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Contents

i. About this document

This report presents the qualitative analysis results and findings based on responses and collected data of the OSEPA project survey. It is to be used and consulted as a complementary resource to the "synthesis report on the OSEPA survey results, based on quantitative factors", prepared by OSEPA partner SAMBRUK. Data analysis refers only to specific, open-ended questionnaire fields and sections as defined in Annexes A and B. Data presented refers to sub-groups of total survey participants, depending on relevant questionnaire fields and sections.

ii. Summary

The purpose of the OSEPA (Open Source software usage by European Public Administrations) project survey was to assess the level of Free and Open Source Software (FOSS) uptake and identify the factors affecting its usage among European public administrations. The survey was conducted through local online questionnaire versions in 20 countries over a period of 10 weeks (24/10/2011 – 31/12/2011) and resulted into a total of 1088 valid responses from 19 countries.[1] The majority of responses (64%) came from participants with a technical background and role in their organisation while about 1 out of 3repondents (36%) had a non technical/administrative profile. Survey results based on the qualitative analysis of open-ended questionnaire fields are summed as follows.

FOSS attitudes
FOSS attitudes of both IT and non-IT staff are perceived as being to a great extend mixed and fluid, depending on various factors, ranging from individual views and opinions to overall organisational settings and strategic issues. What differentiates described attitudes of IT and non-IT staff is a) a critical, risk-aware support to FOSS attributed to IT staff b) b significant knowledge gap in relation to open source attributed to administrative, non-technical staff.

FOSS policies
Clear, straightforward pro-FOSS strategies, although reported by several respondents, do not seem to account for the majority of collected responses. Targeted implementation or planning of FOSS integration in specific organisation departments, operational areas or software categories (e.g. servers, office suites) was the most common strategy to be identified among responses. Policies that are, in principle, favourable to FOSS were also frequently identified among responses.

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[1] No responses gathered in France.

FOSS barriers (additional)

Concerns on security are by far (66%) regarded by respondents as major barrier to FOSS usage that was not included in the list of predefined factors. Technical difficulties and lack of support in integrating FOSS applications to existing proprietary systems also seem to prevent public organisations from migrating to open source solutions.

Respondents also reported lack of knowledge and policy coordination major barriers to FOSS usage and implementation among public administrations.

1. INTRODUCTION

1.1. The OSEPA survey: questions and objectives

1.1.1. Overview

The purpose of the OSEPA project survey was to assess the level of Free and Open Source Software (FOSS) uptake and identify the factors affecting its usage among European public administrations.

More specifically the OSEPA survey intended to:

- assess the level of FOSS experience and readiness among European public administrations
- identify attitudes and experiences of elected representatives, IT managers and staff in European public administrations towards FOSS adoption
- investigate perceived benefits and barriers associated with FOSS use and adoption in public administrations
- investigate key technical, organisational or financial factors (both drivers and inhibitors) influencing the uptake and potential migration of European public administrations to FOSS
- assess the use of specific FOSS applications and packages and their integration in public IT infrastructures

The OSEPA (Open Source software usage by European Public Administrations) survey was conducted through an online questionnaire, adapted to local language versions where

needed, reaching various public administrations (central government departments, local and regional authorities) in 20 European countries. The OSEPA questionnaire aimed to collect both general and more detailed individual views and opinions on technical and non-technical aspects of FOSS and was therefore divided in the following sections:

a) *Introduction / Organisation info*
b) *FOSS non-technical*
c) *FOSS technical*
d) *Detailed view*

1.1.2. FOSS socio-organisational factors

The OSEPA survey explored administrative, socio-organisational and policy aspects of FOSS usage and adoption as addressed by the following main questions and sub-questions.

What is the current level of FOSS awareness and experience in the European public administrations?

- What are the differences related to the FOSS experience and awareness level among the surveyed organisations and respondents?
- Is the level of FOSS awareness and experience within European public administrations linked to organisational or staff profiles?
- To what level have European public administrations tested and assessed FOSS programs?

What are the attitudes to FOSS and current official FOSS policies in European public administrations?

- What are the attitudes of the non-IT staff in public organisations regarding FOSS uptake?

- What are the attitudes of the IT staff in public organisations regarding FOSS uptake?

- To what percentage have European public administrations officially adopted a strategy/ policy/ position regarding FOSS use and uptake?

- Is FOSS policy adoption by public administrations, linked to the organisational size or type?

What are the main perceived organisational benefits and barriers associated with FOSS usage among European public administrations?

- What are the main administrative, financial, organisational or strategic factors perceived as FOSS benefits within European public administrations?

- What are the main administrative, financial, organisational or strategic factors perceived as barriers to FOSS uptake / migration within European public administrations?

- Is there a relation between organisational or staff profiles and the main drivers or inhibitors affecting FOSS uptake in European public administrations?

1.1.3. FOSS technological factors

The OSEPA survey also aimed to identify the technical / technological factors that define - among others- the level of FOSS usage and affect willingness to migrate to possible FOSS solutions within European Public Administrations. These factors were investigated through a series of main questions that correspond to questionnaire sections or fields:

What is the IT/technical profile of participating respondents and surveyed organisations?

- *What is the surveyed organisation's current IT / technical profile?*
- *What is the respondent's IT / technical profile (IT manager, IT staff)*
- *How many servers or clients are in operation in the organisation?*
- *Is there in-house IT support in the organisation?*

This section aims to identify the technical framework and current IT infrastructure of European Public Administrations. As shown in related surveys, establishing an organisation's profile on available IT resources is critical in understanding its performance and strategies on software use in general and free or open source software applications in particular.

What are the main perceived technical/ technological benefits and barriers associated with FOSS usage among European public administrations?

- What are the main technical or technological factors (e.g. security, performance, interoperability) perceived as FOSS benefits within European public administrations?

- What are the main technical or technological factors (e.g. security, performance, interoperability) perceived as barriers to FOSS uptake / migration within European public administrations?

- Is there a relation between the IT/technical profile of survey participants or organisations to the main technical/technological drivers or inhibitors affecting FOSS uptake in European public administrations?

- What are the main technical issues, concerns, or difficulties regarding FOSS migration and adoption as perceived by IT / technical staff in European Public Administrations?

- What are the main advantages, fields of technical improvement and expected benefits regarding a potential FOSS migration as perceived by IT / technical staff in European Public Administrations?

What is the extent of FOSS integration within currently in-use software systems and applications in European Public Administrations?

- What is approximately the distribution of proprietary / FOSS applications running on servers and clients in public organisations?

- What are the most used proprietary / FOSS operating systems running on servers and clients in public organisations?

- What are the most used free / open-source software application packages in public organisations?

