Challenges and obstacles: Usage of Free and Open Source Software in local government in Macedonia

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Summary. Survey of 14 municipalities in Macedonia highlights the challenges and obstacles to usage of Free and Open Source Software (FLOSS) within local government units. Municipalities provided answers related to their software usage and budget plans, clearly indicating the lack of funds to satisfy the needs of the citizens they serve by purchasing proprietary software available from vendors associated with the central government. TOC of using FLOSS compared to proprietary software in Macedonia is comparatively lower, ranging from one-third to one-half of the price needed for purchase of the software and training IT staff to provide maintenance and support for it.

1 Introduction

Local governance in Macedonia is organized into 85 local government (LG) units: 84 municipalities, and the City of Skopje, a special LG unit encompassing and sharing certain competences with the 10 municipalities comprising the capital. The new Law on Decentralization modeled according to the EU standards and directives took effect in July 2005, transferring powers and responsibilities from central to local level.

This study used a representative sample of 20 LG units (24%), out of which 14 (16%) provided information through the standardized questionnaire, under condition that individual municipality data would not be disclosed. Moreover, the LG units covered by the study (Fig.1) provide a cross-section of the various kinds of municipalities present in the country, with diverse geographical characteristics, ethnic and religious background, political affiliation, and level of economic development.

In regard to level of ICT implementation, the sampled municipalities include some of the leaders in this field (Veles, City of Skopje), and most of

Fig. 1. Macedonian municipalities covered by this study

them have shown higher than average level of interest for further IT development, expressed through commitments and participation in various projects, such as the Project for development of citizen-oriented e-Government services on a local level run by USAID and Metamorphosis Foundation. This research does not cover municipalities which have not expressed interest in their IT development.

The main ICT policy document in Macedonia is the National Strategy for Information Society Development (NSISD), adopted in 2005 by both executive and legislative branches of the government, which is technology-neutral and brand-free.

The e-Citizens section of the NSISD defines the LG units as primary institution for enabling G2C communication, and states (section 2.6.1 of NSISD) that it "is necessary to support the use of the FLOSS as a public good accessible to all citizens, especially through the freedom of choice of a platform in the formal and informal ICT education." One of the objectives (06.03) of the same section also requires enabling "accessible e-services irrespective of the software platform, which shall use open standard formats of documentation and exchange of information."

1.1 Known Results

The UNDP survey of 2004 identified low level of IT capacity within Macedonian municipalities, especially pointing out the lack of qualified personnel as major obstacle, but also lack of appropriate equipment.

In 2003 the Government of Republic of Macedonia signed a $4 million Strategic partnership contract with Microsoft, licensing all unlicensed Microsoft software used by the central government and public educational institutions, with Microsoft agreeing to provide localized versions of its OS and office suite, and its local partners receiving contracts to develop several high-profile of e-Government applications. This in effect sealed the almost exclusive

use of Microsoft-based products within the central government, to the point that even free, closed source applications for submitting reports to Pension Fund are provided for Windows only, without alternatives.

Use of FLOSS within central government remains sporadic and is mainly limited to web servers and web applications such as CMS (`http://www. finance.gov.mk`), resulting from actions of individual IT experts, not from wide-ranging policy.
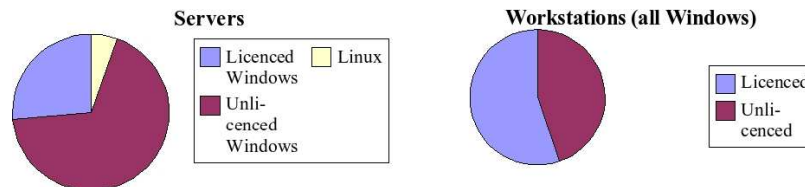

Fig. 2. Operating systems used within surveyed municipalities

LG units were not included in the MS licensing scheme, and have been largely left to their own devices to acquire IT equipment and licenses. Donations by international organizations, such as UNDP and, USAID, some done in cooperation with Microsoft, remain key source in this area.

1.2 Our Results

According to our research, **lack of support** for OSS is emphasized as one of the most important obstacle for OSS widespread use in public administration. Most of the LG units do not have their own IT person. Using the services of local IT companies to provide support for OSS, could foster the development of the local OSS community but also of the IT sector in general.

Additional reason could be the unavailability of open source applications that include all of the functionality of the proprietary software applications they would replace. Especially GIS application and specific tailor-made applications (ex. Finance software).
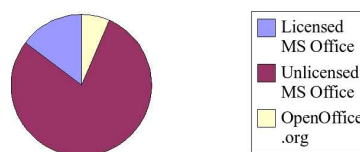

Fig. 3. Office Software used by surveyed municipalities

The second problem is **compatibility** with past, mostly proprietary, software application. Local governments have thousands of documents created

with various versions of Microsoft and similar applications over the years. OSS application still need to be able to open those documents and read them. Perhaps they also need to be maintained so that people must have the possibility to edit them.

Another issue is **training**. Although most OSS application user-interface and functionalities are similar to the Microsoft (or other) applications they're replacing, there are still a lot of differences that hamper the usage of OSS. Training is needed in order to overcome this obstacle and for new users to become more familiar with the new working environment. Most of the LG units are willing to migrate to OSS if they would be provided appropriate training and support.

