Discussion on the Problems to be Solved toward the Migration to OSS Productivity Software in the Business Enterprises

Jun Iio[1] and Tomotaka Ogawa[2]

[1] Mitsubishi Research Institute,Inc., Advanced Business Promotion Unit
2-10-3 Nagatacho, Chiyoda-ku, Tokyo, 100-8141 Japan
`iiojun@mri.co.jp`
[2] K.K.Ashisuto, 4-2-1 Kudankita, Chiyoda-ku, Tokyo, 102-8109 Japan
`togawa@ashisuto.co.jp`

Abstract. In recent years, there is a tendency to migrate from proprietary productivity software to open-source productivity software, especially in government offices and municipal offices. ODPG (OpenOffice.org & OpenDocument Format Promotion Group, Japan) is an organization founded in order to promote the migration to the OSS productivity software in private enterprises as well. In the case evaluation work group of ODPG, business solutions about use of OpenOffice.org have been discussed many times, for the purpose of supporting the migration to OpenOffice.org, by collecting and feeding back the information of case studies useful for the member companies. This paper reports several subjects and solutions, such as promotion strategy for OpenOffice.org to be widely used, the problem in file exchange with the other stakeholders, preparation of use environment, and security issues, which were discussed in the work group.

1 Introduction

Open-Source Software (OSS) has become popular as a part of server solutions, operating systems, and middle-ware. In addition, it is widely used for embedded systems, such as home information appliances and cell phones. However, OSS desktop applications are not popular except for famous web browsers and mail agents; OSS productivity software[1] on which we focus in this paper is still not widely used as expected.

In recent years, there is a tendency to migrate from proprietary productivity software to OSS productivity software, especially in government offices and municipal offices in the world. In Japan, several local government offices have decided to adopt the OSS productivity software instead of the proprietary one. Cost saving is considered as the principal engine of this movement. Due to the protracted recession, not only public sectors but also private sectors begin considering the benefit of the migration to OSS productivity software.

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[1] It is also called "office software" or "office suites."

ODPG (OpenOffice.org & OpenDocument Format Promotion Group, Japan)[1] is an industry organization founded in 2010, in order to promote OpenOffice.org and the OpenDocument Format (ODF) that is adopted by the OpenOffice.org as its file format. As of Mar. 2012, it consists of 23 business enterprises and associations. The members of ODPG exchange information on the usage of OpenOffice.org in their organization and discuss the problems that they have faced in their activities.

At the beginnings of fiscal 2011, the case study working group (CS-WG) was organized in the ODPG. The aim of CS-WG is to support adopting OpenOffice.org as standard software in the member organizations by collecting valuable information for the members and by giving feed back to the other members.

In this paper, we report summarized information and the results of discussions by CS-WG. Although we represent "OpenOffice.org" as the transitional object in this paper, it is not restricted to OpenOffice.org. That is, LibreOffice and similar OSS productivity software can be also considered as the target of the migration.

2   Problems and Solutions in the Migration

In this section, we report the problems and its solutions to realize smooth migration from the organizational usage of Microsoft Office (MS-Office), which is widely used as proprietary productivity software, to the organizational usage of OpenOffice.org, which is also typical OSS productivity software. In the practical discussion by CS-WG members, many problems and solutions about promotion strategy, file exchange with other organizations, preparation of the environment for the usage, security, and so on were confirmed.

2.1   Promotion Strategy

Firstly, we mention about choice of OpenOffice.org and its derivations, gradual or partial migration, document preparation useful for the migration.

Although some members considered that the migration from a product to another product was easy, the other members considered it was not easy. It depends on the size of organization and on the type of businesses. In regard to the style of the migration, gradual migration and partial migration, or the combination of both, were supported by most of members. Documents, which are training materials, guidelines, and the other articles, tend to be prepared in advance of the migration. The other method of the preparation of documents reported from some members is to compile inquiries from employees.

2.2   File Exchange with Other Organizations

Secondly, we point out the problems and solutions on the file exchange with other organizations.

In earlier discussions on this issue, one-to-one or one-to-few file exchange was supposed in many cases. Under these conditions, the problems are considered solved if such files are converted by person in charge or if restricted use of MS-Office is allowed as necessary. However, it costs too much man-hour to solve this problem by the method previously mentioned, if the solution for one-to-many file exchange is required. Also, if casual use of MS-Office is permitted under the migration to OpenOffice.org, the significance of the migration would be spoiled. In the discussion for the OpenOffice.org migration at the large business enterprises, one-to-many file exchange should be considered.

We have proposed two solutions. The first one is to make guidelines for keeping interoperability among ODF, OOXML, and traditional MS-Office files. The guideline claims that over-elaborate documents inhibit conversion from OOXML to ODF, from traditional MS-Office file format to ODF, and vice versa. This approach can be expected as the solution of the interoperability problem between different versions, so that it has a possibility to enable long-term use of office documents.

The other solution is decomposing and restructuring OOXML file. The data structure of OOXML is open to the public as is the case with ODF. Therefore, it is possible to construct a system to take required part of data content from OOXML file and to recompose a file in ODF to deliver the file within the organization.

2.3   Preparation of the Environment for the Usage

What the environment for the usage should we prepare to use OpenOffice.org, instead of other proprietary productivity software? Here we discuss printing and version upgrade.

Regarding the printing, when OpenOffice.org outputs printed image directly to the printer, there still remains some defects, such as misalignment. However, these defects are slight and ignorable. If a complete image is required, the file should be created as a PDF file and printed by a PDF viewer.