1.2. Survey sample and respondent groups

The OSEPA survey was conducted through local online questionnaire versions in 20 countries over a period of 10 weeks (24/10/2011 – 31/12/2011) gathering a total of 1507 –

both full and incomplete – responses from 19 countries.[2] Data consolidation resulted into a total of 1088 valid responses that were processed and analysed.

1.2.1. Respondent groups

Total 1088 valid responses were consequently divided into four respondent sub-groups (a: *FOSS-aware*, b: *not aware of FOSS,* c: *technical*, d: *technical-detailed view*) based on the questionnaire structure and the sections in which the participants could opt for discontinuing the survey:

Q16: Are you aware of what is Free/Open Source Software (FOSS)? (If answer is no survey ends)

Q34: If your role is technical we ask you please to answer further questions. Do you wish to continue?

Q39: Please choose how you wish to define the technical profile of your organization (general view, detailed view, I wish to end here)

This categorization resulted into a distribution of responses as shown in Table 1 and Figure 1.

Table 1. Number of responses by respondent group

Respondent group	*Number of responses*
FOSS aware	828
Not aware of FOSS	260
Technical profile	446
Technical profile: detailed view	68
Total valid responses	**1088**

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[2] No responses were gathered in France.

Figure 1. Number of responses by respondent group
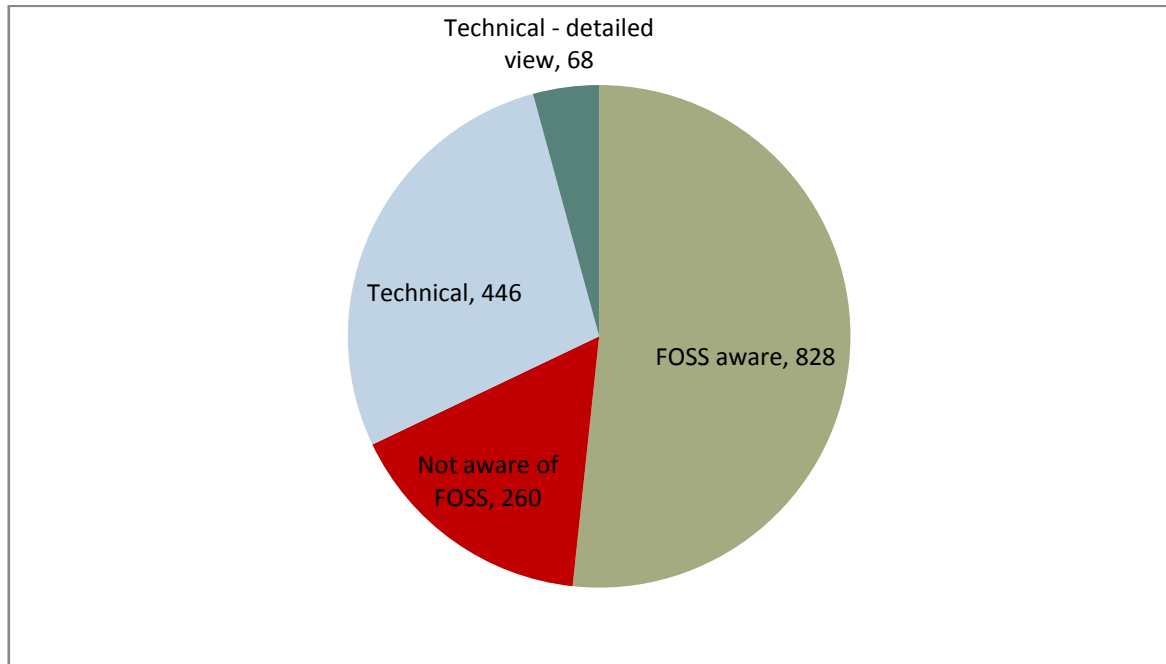
All measured values, percentages and data results presented in this report have been calculated based either on the total of valid responses or the sub-totals respondent groups as specified above, depending on questionnaire field and section.

1.2.2. Responses by country, organisation type and respondent profile

The OSEPA survey gathered 1088 valid responses from 19 countries.[3] As shown in Table 2 and Figure 2, the Italian national survey gathered the highest number of responses (523) reaching up to almost half (48.1%) of the OSEPA survey sample. Therefore, the OSEPA survey largely focuses on Italy with increased representation from Poland (12%), and Spain

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[3] No responses were gathered in France.

(5.3%). 6 countries are represented with rates ranging from 0.6% (Portugal) to 4.5% (Belgium). Finally, in 3 countries (Austria, Hungary, Netherlands) there is insufficient data (1 response/0.1%) and therefore any analysis or interpretation on a national basis is not feasible.[4]

Table 2. Number of responses by country

Country	Respondents	%
Austria	1	0,1%
Belgium	49	4,5%
Bulgaria	16	1,5%
Cyprus	13	1,2%
Czech Republic	41	3,8%
Germany	43	4,0%
Greece	45	4,1%
Hungary	1	0,1%
Ireland	17	1,6%
Italy	523	48,1%
Latvia	21	1,9%
Netherlands	1	0,1%
Poland	131	12,0%
Portugal	7	0,6%
Romania	38	3,5%
Slovenia	9	0,8%
Spain	58	5,3%
Sweden	29	2,7%
UK	45	4,1%
TOTAL	**1088**	**100,0%**

[4]Data from these countries has been omitted, in statistical analysis by national profile, where applicable. No responses were gathered in France.