2 Preliminaries

The findings of the survey in more detail comprise of accumulated responses to the standardized questionnaire, filled in by the persons responsible for IT within the responding LG units.

Table 1. Operating systems used by the municipalities

Number of PCs with	Licensed OS		Unlicensed OS	
Windows Server (2003, 2000, NT)	5	2,4%	13	7,4%
Windows (XP, 2000, 98, ...)	200	95,7%	163	92,6%
Linux (servers)	1	0,5%	0	0,0%
Linux (desktop computers)	0	0,0%	0	0,0%
Other	3	1,4%	0	0,0%

Table 2. Office software used by the municipalities

Number of PCs with	Licensed software		Unlicensed software	
Microsoft Office (XP, 2003, 97)	51	53,1%	271	67,9%
OpenOffice.org, other FLOSS	20	20,8%	2	0,5%
Other commercial software	25	26,0%	126	31,6%

Most of the repsodents expessed reluctance about readiness to **migrate** to FLOSS, with 64,3% replying "maybe" when asked whether they are willing to migrate. On the other hand, the number of respodents who do not consider such an option (14,3%) is almost two times smaller than those who are willing to migrate to FLOSS (21,4%).

Table 3. Reasons for not using FLOSS

Lack of technical support	6	33,3%
Lack of sufficient information	3	16,7%
Lack of knowledge of implementation and maintenance	6	33,3%
Other: lack of training, insufficient FLOSS affirmation.	3	16,7%

Table 4. Conditions for migrating to FLOSS

Availability of appropriate training and support.	8	44,4%
Availability of local vendor and/or consultant.	2	11,1%
Lowering the total cost of ownership.	7	38,9%
In any case.	0	0,0%
In case of compatibility with current software solutions.	1	5,6%

Most of the respodents (78,6%) are aware of the existence of FLOSS office applications localised in local languages (Macedonian, Albanian, Turkish, etc.), while the reamianing 3 (21,4%) are not.

Most municipalities express interest in using GIS software, with 35,7% using the ESRI Arv View, 28,6% planning to purchase such software soon, and 35,7% not using GIS software.

Table 5. Other software used by municipalities

Accounting & budget (proprietary, locally developed)	7	41,2%
Lotus Notes-based archive software	3	17,6%
None	3	17,6%
Document management system	1	5,9%
SW for e-submission of application in Pension Fund	1	5,9%
Archive, issuing and approving building permissions (implementation phase)	1	5,9%
LTAS – taxes and communal taxes (test phase)	1	5,9%

Comparing the current market prices for Microsoft software licenses, the licensing of the unlicensed OS and basic office software they currently use would cost the surveyed municipalities up to EUR 109,265 (OS + Office SBE) or EUR 180,636 (OS + Office Prof.).

The total budget for software purchasing deployed by the surveyed municipalities is EUR 45738, less than half of the cheaper option. Moreover, 50% of all the municipalities plan no budget for this purpose.

Only four of the surveyed municipalities (28,6%) have empolyed system engineer. Of the remaining 71,4%, most plan to employ one in near future

Table 6. Kinds of software the municipality needs and plans to purchase in the near future, ranked according to the priority

	Ranking
Document management system (DMS) and document digitisation	1
Security software (firewall, network antivirus)	2
Financial software	3
Front/back office solution for forms by citizens and businesses	4
Backup software	5
Information management system	6
Workflow management (Workflow, BPM)	7
Intranet groupware and project management solutions	8
Client relations management (CRM)	9
Resource management and planning (lgRP)	10
Other software: Microsoft Small Business Server (ISA, Exchange..), GIS software (ArcView), ect.	11

Table 7. Annual municipal budget designated for software purchase

None	4
No reply, does not know	3
EUR 820	1
EUR 984	1
EUR 2459	2
EUR 2951	1
EUR 3279	1
EUR 32787	1

Table 8. Usual prices of licenses for Microsoft software in Macedonia

Windows Server	**EUR 836**
Windows XP	**EUR 159**
Office Small Business Edition	**EUR 268**
MS Office Proffesional	**EUR 531**

(70%), and others either do not plan such action (20%) or provided no reply (10%).

Very few of the surveyed municipalities (2 out of 13, or 14,3%) have local strategy and action plan for implementation of ICT development in the municipality. Majority of 71,4% does not have such policy documents developed, but would appreciate additional information and consultations about the opportunity for strategic planning of the local ICT development in the

Table 9. Annual municipal budget for information system maintenance

	External consultant (Outsourcing)	In-house (municipal employee)	No reply
None		**2**	
No reply		**3**	**1**
EUR 820	**1**		
EUR 984	**2**		
EUR 1475	**1**	**1**	
EUR 1639	**1**		
EUR 3279	**1**		
EUR 29508		**1**	
Total:	**6**	**7**	**1**

municipality. The remaining 14,3% does not have a strategy nor plans ICT policy activities in near future.

Prices of training of IT professionals in Macedonia range from EUR 2,079 for each of the Microsoft-based MCSA and MCSE certifications, to EUR 1,000 for a standard course for Red Hat administrators. Taking into consideration the licence prices and the training prices, it is obvious that satisfying the stated needs of the surveyed municipalities will be more effective by using FLOSS.

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