

**SIXTH FRAMEWORK PROGRAMME  
PRIORITY 2  
INFORMATION SOCIETY TECHNOLOGIES**



**FLOSSWORLD**

**Free/Libre and Open Source Software: Worldwide  
Impact Study**



**D9: Track 1 Survey Report - China**

(Referred to as D9a, D9b and D9c in the work packages description in the proposal)

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Authors:

Maoke Chen (CERNET)  
Paul David (OII)  
Rishab A. Ghosh (MERIT)  
Rüdiger Glott (MERIT)  
Jesus M. Gonzalez-Barahona (URJC)  
Joseph Shapiro (OII)

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# 1. Introduction

This deliverable provides an overview of the methodology and samples of FLOSSWORLD Track 1 (skills survey) in China. Track 1 consists of three separate surveys:

- Survey of FLOSS developers
- Survey of employers (HR managers at businesses)
- Survey of universities and institutes of higher education (HEIs)

The purpose of Track 1 is to find out how FLOSS contributes to human capacity building and how these capacities are valued by FLOSS community members and by employers. In this context, the study of HEIs is intended to reveal the role of FLOSS for higher education and how FLOSS is employed and taught in HEIs.

# 2. Design and Methodology

The FLOSSWorld project has been designed with a clearly defined work structure in mind, with two chronological phases and three functional tracks. The two chronological phases of the workplan are designed to reflect both the two structural phases of the thematic studies of Tracks 1 to 3, as well as the increasing levels of collaboration during the project lifetime.

Phase 1, “Design and implementation” focuses on the design and implementation of the studies, with workshops<sup>1</sup> bringing together researchers with representatives of business, education and policy communities. Phase 2, “Analysis and policy” focuses on the interpretation of survey results, further analysis and inputs to the policy development process. Workshops bring together researchers and policy makers, with strong representation from business as well as the education sector. Table 1 illustrates how Track 1 is structured along the two phases:

	Phase 1: Design, Implementation	Phase 2: Analysis, Policy
<b>Track 1: study of human capacity building / skills development in FLOSS developer communities</b>	<p>Plan analytical framework.</p> <p>Finalise design and methodology of survey and questionnaire (based on results of on-going FLOSSPOLs survey). Define representative sample for employer/business and university/HEI respondents. Identify sample for FLOSS developer survey (possibly with Track 2).</p> <p>Localise questionnaire. Conduct pre-testing of questionnaire.</p> <p>Conduct survey. (For developer survey, possibly conduct jointly with Track 2.)</p>	<p>Interpret survey results. Determine quantifiable skills development impact of FLOSS participation and value to employers.</p> <p>Compare by region and with Europe (relate to results from FLOSSPOLs, CALIBRE).</p> <p>Determine policy impact on use of FLOSS in the education sector.</p> <p>Determine impact of FLOSS-based skills development on employment generation and business success.</p>

Table 1: Design of Track 1

<sup>1</sup> The workshops held in the course of the FLOSSWORLD project are described in Deliverables D3, D4, and D33-D44.

The questionnaires for the empirical surveys were developed by the European partners (MERIT, URJC, and OII) while the local partners localised and adapted the surveys to the context of each target country – China, Brazil, Bulgaria, China, Croatia, India, Malaysia and South Africa. Localisation involved three tasks:

1. translation of the questionnaire into local languages if and where appropriate (Bulgarian, Chinese, Spanish, Portuguese, etc...)
2. introduction of local terms to ensure international comparability – e.g. using local currencies in the questionnaire and localised scales when asking about income or expenditure levels
3. introduction of additional questions that are unique to each country's context (e.g. questions on the role of specific government organisations, businesses, HEIs or projects, which were carefully designed and positioned so that they did not reduce the international comparability of the rest of the questionnaire)

The surveys were conducted using a combination of web-based questionnaires, e-mail contacts and reminders, telephone and fax. The localised questionnaires were converted into an on-line form and hosted on a web server at UM.

The on-line questionnaires were accessible in two ways: *addressed access*, where unique web addresses were generated for each preselected respondent with identifying information pre-recorded; and *open access*, where respondents have been asked to provide contact information. Addressed access was used in particular when address lists for the respondents were available to the international partners, from which a sample could be drawn. Those respondents that were addressed personally were contacted by e-mail with a request to fill out the survey at the unique address created for them. This is the most reliable form of ensuring an authenticated representative sample of respondents. Open access was used when no respondents could be identified in advance or when the number of identifiable persons to survey was considered too low. For open access, the survey was publicised through mailing lists, online forums, or publicity to associations (of businesses, universities and governments, respectively).

Addressed access execution involved repeated reminders. These were mainly sent by email, but in some countries (Malaysia, Bulgaria) it turned out that phone calls to the addressed respondents were more efficient.

The questionnaire<sup>2</sup> for FLOSS developers asked, among other things, for detailed developer perceptions of skills learnt informally through FLOSS communities in comparison to a more formal setting (multi-disciplinary skills – understanding licensing issues, managing teams, writing modular software...). Developers were also asked to describe what activities (reading code, reading a book, participating in community discussion groups) lead to learning what skills. These questions aimed to determine what benefits for skills development are seen by participants. Finally, respondents were asked to quantify their skills in terms of increased employment possibilities and earning capacity.

The questionnaire for employers was directed at human resource managers at companies – not FLOSS or even software companies, simply employers of IT-skilled personnel. It complements the developer questionnaire to determine employers' perceptions of the type and level of skills learnt informally through participation in FLOSS communities, versus formally through, e.g., universities. Employers are also asked to quantify such skills in terms of hiring preferences and salary levels.

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2 The questionnaires for the surveys and the guidelines for the local partners to execute the survey in their region are attached in Annex A. These documents are referred to in the proposal as Deliverable 6a (not to be released separately).

Universities and other Higher Education Institutes (HEIs) in target countries were surveyed to understand and utilize the information gathered by the survey of developers since for many target countries, the tertiary educational and training institutions are prime access points to the Internet for many young people, at high enough bandwidths to support interactive communication and initial involvement in experiential learning. These also are locales of personal contacts with more expert users and developers of FLOSS code, which may be important for effectiveness even in remote learning. (The FLOSS-US survey showed a clustering of Indian developers at one locale, an HEI in Bangalore.) Thus, the policies of HEIs, and the depth of their personnel's expertise are important factors conditioning the entry of new cohorts of developers, as indicated by the prominence of university and technical college students among respondents to FLOSS and FLOSS-US. The third Track 1 survey targeted at investigating HEIs usage and awareness of FLOSS in order to identify institutional obstacles and solutions to overcome them in the target countries, and further at identifying sources of institutionalized capability in regard to FLOSS use in instruction and research.

### **3. Overview of the Samples of the three Track 1 Surveys**

#### ***3.1. Developer Survey***

83 FLOSS community members have participated in the FLOSSWORLD developer survey in China. 9 respondents (11%) are female. All respondents are Chinese and live in China. Only 9 respondents joined the community before 2005 (the earliest in 1996), 24% joined in 2005 and 62% joined in 2006.

The age of the respondents ranges between 17 and 45 years. Two thirds are between 17 and 25 years, only 2% are older than 40 years. The average age is 25.5 years.

On average, Chinese developers start using a computer at the age of 16 and have their first own computer with 19.5 years. In this respect the Chinese developer community resembles the other two Asian developer communities (India and Malaysia) that were scrutinised in the FLOSSWORLD study. Obviously, access to a computer and ownership of a computer happens at a later point in lifetime in Asian countries than in African and South American developing countries or in South-East European transition countries. No respondent reported that he does not own a computer.

Table 2 shows the educational degrees of Chinese FLOSS community and illustrates that this community is almost completely made up by people with a university degree. The groups with a university bachelor or master degree provide more than 80% of the respondents. This finding is in line with the result of the FLOSS and FLOSSPOLs developer surveys, which both showed that FLOSS community members are comparably well educated, though the share of academic degrees in FLOSS communities in other countries is lower than in China.

**What is the highest level of education you have completed?**

<b>Degree</b>	<b>Percentage</b>
elementary or primary school	0,0
A-levels	1,2
apprenticeship	0,0
high school	4,9
university - bachelors	41,5
university - masters	46,3
university - PhD	6,1
other	-
<b>Total</b>	<b>100,0</b>

*Table 2: Educational degree of FLOSS community members*

The shares of the employed (35%) and the self-employed (1%) among the respondents is extremely low, which is due to the young average age of Chinese FLOSS community members. In fact, almost two thirds (62%) of the Chinese FLOSS community members are students. Only 1% of the respondents said that they were unemployed when the survey was carried out. Table 3 Provides an overview of the professions of the employed or self-employed.

**If you are employed or self-employed, what is your profession?**

<b>Profession</b>	<b>Percentage</b>
programmer	16,7
consultant	0,0
system administrator	3,3
software engineer	36,7
executive (manager, department heads)	6,7
network administrator	10,0
Internet/web designer	0,0
researcher	3,3
university staff	23,3
<b>Total</b>	<b>100,0</b>

*Table 3: Professional structure*

Software engineers provide the largest group within the Chinese FLOSS community, followed with some distance by university staff and programmers. The least important groups are consultants and web designers.

The share of Chinese FLOSS community members that earn money from their FLOSS activities is only 17%. It is thus much smaller than surveys of FLOSS communities in other world regions have carried out, such as the FLOSS developer survey in 2002, indicating that 54% of the mainly European FLOSS community members earned an income from FLOSS. The Chinese community differs from other communities also with regard to the sources of income of those who receive monetary rewards from their engagement in FLOSS. While in other communities the main source of direct incomes from FLOSS is supporting or administrating FLOSS, the main source in China is

either developing FLOSS or other FLOSS activities that are not further specified (see Table 4). The same applies to the main source of indirect income from FLOSS. In other countries most respondents report, in this respect, that they got their job because of their FLOSS experience, but in China the main source of indirect monetary rewards from FLOSS is that people develop FLOSS at work (with their employers knowledge).

Do you earn money from FLOSS, either directly or indirectly?	
Direct / indirect monetary rewards	Percentage
Yes, I am paid directly for developing FLOSS	6,2
Yes, I am paid directly for supporting FLOSS	2,5
Yes, I am paid directly for administrating FLOSS	4,9
Yes, I am paid directly for other FLOSS activities	6,2
<hr/>	
Yes, I am paid indirectly, - I got my job because of my FLOSS experience	3,7
Yes, I am paid indirectly, - I develop FLOSS at work although my job description does not include FLOSS development (i.e. my employer does not know that I develop FLOSS)	2,5
Yes, I am paid indirectly, - I also develop FLOSS at work (my employer knows that I develop FLOSS at work)	7,4

*Table 4: Monetary rewards for FLOSS activities*

The respondents can be distinguished by their degree of project and network experience in the FLOSS community. Half of the respondents were not involved in a project when they participated in the FLOSSWORLD survey, 44% have never participated in any project, 79% have never led a project and 43% have no regular contact to any other FLOSS community member. The Chinese developer community is thus the most inexperienced FLOSS community as compared to the other communities examined in FLOSSWORLD, but this is simply due to the fact that FLOSS became an issue in China only very recently and attracted students rather than people with a business background. Given these circumstances, the Chinese FLOSS community appears as a community that is yet in its starting phase, with its members rather interested in learning than in development projects. On average, those who dispose of FLOSS experience were involved in 1.7 projects when the survey was carried out, participated in a total of 3.5 projects and led 1.8 projects since they joined the community, and have regular contacts to 5.7 other community members.

43% of the Chinese respondents work more with local communities in their country, 10% work more with international developers (47% don't know). 20% of the self-employed or employed respondents work more with independent developers, 40% more within the firm (40% don't know). Finally, 28% of the respondents claim that they choose projects and tasks themselves, 43% are delegated to projects and tasks (29% don't know). In other communities that were examined during the FLOSSWORLD project the majority of the respondents claimed that they choose their projects themselves. That the majority of Chinese respondents reports that they are delegated to projects seems to be due to the fact that a good part of the community members who are involved in projects is obviously involved through their employment, i.e. they mainly develop FLOSS at work.