**Figure 2. Percentage of responses by participating country**
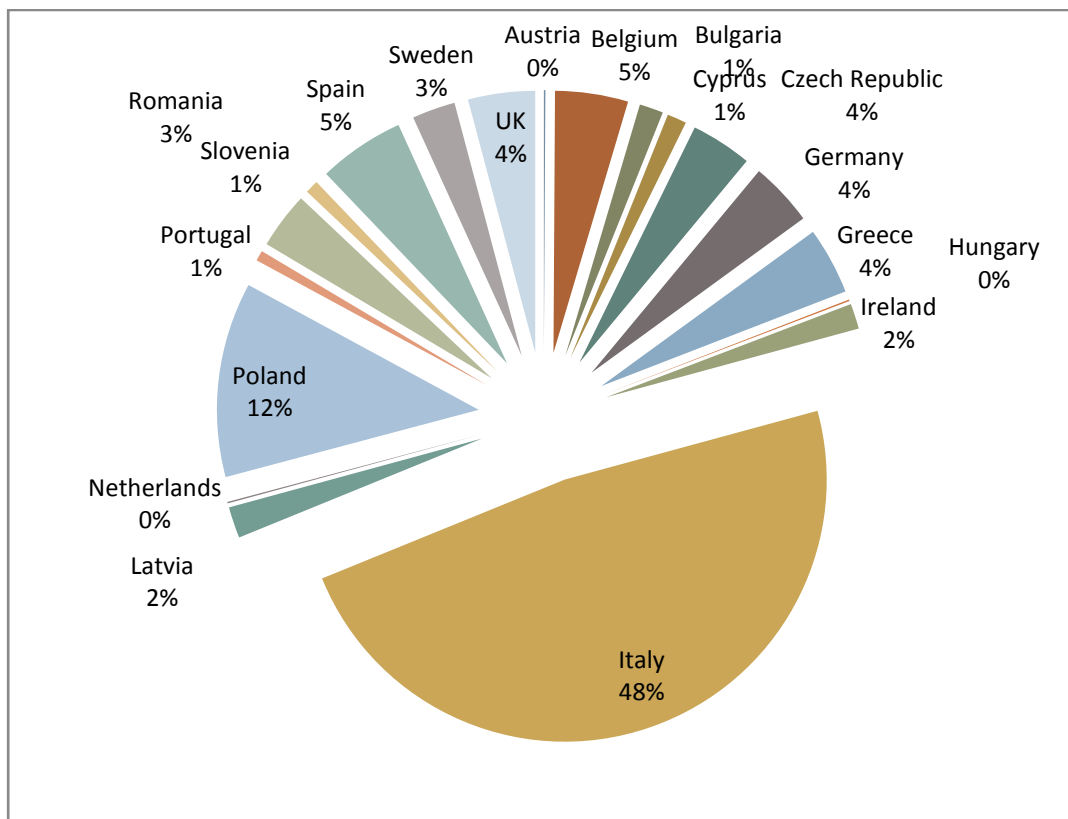
Respondents are grouped in six groups based on their role in the organisation they are working for (administrative manager, administrative staff, elected representative, IT manager, IT staff, other). Technical staff represents almost a 49% of the total respondents. In particular, IT staff and IT managers account for the 28% and 21% of total responses respectively. Administrative staff represents 18.5% of the sample while administrative managers account for the 8% of responses. Elected representatives represent a 5% of respondents. 20% of responses come from respondents stating "other" as their role in their organisation.

Table 3. Role in public administration

Role in organisation	No of responses	%
Administrative manager	85	8,0%
Administrative staff	195	18,5%
Elected representative	51	4,8%
IT manager	216	20,5%
IT staff	297	28,1%
Other	212	20,1%
Total	**1056**	**100%**

Figure 3. Percentage of total responses by respondent's role in public administration
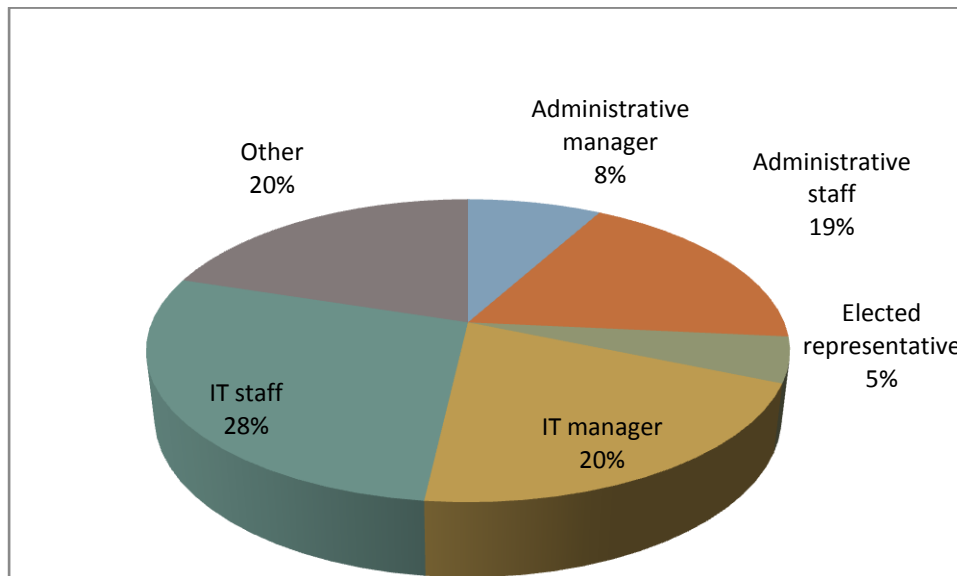
The majority of responses (64%) come from participants with a technical background and role in the organisation they are working for, while about 1 out of 3 respondents (36%) has a non technical profile. Self defined profiles (corresponding to the "other" category) can be

also associated with the main defined categories. Additional, "other" respondent profiles are distributed as follows.

Table 4. Role in the public administration: other

Role in the public administration: other	No of responses	%
Academic/researchers/education employee	14	7,18%
Administrative manager	35	17,95%
Administrative staff	37	18,97%
Elected representative	13	6,67%
IT manager	54	27,69%
IT staff	42	21,54%

Table 5. Technical – non-technical profile

Technical/non technical	Respondents	%
Yes	446	63,9%
No	252	36,1%

Figure 4. Responses by technical – non-technical respondent profile
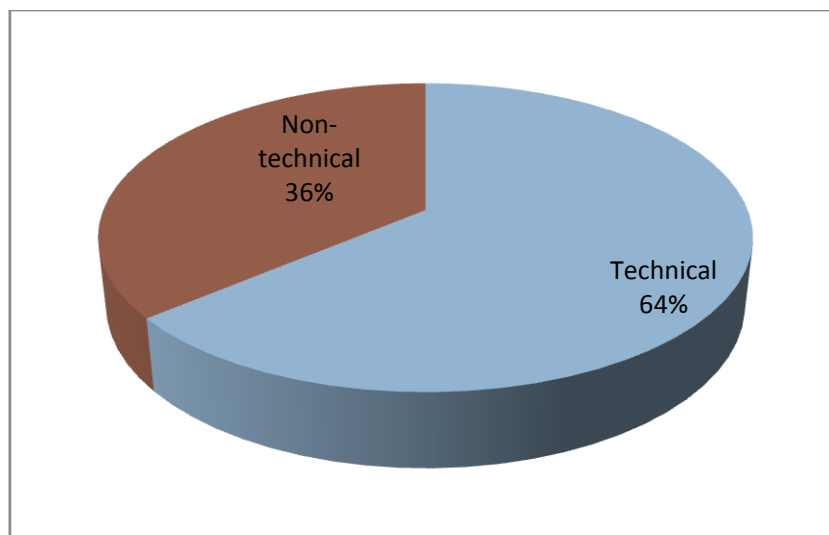
Respondents are also grouped based on the type of the organisation they work in. The majority of respondents (65%) represent local authorities and public administrations (Municipalities, Communes, City councils, Town council, etc.). Following, 16% of respondents are employed in territorial organisations, namely Provinces, Prefectures, Counties, Districts, etc. 8% of respondents represent regional authorities and about 5% central government departments. Last, a small percentage of about 3% works in associations of territorial public administrations. Additional self-defined profiles for organisation type ("other" category) are summed up in table 6.

