT infrastructure (hardware and networks) and in-use operating systems software applications. Getting a detailed view of currently in-use software and hardware will help define desired technical specifications and requirements for FOSS systems and will facilitate a much less troubled integration of new hardware units and software components. Some indicative features that should be recorder are: number and type of hardware units (server/client) software application names and version, types and versions of operating systems, number of supported users for each application, required applications and dependencies, communication protocols, supported languages and file formats.

3.2.2. Defining technical areas and required components

It is critical, in any FOSS migration project, to have a clear view of the technical areas (server, client, network) and software components (both open source and proprietary) that are required for installation and deployment. Server-based systems, for example, require pre-existing web or application servers and more advanced installation and configuration processes. Some applications also require a parallel deployment or co-existence of both open source and proprietary components that should be carefully taken into account in order to avoid compatibility failures.

3.2.3. Defining source code modification / customisation level

One of the most important issues to clarify prior to implementing a FOSS solution is the level of required source code modification or application customisation as this can effect the overall cost,

> *"Software packaging and deployment of the solution had to be assigned to an external company due to the complexity of this task".*
> The City of Freiburg, DE

duration and success of a project. While mainstream, packaged FOSS application suites may only require limited customisation (e.g. OpenOffice), less supported or purpose-built systems and applications may involve advanced configuration, source code modification, or from-scratch software development to meet the needs of an organisation. It is important that public administrations make a clear assessment of this aspect during the planning process and make sure, at an early stage, that either their own technical staff has the skills and experience to support more demanding FOSS solutions or that they can rely on external support and expertise to implement their project.

3.2.4. Choosing a technically mature solution

There are considerable differences between various distributions of an open source software system or applications that should be carefully assessed before making a choice. Some applications maintain bare-bone features based on source code that give developers and IT managers maximum room for custom-built solutions. Mature, mainstream and stable products, however, can significantly minimize the risks of bugs, failures and constant troubleshooting while still providing access to the source code, if needed. Major, most widely used distributions (e.g. OpenOffice, Ubuntu Linux, Suse Linux), some of which are supported by commercial companies (e.g. Linux Enterprise Server), provide complete documentation, fixes and updates. A good practice, especially when an organisation cannot exclusively rely on in-house or external technical support, is choosing stable, mature and tested open source systems and applications with full updating support and documentation.

3.2.5. Checking compatibility prior to implementation

As shown in collected case studies, software/hardware compatibility failures often had to be solved during the implementation of a FOSS project. This is a critical aspect, particularly for large scale migration projects in which a compatibility failure could threaten the entire project. To avoid this, possible failures should be foreseen prior to implementation and specific issues should be addresses such as: 1) availability of hardware drivers 2) compatibility of hardware units with operating systems 3) collaboration of open source systems and applications with existing proprietary software systems.

3.2.6. Using open standards

A transition to open source software also means a significant transition to open data standards (ODS). The use of ODS facilitates interoperability and data preservation, particularly in public administrations which, due to their obligations, maintain large datasets and heavily rely on document-based communications with citizens. There is now is a common understanding among public administrations in Europe that they should rely on open document formats for electronic

"We have implemented Open Office as standard office-software in the municipality administration and in the education at the local schools. ODF and PDF where also implemented as standard document formats."
Alingsås, Västar Götaland, SE

document exchange and storage avoiding to impose the use of specific software products.[8] Moreover, consistently using open data standards and document formats (e.g. ODF, PDF, PostScript, RTF) along with proprietary software applications will make life easier when attempting to migrate to FOSS.

---

[8] See "Conclusions and recommendations on Open Document Formats", Pan-European eGovernment Services Committee (PEGSCO) 2006.

3.2.7. Preparing content

"There were a lot of changes and modifications related to the structure of the OSS solution until the final version was developed and there were a lot of preliminary data to be imported to the database server. There was a lot of dirty data". Jihlava/Vysocina Region, CZ

Preparing clearly structured and categorised data will save a lot of time and resources when imported in open source platforms and applications. Dividing and categorising data according to use and purpose, file formats (open or proprietary), storage specifications or required tasks (e.g. conversion, translation, modification) will speed up migration process and minimize the impact on functionality and productivity within a public

organisation.