### 3.2. Employers Survey

26 Chinese employers have participated in the survey. All respondents know by and large FLOSS and how it differs from proprietary software. Only 15% do not use or develop FLOSS in their company.

27% of the respondents consider FLOSS to be very important within the company (in any form - as a software user, developer, or vendor), and another 46% consider the role of FLOSS in their company as important. 27% say that the role of FLOSS in their company is hardly important.

38% of the respondents belonged to companies with up to 50 employees, one third to companies with 50-250 employees, and 27% to firms with more than 250 employees. The detailed size structure of the companies of the respondents is illustrated in Table 5.

How many people (including yourself) work in your company ?

1-5	3,8
6-10	-
11-30	11,5
31-50	23,1
51-100	7,7
101-250	26,9
251-500	7,7
501-1000	19,2
More than 1000	-
Total	100,0

Table 5: Size of respondents' companies

73% of the respondents know whether there are employees in their company who have experience in the field of FLOSS. 25% of these employers say the share of employees with FLOSS experience in their company is 1% to 10%. In another 25% of the companies the share of FLOSS-experienced employees is between 11% and 20%. In another 25% of the companies the share of FLOSS experienced employees lays between 21% and 50%, the remaining 25% of the respondents say that this share lays between 71% and 100% (see the detailed shares in Table 6).

50% ask job applicants about their FLOSS experience, but only 23% ask directly for FLOSS experience in job advertisements. 31% have positions in their company that require FLOSS experience. 63% of the respondents say that these positions are usually leadership positions.

**What is the share of those with FLOSS experience in your company?**

1-10%	25,0
11-20%	25,0
21-30%	6,3
31-40%	-
41-50%	18,8
51-60%	-
61-70%	-
71-80%	6,3
81-90%	-
91-100%	18,8
Total	100,2

*Table 6: Share of employees with FLOSS experience in respondents' companies*

### **3.3. HEI Survey**

Overall, representatives of 54 institutions have replied to the HEIs survey in China, of which 26 are IT managers and 28 are administrators. 22% of the respondents are female. The average age of the respondents is 36.7 years.

The average number of enrolled undergraduates across all HEIs is 22,348; the number of enrolled graduates is 31,037. 2,871 persons belong to the teaching and research personnel at the 54 HEIs, while the administrative and support staff comprise 865 persons.

63% of the administrators and 76% of the IT managers of the Chinese HEIs report that they are using FLOSS. Almost all (93%) see a need for the FLOSS use to increase in the entire institution. 43% of the HEIs also develop FLOSS.

42% of the respondents have no FLOSS experience at all, 12% have FLOSS experience at work only, 4% have FLOSS experience in private only, and another 42% report FLOSS experience at work and in private.

In 63% of the HEIs job applicants are asked about their FLOSS experience. 53% of the HEIs have positions that require FLOSS skills, in 9% of these cases these positions are usually leadership jobs.

## 4. Regional Analysis

In this section we provide a descriptive overview of basic findings from FLOSSWORLD Track 1 for China. A deeper analysis related to relevant literature and comparing results across the 8 countries covered by the FLOSSWORLD consortium is provided in D31.

It must be emphasised that FLOSSWorld was not designed in order to provide a statistically representative account of FLOSS-related human capacity building in the scrutinised regions. FLOSSWORLD primarily aimed to strengthen Europe's leadership in international research in FLOSS and open standards, and to exploit research and policy complementarities to improve international cooperation, by building a global constituency of policymakers and researchers. FLOSSWorld thus contributes to enhancing Europe's leading role in research in the area of FLOSS and strongly embed Europe in a global network of researchers and policy makers, and the business, higher education and developer communities. Finally, another purpose of FLOSSWorld was to enhance the level of global awareness related to FLOSS development and industry, human capacity building, standards and interoperability and e-government issues in the geographical regions covered by the consortium. The project contributed significantly in establishing and /or supporting a stronger, sustainable research community in these regions. The requirements from the data quality regarding proper academic research were therefore of secondary importance. Testing if and under which conditions data can be gathered in these regions and how collaboration between European and local research partners in these regions can be organised was way more important than statistical representativeness. In order to measure the success of Track 1 the consortium defined following thresholds for data collection, regardless of whether or not the data that was collected was representative:

- Developer survey: 320 developers across 8 countries of respondents
- Employer survey: 400 employers across 8 countries of respondents
- HEI survey: 400 HEIs across 8 countries of respondents

As described above (section 3), the employer survey in China did not reach the country-related threshold of 50 respondents. According to CERNET, Chinese employers are not used to be surveyed by European research institutions. Although the contacting of the employers was carried out by CERNET and in Chinese, the fact that the consortium was led by European institutions seemed to deter many possible respondents from participating in the FLOSSWORLD study.

### ***4.1. Motivations for joining the FLOSS community and contributing to projects***

Regarding the reasons why people join the FLOSS community Chinese community members do not differ much from European community members. As shown in Table 7, most respondents joined the FLOSS community because they wanted to learn new skills and to share knowledge. The wish to participate in the FLOSS way of collaboration provides the second important group of motivators, followed by the wish to improve job opportunities. Ideological motivators, such as “software shouldn't be proprietary” or the wish to limit the power of proprietary software companies, are comparably unimportant with regard to individual motivations in other FLOSS communities.

**Remembering the time you joined the FLOSS community, what was the reason for this?  
(Maximal four answers)**

Motivation	Percentage
to learn and develop new skills	64,4
to share my knowledge and skills	42,5
to participate in new forms of cooperation	37,0
to improve my job opportunities	23,3
to solve a problem that could not be done by proprietary software	20,5
to participate in the OS/FS scene	16,4
to get help in realizing a good idea for a software product	12,3
because I think that software should not be a proprietary product	12,3
to make money	12,3
to improve OS/FS products of other developers	9,6
to limit the power of large software companies	2,7
to get a reputation in the OS/FS developers' scene	0,0
to distribute not marketable software	0,0

*Table 7: Reasons to join the FLOSS community*

Regarding the projects the FLOSS community members choose to participate there may be other aspects that motivate people because contributing to projects happens only after the community member has acquired some knowledge and FLOSS experience. Table 8 shows that the most important reason why people join a certain project is however quite similar to the main motivation for joining the community: they follow personal interests, want to learn, become attracted after using the product of this project (probably after contributing bug reports and bug fixes), or they see it as an appropriate way to improve their skills. Previous project experience and project involvement through friends are the least important reasons to decide to participate in a project.<sup>3</sup>

I joined this project...	%
Because I got somehow involved, after being a user of this project	31,7
Because I had a friend who was a developer of the project	15,9
Because I chose it as the most appropriate for my skills	34,9
Because I chose it as the most appropriate for my interests	49,2
Because I was hired to work in it	27,0
Because I worked in similar projects / a similar project before	11,1
Because I wanted to learn something new (I never worked in similar projects before)	49,2

*Table 8: Reasons to join a certain FLOSS project*

<sup>3</sup> A detailed analysis of FLOSS projects and the way how FLOSS community members are involved is provided in Deliverables D22-D30.

## 4.2. Activities within the FLOSS community

In all other communities that were examined in the FLOSSWORLD study the activity profile of the community members, gained from comparing activities that are performed often or very often to activities that are performed sometimes, seldom or not at all, shows that political and social activities, like convincing others from migrating to FLOSS / raising public awareness of FLOSS or reading Q&As in forums, are the most performed activities, whereas documenting software, translating texts or software, packaging software and providing creative elements are activities that the majority of the community members hardly performs. The Chinese FLOSS community members however are different in several respects: First of all, there is no single activity that is, on average, performed often. Secondly, the activity that is said to be performed most often (writing code) requires a considerable degree of software expertise, which is not to be expected within the Chinese community, given the young average age and the short time most of its members belong to this community. The fact that most of the Chinese community members are students may imply that FLOSS skills are learnt within the university environment, though the HEI survey does not support the assumption that HEIs play a more prominent role for FLOSS in China than in other countries (Table 9).

Table 10 illustrates how the importance of activities within the FLOSS community changes over time, i.e. increases, decreases or remains the same. The respondents tend to answer that activities remain the same or decrease. Social, political, and auxiliary activities, such as translating texts, gain most importance as compared to the other activities. Writing code, raising public awareness of FLOSS and testing software show the strongest decrease of importance.

Activity	N	Mean*	Std.dev.
I write code / fix bugs / provide patches	36	-0,1	1,1
I document software	25	-0,2	1,2
I participate in discussions	31	-0,4	0,9
I raise public awareness for FLOSS	25	-0,5	1,1
I read bug-reports / release reports	30	-0,5	1,0
I provide ideasfor software projects	27	-0,5	1,1
I translate software or documentation	27	-0,5	1,2
I participate in technical workshops etc.	26	-0,5	1,0
I organise workshops etc.	24	-0,5	1,2
I convince people to migrate towards FLOSS	27	-0,6	1,1
I provide tutorials, HOWTOs, etc.	32	-0,6	1,1
I test software	28	-0,6	0,9
I observe what the others do (inactive)	39	-0,6	1,0
I read questions & answers in forums	30	-0,8	1,0
I package software	25	-0,8	1,1
I translate texts (philosophy)	24	-0,9	1,0
I participate in political activities	23	-0,9	0,9
I answer questions in forums	29	-0,9	1,0
I coordinate projects	22	-1,0	1,1
I moderate mailing lists	22	-1,1	1,2
I administer websites	23	-1,2	1,1
I provide creative elements	23	-1,3	0,8

\* = Mean can range between -2 and 2. Values refer to following scale: -2 = not at all, -1 = seldom, 0 = sometimes, 1 = often, 2 = very often

Table 9: Activities within the FLOSS community

Importance of activities within the FLOSS community over time

Activity	N	Mean*	Std.dev.
I provide creative elements	21	0,2	1,0
I participate in political activities	21	0,0	1,0
I coordinate projects	20	0,0	1,0
I translate texts (philosophy)	22	-0,1	1,0
I answer questions in forums	25	-0,1	1,0
I package software	23	-0,1	1,0
I administer websites	23	-0,1	1,0
I observe what the others do (inactive)	34	-0,1	1,0
I moderate mailing lists	22	-0,2	1,0
I provide tutorials, HOWTOs, etc.	28	-0,3	0,9
I organise workshops etc.	23	-0,3	0,9
I document software	25	-0,4	1,0
I read questions & answers in forums	27	-0,4	0,9
I participate in discussions	29	-0,4	0,9
I translate software or documentation	26	-0,4	0,9
I convince people to migrate towards FLOSS	26	-0,4	0,9
I participate in technical workshops etc.	24	-0,5	0,9
I provide ideas for software projects	23	-0,5	0,9
I read bug-reports / release reports	27	-0,5	0,8
I test software	25	-0,6	0,8
I raise public awareness for FLOSS	25	-0,6	0,8
I write code / fix bugs / provide patches	32	-0,7	0,7

\* = Mean can range between -1 and 1. Values refer to following scale: -1 = decreased, 0 = not changed, 1 = increased

Table 10: Change of importance of activities within FLOSS community over time

### 4.3. Human capacity building

Participating in the FLOSS community is not limited to coding. As shown in Table 9, a wide variety of activities can be performed in FLOSS. As a consequence, the FLOSS community provides its members with an environment that enables them to improve more than only technical skills. We have asked the respondents to evaluate 31 different skills with regard to how much these skills have improved through their participation in the FLOSS community. These 31 skills were roughly differentiated into technical, managerial, legal, and general skills, plus two items representing “general awareness” of what is going on in software and the FLOSS scene. Table 11 shows that for Chinese FLOSS community members the community is mainly useful for improving technical and managerial skills while legal skills are reported to improve least. Again, the Chinese FLOSS communities differs considerably from other FLOSS communities, as in many other countries legal skills are reported to improve a lot.