Table 6. Organisation type: other

Organization type: other	No of responses	%
Local authority	2	8,70%
Regional authority	1	4,35%
Association of municipalities	2	8,70%
Public company	4	17,39%
Healthcare institution	1	4,35%
Education/research	8	34,78%
Business association	2	8,70%
Social security	1	4,35%
Unitary authority	1	4,35%
Environmental agency	1	4,35%

Table 7. Responses by organisation type

Organization type	Responses	%
Association of territorial public administrations	26	2,7%
Central Government (ministry or other department)	47	4,8%
Municipality / Commune / Metropolitan / City / Town	637	65,0%
Province / Prefecture/ County / District	160	16,3%
Region	80	8,2%
Other	30	3,1%

Figure 5. Responses by organisation type
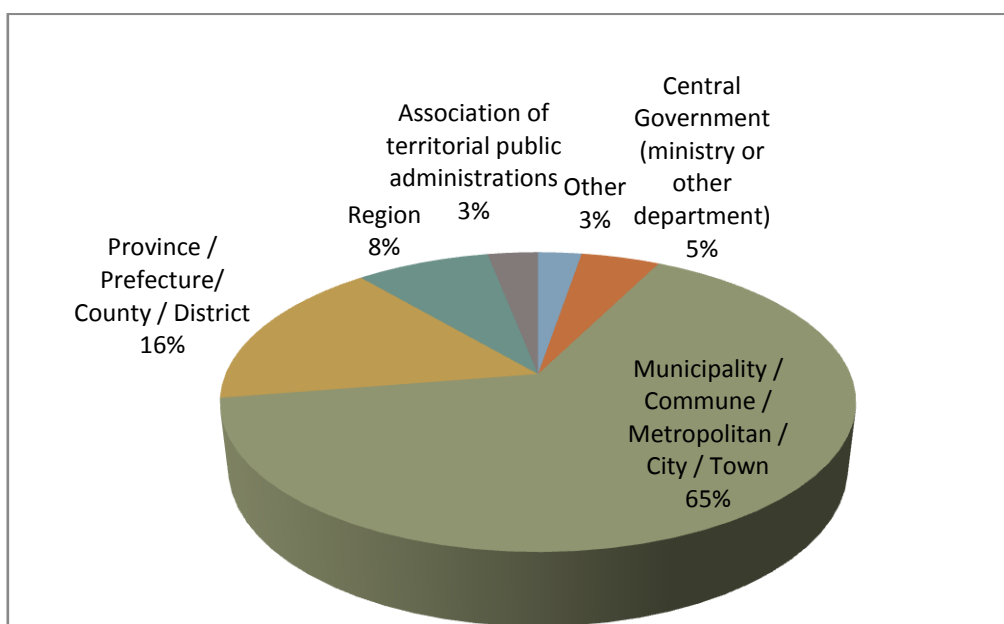
There is a rather balanced distribution of respondents based on organisation size. 22.5% of respondents work in organisations with more than 500 employees and 22.6% is employed in organisations with 101-500 employees. Small organisations (1-30 employees) represent 27% of responses while mid-size organisations (31-100) account for the 28% of total responses.

Table 8. Responses by organisation size (number of employees)

Number of employees	Responses	%
1-30	262	26,8%
31 - 100	273	28,0%
101 - 500	221	22,6%
> 500	220	22,5%

Figure 6. Responses by organisation size (number of employees)
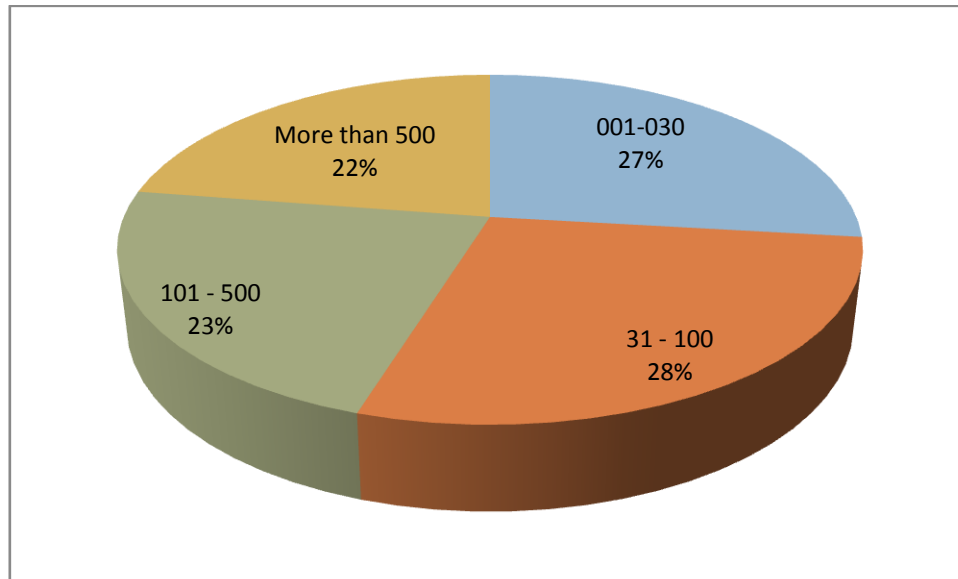
2. KEY FINDINGS

2.1. FOSS attitudes

Based on the analysis of survey responses to open-ended fields, it seems that certain commonalities can be identified in the perceived FOSS attitudes of both IT and non-IT staff, depending on overall organisational settings and strategic issues.

What differentiates described attitudes of IT and non-IT staff is a) a critical, risk-aware support to FOSS attributed to IT staff b) b significant knowledge gap in relation to open source attributed to administrative, non-technical staff.

Beyond any IT/administrative staff difference, certain organizational or administrative factors affecting the overall stance to FOSS such as insufficient technical resources, lack of staff or organised IT departments are also reported by respondents. Future support for FOSS is linked to conditions such as staff availability, or shifts in the organisation's policy/strategy.

2.2. FOSS policies

Clear, straightforward pro-FOSS strategies, although reported by several respondents, do not seem to account for the majority of collected responses. Targeted implementation or planning of FOSS integration in specific organisation departments, operational areas or software categories (e.g. servers, office suites) was the most common strategy to be identified among responses. Policies that are, in principle, favourable to FOSS were also frequently identified among responses.