3.3. SUSTAINABILITY GUIDELINES

3.3.1. Evaluation

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, independence from vendors lock-in, enhancement of IT system security and administration). Evaluating a FOSS project through predefined standards and criteria (e.g. total amount of cost savings, overall end-user satisfaction, increase of productivity) and by getting both internal feedback and -if possible- external expert opinions is the best way to ensure that all identified weaknesses will be addressed and benefits will have a long-term impact within the organisation. In addition, tested and evaluated FOSS projects that produced validated results are more likely to be transferred or replicated.

3.3.2. Staff involvement

Motivating and involving a large number of staff, an entire department of even an entire organisation in the integration of 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 provide a sense of responsibility to wisely use and maintain an adopted IT solution.

3.3.3. Seeking support from central agencies and higher officials

"Nowadays the document management system is in operation and more than 2.000 stakeholders have been interested in the system today."
OSS Alliance National Public Organisation, CZ

As shown by experiences shared in the OSEPA project, support from central, national agencies or higher governmental officials is considered to be a great help to public administrations attempting a transition to open source software.

"The contribution of higher governmental officials through directives, guidelines and policies are a major success factor"
The City of Freiburg, DE

This support is not limited to funding but also refers to standards and guidelines, consensus building and stakeholder motivation. Joint initiatives and collaborations under an "umbrella" agency can attract potential adopters and increase the transferability of best practices.

3.3.4. Providing documentation and language support

The City of Schoten, BE, provided support for its Asterisk Telephony System in English, Dutch, German and French. The City of Freiburg provided support for migrating to OpenOffice in most major languages. More than 60% of the OSEPA good practice case studies provided support for at least 2, or more than 2 languages.

Providing full documentation (e.g. user manuals, installation guides, resources) and language support is critical particularly for open source systems and applications which are mostly maintained by their user or developer communities. FOSS deployments with poor documentation or language support limit down the number and range of their potential users or contributors.

3.3.5. Working with the open source community

Open source projects are developed, tested and maintained by a growing community of users and developers that provide tools and resources, software application fixes and updates, feedback and troubleshooting advice, networking and collaboration opportunities. Interacting with the open source community -both getting and giving back- is the best way to get cost-free, ongoing support or even build interest groups or networks that will help extent an open source solution applied by an organisation.

3.3.6. Reaching out to peers and stakeholders

As shown by collected case studies and experiences in OSEPA, many needs and problems relating to software applications and IT infrastructures are shared by several public administrations with similar obligations and organisational profiles. In that sense, solutions can be shared as well. Identifying peer organisations and related practices, giving consent and providing information to potential adopters, exchanging experience with other public administrations and stakeholders is a wise investment on the sustainability of adopted FOSS practices and solutions.

4. References

OSEPA project deliverables

1. Catalogue of case studies on open source software. Deliverable implemented by OSEPA partner City of Schoten.
2. "Planning report setting out the methodology and the criteria with which partners' practices will be examined and synthesized". Deliverable implemented by OSEPA partner Research Academic Computer Technology Institute.
3. "Report on the methodology and the tools for investigating partners' practices on FOSS usage". Deliverable implemented by OSEPA partner City of Schoten.
4. Task Allocation List of the Partnership Agreement between KEDKE (Central Union of municipalities and communities of Greece) and the OSEPA partners.

