

Analysis of arguments against Open Source and Open Solutions: Separating truth from myth

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Abstract

Open solutions as a valid alternative to proprietary IT software are still not as common as the technological maturity would suggest. CIO's and IT managers are eager to prove application of open solutions futile. Arguments used range from lack of quality, security and manageability to unspecified increased risk for the company. Most of these arguments are around for more than a decade. This report analyses and categorizes the arguments and seeks answers about their validity. A comparison with a Swiss study validates the findings.

1. Introduction

CIO's and IT managers are under constant pressure to prove themselves and their organisational units valuable to their company [9]. It is common to look outside the company in search for established, proven processes and solutions – best practice approaches.

Large proprietary vendors of standard software face sharply dropped revenues due to cuts in customer budgets. This leads to reduced innovation within their products and an increase in marketing efforts as well as raised maintenance and service fees. Vendor lock-in is another means of defending market shares. A widely used means to divert customers from utilising open solutions is to spread rumours, prematurely announce new products and distribute fear, uncertainty and doubt (FUD) [1][2].

Open solutions based on open source software as an alternative to costly and inflexible IT solutions are widely available for quite a while. They provide reliable, stable and well-performing IT services for corporate environments at reduced cost compared to proprietary systems in most cases [3]. However, most CIO's and IT managers consider open solutions as exotic, unreliable and risky to implement [4][5][9]. Currently, no reliable statistics about the adoption of open solutions exist and myths and arguments against open solutions prevail.

A cursory assessment of counter arguments against the implementation of open solutions indicates that most arguments can be invalidated quite easily. Most of them date back to when open solutions were at an early state of maturity. Some are reiterations of marketing statements issued by vendors that did not perform well in the presence of open source competition. Finally, there are some issues that need urgent addressing by

the community in order to get a wider market acceptance [6][7].

In order to address those arguments – either via clarification or by directing development efforts to ease existing shortcomings – those arguments have to be collected, categorized and analysed first.

2. Times have changed, arguments do not reflect progress

In the past, open solutions strove to compete with proprietary IT systems. Huge efforts ran into development of open source alternatives to proprietary desktop applications. As open development lacks in co-ordinated and orchestrated development efforts, competition and substitution emerged from within communities developing open solutions. Gnome, KDE, LXFE and others competed against Microsoft Windows and a struggling proprietary alternative – OS X and iOS. Office productivity suites like AbiWord, Calligra Suite (formerly KDE Office), OpenOffice and later LibreOffice strove after market shares of most popular Microsoft Office (both for Windows and Mac) as well as the native office tools for OSX (Pages, Numbers, Keynotes, etc.). It took those tools years to gain an acceptable state of stability, functionality and maturity.

Parallel but hidden from the observing public development of professional tools and solutions took place which are highly competitive in their respective niches: Software development tools offer methods for high quality design, development and life cycle management. High available and well-performing databases offer reliable data management, including innovative solutions for unstructured or non-tabular data sets. Document and knowledge management rely on solid open solutions from web based forums, wikis,

content management systems to solutions for business intelligence and data mining. In some cases there are little proprietary solutions left to compete with their open source counterparts.

Most of this development is based on a web oriented foundation. There are literally thousands of frameworks, applications and solution providers that offer commercially supported open solutions. Recently successful companies like Amazon, Google and Facebook heavily rely on open solutions.

3. Methodology

The following report takes an empirical approach to answering what keeps conservative companies from applying open solutions themselves.

It is based on data collected during a survey carried out by the students of the 2012 course in “Open Enterprise Computing” at the University of Applied Science Technikum Wien. The original question was:

Survey question:

“Open Enterprise Computing is tightly related to utilising open source software (which is correct to some extent). Please collect some arguments (min 3), why open source is not suitable or desirable for use in corporate IT environments. Bonus: Find argument(s), why open source is not suitable or desirable in any IT application (be it business or private).”

Students were encouraged to collect as accurate data as possible (e.g. if not working in an IT department themselves, they were to ask their IT for their opinion).

The arguments were then grouped, and weighted according to their quotation, assuming that arguments mentioned more often reflect opinions that are more wide-spread and bear more significance than arguments that had a lower count. In a second step, grouped arguments were categorized pertinent to different stages in the application life-cycle:

- selection
- implementation
- operations and
- utilisation.

For software vendors, a fifth category was introduced:

- sales.