Which of the following skills improved through your participation in the FLOSS community?

	N	Mean	Std.dev.
Technical skills improvement: Basic / introductory programming skills	54	2,4	1,1
Technical skills improvement: To re-use code written by others	49	2,4	1,2
Technical skills improvement: To write code in a way that it can be re-used	43	2,3	1,3
Technical skills improvement: To run and maintain software systems	41	2,3	1,4
Managerial skills improvement: To express your personal opinions	38	2,3	1,3
General skills improvement: To better understand English, especially technical discussion	46	2,2	1,4
Technical skills improvement: To design modular code	46	2,1	1,1
Managerial skills improvement: To clearly articulate an argument	35	2,1	1,3
Technical skills improvement: To become familiar with different programming languages	48	2,1	1,2
Managerial skills improvement: To clearly define and achieve targets	39	2,1	1,2
Technical skills improvement: To look for bugs	44	2,1	1,2
Managerial skills improvement: To plan work and stick to a work schedule	36	2,1	1,3
General skills improvement: To interact with other people	42	2,0	1,1
Technical skills improvement: To document code	43	2,0	1,2
Managerial skills improvement: To coordinate your own work with the work of others	37	1,9	1,2
Managerial skills improvement: To accept and to respond to criticism from others	35	1,9	1,3
Technical skills improvement: To fix bugs	39	1,8	1,3
Managerial skills improvement: To motivate people	34	1,8	1,3
Managerial skills improvement: To evaluate the work of others	36	1,8	1,1
Improvement of general awareness: To get an overview of the skills you need in the software professions	39	1,7	1,2
Improvement of general awareness: To get an overview of developments in software technology	43	1,7	1,1
Managerial skills improvement: To keep a community going	34	1,6	1,4
General skills improvement: To understand and work with people from different cultures	41	1,6	1,0
Managerial skills improvement: To settle conflicts within a group	34	1,6	1,2
Managerial skills improvement: To lead a project or a group of people	33	1,5	1,3
Technical skills improvement: To create new algorithms	42	1,5	1,1
Legal skills improvement: To understand licences	37	1,5	1,3
Legal skills improvement: To understand copyright law issues	34	1,3	1,2
Legal skills improvement: To understand the differences between copyrights, patents, and licences	35	1,3	1,2
Legal skills improvement: To understand patent law issues	35	1,1	1,2
Legal skills improvement: To improve your understanding of liability issues	36	1,1	1,3

\* = Mean can range between 0 and 4. Values refer to following scale: 0 = nothing, 1 = little, 2 = some, 3 = more, 4 = a lot

Table 11: Skills improvement through FLOSS

The question which skills – based on a limited set of items in order to avoid survey fatigue of the respondents – can better be learnt in the FLOSS community than in a computer science course at

university or at a firm (Table 12) revealed that writing code in a re-usable way, to define and achieve targets, and legal skills are the most FLOSS-specific skills. Basic programming skills and to lead a project or developer group are perceived as the least FLOSS-specific skills.

Which of the following skills can be better learnt within the FLOSS community as compared to a formal computer science course, e.g. at university or at a firm? - Developers' and employers view

Technical skills	Developers	Employers
To write code in a way that it can be re-used	81,3	73,1
To run and maintain complex software systems	54,7	69,2
To document code	50,7	46,2
Basic / introductory programming skills	34,7	57,7
<b>Managerial and teamwork skills</b>		
To clearly define and achieve targets	57,3	53,8
To coordinate your own work with the work of others	54,7	65,4
To express your personal opinions	45,3	30,8
To plan work and stick to a work schedule	41,3	46,2
To accept and to respond to criticism from others	37,3	30,8
To evaluate the work of others	36,0	42,3
To lead a project or a group of developers	29,3	53,8
<b>Legal skills</b>		
To develop an awareness of legal issues relating to software, such as copyright, patents, licensing, liability	56,0	76,9

Table 12: Skills better learnt in FLOSS than in a formal computer science course – developers' and employers' views compared

Interestingly, the view of developers on skills that can better be learnt informally in the FLOSS community than in formal courses complies very much with the view of employers on these skills, with the remarkable exception that employers consider those two skills that developers consider to be least FLOSS specific (basic programming skills and leadership skills) as skills that are typically better learnt within the FLOSS community (Table 12).

Table 13 illustrates how Chinese FLOSS community members evaluate the usefulness of different forms of learning. The mean values indicate that all these forms are considered to be useful ways of learning. Self-study (reading books) and contact to more experienced community members (“mentors”) is the most useful way to together with reading other developers' feedback and fixing bugs are valued very high. The least useful way of learning for Chinese developers – as for developers in other countries – is formal training.

How useful do you personally consider the following activities as ways of learning technical skills?

Ways of learning	N	Mean	Std.dev.	Never done (%)
Learning: Reading books or articles on programming	67	2,1	0,8	2,9
Learning: Guidance from mentors	60	2,1	0,7	4,8
Learning: Reading other developers' feedback to my patches / bug-reports/bug-fixes	57	2,1	0,7	10,9
Learning: Fix bugs	57	2,1	0,9	9,5
Learning: Reading source code of programs and patches	56	2,0	0,9	12,5
Learning: Checking programs	61	1,9	0,7	7,6
Learning: Participate in the discussions within the FLOSS community	50	1,8	0,8	21,9
Learning: Reading bug reports	60	1,8	0,7	10,4
Learning: Participate in workshops or congresses	66	1,7	0,7	2,9
Learning: participating in training courses	62	1,5	0,9	7,5

\* = Mean can range between 0 and 3. Values refer to following scale: 0 = not at all useful, 1 = slightly useful, 2 = useful, 3 = very useful

Table 13: Usefulness of different ways of learning within the FLOSS community

41% of the respondents consider the skills they learn in the FLOSS community as a core skill for their professional career, another 40% as a useful supplement, and 12% as an end in itself but unimportant for their professional career. 7% don't know how to evaluate the skills they learn in FLOSS with regard to their importance for their professional career.

The skills that are learnt within and from the FLOSS community must also be evaluated with regard to the knowledge people have about FLOSS when they join the community. As illustrated by the mean values in Table 14, the Chinese FLOSS community members' advance knowledge when they joined the community was comparably good with regard to the FLOSS philosophy and technical aspects, but low with regard to licenses work and collaboration.

How much did you already know about FLOSS before you joined the FLOSS community?

Fields of knowledge	N	Mean	Std.dev.
Known before joining FLOSS: Technical aspects of FLOSS (programming languages, projects, products)	72	1,3	0,7
Known before joining FLOSS: How work and cooperation in FLOSS is organised	73	0,8	0,7
Known before joining FLOSS: The philosophy of free software or open source software	73	1,2	0,7
Known before joining FLOSS: The difference between FLOSS licences and proprietary licences	73	1,0	0,7

\* = Mean can range between 0 and 3. Values refer to following scale: 0 = nothing, 1 = little, 2 = quite a lot, 3 = really a lot

Table 14: Knowledge about FLOSS before joining the community

Regarding the value of FLOSS skills as compared to formal degrees, 74% of the developers think that proven participation in the FLOSS community can compensate for the lack of formal degrees, like certificates or university degrees. Chinese employers have a similar view on this: 12% say that a formal qualification is better than practical FLOSS experience, 50% say that both qualifications are equal, and 35% say that the formal qualification is worse than practical FLOSS experience (3% don't know).<sup>4</sup> 81% of the employers also say that FLOSS experience adds value to a formal computer science qualification.

When two people with exactly the same level of formal qualifications but different experiences are

<sup>4</sup> The question the developers had to answer was: "For a prospective or current employee: How do you consider the relative merit of a university degree or other formal computer science qualification as compared to practical experience as a developer in the free software / open source software community?"

imagined, Person A with proven experience developing an important component of a proprietary software product and Person B with proven experience developing an important component of a FLOSS software product of equivalent complexity, 25% of the FLOSS community members think that Person B would be in a better position to get a job<sup>5</sup>, only 27% see Person A advantaged. 40% of the respondents think that there would be no difference between Person A and Person B, 8% did not know how to decide on this question. Interestingly, most of the employers (58%) say they would prefer Person B, 23% say that the differences between Person A and Person B would not influence their preference, and 12% say they would prefer Person A (7% do not know). Chinese HEIs also show a comparably strong preference for people with FLOSS experience: 61% say they would prefer Person B and only 8% would prefer Person A.

While the FLOSS community members' view is probably determined by their strong identification with FLOSS as a better solution to software problems than proprietary software, the employers' view<sup>6</sup> is probably determined by the fact that FLOSS is important or even very important for two thirds of the sample.<sup>7</sup>

The question if the FLOSS community members think that people like person A, with proprietary development credentials, are paid the same by employers as people like person B, with FLOSS development credentials, was apparently hard to answer, as 33% replied that they don't know if this is the case. 21% of the respondents assume that both persons are paid the same. One third of the respondents thinks that people like Person A would be paid more, while only 14% think that people like Person B would be paid more.

71% of the employers replied that they would pay persons with FLOSS experience more than persons with a formal computer science qualification. 12% pay those with a formal qualification more and 23% would make no difference in paying (8% don't know).

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5 It was explained to the respondents that "job" refers not just to permanent employment, but also any other paid work including freelance or consultancy.

6 Hypotheses explaining the HEIs' view are discussed in D31.

7 Though statistically not significant it may be worth to mention here that 62% of those employers for whom FLOSS is not or only hardly important say that their preference would not be affected by the differences between Person A and Person B, while 15%, would prefer Person A and another 15% would prefer Person B (7% don't know).

## 5. Conclusions

FLOSSWORLD has proven that a successful collaboration between European and Chinese research partners is possible and reveals valuable results. What has been found out about the Chinese FLOSS community implies that this community differs considerably in many respects from FLOSS communities in other countries. The Chinese community is significantly younger than other communities, with regard to the average age of its members as well as with regard to the time that it exists as a large community. The activity profile of Chinese developers also differs from other communities, as it shows a stronger relation to direct FLOSS production and a weaker relation to political and legal activities. The community members have a clear and – in most respects – realistic understanding of the value of the skills they learn within and through the FLOSS community. By and large, the view of the community members goes well in line with employers' views. In this regard the Chinese FLOSS community resembles the communities in other countries.

Employers as well as HEIs in China pay much attention to FLOSS, especially employers show a strong preference for FLOSS skills. However, the reservation must be made that the FLOSSWORLD employers sample is biased towards companies for which FLOSS is important.