Guidelines and recommendations

1. Conclusions and recommendations on Open Document Formats", Pan-European eGovernment Services Committee (PEGSCO) 2006.
2. The IDA Open Source Migration Guidelines, November 8, 2003. Accessible at: http://ec.europa.eu/idabc/servlets/Doc5621.pdf?id=1983

Web resources

http://ec.europa.eu/idabc/

http://www.osor.eu/

5. APPENDIX. List of good practice cases.

5.1. Operating systems

5.1.1. Migration to OSS in desktop PCs and servers – DE

Title	Migration to OSS in desktop PCs and servers
Organisation	City of Schwaebisch Hall, Baden-Wuerttemberg, Germany
Description	In 2001, as the support for the operating system and the office application, which have been used up to then, was discontinued by the software suppliers and the City of Schwäbisch Hall would have to pay substantial license fees for the hardware and software upgrade, the IT department of the City of Schwaebisch Hall decided to assess new alternatives. The positive experiences with OSS in the past encouraged the administrators to use OSS also for the equipment of the future workplaces. After the starting signal by the mayor, the EDP (Electronic Data Processing) department with SUSE (now Novell) and IBM provided the first computers with the operating system Linux and OpenOffice for text processing, spreadsheet, presentation etc. The staff was trained on the work so as to be able to operate with the OSS applications. At the end of the training courses they found their desktops ready for use. In the meantime, the administration was equipped with workplaces consisting of OSS applications.

Duration / Preparation	**Date/Year**	2002-2005	**Person months**	>36	**Staff preparation**	Yes
Implementation	**Internal / External**		Mostly in-house	**Est. cost**	15k – 49k €	

Software components / licenses	The major open source components used by the City of Schwaebisch Hall for the migration to OSS were: • In servers: SUSE Linux enterprise server, OpenLDAP, NFS, Samba, OpenXchange server, Ingres database • In clients: SUSE Linux, KDE, OpenOffice, Mozilla Firefox, GIMP, Mediawiki. Licenses: GPL, LGPL, X11, Apache, Java and BSD. The following proprietary components were used: Citrix-Clients, VMware and MS-Terminal Server.

Source code / documentation	**Source code modification**	No	**Documentation languages**	English, German

Main results /achieved objectives	• Strategic independence from vendors lock-in • Flexibility of applications • Promotion of safe enterprise through multiple developers and medium-size suppliers. • Digital preservation through the use of open formats and standards
Perspectives	The staff in the City of Schwaebisch Hall continues to use the installed open source applications in desktop and server PCs and the city administration is determined to continue and to expand its open source strategy.
Contact / info	Mr. Horst Braeuner, horst.braeuner@schwaebischhall.de http://www.schwaebischhall.de/en/welcome/linux.html

5.2. Document management and office applications.

5.2.1. Migration of 2.000 office users from MS Office 2003 to OpenOffice 3.21 – DE					
Title	Migration to OSS in desktop PCs and servers				
Organisation	City of Freiburg, Baden-Württemberg, Germany				
Description	In early 2007 the City of Freiburg was looking to replace the proprietary software used for word processing with an open source software application. In February 2007 the City of Freiburg started to study the alternatives and six months later the responsible officers decided to migrate from MS Word 2003 to OpenOffice 3.21 in 2.000 client computers. Two years later the migration was completed with only a few person months to be invested from the internal resources of the City of Freiburg for the implementation process. "Open source and open standards are part of the Freiburg eGovernment Strategy. The migration project to OpenOffice was … intended to lead the way to open and interoperable document formats. Beyond that it helped to save almost half a million Euros of licence fees. Additional benefit was generated with the introduction of Wollmux… Internal document based communication is now 100% open, while external document exchange still suffers compatibility issues because of the indolence in adapting open formats by the several levels of public administration in Germany."				
Duration / Preparation	Date/Year	2007-2009	**Person months**	1-6	**Staff preparation** · Yes
Implementation	**Internal / External**		Mostly in-house	**Est. cost**	50k – 99k €
Software components / licenses	The major OSS components which have been used are OpenOffice 3.21, Wollmux 6.50, Mozilla Firefox 3.54, SUSE Linux enterprise server, MySQL database, PHP and Apache web server. No proprietary software component has been used. LGPL (Lesser General Public License) and EUPL (European Union Public License) licenses were granted to the City of Freiburg for the migration to OSS.				
Source code / documentation	**Source code modification**	Yes	**Documentation languages**		Most major languages
Main results /achieved objectives	- Improvement of performance and effectiveness of the organisation - Strategic independence from vendors lock - in - Reduction of procurement (licensing) costs - Optimization/ Simplification of organisation processes				
Perspectives	The 2.000 users within the City of Freiburg still use OpenOffice 3.21 for word processing and the perspective for OpenOffice 3.21 for the next years is to be retained and sustained within the organisation.				
Contact / info	Mrs. Ruediger Czieschla, ruediger.czieschla@stadt.freiburg.de www.freiburg.de/openstandards				