The problem in upgrading versions is that we have to distribute a large size file for version upgrade installation because current method to upgrade OpenOffice.org is overwriting installation so that whole image file is required. This would be problematic in the organization where the intranet connection is relatively poor. The bandwidth of the network is exhausted for transferring install files and it results in a negative consequence for network operations.

In addition, we have to prepare some particular systems to consolidate version numbers in an organization or to make all software upgraded, since OpenOffice.org's policy for the upgrade is that users themselves run an install program on an autonomous basis. It is important that a framework to make smooth upgrade, including distributed deployment of install image files to avoid congestion of the intranet, is considered beforehand with the migration.

However, other software upgrades such as Windows Update, the upgrade of Java Runtime package, the upgrade of Adobe Reader, require the large image files as well. If the network environment is rich enough and there are no problems in such

software upgrades, the network bandwidth problem in upgrading OpenOffice.org is also ignorable.

2.4   Security

Security issues are not ignorable if the software is used in the business enterprises. How do we deal with the situation if a vulnerability is found in OpenOffice.org, especially with the targeted attack like APT (Advanced Persistent Threat) attack, which is frequently occurs in recent years.

First of all, once an APT attack targeted at zero-day vulnerability is reached at the internal of an organization, the attack to PCs in the network will be successful. It is better to consider that any attack to PCs will result in a higher rate of success even if the attack is not zero-day vulnerability, because many of anti-virus systems, anti-SPAM systems, and gateway systems of the intranet can not prevent from the APT attacks. Then, it is an effective approach to construct a framework to shield outgoing data, in order to protect the intranet from APT attacks.

In regard to dealing with vulnerability issues, the only way to solve the issue on vulnerability of OpenOffice.org is "upgrading OpenOffice.org," at the moment. In addition, the next version of OpenOffice.org has not been released for a while. However, the vulnerability of OpenOffice.org pointed out at Mar. 2012, is just the problem that the particular MS-Office file makes OpenOffice.org crashed. The patch program that can fix this vulnerability has already been developed and will be adopted in the next release of OpenOffice.org. The current version of LibreOffice, which was forked from OpenOffice.org, has already been fixed this problem.

2.5   Productivity

It is a considerable issue whether the productivity of business transactions is not decline after the migration to OpenOffice.org from existing productivity software with a familiar user interface. However, even the companies which have already succeeded in the migration to OpenOffice.org do not have clear values measuring the productivity of their business.

In addition, the productivity of office work is different from that of production lines in the factory. It depends on several factors, so that the values measured in other companies is not necessarily correspond to another company.

Anyway, the discussion to determine the productivity factors to be considered for the successful migration results in the following issues:

- depression of productivity due to human factors;
- conflict against existing business systems;
- appropriate target for comparison.

Depression of Productivity due to Human Factors. It is concerned that decline in the productivity of document preparation occurs after the migration from MS-Office

to OpenOffice.org, due to inexperience in the operation. According to the person who had succeeded in the migration, although depression of productivity comes out in any organization, operators have become accustomed to the new interface just for about three months.

Furthermore, in order to keep performance of office work after the migration, it is effective to make business process simple and not to require complicated documents. Moreover, the decline in productivity tends to occur in the parallel operation of MS-Office and OpenOffice.org because there are frequent opportunities to convert data format to each other. It should be careful if the parallel operation will be required.

Conflict against Existing Business Systems. There exist some business systems which suppose that the data is conveyed in MS-Office format. That may become a factor to decline the productivity of business transactions after the migration to OpenOffice.org. However, the risk can be eliminated by business process analysis (BPA) before the migration. Furthermore, it is possible to calculate how much man-hour should be required to migrate by the migration support services (MSS).

Utilizing BPA and MSS previously conducted, we can understand how much the productivity will be declined, what are the workaround plans, how many functions should be fixed to accept ODF files. These understandings reduce the risk of the problems involved in the migration.

Appropriate Target for Comparison. When we consider the migration from MS-Office 2003 to OpenOffice.org, they are often easily compared and it comes to a conclusion from the comparison of them. However, some CS-WG members pointed out that MS-Office 2007/2010 should be compared with OpenOffice.org (and/or its derived products) to make practical decisions especially in planning the migration to OpenOffice.org.

3   Related Work

Many academic studies about the migration to OpenOffice.org[2-8] have been conducted in recent decades. However, in almost of all studies, the case studies are the migrations in the public administration offices. Ven *et al.*[2] studied the case study at the ministerial cabinets of the Brussels Capital Region. Karjalainen[7] reported the Finnish case. Perry and Margoni [8] reported the case of the Canadian government.

Some of these studies were executed under the Consortium for Open Source Software in the Public Administration (COSPA)[9] project, which is supported by the European Union's Sixth Framework Program.

On the other hand, the case examples discussed in the activities of ODPG significantly differ from these case studies. ODPG mainly focus on the ODF-based migration in private sectors, and it is a private organization with no recourse to public funds.

4   Conclusions

ODPG promotes information exchange by organizations that plan the large scale migration to OpenOffice.org each other. In this paper, we report the results of the discussion on the problems and solutions faced in the migration, as a part of ODPG's activities.

Issues on promotion strategy, file exchange with other organizations, preparations of the environment for the usage, security, keeping productivity are pointed out by the discussion of the working group of ODPG. In these issues, some problems have not been solved. However, most of problems are solvable and it is confirmed that they are not large obstacles to realize the trouble-free migration.

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