This was done mainly to reduce complexity and support future discussions and research.

Finally the arguments were graded according to their truth value (from the authors perspective) on a 5 point scale according to:

- 2 ... FF ... proven wrong
- 1 ... F mostly wrong, depends on circumstances
- 0 ... TF ... partly true
- 1 ... T mostly true, depends on circumstances
- 2 ... TT ... major issue and known obstacle

Results were discussed with the participants of the survey to understand their concerns and verify that conclusions drawn from raw data comply with the opinion of the participants. Further, our findings were compared to an open source study carried out by Swiss ICT & Ernst & Young in 2012 to cross-check the results of this report.

4. Findings

Most students lived and worked in Austria – only 6 students came from neighbouring countries (Switzerland, Slovenia, Slovakia and Czech republic). 64 Students provided 440 statements why companies do not select, implement and operate open solutions in their IT environments. Some statements were compounds of arguments thus a single statement could provide more than a single argument leading to a total of 547 identifiable arguments.

Overall 27 main arguments could be isolated. Table 1 provides the arguments along with their statistical weight sorted according to the number of their appearance in the survey. It also shows the grading of the arguments according to the criteria given in chapter 3.

Table 1 resembles a sorted list of arguments. Arguments were ordered in groups of concern. Their absolute and relative occurrence is given as count and percentage respectively, as well as an indication about the cumulated percentage. Statistical clusters were introduced at 50%, 80% and the total of all arguments.

The remaining 2 columns reflect the grading of the truth value as described in chapter 3. This will be dealt with in the discussion in chapter 5.

Nr	Concern	Cnt	Percent		True/False	Grade
1	Missing Support	47	10,68%	8,59%	FF	-2
2	Missing liability and warranty	45	10,23%	16,82%	F	-1
3	Longterm sustained availability	42	9,55%	24,50%	F	-1
4	Missing skilled personnel	42	9,55%	32,18%	TF	0
5	Increased risk	37	8,41%	38,94%	TF	0
6	Insufficient functionality	34	7,73%	45,16%	F	-1
7	Missing user acceptance	31	7,05%	50,82%	TT	2
8	Incompatible to PS and legacy	30	6,82%	56,31%	TF	1
9	Legal issues	27	6,14%	61,24%	F	-1
10	Hidden costs	25	5,68%	65,81%	F	-1
11	Missing documentation	22	5,00%	69,84%	FF	-2
12	Insufficient usability	19	4,32%	73,31%	F	-1
13	Lack of applications / fragmentation	18	4,09%	76,60%	F	-1
14	Higher implementation effort	18	4,09%	79,89%	F	-1
15	Inferior quality	16	3,64%	82,82%	F	-1
16	Untested	14	3,18%	85,37%	FF	-2
17	Unreliable systems	13	2,95%	87,75%	F	-1
18	Small installed base & network effects	11	2,50%	89,76%	TT	2
19	Missing commercial model	11	2,50%	91,77%	F	-1
20	Lack of innovation	9	2,05%	93,42%	FF	-2
21	Higher maintenance effort	9	2,05%	95,06%	FF	-2
22	Inconsistent design	8	1,82%	96,53%	TT	2
23	Unprofessional creation process	8	1,82%	97,99%	FF	-2
24	Low performance	4	0,91%	98,72%	F	-1
25	Vendor/Developer Lockin	4	0,91%	99,45%	F	-1
26	Lack of political influence	2	0,45%	99,82%	TT	2
27	Requires new approach from IT	1	0,23%	100,00%	TT	2
TOTAL		547				

Table 1: Collection of survey results

Illustration 1 summarizes these results in graphical form. The colour scheme applied reflects the relevance of the arguments: red being the top 50%, orange the top 80% and green the rest.

The last 3 arguments (Low performance, Lack of political influence and Requires new approach from IT, blue coloured) reflect the last 1% of arguments and are coloured blue. They will be discussed in chapter 5.5.

5. Discussion of results

5.1 Comparable professionalism questioned

Professional support is considered to include a timely and effective response to issues a company has operating its IT infrastructure. Availability of professional support for open solutions seems to be a major concern. It also seems that IT departments prefer to yield responsibility and risk to external vendors in favour to providing internal know-how at higher personnel expenses. It is anticipated that proprietary

software vendors live up to their promise of dealing with customer issues in a timely manner as well as taking responsibility for issues that occur during course of operation.