European Union
European Regional Development Fund

OSEPA
Open Source software usage by
European Public Administration

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

5.2.2. Open – source document management system for the public administration based on the national legal requirements, CZ.

Title	Open – source document management system for the public administration based on the national legal requirements.
Organisation	OSS Alliance, Czech Republic
Description	OSS Alliance, a national public organisation of Czech Republic, created in 2009 an administrative application based on open source software for the administering and the management system of documents in public administrations. The developed document management system is based on PHP and MySQL and is licensed under EUPL license. The source code of the OSS components was modified so as to meet the needs of the organization. The developed open source document management system is developed with compliance to the national legal requirements. It can be applied to every public administration that has the legal rights to use this type of application. Some key features of this management system are: - management of physical documents and e-documents, - implementation of storage and archiving, - administering of document workflow, - connection to other document management systems, - enabling searching features in documents, - development of reports & printing enabling, - receiving and sending documents, - provision of support for eGovernment projects

Duration / Preparation	Date/Year	2009	Person months	1-6	Staff preparation	Yes
Implementation	**Internal / External**		Both in – house and external	**Est. cost**	100k – 499k €	
Software components / licenses	The developed document management system is based on PHP and MySQL and is licensed under EUPL license.					
Source code / documentation	**Source code modification**		Yes	**Documentation languages**	Czech	
Main results /achieved objectives	• The strategic independence from vendors lock-in • The reduction of procurement (licensing) costs					
Perspectives	Nowadays the document management system is in operation and more than 2.000 stakeholders have been interested in the system today. In OSS Alliance they are about to finish and release the next enhanced version of the document management system.					
Contact / info	Mr. Jaroslav Krotky, vysocina01@bestpractices.osepa.eu http://www.spisovka3.cz					

European Union
European Regional Development Fund

O-SEPA
Open Source software usage by
European Public Administration

INTERREG IVC
INNOVATION & ENVIRONMENT
REGIONS OF EUROPE SHARING SOLUTIONS

5.2.3. Migration to OpenOffice and adoption of ODF and PDF as standard document formats – SE

Title	Migration to OpenOffice and adoption of ODF (Open Document Format) and PDF (Portable Document Format) as standard document formats
Organisation	District council of the municipality of Alingsås, Alingsås, Västar Götaland, Sweden
Description	In August 2009 the district council of the municipality of Alingsås decided to replace Microsoft Office with OpenOffice as standard office application and also to adopt ODF and PDF file formats as document formats for documents in a workflow and for fixed documents respectively. The main motive to migrate to open source was the reduction of software procurement costs by the replacement of MS Office with OpenOffice and the autonomy from software proprietary vendors. "The municipality of Alingsås joined with other municipalities a public call to the vendors of software for Swedish municipalities." The municipality asked from "suppliers of municipal management system to open up their applications for the open standard and drop the hard links to Microsoft Office. A joint letter, dated in February 2009, from a number of municipalities to the system vendors requires transparency: *http://www.kivos.se/openoffice/skrivelse-om-oppenhet-till-leverantorer*

Duration / Preparation	**Date/Year**	2009	**Person months**	1-6	**Staff preparation**	Yes
Implementation	**Internal / External**		Mostly in-house		**Est. cost**	15k – 49k €

Software components / licenses	The open source components used by the municipality of Alingsås and the local schools were OpenOffice and OpenClipart. No modification of the source code was made and the license granted was GNU Lesser General Public License. The proprietary software used was ZENworks and MSI packets for the installation of OpenOffice.

