COST-EFFECTIVENESS IN CHOOSING SOFTWARE FOR INFORMATION SYSTEMS DEVELOPMENT

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I. INTRODUCTION

Nowadays, life of the modern person, enterprise, business, country and the world as a whole can't be imagined without IT, and its considerable part is software. Any program basis is based on mathematical models and represents flexible and, in most cases, reliable prediction mechanism of managerial decisions' economic effect.

II.COMMERCIAL SOFTWARE AND TCO

With growth and progress of the IT sector, phenomenon of the mass commercial software got spread. As a rule, such software is made within the limits of corresponding professional work and business specialization:

– for the specific end user;

– according to not determined in advance range of end users.

Program life cycle can be very short: the program is developed, than purchased or rented to perform a single procedure.

More complicated case is development, purchasing or leasing of a program to perform recurring operations. For a period of time environment (other programs, equipment) can be changed, and confidence of user in program's capability to function in new conditions becomes very important.

And the most complicated is development, purchase or lease of a program for permanent usage in routine business tasks. The program should meet constantly varying environment, requirements to it, be ergonomic and as far as possible it should be easily managed by new employees etc.

To estimate such cases the concept "Total Cost Of Ownership"(TCO) was entered. It is possible to draw an analogy with cars: for a car TCO will include price of consumed fuel, repairs and demurrage. As a result for someone "Mercedes" will appear more cheaply than "Ford" in aggregate, though the sale price of the first can exceed the price of the second twice.

The most essential are the following components of the software TCO:

1. Cost of the equipment required for running the program and its maintenance;
2. Cost of necessary program copies (or licenses for their independent production);
3. Cost of administration and support of systems;
4. Cost of personnel training;
5. Losses from failures and errors while programs are operated, equipment standing idle time.

III. FREE AND NOT FREE MODELS OF COMMERCIAL SOFTWARE. THEIR PROPERTIES AND ADVANTAGES

After programs had been recognized as objects of the copyright in the 70-90 of 20th century (in different countries), in profession and field two approaches of realization of these rights were formed. Following one of them cardinally influences on not only developing of programs, but also on costs structure.

The free software is a model whereby the basis set of property rights is transferred ("licensed") to the owner of each copy of the program. Thus, creation of and bringing into turnover additional (modified) copies, or a component of the program including original, are possible without additional agreement with author (or the legal owner), obligatory monetary contributions, etc.

Free software forms public market, where any service can be sold and bought with the agreement of two parties – the supplier and the purchaser of service, without third party participation.

There is an alternative to the free software – not free («proprietary»), when author (or the legal owner) reserves a number of rights. The typical model of not free licensing provides obligatory contributions (in the form of purchasing of additional copies or "licences" for their producing) for bringing additional copies into turnover.

The external form of not free software reminds of publishing business – the company-

"publisher" purchases rights to product, and then publishes and sells it, trying to get profit.

As the company carries out not only marketing of the products/services, but also management of the creation process, many companies name itself "producers" of programs, though programming, of course, does not become industrial production process, and remains creative activity of individuals, though united in a team.

At the disposal of not free code "owners" there are very powerful levers of software market qualitative changes:

Considerable share of not free programs is delivered to end users without a source code, i.e. in the form which allows only operation of the program, but not its analysis, updating, etc.

1. Concealment of the source code involves growth of the information asymmetry about the goods or services (imperfection of the market), particularly, about quality of programming.
2. Concealment of the source code also provoke monopolization of programs support services (correction of errors, functionality extension, integration with other programs and new equipment).
3. Disposing of the access to a code, possessor of the rights can also carry out price discrimination of the end users, including cut of the program functionality;

Thus, for guaranteeing competitiveness the traditional closed model of programs development tries to grant the minimum set of rights to consumer. On the contrary, free software provides maximum rights and makes it possible to:

1. Lower the customers' dependence on developers;
2. Raise availability;
3. Raise information security;
4. Raise a guarantee of life cycle maintenance.

IV. GOVERNMENT PARTICIPATION IN THE FREE SOFTWARE FIELD. FOREIGN EXPERIENCE

Noticeable source of resources for free software development, along with financing from business for commercial needs and disinterested contribution of volunteers, are also budgetary funds of many countries.

The most known is partial financing of development free OS BSD by research group at University of California in Berkeley from Agency of Advanced Research Projects (DARPA) of USA Department of Defense in the early eighties.

It is BSD 4.3 (1986) and its further versions that became a real basis of Internet networks deployment (Internet community) all over the world. This certainly is the most successful through the history of field case of free project financing from governmental sources.

The International Monetary Fund expects from the countries-participants providing wide spectrum of financial information online. Thanks to the free software USA had become the first country with completely automated system.

The aggregate cost reduction for these projects is estimated at 311 thousand dollars, distributed as follows (Table 1).

Table 1

Cutting in costs connected with free software usage

	Not Free Software, $, thousand	Free Software, $, thousand	Cost Reduction, %
OS and Equipment	80	30	67
Web-server	3	0	100
DBMS	80	12	85
Search engine	195	5	97

So serious figures of economy are explained by easy portability of free programs in a diverse environment, absence of delays with delivery, availability of support and authors, absence of licensing costs and access to source code.

Efficiency of the free-program projects is confirmed by their state financing from budgets of various countries, tens of new projects are financed by EU.

In Russia concept of development and usage of free software is also accepted at the state level.

To support this model standardization of data formats, transfer protocols and also free licensing of programs which belongs to the state are provided.

The software, as well as the majority of mass activity spheres, has a real economic basis – the services market and the labor market.

V. COST–EFFICIENCY IN CHOOSING SOFTWARE

TCO table, mentioned below (Table 2) shows cost-efficiency in choosing software for a project with 1000 users. Cost is taken from open sources, taking into account crisis management offers, as of April, 2009.

Table 2

Costs calculation with different types of software

DBMS	Oracle, USA Dollars	MS SQL Server, USA Dollars	My SQL Server, USA Dollars
DBMS License(Server+Clients)	709 000	179 000	0
UPS	1 300	1 300	1 300
1 Server + 1 Reserve	20 000	20 000	20 000
PC Workplace	650 000	650 000	650 000
OS for Server	(Linux) 0	(MS Windows) 2 500	(Linux) 0
OS – Client license	(Linux) 0	(MS Windows) 350 000	(Linux) 0
Desktop Apps	(OpenOffice) 0	(MS Office) 250 000	(OpenOffice) 0
Support for 1 year	0	0	2 100
Personnel training – DBMS administration	3150	1 900	800
Personnel training – OS administration	500	1300	500
TOTAL	**1 383 950**	**1 456 000**	**674 700**
Technical Support for next years, per year	112 000	125 000	2100

Conclusions are evident and obviously confirm economic advantages of choosing the free software, both for performance of various business problems, and for the markets of the various countries, especially developing. But in certain using of not free software is reasonable when large company or institution already uses one of the earlier purchased versions or the expense ratio of purchasing is not essential to its turnover.

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