It seems, based on responses, that the majority of organisations have adopted approaches that tend to favour or support FOSS. These approaches, however, do not always reflect in elaborate, FOSS-specific strategies or do not necessarily translate into concrete actions and implementations. Policies that, in principle, favour the use of FOSS may actually result to poor implementation. At the same time, even in implementation initiatives, as often reported by respondents, open source is introduced in specific organisational structures, operational fields or software types, thus resulting to a controlled, small-scale and often limited integration into existing systems and applications.

2.3. FOSS barriers

Concerns on security are by far (66%) regarded by respondents as major barrier to FOSS usage that was not included in the list of predefined factors. The emphasis given by respondents to IT security in relation to FOSS integration shows that this is a critical issue that should be taken into account in assessing factors that affect FOSS usage.

Technical difficulties and lack of support in integrating FOSS applications to existing proprietary systems also seems to prevent public organisations from migrating to open source solutions.

Several respondents also identified a deeper knowledge gap and organisational mentality in public organisations as a critical factor causing resistance and unwillingness to any change in software use and related practices.

Finally, a significant gap on policy coordination is reported as a barrier to FOSS usage and implementation.

3. ANALYSIS RESULTS

This section presents the qualitative analysis results based on content provided directly by respondents in open-ended type questions or sub-questions of the OSEPA survey. Data analysis refers only to specific, open-ended questionnaire fields and sections as defined in Annexes A and B. Data presented refers to sub-groups of total survey participants, depending on relevant questionnaire fields and sections. Due to language/translation barriers[5] original text and survey participant quotes are used indicatively and with possible minor editing.

3.1. FOSS attitudes

In this section, results are presented based on responses to the open text fields for questions 26 and 27 of the OSEPA survey questionnaire:

Q26: *"How would you describe the general attitude of the IT staff in your organization towards FOSS usage"*? [Other]

Q27: *"How would you describe the general attitude of the NON - IT staff in your organization towards FOSS usage"*? [Other]

3.1.1. FOSS attitudes: IT staff

Open descriptions provided by respondents on the general attitude of IT staff to FOSS usage provided a more complex and nuanced view on various modes and degrees of support,

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[5] The OSEPA survey was conducted simultaneously in 12 European countries through local language versions of the online questionnaire. Exported results were translated to English.

engagement or reluctance to FOSS uptake. Different modes of risk-aware, "cautious" or conditional support, adaptiveness, reluctance or mixed attitudes depending on groups or individual views are described.

In describing FOSS attitudes, respondents reveal various mostly organizational or administrative factors affecting the overall stance to FOSS such as insufficient technical resources, lack of staff or organized IT departments. Future support for FOSS is linked to conditions such as staff availability, or shifts in the organisation's policy/strategy.

Based on textual descriptions provided by respondents, responses could be categorized in some attitude pattern categories as shown in table 9.

Table 9. Patterns in responses to FOSS attitude [other] of IT staff

FOSS attitude [other]: IT staff	Freq.	%
Supportive	1	2.7%
Supportive but risk-aware	2	5.4%
Conditionally supportive	6	16.2%
Mixed/depending	13	35.1%
Neutral	3	8.1%
Passive/reluctant	2	5.4%
No IT department or staff	8	21.6%
No FOSS use in department	2	5.4%

FOSS attitudes of IT staff are perceived as being to a great extend mixed and fluid, depending on various factors, ranging from individual views and opinions to overall organisational settings and strategic issues. A critical, risk-aware support to FOSS is also attributed to the IT staff of public administrations. As indicatively state by some respondents, IT staff is regarded to be:

"Cautiously supportive"

"Supportive, but cognisant of risks inherent with FOSS so cautious"

This can be probably attributed to the technical knowledge background that allows IT managers and staff to scrutinize FOSS strengths, weaknesses and features.

Also of importance is that several respondents identify deeper organizational and structural difficulties (e.g. no organised IT department) without which IT staff would show greater support and adaptiveness to FOSS. As stated by one of respondents, attitude of IT staff to FOSS *"would be in theory enthusiastic, but in the reality there is the need for more IT staff and more support".*

3.1.2. FOSS attitudes: non-IT staff

Attitudes of non-IT staff to FOSS are also seen as mixed and dynamic covering a wide range of behaviours ranging from negativity to full support. Almost half or responses describe mixed attitudes to FOSS depending on staff profile or individual views. What differentiates, however, responses regarding non-IT staff compared to IT staff is that a significant knowledge gap in relation to open source is attributed to administrative, non-technical staff. Several respondents describe non-IT staff in their organization as being unaware or ignorant when it comes to open source software (e.g. "*they do not know what FOSS is*")

In addition, negative attitudes of FOSS as a potential "threat" or risk are also attributed to administrative staff in public administrations.

Based on textual descriptions provided by respondents, responses could be categorized in some attitude pattern categories as shown in table 10.

Table 10. Patterns in responses to FOSS attitude [other] of non-IT staff

FOSS attitude [other]: non-IT staff		
	Freq.	%
Supportive	1	3.7%
Mixed/depending	13	48.1%
Neutral	1	3.7%
Negative	2	7.4%
Passive/reluctant	1	3.7%
No FOSS use in department	1	3.7%
Unaware/ignorant	8	29.6%

3.2. FOSS policies

3.2.1. Typology of FOSS policies and strategies

Open ended question 20 of the online questionnaire ("*Please provide more information related to your organization's strategy/policy/official position regarding FOSS*") provided a chance for respondents to give a more detailed view of the FOSS-related policies and strategies adopted by their organisations.

A great variety of responses was gathered covering a wide range of not just official policies related to FOSS but also of overall positions, strategies and "ways of thinking" regarding software and ICT in public administrations. In this sense, respondents do not merely provide additional information or describe any official policies of their organisations but rather make use of the opportunity to communicate any other unofficial projects and initiatives, future planning priorities or difficulties and concerns regarding decision making on software and ICT.