Source code / documentation	**Source code modification**	No	**Documentation languages**	Swedish

Main results /achieved objectives	- Strategic independence from vendors lock-in - Reduction of procurement costs
Perspectives	In the municipality of Alingsås and in the local schools, they keep on using OpenOffice and adopting ODF and PDF standards, as standard document formats, and the perspective for the next years is to endure the usage of the aforementioned OSS components.
Contact / info	Mr. Göran Westerlund, goran.westerlund@alingsas.se www.kivos.se

5.2.4. Adoption of OpenOffice, Ubuntu LTSP and Samba server by Swedish schools in Vindeln municipality – SE

Title	Adoption of OpenOffice, Ubuntu LTSP (Linux Terminal Server Project) and Samba server by Swedish schools in Vindeln municipality
Organisation	Vindeln Municipality, Västerbotten, Sweden
Description	In 2008 the civil service organization of Vindeln municipality took the decision that the schools of the municipality would migrate to OSS. After eight months of study (August 2006), the migration was implemented. The implementation lasted for eight months and only a few person months (1 to 6) were invested from the internal resources of the municipality during the implementation phase. Before the decision was taken, tests were made and requirements were identified from the schools.

Duration / Preparation	**Date/Year**	2008	**Person months**	1-6	**Staff preparation**	
Implementation	**Internal / External**		Yes	**Est. cost**	1 – 15k €.	

Software components / licenses	The open source components used by the schools in Vindeln municipality are Open Office, Ubuntu LTSP server installation - by secondary schools - and Samba server as a file server. Also the DNS (Domain Name System) server of schools is based on open source software.

Source code / documentation	**Source code modification**	No	**Documentation languages**	Swedish

Main results /achieved objectives	- Strategic independence from vendors lock-in - Reduction of procurement (licensing) costs
Perspectives	The OSS applications are still in use by the schools of Vindeln municipality.
Contact / info	Mr. Lars Eriksson, lars.eriksson@vindeln.se www.vindeln.se

5.3. Project management / administrative applications

<table>
<tr><td colspan="7">5.3.1. Helpdesk and inventory software based on open source software – BE</td></tr>
<tr><td>Title</td><td colspan="6">Helpdesk and inventory software based on open source software</td></tr>
<tr><td>Organisation</td><td colspan="6">Local Police of Brasschaat, Brasschaat, Belgium</td></tr>
<tr><td>Description</td><td colspan="6">In 2009 the Local Police of Brasschaat decided to implement a helpdesk and an inventory software based on OSS in order to reduce the software procurement costs. After 3 months of studying, the Local Police of Brasschaat started to implement the open source solution. Only a few person months were invested from the internal resources of the organisation and the open source solution was finally developed. The OTRS (Open Source Helpdesk and IT Service Management Solution) and the OCS (Open Source and Software Inventory Next Generation) accompanied with GLPI (Information Resource Manager) were used so as to meet the needs of the Local Police of Brasschaat.</td></tr>
<tr><td>Duration / Preparation</td><td>Date/Year</td><td>2009</td><td>Person months</td><td>1-6</td><td>Staff preparation</td><td>Yes</td></tr>
<tr><td>Implementation</td><td colspan="2">Internal / External</td><td colspan="2">Both in-house and external</td><td>Est. cost</td><td>1 – 15k €.</td></tr>
<tr><td>Software components / licenses</td><td colspan="6">The helpdesk and the inventory software were implemented on SUSE Linux enterprise server and a KVM (Kernel based Virtual Machine) was used for their virtualisation. The source code of the open source component was not modified and the license granted for the OSS solution was the license for SUSE Linux 11. No proprietary software component was used.</td></tr>
<tr><td>Source code / documentation</td><td colspan="2">Source code modification</td><td>No</td><td>Documentation languages</td><td colspan="2">English, Dutch</td></tr>
<tr><td>Main results /achieved objectives</td><td colspan="6">Improvement of performance and effectiveness of the organisation
Simplification of IT architecture</td></tr>
<tr><td>Perspectives</td><td colspan="6">In the Local Police of Brasschaat the open source solution adopted is still in use and the perspective for the next years is to be enhanced, expanded or replicated.</td></tr>
<tr><td>Contact / info</td><td colspan="6">Mr. Roel De Pooter, ict@politiebrasschaat.be
www.politiebrasschaat.be</td></tr>
</table>