Support (Missing support, 10,68%) and liability (Missing liability and warranty, 10,23%) are a major concern with open solutions.

IT management seems to be comfortable having a contract that delegates responsibilities in case of major problems. Some participants in this survey questioned the validity of such contractual promises. They indicated a mismatch between service charges and service abilities.

Open source vendors and service contractors are generally reluctant to accept risk they cannot directly influence. This generates a bias towards proprietary all-inclusive vendors in the IT managers view which also bears the risk of long-term vendor lock-in.

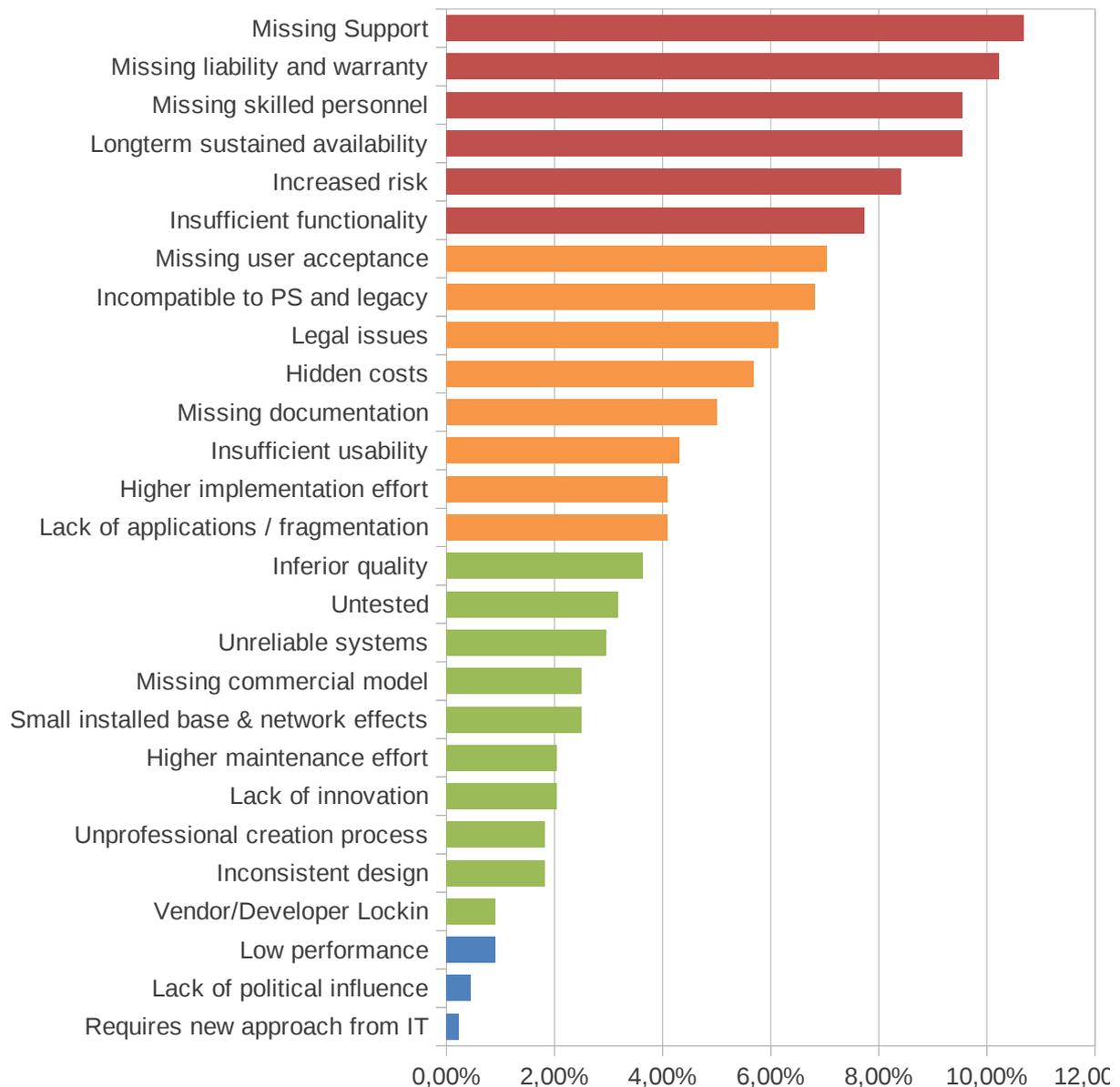


Illustration 1: Arguments grouped according to relevance

Long-term availability (Longterm, sustained availability, 9,55%) is another question that raises concern. Open solutions have a volatile image regardless of factual numbers. Disregarding long term availability of major components of the open source IT stack¹, corporate developments of lighthouse projects like StarOffice² and MySQL³ generate insecurities, uncertainty and persistence in favour of proprietary, well-proven solutions.