# Annex A1: Questionnaire for Developer Survey

organisation :

name :

position :

email :

country :

**1 / 53. What is your gender?**

man

woman

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**2 / 53. How old are you?**

---

**3 / 53. What is your nationality?**

---

**4 / 53. In which country do you live?**

---

**5 / 53. When did you join the FLOSS community?**

---

**6 / 53. What is the highest level of education you have completed?**

:

:

:

:

- 
- 
- 

**Other:**

Please specify

---

---

**7 / 53. From which age onwards did you use a computer?**

---

 years old

---

**8 / 53. At what age did you have your first computer of your own?**

---

 years old

I do not own a computer

---

**9 / 53. What is your current employment status?**

- I do not work at present because I am unemployed
  - I do not work at present because I am a stay-home spouse
  - I do not work at present because I am student
  - I am employed
  - I am self-employed / free lancer / contractor
  - I am retired
- 

**9a / 53. If you are employed or self-employed, what is your profession?**

- Software engineer
- Programmer
- System Administrator
- Network Administrator
- Database Administrator
- Internet / Web designer
- Designer/Illustrator/Graphic Artist
- Researcher
- Consultant

- Executive (Manager, Department Heads)
- University staff

Other profession ? Please specify:

---

**10 / 53. Approximately, what is your monthly gross income (i.e. total income per month, including benefits, before taxes)? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

---

**11 / 53. Do you earn money from FLOSS, either directly or indirectly? Please check every item that applies to you.**

- No, I don't get any monetary remuneration for my FLOSS activities
- Yes, I am paid directly for developing FLOSS
- Yes, I am paid directly for supporting FLOSS
- Yes, I am paid directly for administrating FLOSS
- Yes, I am paid directly for other FLOSS activities
- Yes, I am paid indirectly, - I got my job because of my FLOSS experience
- Yes, I am paid indirectly, - I develop FLOSS at work although my job description does not include FLOSS development (i.e. my employer does not know that I develop FLOSS)
- Yes, I am paid indirectly, - I also develop FLOSS at work (my employer knows that I develop FLOSS at work)

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Part 2: Your role in the FLOSS community

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**12 / 53. Remembering the time you joined the Free/Libre and Open Source Software community, what was the reason for this? (Maximal four answers)**

- to participate in new forms of cooperation

- to learn and develop new skills
- to share my knowledge and skills
- to participate in the OS/FS scene
- to improve my job opportunities
- to improve OS/FS products of other developers
- to get a reputation in the OS/FS developers' scene
- to distribute not marketable software
- to get help in realizing a good idea for a software product
- to solve a problem that could not be done by proprietary software
- to limit the power of large software companies
- because I think that software should not be a proprietary product
- to make money
- I do not know

**13 / 53. How would you characterise your participation in the Free / Libre / Open Source Software (FLOSS) community? Please indicate for each item to which degree it applies to you. Please indicate also how the importance of these activities has changed for you since you joined the FLOSS community. Leave out the activities you have never performed!**

activity	scale	changing importance
I observe what the others do, but do not actively participate		
I participate in discussions		
I read questions & answers in forums		
I answer questions in forums		
I provide documents to help people with their FLOSS problems (e.g. tutorials, HOWTOs)		
I read bug-reports / release reports		
I test software		
I write code / fix bugs / provide patches		
I provide ideas for new features for a software project		
I package software		

I translate software or documentation (internationalisation / localisation)	<input type="checkbox"/>	<input type="checkbox"/>
I translate texts about the idea / philosophy of FLOSS	<input type="checkbox"/>	<input type="checkbox"/>
I provide graphics, sounds, or other creative elements for a project or Website	<input type="checkbox"/>	<input type="checkbox"/>
I document software	<input type="checkbox"/>	<input type="checkbox"/>
I have a coordinating function for a project (development)	<input type="checkbox"/>	<input type="checkbox"/>
I help organising workshops, congresses, and other meetings	<input type="checkbox"/>	<input type="checkbox"/>
I participate in technical workshops, congresses, and other meetings	<input type="checkbox"/>	<input type="checkbox"/>
I participate in political activities (e.g. against software patents)	<input type="checkbox"/>	<input type="checkbox"/>
I try to raise public awareness for FLOSS	<input type="checkbox"/>	<input type="checkbox"/>
I try to convince people to migrate towards FLOSS	<input type="checkbox"/>	<input type="checkbox"/>
I administer websites for FLOSS activities	<input type="checkbox"/>	<input type="checkbox"/>
I moderate mailing lists for FLOSS activities	<input type="checkbox"/>	<input type="checkbox"/>
Other, please specify	<input type="text"/>	

**13a / 53 Are you a member of local / national FLOSS groups (e.g. LUGs, voluntary associations, etc.)**

yes

No

if yes, please list the groups:

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**14 / 53. What licences do you use for the FLOSS software you write? Please answer separately for situations in which you can choose the license yourself and situations in which you have to use a license that is prescribed by the project you contribute to.**

<b>a) When I choose the licence myself, I choose:</b>	
strong reciprocal / copyleft licences: LGPL, GPL, etc	<input type="text"/>
weak copyleft licences: CDDL, Mozilla license	<input type="text"/>
permissive ("BSD"-like) licenses: BSD, MIT, Apache, Perl Artistic, Zope etc.	<input type="text"/>
<b>b) When I contribute to projects which have chosen a licence, :those licences are:</b>	
strong reciprocal / copyleft licences: LGPL, GPL, etc	<input type="text"/>
weak copyleft licences: CDDL, Mozilla license	<input type="text"/>
permissive ("BSD"-like) licenses: BSD, MIT, Apache, Perl Artistic, Zope etc.	<input type="text"/>

**15 / 53. What are the roles of an open source/free software license? Check all that apply.**

- To prevent others from appropriating the software we've created
- To allow us to create OS/FS without scaring commercial firms from using it
- To force credit to be given to programmers' work
- To promote the launching of other OS/FS programs
- To protect the freedom that software users should have

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Part 3: Learning in the FLOSS community

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**16 / 53. Which of the following skills improved through your participation in the FLOSS community? Please indicate for each item whether you learned nothing, little, some, more or a**

**lot. If you don't know how to answer an item or if you have no opinion on it, tick "not applicable".**

<b>Technical skills:</b>	
Basic / introductory programming skills	<input type="checkbox"/>
To write code in a way that it can be re-used	<input type="checkbox"/>
To re-use code written by others	<input type="checkbox"/>
To document code	<input type="checkbox"/>
To create new algorithms	<input type="checkbox"/>
To become familiar with different programming languages	<input type="checkbox"/>
To design modular code	<input type="checkbox"/>
To run and maintain software systems	<input type="checkbox"/>
To look for bugs	<input type="checkbox"/>
To fix bugs	<input type="checkbox"/>
<b>Managerial and teamwork skills:</b>	
To clearly define and achieve targets	<input type="checkbox"/>
To plan work and stick to a work schedule	<input type="checkbox"/>
To evaluate the work of others	<input type="checkbox"/>
To coordinate your own work with the work of others	<input type="checkbox"/>
To lead a project or a group of people	<input type="checkbox"/>
To express your personal opinions	<input type="checkbox"/>
To clearly articulate an argument	<input type="checkbox"/>
To accept and to respond to criticism from others	<input type="checkbox"/>
To settle conflicts within a group	<input type="checkbox"/>
To motivate people	<input type="checkbox"/>
To keep a community going	<input type="checkbox"/>
<b>Legal skills:</b>	
To understand copyright law issues	<input type="checkbox"/>

To understand patent law issues	
To understand licences	
To understand the differences between copyrights, patents, and licences	
To improve your understanding of liability issues	
<b>General skills:</b>	
To better understand English, especially technical discussion	
To interact with other people	
To understand and work with people from different cultures	
<b>General awareness of ongoing developments:</b>	
To get an overview of developments in software technology	
To get an overview of the skills you need in the software professions	

**17 / 53. In your opinion, which of the following skills can be better learnt within the FLOSS community as compared to a formal computer science course, e.g. at university or at a firm?**

**Technical skills**

- To write code in a way that it can be re-used
- To document code
- To run and maintain complex software systems
- Basic / introductory programming skills

**Managerial and teamwork skills**

- To clearly define and achieve targets
- To plan work and stick to a work schedule
- To evaluate the work of others
- To coordinate your own work with the work of others
- To lead a project or a group of developers
- To express your personal opinions
- To accept and to respond to criticism from others

**Legal skills**

- To develop an awareness of legal issues relating to software, such as copyright, patents, licensing, liability

**18 / 53. How useful do you personally consider the following activities as ways of learning the technical skills referred to in the previous questions? If you don't know or don't want to answer, leave it blank**

Learning by participating in training courses	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Participate in workshops or congresses	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Participate in the discussions within the FLOSS community	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Reading bug reports	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Fix bugs	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Reading source code of programs and patches	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Checking programs	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this

Guidance from mentors	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Reading other developers' feedback to my patches / bug-reports/bug-fixes	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Reading books or articles on programming	<input type="radio"/> not at all useful <input type="radio"/> slightly useful <input type="radio"/> useful <input type="radio"/> very useful <input type="radio"/> I have never done this
Other self-study, - please specify: <div style="border: 1px solid black; height: 150px; width: 100%; margin-top: 10px;"></div>	

**19 / 53. What do you think about the skills you develop in the FLOSS community? (Note: in the items below, ?professional career? refers to your existing career or the professional career you plan to have.)**

- they provide a core skill for my professional career
- they provide a useful supplement, but they are not a core skill of my professional career
- they are an end in itself (they provide fun, contacts to others, help to use my time in a reasonable way etc.) but play no important role for my professional career
- I don't know

**20 / 53. How much did you already know about FLOSS before you joined the FLOSS community?**

Technical aspects of FLOSS (programming languages, projects, products)	<input type="radio"/> nothing <input type="radio"/> a little <input type="radio"/> quite a lot <input type="radio"/> really a lot
How work and cooperation in FLOSS is organised	<input type="radio"/> nothing <input type="radio"/> a little <input type="radio"/> quite a lot <input type="radio"/> really a lot
The philosophy of free software or open source software	<input type="radio"/> nothing <input type="radio"/> a little <input type="radio"/> quite a lot <input type="radio"/> really a lot
The difference between FLOSS licences and proprietary licences	<input type="radio"/> nothing <input type="radio"/> a little <input type="radio"/> quite a lot <input type="radio"/> really a lot

**21 / 53. In the last week: How many hours did you spend on experimenting with coding programs, reading books, articles, documentation, mailing lists, and other activities that you think develop your skills in relation to FLOSS? If you are a freelancer on FLOSS, please separate if possible the time you spent on FLOSS-related activity privately (e.g. at home) and the time you spent on FLOSS-related activity in your professional environment (e.g. at work).**

privately:  hours

professionally:  hours

**22 / 53. Do you think that proven participation in the FLOSS community can compensate for the lack of formal degrees, like certificates or university degrees?**

- yes  
 no

**23 / 53. Imagine two people with exactly the same level of formal qualifications but different experiences: Person A has proven experience developing an important component of a proprietary software product. Person B has proven experience developing an important component of an FLOSS software product of equivalent complexity. Who do you think is in a better position to get a job? Note: "job" refers not just to permanent employment, but also any other paid work including freelance or consultancy.**

- Person A, with proprietary development credentials, is advantaged  
 Person B, with FLOSS development credentials, is advantaged

- They are equally likely to get a job
  - I don't know
- 

**24 / 53. Do you think that people like person A, with proprietary development credentials, are paid the same by employers as people like person B, with FLOSS development credentials?**

- Yes
  - No, Person A (proprietary) gets paid more
  - No, Person B (FLOSS developer) gets paid more
  - I don't know
- 

**24a / 53. If your answer is 'NO': What do you think the salary difference per month is? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

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**25 / 53. Did you respond to the previous question based on your own experience in getting a job?**

- Yes
  - No
- 

Part 4: Contributing to FLOSS projects

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**26 / 53. In the last week: How many hours did you spend on contributing to FLOSS projects, in any way - including coding, writing a translation, documentation, FLOSS-related website, FLOSS-related email, or any other FLOSS-related activity that you perform of which you make the results available to others?**

--

---

**27 / 53. What is the name of the FLOSS project you contributed the most in the past month**

--

---

**What is the URL of this project?**

--

---

---

**28 / 53. How much time did you spend in a typical week contributing to this project?**

hours

---

---

**29 / 53. Why did you join this project?**

<input type="checkbox"/>	Because I got somehow involved, after being a user of this project
<input type="checkbox"/>	Because I had a friend who was a developer of the project
<input type="checkbox"/>	Because I chose it as the most appropriate for my skills
<input type="checkbox"/>	Because I chose it as the most appropriate for my interests
<input type="checkbox"/>	Because I was hired to work in it
<input type="checkbox"/>	Because I worked in similar projects / a similar project before
<input type="checkbox"/>	Because I wanted to learn something new (I never worked in similar projects before)

---

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**30 / 53. In how many FLOSS projects are you actively involved at present?**

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**31 / 53. Approximately, in how many FLOSS projects did you participate since you joined the community?**

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**32 / 53. Approximately, how many FLOSS projects did you lead since you joined the community?**