5.4. E-mail & communication applications

5.4.1. Zimbra: Next-generation email, calendar and collaboration server – ES

Title	Zimbra: Next-generation email, calendar and collaboration server
Organisation	Foundation for the Development of the Science and Technology in Extremadura, Extremadura, Spain
Description	In January 2009 the Foundation for the Development of the Science and Technology in Extremadura started to study the potential adoption of Zimbra server. Six months later, the decision was taken: Zimbra would be installed in the public administration. Zimbra is a next-generation collaboration server that provides organizations greater overall flexibility and simplicity with integrated email, contacts, calendaring, sharing and document management plus mobility and desktop synchronization to users on any computer.

Duration / Preparation	**Date/Year**	2009	**Person months**	1-6	**Staff preparation**	No
Implementation	**Internal / External**		Mostly in-house		**Est. cost**	1 – 15k €.

Software components / licenses	The Zimbra collaboration suite is the only application suite installed on the server, which bundles and installs, as part of the installation process, various other third party and open source software, including Apache Jetty, Postfix, OpenLDAP, and MySQL.

Source code / documentation	**Source code modification**	Yes	**Documentation languages**	English, Spanish

Main results /achieved objectives	- Improvement of performance and effectiveness of the organisation - Reduction of procurement/ licensing costs - Promotion of open source software - Minimization of the need for technical support
Perspectives	At the Foundation for the Development of the Science and Technology in Extremadura they keep on using Zimbra server and the perspective for the next years is to be enhanced, expanded or replicated.
Contact / info	Mr. Nicolas Lopez de Lerma, nicolas@fundecyt.es http://www.zimbra.com/

5.4.2. Asterisk telephony system – BE

Title	Asterisk telephony system
Organisation	City of Schoten, Antwerp region, Belgium
Description	The city of Schoten was looking for a new telephony system at a reasonable price. The new system should be capable of integrating new applications, such as SMS (Short Message Service), MMS (Multimedia Messaging Service), chat and Skype and also integrating with existing and future installations. The IT (Information Technology) department should also be able to configure the telephony system according to the needs and requirements of the organisation. The telephony system should also be redundant. In 2006 the IT department of the City of Schoten started to study the possible solutions. Six months were invested for this study phase before the adoption of Asterisk telephony system. In 2007 the IT department started to implement the Asterisk solution and spent four months for this implementation. Synsip, a provider in VoIP solutions undertook the installation of Asterisk: "*Synsip had a good migration plan and there was a very good transfer of their knowledge in the City of Schoten*".

Duration / Preparation	**Date/Year**	2006-2007	**Person months**	1-6	**Staff preparation**	Yes
Implementation	**Internal / External**		Both in-house and external	**Est. cost**	50k – 99k €	

Software components / licenses	The open source component used for the development of the Asterisk solution was mySQL / postgreSQL database. The configuration files of this system can be accessible and modifiable. A redundant solution can easily be developed and especially, through the investment of few internal resources. A scope server and a GUI (Graphical user interface) were used to manage Asterisk proprietary components. The license granted for the implementation of the Asterisk telephony system was GPL for Asterisk license.