Certain straightforward approaches and clear pro-FOSS strategies have been identified in responses, as indicatively stated in the following quotes:

> *"Active migration to FOSS over the next five years; at the same time development of the Linux infrastructure in the server and client area as well as strategic focus on open document formats".*

> *"Political guideline is to increase the usage of FOSS solution and to share the data produced inside the administration through open data".*

> *"Strategy of FOSS is described in the document Action Plan on implementing e-Government services in the period from 2010 to 2015".*

Such firm statements, however, do not account for the majority of collected responses. Targeted implementation or planning of FOSS integration in specific organisation departments, operational areas or software categories (e.g. servers, office suites) is the most common strategy to be identified among responses:

> *"FOSS is usable in certain cases on the server side, not usable for desktops, but ongoing monitoring is under way".*

> *"Gradual introduction of FOSS tools for individual productivity at the client level. Usage of FOSS operating system at server level".*

> *"Implementation of an open source CMS (Content Management System) in our offices, FOSS desktop applications like Open Office and Ubuntu operating system".*

Policies that are, in principle, favourable to FOSS were also frequently identified among responses:

> *"Administration is in favour of an Open Source adoption".*

> *"In favour, but left in the hand of the users' self decisions".*

They are also accounts of equal distance approaches, considering and leaving open both FOSS and proprietary software options on the basis of cost, security features, functionalities offered and/or organisational requirements:

> *"Entirely best on value for money and security compliance".*

> *"Software is judged on functionality, not on the fact that it is open source or not".*

Some respondents reported that FOSS solutions have been considered but never implemented or not regarded as a priority in their organisations due to various reasons (e.g. vendor-dependence, compliance and integration issues, training costs, top-down political decisions):

> *"Although FOSS is considered a valid option, it is unfortunately not compatible with software in use into our offices. Changing the software would imply for the administration a huge investment in terms of time and money, together with the risk of losing important data.*
> *"Constantly discussed and subject to selection procedures, but not yet implemented".*

Finally, they were accounts of either unofficial, small-scale initiatives, mostly based on personal efforts, and of complete absence of any concrete policy or strategy, providing, in some cases, further explanation on the difficulties and barriers met.

Based on the review and analysis of responses, recurring themes, keywords or patterns were identified and 11 categories were defined in which responses were grouped. Based on this categorisation, response frequencies were distributed as shown in Table 11.

Table 11. Response frequencies by response category for question 20:
"Please provide more information related to your organization's strategy/policy/official position regarding FOSS"

	Response category	Freq.	%
1	*Planning, encouraging or implementing FOSS use in certain areas/specific applications (e.g. office suites)*	57	27.4%
2	*Favourable to FOSS*	39	18.8%
3	*Clear/elaborate pro FOSS strategy*	32	15.4%
4	*Equal FOSS/proprietary consideration based on cost and features*	22	10.6%
5	*FOSS considered/assessed but not implemented*	16	7.7%
6	*No current policy*	15	7.2%
7	*FOSS is not a priority/not preferred*	10	4.8%
8	*Emphasis on FOSS/proprietary software compatibility*	6	2.9%
9	*FOSS preferred after testing and assessment*	5	2.4%
10	*Small scale/projects based on personal initiative/randomness*	4	1.9%
11	*Indifference*	2	1.0%
		208	100.0%

3.2.2. Remarks

As shown by responses, the majority of organisations have adopted approaches that tend to favour or support FOSS. These approaches, however, do not always reflect in elaborate, FOSS-specific strategies or do not necessarily translate into concrete actions and implementations. Policies that, in principle, favour the use of FOSS may actually result to poor implementation. At the same time, even in implementation initiatives, as often reported by respondents, open source is introduced in specific organisational structures, operational fields or software types, thus resulting to a controlled, small-scale and often limited integration into existing systems and applications.

Even so, it seems that a certain number of public organisations have actually developed, during the last years, clear, FOSS-specific policies and positions that may be also be used as road-maps by organisations with a similar scope and profile that seek guidance and support.

A fair percentage of responses refer to an "equal consideration" policy considering both FOSS and proprietary software solutions on the merit of overall costs, organisational requirements or desired functionalities.

In considering or assessing FOSS however, organisations seem to lack, based on responses, coherent ways and common methodologies (e.g. cost estimation, software benchmarking and assessment tools) to reach informed decisions on a value for money basis. There is a great fragmentation in criteria, specifications or weighted factors (e.g. compliance issues training costs for open source systems) and a lack of coordination among public administrations in FOSS assessment. This may result to poor assessment or to "considered but not implemented" scenarios for FOSS.

Moreover, there are certain barriers that prevent organisation from considering FOSS as a priority or a possible option. Issues of compliance and integration with existing proprietary systems and applications are critical factors affecting software priorities and some respondents have highlighted this aspect at the core of their organisation's policy. Several administrations heavily rely on vendors and purchased proprietary licences with seemingly no reliable alternative –particularly for specialised tasks and operational field– therefore not considering open source as a priority.

Finally, respondents often report FOSS projects and implementations based on small scale, bottom-up or personal initiatives and efforts. Respondents point out reluctance among public administrations in adopting an official policy or strategy and taking responsibility for it. Several, particularly local, administrations, seek guidance and support, in terms of resources and political backing from central government before adopting and applying a specific decision making framework for open source.

3.3. Perceived FOSS barriers

Open ended question 33 ("*please give any additional barriers that were not included in the above list*") of the OSEPA survey questionnaire aimed to identify additional factors perceived as barriers to FOSS usage that were not included in the predefined list of previous question 32 ("*please rate the importance of the barriers to the successful implementation of FOSS*").

Gathered responses covered a wide range of issues, difficulties and barriers hindering FOSS integration in public administrations and touched upon several technical, organisational, political or legal aspects. Based on common keywords, themes and patterns, 13 FOSS barrier

factors, summing the content of all proposals, were defined and response frequency was distributed accordingly, as shown in table 12.

Table 12. Additional FOSS barriers.
Grouped and identified based on responses to question 33 ("*please give any additional barriers that were not included in the above list*")

	FOSS barriers (additional)		
1	*Security concerns*	57	66.3%
2	*Lack of support for integration to proprietary systems*	6	7.0%
3	*Lack of interest/knowledge*	4	4.7%
4	*Resistance to change / mentality*	3	3.5%
5	*Lack of multi-level cooperation/coordination of strategies and requirements between administrations and central government*	3	3.5%
6	*Vendor-locking in existing systems with no quality alternative*	3	3.5%
7	*Lack of policy support/political leadership*	2	2.3%
8	*Lack of in-house staff, technical support and knowledge base*	2	2.3%
9	*Training costs*	2	2.3%
10	*Standard compliance issues*	1	1.2%
11	*Limited functionalities offered for specific/advanced application areas for public administrations*	1	1.2%
12	Lack of proper legal framework	1	1.2%
13	Dependence on other public administrations	1	1.2%
		86	100.0%

Additional FOSS barriers, grouped and identified based on responses, reveal some interesting aspects not covered by the predefined list of barriers to FOSS usage. They also provide an opportunity to assess difficulties and challenges relating to FOSS as highlighted directly by respondents/organisations.