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**33 / 53. Approximately, with how many Free / Libre / Open Source Software participants do you have regular contact on an individual basis (e.g. by email or telephone)? Note: "Free / Libre / Open Source Software participant" means every person who is somehow actively involved in the community.**

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**34 / 53. Do you work more with the local community in the country you live in or do you work more with international developers**

More with the local community in my country

- More with international developers
  - I don't know
- 

**35 / 53. FOR EMPLOYED AND SELF-EMPLOYED (INCL. FREELANCERS AND CONTRACTORS) ONLY: Do you work on Free / Libre and Open Source projects more within the firm ore with independent developers?**

- More within the firm
  - More with independent developers
  - I don't know
- 

**36 / 53. Do you usually choose projects and tasks yourself or are you usually delegated to projects and tasks?**

- I choose them myself
  - I am delegated
  - I don't know
- 

#### **Part 5: Women in the Free/Libre/Open Source Software Community**

**37 / 53. Do you normally use an online identity that indicates whether you are male or female?**

- Yes
  - No
- 

**38 / 53. Among people with whom you collaborate and interact regularly and which you know well in the FLOSS community, how many women and how many men are there (including yourself)?**

- men (number)
  - women (number)
  - People whose gender I do not know (number)
- 

**39 / 53. In your opinion, for whom is it easier to receive acknowledgement for work in the FLOSS community - men or women?**

- Men
  - Women
  - Nobody cares whether you are a man or a woman
  - I do not know
- 

**40 / 53. Regarding the FLOSS community as a whole, do you think that it would be better if**

**there were more female participants?**

- Yes
  - No
  - I do not know
- 

**41 / 53. Would you personally enjoy it if you could collaborate with more women in your FLOSS activities?**

- Yes
  - No
  - I do not know
- 

**42 / 53. What do you think the differences in the FLOSS community between men and women are**

Women are not as interested in technology as men	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Women ask more questions than men	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Women are more interested in the documentation (writing guidelines, helps, user guides) than men	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Men spend more time on research (about coding details, bugs, code improvements) than women	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Men work on their own, women prefer to work in teams	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know

Women work more effectively than men	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
In online contexts women often get more attention as a women rather than a FLOSS participant	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
In offline contexts women often get more attention as a women rather than a FLOSS participant	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Women have less time than men to participate in FLOSS	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Women and men contribute differently to the FLOSS community	<input type="radio"/> very true <input type="radio"/> mainly true <input type="radio"/> mainly false <input type="radio"/> completely false <input type="radio"/> I do not know
Other differences - please specify	

**43 / 53. Regarding the FLOSS community as a whole, have you ever observed or experienced discriminatory behaviour against women?**

- Yes, I have observed discriminatory behaviour
- Yes, I have experienced discriminatory behaviour
- no

**44 / 53. Regarding your collaboration with others during your FLOSS activities, have you**

**ever observed or experienced discriminatory behaviour against women?**

- Yes, I have observed discriminatory behaviour
  - Yes, I have experienced discriminatory behaviour
  - no
- 

**45 / 53. Due to your household work: Do you have problems at home to dedicate time to your open source / free software activities?**

- never
  - rarely
  - sometimes
  - often
  - very often
  - I do not know
- 

**46 / 53. Approximately, how many hours of spare time do you have per week?**

**47 / 53. How much of this spare time do you spend in front of a computer - in hours per week?**

number of spare time hours spent on the Internet

number of spare time hours spent for FLOSS activities (coding, organising meetings, etc.)

number of spare time hours spent for other computing activities (gaming, writing personal emails, etc.)

---

**48 / 53. Did it happen that other FLOSS community members asked you to meet for social events outside the FLOSS community?**

- Yes, quite often
  - Yes, but not very often
  - Never
- 

**49 / 53. Have you ever been asked for a date by a FLOSS participant?**

- Yes, quite often
- Yes, seldom
- Never

---

---

**49a / 53. Would you be interested in getting to know FLOSS participants for activities unrelated to the FLOSS community?**

- Yes
  - No
  - I don't know
- 

**Part 6: Contact**

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---

**50 / 53. What is your SF / BerliOS / Savannah username?**

<input type="text"/>	SF username
<input type="text"/>	BerliOS username
<input type="text"/>	Savannah username

---

---

**51 / 53. Would you allow us to contact you in case we have further questions?**

- yes
  - no
- 

**52 / 53. Do you want to receive notification of the survey results by e-mail?**

- yes
  - no
- 
- 

**53 / 53. If you answered "Yes" to question 51 or 52, please could you provide us with your email address?**

## Annex A2: FLOSSWORLD Guidelines for the Developer Survey

The following guideline provides a stepwise instruction for the preparation and execution of the developer survey. It refers to the analytical framework paper and to the revised version of the respective global questionnaire.

1. **Check the revised global questionnaire** carefully with regard to understandability of the wording, order of the questions, and completeness of aspects that are surveyed again. Inform MERIT and URJC about changes you want to make and errors.
2. **Localise the questionnaire.** As described in the analytical framework paper, localisation means to translate the complete questionnaire into your language, to introduce local terms to ensure international comparability (e.g. using local currencies in the questionnaire and localised scales when asking about income or expenditure levels, but do also localise the FLOSS terminology that we use (e.g. FLOSS, F/OSS, Libre Software, Free Software, Open Source Software, or any other term that you think would be best to use in the region you survey) and the educational degrees and professions) and to add questions that are unique to each country's context. **At the end of this text a separate short list is provided for the questionnaire of the question numbers and points that MUST be localised by ALL FLOSSWORLD PARTNERS.**
3. **Prepare the circulation of the questionnaire** (start in parallel to localisation): Figure out how you want the questionnaire to be circulated. For FLOSS community participants we expect to use only the online version. Therefore you must as soon as possible identify which organisations (developer forums, user groups, mailing lists, etc.) you want to use in order to distribute the questionnaire. Get in touch with them, explain the purpose of the survey, and find out whether they are willing to distribute the questionnaire. Make a list of all these organisations with contact details (i.e. name of contact person, email address, and any other information that is relevant for contacting this person). If you find out that a different way of circulating the questionnaire (i.e. by letter or fax or face to face during user group meetings or conferences) would be better, you have to collect contact information (telephone or fax numbers or locations / dates for possible face to face interactions) of the persons you want to survey (not only of persons / organisations you want to distribute the questionnaire). These personalised address lists must be sent to MERIT, too. *Note: The advantage of an online version is that it can be distributed within your*

*local FLOSS community independently from you – once we have posted it to the multipliers you specified, it will be further distributed within the community in a self-organised way. If you rely on other channels for distributing the questionnaire you will have to organise the distribution of the questionnaire yourself.*

4. **Create different versions of an introductory email or letter/fax** in order to announce the survey and explain its purpose to the multipliers or persons that are intended to distribute the questionnaire or to be surveyed. This will be done by MERIT and coordinated with you. *You will have to localise the introductory letter and send it back to MERIT.*
5. **Send the localised questionnaire to MERIT.** The localised questionnaires will be converted into on-line form and hosted on a web server at UM (in cases where connectivity is an issue, questionnaires can be hosted on local web servers arranged by the international partners). The on-line questionnaires will be accessible in two ways: addressed access, where unique web addresses will be generated for each pre-selected respondent with identifying information pre-recorded; and open access, where respondents may be asked to provide contact information. *The developer survey is intended to use open access, but that's no must and depends on your and your respondents' preferences<sup>8</sup> - for instance, if you compile lists of user group or developer group members, these people could receive the online questionnaire individually through addressed access, while others receive the open access version.* If you want to use letters or faxes, MERIT will create a database that you can access online and in which you can fill in the responses you get.
6. **Pre-test preparation and execution:** Select a limited number of developers (usually, 5-10 respondents suffice for this purpose), for instance members of a specific user group, and let them fill in the questionnaire. If possible, you should try to talk to a couple of the pre-test respondents directly about the questionnaire, this provides you with much deeper insights in how the questionnaire works and how the targeted group of respondents might react than indirect communication. For the pre-test we will need some additional questions on the items listed below. These questions must also be sent to MERIT in order to include them in the pre-test version of the questionnaire. Answers to the pretest must be treated as normal responses and therefore be submitted to MERIT, if appropriate they will get integrated in the final survey dataset. Extra items the respondents should comment on in the pre-test are:

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8 See the analytical framework.

- understandability of the questions,
- questions that appear difficult or impossible to answer,
- questions they did not want to answer,
- questions (or terms) they find unclear or annoying,
- the time they needed to complete the questionnaire (in an online version we can monitor this ourselves) and whether or not they find it too time-consuming (ask for the concrete question at which they got the feeling the questionnaire is too long),
- their general impression of the survey and the questionnaire
- further comments

7. **Analysis of the pre-test:** Particular attention will be given to any local differences in understanding or answering the localised versions of the questionnaire.

8. **Revision of the questionnaire** (if necessary), including localisation of the new elements and revision of the online version.

9. **Distribution of the final version of the questionnaire together with the introductory letter** to either the multipliers (the Internet forums, user groups, mailing lists etc.) or to the persons in the address lists that have been collected during step 3. This will be done by MERIT. Depending on which way of distributing the questionnaire you chose the questionnaire will either be sent by email to multipliers, providing open access to the online questionnaire for the respondents, or to the persons that you have specified in personalised address lists, providing addressed access to the online questionnaire (a combination of both is also possible). In case of addressed access, MERIT will attribute each personal record with a personal password that will be used in the introductory email to allow respondents to access their personal version of the online questionnaire (i.e. nobody else will be able to see what they reply). If you prefer to distribute the questionnaire by fax or by letter these paper versions must be distributed by you and the completed questionnaires must be returned to you, too. In case of letter questionnaires we recommend strongly to use pre-paid response envelopes with your address, as this eases the respondents to reply and raises the response rate.

#### 10. **Data collection:**

- For online survey with open access to the online questionnaire: Respondents will fill out the questionnaires directly on the website, the responses will automatically be transferred

into a password-protected database that can be accessed by you online.

- For online survey with addressed access to the online questionnaire: Respondents will access the online questionnaire and authenticate by entering their personal password, then they will complete the questionnaire. The responses will automatically be transferred into a password-protected database that can be accessed by you online.
- For letter or fax survey: The respondents will send you back the completed questionnaires. You will have to access the password-protected database that is provided online by MERIT and to enter the responses manually in this database.
- For face to face interviews / meetings: Either use a computer to have the interviewee fill out the questionnaire online, or fill out a paper version of the questionnaire which you will then provide in electronic form to MERIT as with the letter survey described above.

**11.Shortlist of question numbers and points in the questionnaire that must be localised by all local partners:**

- FLOSS terminology (i.e. FLOSS, F/OSS, Open Source Software, etc.)
- Question 6: educational degrees
- Question 9a: professions
- Question 10: currency
- Question 22a: currency
- Question 25: name of main FLOSS project
- Question 32: if you think that language barriers are important we might have to include an extra question on this here
- Question 38: If you know or have hints that there are a lot of women in in the FLOSS community of your country we have to change or drop this question.

- Question 39: If you know or have hints that there are a lot of women in in the FLOSS community of your country we have to change or drop this question.
- Question 41: Maybe nothing for the questionnaire itself but something we should keep in mind while interpreting the results: There may be regional differences in what is perceived as discriminatory behaviour.
- Question 42: Maybe nothing for the questionnaire itself but something we should keep in mind while interpreting the results: There may be regional differences in what is perceived as discriminatory behaviour.

Question 43: The hypothesis behind this question is (as you probably assumed already) that women are burdened more with household and family than men and therefore behave different in the community. If for your country the division of household and family work in the family deviates from the classical "Western-European" way (i.e. women do the lion share of this work) you should let us know.