Source code / documentation	**Source code modification**	No	**Documentation languages**	English, Dutch, French, German

Main results /achieved objectives	- Reduction of procurement/ licensing costs - Improvement of performance and effectiveness of the organisation - Enhancement of performance and effectiveness of the IT system
Perspectives	Asterisk telephony system is nowadays in operation and the perspective for the next years is to be enhanced, expanded or replicated.
Contact / info	Mr. Jan Verlinden, jan.verlinden@schoten.be www.digium.com, www.voip-info.org

5.5. Internet applications

5.5.1. Touristic web portal – CZ					
Title	Touristic web portal				
Organisation	Jihlava/Vysocina Region, Czech Republic				
Description	Vysocina Tourism, an allowance organisation of Czech Republic, started in March 2007 to study the possibility of creating a touristic web portal based on OSS tools in order to reduce licensing costs. Five months later, the Vysocina Tourism implemented the touristic web portal. Only four person months were invested from the internal resources of the Vysocina Tourim and the web portal was ready for use. "*We decided to use OSS because it was suitable solution for this project. Low (zero) cost and very good functionality of OSS software were the main motives for this selection. We had also very good knowledge and skills with implementation of OSS because we used these components in some small projects.*"				
Duration / Preparation	**Date/Year**	2007	**Person months**	6-12	**Staff preparation** No
Implementation	**Internal / External**		Mostly in-house	**Est. cost**	1 – 15k €.
Software components / licenses	The major OSS components used are the web server Apache 2, the hypertext preprocessor PHP4/5, Google API, MySQL database SQL server, Mozilla Firefox web browser, GIMP 2.6 graphical software and Open Office. The source code of the OSS components was not modified for the implementation of the solution and the license granted was GNU General Public License. The only proprietary software used was the operating system of the server, the Microsoft Windows 2003 Server.				
Source code / documentation	**Source code modification**	Yes	**Documentation languages**		Czech, English
Main results /achieved objectives	- Strategic independence from vendors lock-in - Enhancement of performance and effectiveness of the IT system - Promotion of open source software - Minimisation of technical support needs				
Perspectives	Nowadays the touristic web portal is in operation and the perspective for the next years is to be expanded, enhanced and replicated.				
Contact / info	Mr. Jaroslav Krotky, vysocina03@bestpractices.osepa.eu http://www.region-vysocina.cz/index.php?jazyk=en, http://www.region-vysocina.cz				

5.5.2. Untangle: a powerful suite for Internet management applications – CY

Title	Untangle: a powerful suite for Internet management applications
Organisation	Municipality of Strovolos, Nicosia, Cyprus
Description	In October 2009 the municipality of Strovolos was looking for an internet content filter solution with the less possible cost in order to enhance the productivity of the municipality's staff by minimizing the time spent on internet by the staff and also to strengthen the system security of the municipality. After one person month of studying the alternative solutions and half person month spent in the implementation of the Untangle application, the IT department of the municipality could finally benefit from the features of Untangle: web filter, virus blocker, spam blocker, ad blocker etc. *"It was both the Management and the IT department effort to have an internet content filter solution with the less cost as possible for the municipality. The solution was needed for the improvement of the productivity of the municipality's staff by minimizing the time spent on not work related on internet usage. In addition by implementing such a solution the effort was to provide better security for the Municipality network."*

Duration / Preparation	**Date/Year**	2009	**Person months**	1-6	**Staff preparation**	No
Implementation	**Internal / External**		Both in-house and external	**Est. cost**	1 – 15k €.	

Software components / licenses	The only open source component used for the installation of the software package of Untangle was a Linux server. The source code of the application was not modified. No proprietary software component was used. Untangle is licensed under GNU Public License v2 (GPLv2).

Source code / documentation	**Source code modification**	No	**Documentation languages**	English

Main results /achieved objectives	- Improvement of performance and effectiveness of the organisation - Strategic independence from vendors lock-in - Reduction of procurement/ licensing costs - Enhancement of system security
Perspectives	Untangle application is nowadays in operation and the perspective for the next years is to be enhanced, expanded or replicated.
Contact / info	Mr. Nicos Kyriakides, nkyriakides@strovolos.org.cy www.untangle.com

5.6. E-government and e-learning platforms

5.6.1. MOODLE: e – learning software platform – CY

Title	MOODLE: e – learning software platform
Organisation	University of Cyprus, Computer Science Department, Nicosia, Cyprus
Description	In July 2008 the IT department, responsible for the development and support of software application within the Computer Science department of the University of Cyprus, took the decision to adopt the MOODLE platform as an alternative to the proprietary course management system previously used, *blackboard*. MOODLE (Modular Object-Oriented Dynamic Learning Environment) is a free and open-source e-learning software platform, belonging to the Content Management Systems (CMS). The adoption of MOODLE was overall successful, as "*there weren't any problems during the adoption of the software and not any migration was needed. No legal issues were arisen at the time.*"