Concerns on security are by far (66%) regarded by respondents as major barrier to FOSS usage that was not included in the list of predefined factors. Great emphasis was given by respondents to IT security in relation to FOSS integration most commonly stated as "security concerns". Concerns over security as expressed by respondents highlight a critical issue –

not sufficiently addressed in the closed-type question – that should be taken into account in assessing factors that affect FOSS usage.

Technical difficulties and lack of support in integrating FOSS applications to existing proprietary systems also seems to prevent, to a great extent, public organisations from migrating to open source solutions. As indicatively stated by survey participants:

"Complicated Integration to existing proprietary solutions".
"Some FOSS is not compatible with lot of proprietary software dealing with important database".
"Specific software used in public administrations is never compatible with FOSS. There should be a law to enforce them to be compatible!"

Several respondents identified a deeper knowledge gap and organisational mentality in public organisations as a critical factor causing resistance and unwillingness to any change in software use and related practices:

"I suppose there is no interest in FOSS usage by our Municipality and its employees".
"Lack of understanding of the FOSS business model"
"Fear of change"
"The mentality of rank-workers and managers. The so-called habits".

This resistance factor is further solidified by the lack of trained, skilled staff and an expert knowledge base within organisations that could help increase familiarity with open source. As stated, for example by one of the respondents, there is "*lack of a knowledge-base to be "transferred" to those employees who do not have a stable working contract*".

Finally, a significant gap on political leadership and policy coordination is reported by respondents as a barrier to FOSS usage and implementation:

"In the case of Public Administration lack of interaction and cooperation among local and central institutions in the IT sector."	
"Lack of National and EU policy and actions to support FOSS."	
"Lack of legal regulations that enforce the use of FOSS solutions for projects designed to support more than 3 institutions / agencies."	
"Conflicting government strategies, certification requirements."	
"Lack of powerful politically potent role model (e.g. EU level organizations)."	
"Unwillingness to assume responsibility for the consequences of migration."	

The lack of multi-level interaction and cooperation between local administrations (cities, towns, municipalities) and central government departments seems to lead either to great fragmentation and inconsistencies in terms of strategies and requirements or to a one-way dependency of small-scale local administration to central institutions.

3.4. FOSS applications by software category

Question 43-56 of the OSEPA survey online questionnaire aimed to get a more detailed technical view on the most used FOSS applications by software type and category. Survey participants were also given the opportunity to report any additional open source applications that are in use in their organisation in related fields as shown in table 13.

Table 13. Survey questions on additional FOSS applications in use by software type/category.

Question No	Question title
Q44	*Please enter any other text processing and publishing tools that were not included above and indicate if they are your organization's default application.*
Q46	*Please enter any other email, communication, project management or groupware tools that were not included above and indicate if they are your organization's default application.*
Q48	*Please enter any other graphics, media and file compression tools that were not included above and indicate if they are your organization's default application.*
Q50	*Please enter any other Internet / networking tools that were not included above and indicate if they are your organization's default application.*
Q52	*Please enter any other server, database and content management tools that were not included above and indicate if they are your organization's default application.*
Q54	*Please indicate any other GID or CAD tools that were not included above and indicate if they are your organization's default application*
Q56	*Please enter any other System Administration, Security or development tools that were not included above and indicate if they are your organization's default application*

Use frequencies for each software application mentioned are presented in table 14. Frequencies are also visualised in a tag-cloud format as shown in Figure 7.

Table 14. Use frequencies for each FOSS application mentioned

Text processing/ publishing tools		Email, project management and groupware	
GhostScript	1	eGroupWare	11
itext	1	Roundcube mail	10
7zip	1	Zimbra	1
Lynx	1	OpenXchange	1
Fusioninventory	1	Openfire	1
Audacity	1	Spark	1
UltraVNC	1	Asterisk	1
WinSCP	1	Mantis	1
		project.net	1
		mediawiki	1
		qmail	1
		zentrack	1
Graphics, media and file compression		**Internet / networking**	
Evolus PENCIL	1	Rdesktop	2
cdburnerxp	1	Squid	2
		Filezilla	1
		Mozilla Firefox	1
		Chrome	1
		Opera	1
		Cobian Backup	1
Servers, databases, CMS		**GIS/CAD**	
TYPO3	2	Geoserver	3
OCS-inventory	1	Mapwork	1
GLPI	1	MapServer	1
Django	1		
Dokuwiki	1		
Moodle	1		
SymmetricDS	1		
cmsms	1		
System administration/development			
TYPO3	2		
Moodle	1		
OCS-inventory	1		
GLPI	1		

| Django | 1 |
| Dokuwiki | 1 |

Figure 7. Tag-cloud for additional FOSS applications mentioned.
(Generated on a word frequency basis)
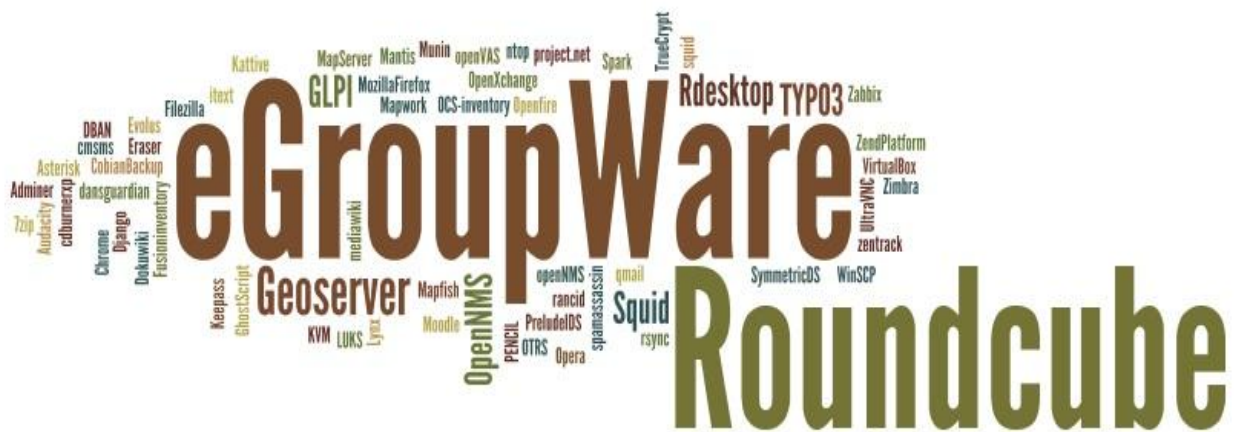
4.   ANNEX A: data analysis methodology

4.1. Preparation stage: data consolidation

To validate survey results and facilitate data processing and analysis, upon survey completion, exported data was validated and consolidated through a four-step process: 1) categorisation 2) screening 3) editing/correction 4) integration.