## **Annex A3: Questionnaire for Employers**

**How many people (including yourself) work in your company?**

1-5

6-10

11-30

31-50

51-100

101-250

501-1000

more than 1000

---

**By and large: Do you know free software / open source software and its differences compared to proprietary software? (Note: We do not mean expert knowledge here, but basic knowledge on open source software and its main differences compared to proprietary software).**

yes

no

---

**1 / 10. Do you use or develop free software / open source software in your company?**

no

yes

I'm not sure

I don't know

---

**2 / 10. Do you know whether there are employees in your company who have experience in the field of free software / open source software?**

yes

no

---

**2a / 10. What is the share of those with free software / open source software experience in your company?**

1-10%

11-20%

21-30%

31-40%

41-50%

51-60%

61-70%

71-80%

81-90%

91-100%

I don't know

---

**3 / 10. Do you ask job applicants about their experience in the field of free software / open source software?**

yes

no

---

**4 / 10. Do you ask directly about experience in the field of free software / open source software in job advertisements?**

yes

no

---

**5 / 10. Are there positions in your company that require experience in free software / open source software?**

yes

no

---

**5a / 10. Are these positions usually leadership positions?**

yes

no

---

**6 / 10. For a prospective or current employee: How do you consider the relative merit of a university degree or other formal computer science qualification as compared to practical experience as a developer in the free software / open source software community?**

the formal qualification is better

the formal qualification is worse

the formal qualification is equal

I don't know

---

**7 / 10. In your opinion, which of the following skills can be better learnt within the free**

**software / open source software community as compared to a formal computer science course, e. g. at university or at firm?**

**Technical skills**

Technical skills better learnt in FLOSS: to write code in a way that it can be re-used

Technical skills better learnt in FLOSS: to document code

Technical skills better learnt in FLOSS: to run and maintain complex software systems

Technical skills better learnt in FLOSS: basic / introductory programming skills

**Managerial and teamwork skills**

Managerial skills better learnt in FLOSS: to clearly define and achieve targets

Managerial skills better learnt in FLOSS: to plan work and stick to a work schedule

Managerial skills better learnt in FLOSS: to evaluate the work of others

Managerial skills better learnt in FLOSS: to coordinate your own work with the work of others

Managerial skills better learnt in FLOSS: to lead a project or a group of developers

Managerial skills better learnt in FLOSS: to express personal opinions

Managerial skills better learnt in FLOSS: to accept and to respond to criticism from others

**Legal skills**

Legal skills better learnt in FLOSS: to develop an awareness of legal issues relating to software, such as copyright, patents, licensing, liability

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**8 / 10. If a prospective employee has a formal computer science qualification, do you think that experience in the free software / open source software community (i.e. experience in developing, supporting, or using Open Source / Free Software) adds value?**

- yes
  - no
  - I don't know
- 

**8a / 10. Do you offer prospective employees with free software / open source software development experience but no formal degree different pay than those with formal qualifications such as a university computer sciences degree but no practical experience?**

- No, they earn the same
  - Yes, those with formal degrees but no practical experience get paid more
  - Yes, employees with free software / open source software experience but no formal degree get paid more
  - I don't know
- 

**9 / 10. Suppose you were to face a choice between two prospective employees (person A and person B) with exactly the same level of formal qualifications but different experiences: Person A has proven experience developing an important component of a proprietary software product, as an employee of a proprietary software company. Person B has proven experience developing an important component of a free software / open source software product of equivalent complexity, as an independent participant of the developer community. Would you be more likely to hire person A or person B?**

- Person A (with proprietary software experience)
  - Person B (with free software / open source software experience)
  - These different experiences would not influence my preference
  - I don't know
- 

**10 / 10. How do you assess the role of free software / open source software within your organisation (in any form - as a software user, developer, or vendor)?**

- very important
  - important
  - hardly important
  - not important at all
- 

**1 / 3. Do you know whether there are employees in your company who have experiences in the field of free software / open source software?**

- yes
  - no
- 

**1a / 3. What is the share of those with free software / open source software experiences in your company?**

- 1-10%
  - 11-20%
  - 21-30%
  - 31-40%
  - 41-50%
  - 51-60%
  - 61-70%
  - 71-80%
  - 81-90%
  - 91-100%
  - I don't know
- 

**2 / 3. Do you ask job applicants about their experiences in the field of free software / open source software**

- yes
  - no
-

**2a / 3. Do you usually employ developers with experiences in the field of free software / open source software on leadership positions?**

- yes
  - no
- 

**2b / 3. Do you think that it will become useful for your company in future to ask job applicants for experiences in the field of free software / open source software?**

- yes
  - no
  - I don't know
- 

**3 / 3. Would you offer prospective employees with free software / open source software development experience but no formal degree different pay than those with formal qualifications such as a university computer sciences degree but no practical experience?**

- No, they earn the same
  - Yes, those with formal degrees but no practical experience get paid more
  - Yes, employees with free software / open source software experience but no formal degree get paid more
  - I don't know
- 

**3a / 3. How much (EURO or other currency per month) would you pay more? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

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## **Annex A4: Guidelines for the localisation of the Employers Questionnaire**

### **FLOSSWORLD Guidelines for the Employers Survey**

The following guideline provides a stepwise instruction for the preparation and execution of the employers survey. It refers to the analytical framework paper and to the revised version of the respective global questionnaire.

1. **Check the revised global questionnaire** carefully with regard to understandability of the wording, order of the questions, and completeness of aspects that are surveyed again. Inform MERIT about changes you want to make and errors.
2. **Localise the questionnaire.** As described in the analytical framework paper, localisation means to translate the complete questionnaire into your language, to introduce local terms to ensure international comparability (e.g. using local currencies in the questionnaire and localised scales when asking about income or expenditure levels, but do also localise the FLOSS terminology that we use (e.g. FLOSS, F/OSS, Libre Software, Free Software, Open Source Software, or any other term that you think would be best to use in the region you survey) and the educational degrees and professions) and to add questions that are unique to each country's context. **At the end of this text a separate short list is provided for the questionnaire of the question numbers and points that MUST be localised by ALL FLOSSWORLD PARTNERS.**
3. **Prepare the circulation of the questionnaire** (start in parallel to localisation): Figure out how you want the questionnaire to be circulated, this may be dependent on the availability of contact information for companies in your country. You can either use databases that contain such information, search the Internet, contact industry or employer associations, use address books, yellow pages, etc. At any rate it would be good if you have a name of a person in the companies you want to survey who is able to answer our questions (anyone who is responsible for hiring people for IT functions, i.e. usually HR or IT managers, in small companies maybe the CEO) and to whom we can send the questionnaire. Our experience in Europe is that eliciting such information through phone calls is an extremely hard and time-consuming business. Nevertheless, having a personal contact usually helps considerably to raise the response rate, and you can explain the purpose of the survey and ask for the preferences of the respondents regarding the kind of questionnaire (online, letter, fax). Make as soon as possible a list of all the

organisations you want to contact, together with contact information (name of the company, name of the contact person, email address(es), and any other information that is relevant for contacting this organisation) and information about their level (local-regional-central, association of government organisations, etc. - whatever you find useful) and the way how they should be contacted (email, letter, fax, phone, maybe even face to face). Send all these information to MERIT. If you find out that circulating the questionnaire by letter or fax or face to face would be better, you have to collect contact information (telephone or fax numbers or locations / dates for possible face to face interactions) of the persons you want to survey. These lists must be sent to MERIT, too. *Note: The advantage of an online version is that it can be very easily distributed and responded. If you rely on other channels for distributing the questionnaire (i.e. telephone, fax, face to face) you will have to organise the distribution of the questionnaire yourself.*

4. **Create different versions of an introductory email or letter/fax** in order to announce the survey and explain its purpose to the companies or, if applicable, contact persons in the companies. This will be done by MERIT and coordinated with you. *You will have to localise the introductory letter and send it back to MERIT.*
5. **Send the localised questionnaire to MERIT.** The localised questionnaires will be converted into on-line form and hosted on a web server at UM (in cases where connectivity is an issue, questionnaires can be hosted on local web servers arranged by the international partners). The on-line questionnaires will be accessible in two ways: addressed access, where unique web addresses will be generated for each pre-selected respondent with identifying information pre-recorded; and open access, where respondents may be asked to provide contact information. *The developer survey is intended to combine addressed and open access, because you might see a possibility to get the questionnaire and the introductory letter circulated in a self-organised way within industry or employers associations in your country.* If you want to use letters or faxes, MERIT will create a database that you can access online and in which you can fill in the responses you get.
6. **Pre-test preparation and execution:** Select a limited number of companies (usually, 5 respondents suffice for this purpose), for instance Hr or IT managers of companies of different size in the area where you live, and let them fill in the questionnaire. If possible, you should try to talk to a couple of the pre-test respondents directly about the questionnaire, this provides you with much deeper insights in how the questionnaire works and how the targeted group of

respondents might react than indirect communication. For the pre-test we will need some additional questions on the items listed below. These questions must also be sent to MERIT in order to include them in the pre-test version of the questionnaire. Answers to the pretest must be treated as normal responses and therefore be submitted to MERIT, if appropriate they will get integrated in the final survey dataset. Extra items the respondents should comment on in the pre-test are:

- understandability of the questions,
- questions that appear difficult or impossible to answer,
- questions they did not want to answer,
- questions (or terms) they find unclear or annoying,
- the time they needed to complete the questionnaire (in an online version we can monitor this ourselves) and whether or not they find it too time-consuming (ask for the concrete question at which they got the feeling the questionnaire is too long),
- their general impression of the survey and the questionnaire
- further comments

7. **Analysis of the pre-test:** Particular attention will be given to any local differences in understanding or answering the localised versions of the questionnaire.
8. **Revision of the questionnaire** (if necessary), including localisation of the new elements and revision of the online version.
9. **Distribution of the final version of the questionnaire together with the introductory letter** to the persons in the address lists that have been collected during step 3. This will be done by MERIT. Depending on which way of distributing the questionnaire you chose the questionnaire will either be sent by email to the persons that you have specified in personalised address lists, providing addressed access to the online questionnaire. If you found a way to distribute the questionnaire in a self-controlled way within industry or employers, open access to the questionnaire will also be provided. In this case the respondents will have to specify the name of their company and some other relevant information (such as their function) that otherwise would have been collected in step 3. (Note: A combination of addressed and open access to the questionnaire is generally possible). In case of addressed access, MERIT will attribute each personal record with a personal password that will be used in the introductory email to allow respondents to access their personal version of the online questionnaire (i.e. nobody else will be

able to see what they reply). If you prefer to distribute the questionnaire by fax or by letter these paper versions must be distributed by you and the completed questionnaires must be returned to you, too. In case of letter questionnaires we recommend strongly to use pre-paid response envelopes with your address, as this eases the respondents to reply and raises the response rate.

#### 10. Data collection:

- For online survey with addressed access to the online questionnaire: Respondents will access the online questionnaire and authenticate by entering their personal password, then they will complete the questionnaire. The responses will automatically be transferred into a password-protected database that can be accessed by you online. After a specified period of time (i.e. one week after distributing the questionnaire), those who did not reply will get a reminder by email. We usually send 3-4 email reminders and then make a final reminder phone call before we close the survey.
- For online survey with open access to the online questionnaire: Respondents will fill out the questionnaires directly on the website and have to specify some extra personal information (name of company, industry, etc.), the responses will automatically be transferred into a password-protected database that can be accessed by you online. Reminders cannot be used because we have no contact information.
- For letter or fax survey: The respondents will send you back the completed questionnaires. You will have to access the password-protected database that is provided online by MERIT and to enter the responses manually in this database. You will also be responsible for sending reminder letters and faxes. At any rate, you should calculate a longer survey period for letter and fax surveys than for the online survey (at least double the time).
- For face to face interviews / meetings: Either use a computer to have the interviewee fill out the questionnaire online, or fill out a paper version of the questionnaire which you will then provide in electronic form to MERIT as with the letter survey described above. Since you meet the respondent personally there's no need for reminders.