Duration / Preparation	**Date/Year**	2008	**Person months**	1-6	**Staff preparation**	Yes
Implementation	**Internal / External**		Mostly in-hosue		**Est. cost**	1 – 14.999 €

Software components / licenses	The open source components used were Linux server, Apache web server and MySQL database. The source code of MOODLE was not modified. No proprietary software component was used. MOODLE is released under GPL license. **1.2.1.**

Source code / documentation	**Source code modification**	No	**Documentation languages**	English

Main results /achieved objectives	- Improvement of performance and effectiveness of the organisation - Strategic independence from vendors lock-in - Reduction of procurement/ licensing costs - Minimisation of the need for technical support
Perspectives	MOODLE is nowadays in operation and the perspective for the next years is to be enhanced, expanded or replicated.
Contact / info	Mr. Nicos Kyriakides, knicos@gmail.com www.moodle.org

5.7. Geographic Information Systems (GIS)

5.7.1. Geographic Information System (GIS) for viewing, querying and editing of geographic data in a GIS-Viewer on a client computer – BE					
Title	Geographic Information System (GIS) for viewing, querying and editing of geographic data in a GIS-Viewer on a client computer.				
Organisation	City of Schoten, Belgium				
Description	In 2006 the City of Schoten took the decision to adopt a GIS Manager in order to set up a GIS system in the whole municipality of Schoten. The implementation of the GIS system derived from the need to organise and administer the available geographic data in a common system, which could be used by each municipality in Flanders. The criteria for selecting between the available solutions were the cost of implementation and of maintenance for the next five years, the quality, the interoperability, the knowledge transfer and the previous experience with OSS. The study phase lasted for eight months. The implementation of the selected OSS solution started in early 2007 and completed within half a year.				
Duration / Preparation	Date/Year	2007	**Person months**	6-12	**Staff preparation**	Yes
Implementation	**Internal / External**		Mostly external	**Est. cost**	50k – 99k €
Software components / licenses	Firstly, the various geographic data were imported in a PostGIS database, which is a component of PostGreSQL. Then, a geoserver was used so as to provide access to the geographic data. The geoserver uses OGC-standards (Open Geospatial Consortium): the WMS (Web Map Service) in order to produce maps from vector and raster data and the WFS (Web Feature Service) to show attribute information from vector data in the viewer. Multiple geoportals can be consulted in GIM WebGIS. GIM WebGIS is a CMS (Content Management System) where the GIS Manager configures the required parameters and data and the end-users view detailed maps. With GIM WebGIS the GIS Manager can make geoportals. In a geoportal, data belonging to a specific theme can be grouped (planning, environment, cemetery, addresses, etc). The GIS Manager can create as much geoportals as it is required. The GIS Manager administers and decides about the rights of the users regarding their access to geoportals. The aforementioned OSS components run on a server with Linux CentOS as operating system. All vector data are stored in a PostGIS database. Raster data are stored in files on the geoserver. The only (partially) proprietary software used was GIM WebGIS. The source code of the OSS components which have been used was not modified and the GPL (General Public License) license was granted for the implementation of the GIS system.				
Source code / documentation	**Source code modification**	No	**Documentation languages**	English, Dutch, French	
Main results /achieved objectives	- Improvement of performance and effectiveness of the organisation - Strategic independence from vendors lock-in - Optimisation of organisation processes - Strengthening of data security - Software interoperability				
Perspectives	The GIS system implemented by the City of Schoten is nowadays in operation and the perspective for the next years is to be enhanced, expanded or replicated.				
Contact / info	Mr. Steven Vermeir, steven.vermeir@schoten.be http://geoserver.org ,http://postgis.refractions.net/ ,http://www.gim.be				