The OSEPA survey was conducted through local online questionnaire versions in 20 countries over a period of 10 weeks (24/10/2011 – 31/12/2011) gathering a total of 1507 – both full and incomplete – responses from 19 countries (no responses in France). Data consolidation resulted into a total of 1088 valid responses that were processed and analysed.

Data preparation and processing steps were defined based on the foreseen analysis methodology for the OSEPA survey results, the structure of the online survey questionnaire and the type and volume of data produced.

4.2. Data analysis

Qualitative analysis aimed to identify certain views, attitudes and opinions relating to FOSS usage in European Public Administrations by tracing recurring themes, issues and patterns in responses to open ended questions of the OSEPA online questionnaire.

Data processing and analysis, facilitated by the preparation stage of data consolidation, followed a four-step process as described below:

1) Questionnaire mapping: questionnaire fields for analysis were identified based on relevance, priority and question type (e.g. closed ended – open-ended). Open-ended questions and closed questions with additional options for text input ("other", "please enter any additional") were included in analysis. Questionnaire sections and fields with no direct relevance to FOSS or not allowing for qualitative analysis (e.g. pre-defined list, closed-type questions, and numerical values) were not included in the analysis process.

2) Reviewing and textual analysis of responses: all content and input text for responses to defined questionnaire fields was reviewed and analysed. Where applicable, attached files or provided internet resources were also reviewed.

3) Identifying themes, trends and patterns: based on content analysis, common themes, "keywords" or patterns were identified

4) Defining response typology: response categories based on identified themes, patterns and keywords were created

5) Response mapping: responses were mapped and grouped based on defined typology.

5. ANNEX B: analysed questionnaire fields

Note: Questionnaire sections and fields with no direct relevance to FOSS or not allowing for qualitative analysis (e.g. pre-defined list, closed-type questions, and numerical values) were not included in analysis.

Colour key to table

Questions included in qualitative analysis
Closed-ended questions not included in qualitative analysis
Not included in analysis
Questionnaire section
Personal info

QID	Question title	Question type
	INTRODUCTION	
Q01	First name in English	Closed ended
Q02	Last name in English	Closed ended
Q03	Email address	Closed ended
Q04	The name of the public administration with which you are affiliated	Closed ended
Q05	Your role in the public administration	Closed ended/other
	YOUR ORGANISATION	
Q06	Organization type	Closed ended/other
Q07	Approximate number of personnel in your organization	Closed ended
Q08	Does your organization outsource any of its IT based services?	Closed ended
Q09	Which IT based services does your organization outsource?	Closed ended/other
Q10	Is your organization reviewing IT budget in the light of financial cuts?	Closed ended
Q11	Does your organization have an active policy against the use of illegal software in offices/departments?	Closed ended
Q12	Is your organization using private or public cloud solutions?	Closed ended
Q13	Is your organization actively expanding services to include mobile phone and related access?	Closed ended
Q14	Is your organization engaging with social networking systems?	Closed ended
Q15	Does your organization have a dedicated data security manager?	Closed ended

Q16	Are you aware of what is free and/or open source software (FOSS)?	Closed ended
	FOSS NON-TECHNICAL	
Q17	Which of the following statements best describes the experience (s) of FOSS operating systems and applications in your organization?	Closed ended
Q18	Has your organization or department ever migrated to FOSS operating systems and/or applications?	Closed ended
Q19	Is there any strategy/policy/official position adopted by your organization regarding FOSS?	Closed ended
Q20	Please provide more information related to your organization's strategy/policy/official position regarding FOSS	Open ended
Q21	Please attach a file of your organization's strategy/policy/official position if that is convenient.	Open ended
Q22	Which of these describes your organization's experience with supporting FOSS?	Closed ended
Q23	Please indicate all that apply (contribution to FOSS community)	Closed ended
Q24	How many applications that were developed and shared by other public administrations are in use by your organization?	Open ended
Q25	How many applications that were developed by your organization have been shared with other public administrations?	Open ended
Q26	How would you describe the general attitude of the IT staff in your organization towards FOSS usage?	Closed ended/other
Q27	How would you describe the general attitude of the NON - IT staff in your organization towards FOSS usage?	Closed ended/other
Q28	Which of these describes your level of involvement with the code of FOSS programs?	Closed ended
Q29	Please indicate your level of involvement with the OSOR.eu	Closed ended
Q30	Please indicate your level of use of the EUPL (European Union Public Licence)	Closed ended
Q31	Please rate your level of agreement with the following statements regarding FOSS benefits	Closed ended
Q32	Please rate the importance of the barriers to the successful implementation of FOSS	Closed ended
Q33	Please give any additional barriers that were not included in the above list.	Open ended
Q34	If your role is technical we ask you please to answer further questions. Do you wish to continue?	Close ended
	FOSS TECHNICAL	
Q35	Approximately how many servers (physical or virtual) are in use in your organization?	Close ended
Q36	Approximately how many desktops & laptops (clients) are in use in your organization?	Close ended
Q37	How would you describe the distribution of proprietary/FOSS applications most frequently used in a typical server in your organization?	Close ended
Q38	How would you describe the distribution of proprietary/FOSS applications most frequently used in a typical desktop/laptop (client) in your organization?	Close ended
Q39	Please choose how you wish to define the technical profile of your organization	Close ended
Q40	For each type of software that your organization uses, what proportion of total use is FOSS?	Close ended
Q41	Please specify the number of operating systems running on servers in your organization. Select all that apply.	Open ended
Q42	Please specify the number of operating systems running on clients (desktops and laptops) in your organization.	Open ended
Q43	Text processing and publishing tools. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q44	Please enter any other text processing and publishing tools that were not included above and indicate if they are your organization's default application.	Open ended
Q45	Email and communication, project management and groupware. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended

Q46	Please enter any other email, communication, project management or groupware tools that were not included above and indicate if they are your organization's default application.	Open ended
Q47	Graphics, media and file compression. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q48	Please enter any other graphics, media and file compression tools that were not included above and indicate if they are your organization's default application.	Open ended
Q49	Internet / networking. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q50	Please enter any other Internet / networking tools that were not included above and indicate if they are your organization's default application.	Open ended
Q51	Servers, Databases and Content Management. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q52	Please enter any other server, database and content management tools that were not included above and indicate if they are your organization's default application.	Open ended
Q53	Geographic Information Systems (GIS) and Computer Aided Design (CAD). Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q54	Please indicate any other GID or CAD tools that were not included above and indicate if they are your organization's default application	Open ended
Q55	System Administration, Security and Development tools. Please estimate how many and indicate any that are the standard default application. Select all that apply	Open ended
Q56	Please enter any other System Administration, Security or Development tools that were not included above and indicate if they are your organization's default application	Open ended