11. **Non-response analysis:** Not all of the contacts you have collected for the lists will reply. The crucial question for the validity of our results is whether our respondents differ significantly

from the non-respondents in one or more respects. If this is the case our sample would be biased towards this or these characteristics, for instance towards FLOSS users. In order to estimate whether such (a) bias(es) exist(s) we have to conduct a non-response analysis. This means that we have to contact the non-respondents (or a sub-sample of them) again after the survey is closed and to ask them a couple (2-4) of relevant questions that allow comparing the non-respondents and the respondents with regard to characteristics that are important for the survey. For instance, FLOSS usage, size of the organisation, and level of the organisation could be such important criteria. The small questionnaire for the non-response analysis will be created in collaboration of all consortium partners, the execution of the non-response survey will fall into the responsibility of the local partners. The results of the non-response survey must be sent to MERIT and will be analysed and compared there.

**12.Shortlist of question numbers and points in the questionnaire that must be localised by all local partners:**

- FLOSS terminology (i.e. FLOSS, F/OSS, Open Source Software, etc.), see for instance first filter question
- Question 4: the usefulness of this question depends on whether or not recruiting by job advertisements is the dominating way of hiring people

## **Annex A5: Questionnaire for HEIs (Administrators)**

**What is your gender?**

female

male

I don't want to answer this question

---

**Which year were you born?**

---

**1 / 18. What is the total number of students that your institution currently enrolls? If you don't know an answer, leave it blank. Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of undergraduate students

number of graduate and postgraduate students

---

**2 / 18. What is the total number of teaching and research personnel that your institution currently employs? If you don't know the answer, leave it blank. Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of teaching and research personnel

---

**3 / 18. What is the approximate total number of central and departmental administrative personnel and support staff (e.g. research assistance, administrative assistants, ICT staff etc.) currently working at your institution? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of administrative and support personnel

---

**4 / 18. Does your job involve following positions? Please select all that apply.**

an executive position (e.g. manager, department head)

a position as lecturer / teacher

a position as researcher

other

---

**5 / 18. Do you have any of the following administrative responsibilities? Please select all that apply.**

Software procurement/purchasing  
Developing institutional ICT policies  
Overseeing implementation of ICT policies  
Developing/administrating institutional ICT budgets  
Designing/approving software licensing agreements  
Approving software development in-house  
Managing/coordinating ICT training  
Developing ICT training  
None of these

---

**6 / 18. Are decisions on software purchases in your institution made on an institution wide basis?**

yes

no

I don't know

---

**6a / 18. Who is (are) most important for decisions on software purchases in your organisation? Please choose not more than two answers and rank them by a '1' for most important and a '2' for second most important.**

IT Manager / Head of IT department

users

financial department

other management (possibly including yourself)

external consultants

others

Please specify

I don't know

---

**7 / 18. Roughly speaking, how large was the IT budget of your institution in 2005? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

I don't know

---

**8 / 18. Roughly speaking, what is the percentage of the share of software purchases and license fees in your organisation's IT budget in 2005?**

**I don't know**

---

---

**9 / 18. Roughly speaking, what is the percentage of the share of personnel cost in your organisation's IT budget in 2005? In case the IT budget does not include personnel cost please fill in 0.**

**I don't know**

---

---

**10 / 18. What do you think: Is the share of software purchases and license fees in the total IT budget of your institution too high, too low, or reasonable?**

**too low**

**reasonable**

**too high**

**I don't know**

---

---

**11 / 18. Do you see a need for reducing the expenditure for software purchases and license fees in your institutions within the next two years?**

**yes**

**no**

**I don't know**

---

---

**12 / 18. Does your institution have a stated IT policy or strategy?**

**yes**

**no**

**I don't know**

---

---

**13 / 18. Does this IT policy or strategy include Open Source Software (OSS) as an option when procuring software?**

**yes**

**no**

**I don't know**

---

---

**13a / 18. Does this policy require that you choose the Open Source Software (OSS) application, if one exists, instead of a proprietary software alternative?**

**yes**

**no**

**I don't know**

---

**13b / 18. Why does the IT policy or strategy not include Open Source Software (OSS) as an option when procuring software?**

**the policy does not explicitly or implicitly mention software**

**the IT policy mentions software, but does not specify the type of software**

**the IT policy focuses only on proprietary software**

**the policy explicitly excludes OSS as an option**

**other reason**

**I don't know**

---

**14 / 18. Do you use open source software in your institution?**

**yes**

**no**

**I don't know**

---

**14a / 18. To which extent do the following groups in your institution use open source software?**

<b>Administration staff (including IT staff)</b>	<b>not at all a little much a great deal I don't know</b>
<b>Teaching staff</b>	<b>not at all a little much a great deal I don't know</b>
<b>Students in computer science</b>	<b>not at all a little much a great deal I don't know</b>
<b>Students in other science</b>	<b>not at all a little much a great deal I don't know</b>

<b>Students in non-science</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>
--------------------------------	---

**15 / 18. Would you find it useful to increase the share of open source software in your institution?**

**yes**

**no**

**I don't know**

**15a / 18. To which extent should the use of open source software in your institution increase for the following groups?**

<b>Administration staff (including IT staff)</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>
<b>Teaching staff</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>
<b>Students in computer science</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>
<b>Students in other science</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>
<b>Students in non-science</b>	<b>not at all</b> <b>a little</b> <b>much</b> <b>a great deal</b> <b>I don't know</b>

**16 / 18. Do you develop open source software anywhere in your institution?**

yes

no

I don't know

---

**16a / 18. To which extent do the following groups in your institution develop open source software?**

<b>Administration staff (including IT staff)</b>	<b>not at all a little much a great deal I don't know</b>
<b>Teaching staff</b>	<b>not at all a little much a great deal I don't know</b>
<b>Students in computer science</b>	<b>not at all a little much a great deal I don't know</b>
<b>Students in other science</b>	<b>not at all a little much a great deal I don't know</b>
<b>Students in non-science</b>	<b>not at all a little much a great deal I don't know</b>

---

**16b / 18. Do you have a policy on licensing the use of software that has been developed by staff or students in your institution?**

yes

no

I don't know

---

**16c / 18. What best describes your institution's licensing policy?**

<b>We release our software into the public domain for free</b>	<b>does not apply at all sometimes often very often I don't know</b>
<b>We release our software under an open source software license</b>	<b>does not apply at all sometimes often very often I don't know</b>
<b>We sell our software or license it commercially</b>	<b>does not apply at all sometimes often very often I don't know</b>

**17 / 18. Do you have personal experience in working with OSS?**

**yes**

**no**

**17a / 18. What kind of experience do you have?**

**work-related experience**

**private experience**

**18 / 18. Is there anything you would like to add to the information that you gave in this survey that you have not been able to express?**

## Annex A6: Questionnaire for HEIs (IT Managers)

What is your gender?

female

male

I don't want to answer this question

---

Which year were you born?

drop-down

---

**1 / 25. What is the total number of students that your institution currently enrolls? If you don't know an answer, leave it blank. Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of undergraduate students

number of graduate and postgraduate students

---

**2 / 25. What is the total number of teaching and research personnel that your institution currently employs? If you don't know the answer, leave it blank. Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of teaching and research personnel

---

**3 / 25. What is the approximate total number of central and departmental administrative personnel and support staff (e.g. research assistance, administrative assistants, ICT staff etc.) currently working at your institution? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

number of administrative and support personnel

---

**4 / 25. Does your job involve following positions? Please select all that apply.**

an executive position (e.g. manager, department head)

a position as lecturer / teacher

a position as researcher

other

---

**5 / 25. Do you have any of the following personal technical skills and/or responsibilities in your employment position? Please check all that apply.**

Software development (e.g. producing code, producing packages etc.)

Programming

System administration

Network administration

Database administration  
Internet / Web design  
ICT / Software training or teaching  
None of these

---

**6 / 25. Do you have any of the following administrative responsibilities? Please select all that apply.**

Software procurement/purchasing  
Developing institutional ICT policies  
Overseeing implementation of ICT policies  
Developing/administrating institutional ICT budgets  
Designing/approving software licensing agreements  
Approving software development in-house  
Managing/coordinating ICT training  
Developing ICT training  
None of these

---

**7 / 25. Are decisions on software purchases in your institution made on an institution wide basis?**

- yes  
 no  
 I don't know
- 

**7a / 25. Who is (are) most important for decisions on software purchases in your organisation? Please choose not more than two answers and rank them by a '1' for most important and a '2' for second most important.**

- IT Manager / Head of IT department (possibly yourself)
- users
- financial department
- other management
- external consultants
- others
- Please specify
- I don't know
- 

**8 / 25. Roughly speaking, how large was the IT budget of your institution in 2005? Please, use ONLY numbers with no other characters (e.g. 10000 for ten thousand).**

I don't know

---

**9 / 25. Roughly speaking, what is the percentage of the share of software purchases and license fees in your organisation's IT budget in 2005?**

 %

I don't know

---

**10 / 25. Roughly speaking, what is the percentage of the share of personnel cost in your organisation's IT budget in 2005? In case the IT budget does not include personnel cost please fill in 0.**

 %

I don't know

---

**11 / 25. What do you think: Is the share of software purchases and license fees in the total IT budget of your institution too high, too low, or reasonable?**

- too low  
 reasonable  
 too high  
 I don't know
- 

**12 / 25. Do you see a need for reducing the expenditure for software purchases and license fees in your institutions within the next two years?**

- yes  
 no  
 I don't know
- 

**13 / 25. Does your institution have a stated IT policy or strategy?**

- yes  
 no  
 I don't know
- 

**14 / 25. Does this IT policy or strategy include Open Source Software (OSS) as an option when procuring software?**

- yes

- no
  - I don't know
- 

**14a / 25. Does this policy require that you choose the Open Source Software (OSS) application, if one exists, instead of a proprietary software alternative?**

- yes
  - no
  - I don't know
- 

**14b / 25. Why does the IT policy or strategy not include Open Source Software (OSS) as an option when procuring software?**

- the policy does not explicitly or implicitly mention software
  - the IT policy mentions software, but does not specify the type of software
  - the IT policy focuses only on proprietary software
  - the policy explicitly excludes OSS as an option
  - other reason
  - I don't know
- 

**15 / 25. Do you use open source software in your institution?**

- yes
  - no
  - I don't know
- 

**15a / 25. To which extent do the following groups in your institution use open source software?**

Administration staff (including IT staff)	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Teaching staff	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know

Students in computer science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in other science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in non-science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know

**16 / 25. Would you find it useful to increase the share of open source software in your institution?**

- yes
- no
- I don't know

**16a / 25. To which extent should the use of open source software in your institution increase for the following groups?**

Administration staff (including IT staff)	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Teaching staff	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in computer science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know

Students in other science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in non-science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know

**17 / 25. Do you develop open source software anywhere in your institution?**

- yes  
 no  
 I don't know

**17a / 25. To which extent do the following groups in your institution develop open source software?**

Administration staff (including IT staff)	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Teaching staff	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in computer science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
Students in other science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know

Students in non-science	<input type="radio"/> not at all <input type="radio"/> a little <input type="radio"/> much <input type="radio"/> a great deal <input type="radio"/> I don't know
-------------------------	--

**17b / 25. Do you have a policy on licensing the use of software that has been developed by staff or students in your institution?**

- yes
- no
- I don't know

**17c / 25. What best describes your institution's licensing policy?**

We release our software into the public domain for free	<input type="radio"/> does not apply at all <input type="radio"/> sometimes <input type="radio"/> often <input type="radio"/> very often <input type="radio"/> I don't know
We release our software under an open source software license	<input type="radio"/> does not apply at all <input type="radio"/> sometimes <input type="radio"/> often <input type="radio"/> very often <input type="radio"/> I don't know
We sell our software or license it commercially	<input type="radio"/> does not apply at all <input type="radio"/> sometimes <input type="radio"/> often <input type="radio"/> very often <input type="radio"/> I don't know

**18 / 25. Do you have personal experience in working with OSS?**

- yes
- no

**18a / 25. What kind of experience do you have?**

- work-related experience
- private experience

**19 / 25. Which of the following types of computer programming courses are available at your institution to students or staff?**

**for students**

- Introductory programming course (e.g. Visual Basic, Python, Deplhi, etc.)
- Web management tools course (e.g. Frontpage, Dreamweaver, etc)
- Simple HTML course
- Advanced HTML course (e.g. CSS, javascript, etc)
- Intermediate, advanced programming (e.g. C/C++, Java, C#, Pascal/Delphi, etc.)
- Shell scripting course (e.g. Perl, Bash, etc.)
- Other course

Please describe:

- I don't know

**for staff**

- Introductory programming course (e.g. Visual Basic, Python, Deplhi, etc.)
- Web management tools course (e.g. Frontpage, Dreamweaver, etc)
- Simple HTML course
- Advanced HTML course (e.g. CSS, javascript, etc)
- Intermediate, advanced programming (e.g. C/C++, Java, C#, Pascal/Delphi, etc.)
- Shell scripting course (e.g. Perl, Bash, etc.)
- Other course

Please describe:

I don't know

---

**20 / 25. Do you ask job applicants about their experiences in the field of free software / open source software?**

- yes
  - no
- 

**21 / 25. Are there positions in your company that require experiences in free software / open source software?**

- yes
  - no
- 

**21a / 25. Are these positions usually leadership positions?**

- yes
  - no
- 

**22 / 25. Suppose you were to face a choice between two prospective employees (person A and person B) with exactly the same level of formal qualifications but different experiences: Person A has proven experience developing an important component of a proprietary software product, as an employee of a proprietary software company. Person B has proven experience developing an important component of a free software / open source software product of equivalent complexity, as an independent participant of the developer community. Would you be more likely to hire person A or person B?**

- Person A (with proprietary software experience)
  - Person B (with free software / open source software experience)
  - These different experiences would not influence my preference
  - I don't know
-

**23 / 25. Which of the following operating systems are the basis of the IT system of your institution? Answer this question for servers and desktop PCs separately.**

**on central servers**

- Windows Server 2003
- Windows XP
- Windows ME
- Windows 95 or earlier
- AIX
- Free BSD
- NetBSD
- OpenBSD
- GNU/Linux
- HP-UX
- MacOS
- Mac OS X
- Netware
- Open VMS
- OS/2
- Plan 9
- SOLARIS
- yellowTAB ZETA/BeOS
- I don't know

**on desktop PCs**

- Windows Server 2003
- Windows XP
- Windows ME
- Windows 95 or earlier
- AIX
- Free BSD
- NetBSD
- OpenBSD
- GNU/Linux

- HP-UX
  - MacOS
  - Mac OS X
  - Netware
  - Open VMS
  - OS/2
  - Plan 9
  - SOLARIS
  - yellowTAB ZETA/BeOS
  - I don't know
- 

**24 / 25. Which of the following software systems are used in your institution?**

- Apache
- FreeBSD/OpenBSD
- Gnome
- GNU/Linux
- Evolution
- KDE
- Konqueror
- LaTeX
- Matlab
- Microsoft Internet Explorer
- Microsoft Internet Information Server
- Microsoft Office
- Microsoft Outlook
- Microsoft Outlook express
- Microsoft SQL Server
- Mozilla/Firefox
- MySQL
- Netscape
- Octave
- OpenOffice.org
- Perl

- PHP
  - PostgreSQL
  - Samba
  - Squid
  - Sun Java Web Server
  - Thunderbird
  - Zope
- 

**25 / 25. Is there anything you would like to add to the information that you gave in this survey that you have not been able to express?**

## Annex A7: Guidelines for the Localisation of the HEIs Questionnaire

### FLOSSWORLD Guidelines for the HEI Survey

The following guideline provides a stepwise instruction for the preparation and execution of the higher educational institutions (HEI) survey. **PLEASE NOTE: the HEI questionnaires are not final by now, as the revised versions that have been distributed in December do not fully address the comments from UWC and CSIR. We plan to cut several questions in each of the two HEI questionnaires. Therefore we need your comments and your decisions on which questions in the two questionnaires are most important to you before January 15!**

1. **Check the revised global questionnaires** carefully with regard to understandability of the wording, order of the questions, and completeness of aspects that are surveyed again. Inform OII about changes you want to make and errors.
2. **Localise the questionnaire.** As described in the analytical framework paper, localisation means to translate the complete questionnaire into your language, to introduce local terms to ensure international comparability (e.g. using local currencies in the questionnaire and localised scales when asking about income or expenditure levels, but do also localise the FLOSS terminology that we use (e.g. FLOSS, F/OSS, Libre Software, Free Software, Open Source Software, or any other term that you think would be best to use in the region you survey) and the educational degrees and professions) and to add questions that are unique to each country's context. **At the end of this text a separate short list is provided for the questionnaire of the question numbers and points that MUST be localised by ALL FLOSSWORLD PARTNERS.**
3. **Prepare the circulation of the questionnaire** (start in parallel to localisation): Figure out how you want the questionnaire to be circulated, this may be dependent on the availability of contact information for government organisations in your country. You can either use databases that contain such information, search the Internet for such organisations and associations of such organisations, use address books, yellow pages, etc. At any rate it would be good if you know the name of a person in the organisations you want to survey who is able to answer our questions and to whom we can send the questionnaire. Our experience in Europe is that eliciting such information through phone calls is an extremely hard and time-consuming business. Nevertheless, having a personal contact usually helps considerably to raise the response rate, and

you can explain the purpose of the survey and ask for the preferences of the respondents regarding the kind of questionnaire (online, letter, fax). Make as soon as possible a list of all the organisations you want to contact, together with contact information (name of the organisation, name of the contact person, email address(es), and any other information that is relevant for contacting this organisation) and the way how they should be contacted (email, letter, fax, phone, maybe even face to face). Send all these information to OII/MERIT. **Be aware that the survey addresses two separate groups of questions that can be answered by two separate groups of people – IT managers and administrators! You will possibly have to build two separate contacts lists.** If you find out that circulating the questionnaire by letter or fax or face to face would be better, you have to collect contact information (telephone or fax numbers or locations / dates for possible face to face interactions) of the persons you want to survey. These lists must be sent to OII/MERIT, too. *Note: The advantage of an online version is that it can be very easily distributed and responded. If you rely on other channels for distributing the questionnaire (i.e. telephone, fax, face to face) you will have to organise the distribution of the questionnaire yourself.*

4. **Create different versions of an introductory email or letter/fax** in order to announce the survey and explain its purpose to the government organisations or, if applicable, contact persons in these organisations. This will be done by OII/MERIT and coordinated with you. *You will have to localise the introductory letter and send it back to OII/MERIT.*
5. **Send the localised questionnaire to OII/MERIT.** The localised questionnaires will be converted into on-line form and hosted on a web server **at UM** (in cases where connectivity is an issue, questionnaires can be hosted on local web servers arranged by the international partners). The on-line questionnaires will be accessible in two ways: addressed access, where unique web addresses will be generated for each pre-selected respondent with identifying information pre-recorded; and open access, where respondents may be asked to provide contact information. If you want to use letters or faxes, OII/MERIT will create a database that you can access online and in which you can fill in the responses you get.
6. **Pre-test preparation and execution:** Select a limited number of HEIs (usually, 5 HEIs suffice for this purpose) and let them fill in the questionnaire. If possible, you should try to talk to a couple of the pre-test respondents directly about the questionnaire, this provides you with much deeper insights in how the questionnaire works and how the targeted group of respondents might

react than indirect communication. For the pre-test we will need some additional questions on the items listed below. These questions must also be sent to OII/MERIT in order to include them in the pre-test version of the questionnaire. Answers to the pretest must be treated as normal responses and therefore be submitted to OII/MERIT, if appropriate they will get integrated in the final survey dataset. Extra items the respondents should comment on in the pre-test are:

- understandability of the questions,
- questions that appear difficult or impossible to answer,
- questions they did not want to answer,
- questions (or terms) they find unclear or annoying,
- the time they needed to complete the questionnaire (in an online version we can monitor this ourselves) and whether or not they find it too time-consuming (ask for the concrete question at which they got the feeling the questionnaire is too long),
- their general impression of the survey and the questionnaire
- further comments

7. **Analysis of the pre-test:** Particular attention will be given to any local differences in understanding or answering the localised versions of the questionnaire.

8. **Revision of the questionnaire** (if necessary), including localisation of the new elements and revision of the online version.

9. **Distribution of the final version of the questionnaire together with the introductory letter** to the persons in the address lists that have been collected during step 3. This will be done by OII/MERIT. Depending on which way of distributing the questionnaire you chose the questionnaire will either be sent by email to the persons that you have specified in personalised address lists, providing addressed access to the online questionnaire. (Note: A combination of addressed and open access to the questionnaire is generally possible). In case of addressed access, OII/MERIT will attribute each personal record with a personal password that will be used in the introductory email to allow respondents to access their personal version of the online questionnaire (i.e. nobody else will be able to see what they reply). If you prefer to distribute the questionnaire by fax or by letter these paper versions must be distributed by you and the completed questionnaires must be returned to you, too. In case of letter questionnaires we recommend strongly to use pre-paid response envelopes with your address, as this eases the respondents to reply and raises the response rate.

## 10. Data collection:

- For online survey with addressed access to the online questionnaire: Respondents will access the online questionnaire and authenticate by entering their personal password, then they will complete the questionnaire. The responses will automatically be transferred into a password-protected database that can be accessed by you online. After a specified period of time (i.e. one week after distributing the questionnaire), those who did not reply will get a reminder by email. We usually send 3-4 email reminders and then make a final reminder phone call before we close the survey.
- For online survey with open access to the online questionnaire: Respondents will fill out the questionnaires directly on the website, the responses will automatically be transferred into a password-protected database that can be accessed by you online. Reminders cannot be used because we have no contact information.
- For letter or fax survey: The respondents will send you back the completed questionnaires. You will have to access the password-protected database that is provided online by OII/MERIT and to enter the responses manually in this database. You will also be responsible for sending reminder letters and faxes. At any rate, you should calculate a longer survey period for letter and fax surveys than for the online survey (at least double the time).
- For face to face interviews / meetings: Either use a computer to have the interviewee fill out the questionnaire online, or fill out a paper version of the questionnaire which you will then provide in electronic form to OII/MERIT as with the letter survey described above. Since you meet the respondent personally there's no need for reminders.

11. **Non-response analysis:** Not all of the contacts you have collected for the lists will reply. The crucial question for the validity of our results is whether our respondents differ significantly from our respondents in one or more respects. If this is the case our sample would be biased towards this or these characteristics, for instance towards FLOSS users. In order to estimate whether such (a) bias(es) exist(s) we have to conduct a non-response analysis. This means that we have to contact the non-respondents (or a sub-sample of them) again after the survey is closed and to ask them a couple (2-4) of relevant questions that allow comparing the non-respondents and the respondents with regard to characteristics that are important for the survey.

For instance, FLOSS usage, size of the organisation, and level of the organisation could be such important criteria. The small questionnaire for the non-response analysis will be created in collaboration of all consortium partners, the execution of the non-response survey will fall into the responsibility of the local partners. The results of the non-response survey must be sent to MERIT and will be analysed and compared there.

**12.Shortlist of question numbers and points in the questionnaire that must be localised by all local partners:**

- **both questionnaires**
  - IT-terminology, educational degrees and professions, FLOSS terminology (i.e. FLOSS, F/OSS, Open Source Software, etc.)
  - Terminology for "institution" and / or "organisation"
  
- **questionnaire for administrators**
  - Question 14: currency
  - Question 15: currency
  - Question 17: currency
  
- **questionnaire for IT managers**
  - Question 12: list of operating systems
  - Question 13: list of software systems
  - Question 30: list of courses