This is reflected in unidentifiable and unspecified anticipation of higher risk⁴ (Increased risk, 8,41%).

It seems that the fork of LibreOffice to evade restrictive corporate rulings at Oracle went unnoticed or at least was not taken as a strong sign of a will of the community to survive and continue to provide high quality software that was freely available.

1 Linux, Apache, MySQL, PHP, Java, etc.
 2 which later became OpenOffice to be forked into LibreOffice after the acquisition by Oracle
 3 acquired by Oracle in the Sun deal as well

4 participants had to be reminded that proprietary solutions like Lotus 1-2-3, Symphony, WordPerfect, Ragtime, Netscape, RDB, etc. dropped out of market previously as well. Some of them were the foundation of open source solutions

During the selection and evaluation of new IT solutions, open source solutions are measured by the same scales and means as proprietary software, disregarding new, additional or different services⁵ not available with proprietary solutions.

The anticipated lack of professionalism more so seems to be a lack of information than a factual technological disadvantage.

Recent improvements in project marketing counter this. Visually appealing project websites offer clear information about the solution, related services, license models, quick access to source and executable code as well as a communication channel and platforms for community activities. Open source initiatives provide solution- and partner directories and educational institutions have adopted open solutions into their course offerings.

5.2 Inferior functionality

Functionality defines the capability of IT services to support the working processes of its users. This includes operational function units offered by the software, the ability to interact with adjacent software systems and the ability to adapt to future requirements.

Open solutions are generally considered less functional in terms of offering less support for business processes (Insufficient functionality, 7,73%) and sometimes are considered old-fashioned⁶ (Lack of innovation, 2,05%). Lack of support for proprietary formats and communication protocols is attributed to insufficient support of standards. Incompatibilities are attributed mainly to open solutions as opposed to undisclosed extended standards.

These arguments do not take user requirements into account but measure functionality purely compared to the maximum set of a feature list. It is also assumed that every proprietary software provides this virtual set of features. This is neither the case with proprietary systems nor is it the case with open solutions.

IT managers seem to be unaware that responsibility for system compatibility is a mutual effort. Open solutions adhere to open standards⁷. Thus they interact with less

-
- 5 like forums, Wikis, communities, foundations, license and service models, source code availability, code forks, inheritance and reuse, as well as vendor independent local service providers
 - 6 a common prejudice is the necessity to operate open solutions from the command line, giving it a nerdy image
 - 7 Prominent open standards are: RFC, ECMA, OASIS, W3C, ...

implementation effort that do open systems with proprietary ones. It should be understood that this is part of a vendor lock-in, a valid business strategy of proprietary vendors to protect their market shares. The downside for companies adopting such solutions – less interchangeable systems – needs clarification of the real source of the problem.

Recent efforts, mainly driven by government institutions, have provided reasonable awareness that open standards and open data formats are important for long-term IT usability. These efforts slowly get absorbed by companies.

Further, open solution providers have developed connectors to integrate proprietary and undocumented services into their offerings. It will take some time for a mainstream penetration but the technology is here today.

5.3 Inferior quality

According to ISO, quality is the “Degree to which a set of inherent characteristics fulfils requirements”. Characteristics include the usability, reliability performance, documentation and availability of skilled personnel to name but a few.

Open solutions are considered to be of inferior quality mainly because of a lack of professionalism in the development process (Unprofessional creation process, 1,82%). This leads to untested (3,18%) and unstable (Unreliable systems, 2,95%) software. Missing documentation (5,0%) prevents sufficient training (Missing skilled personnel, 9,55%). Inconsistent software design (1,82%) generates higher efforts implementing (4,09%) and maintaining (2,05%) IT systems. From a user perspective, these systems are less usable (Insufficient usability, 4,32%) and lead to a reduced user acceptance (Missing user acceptance, 7,05%). Finally, total cost of ownership will be higher, partly due to hidden costs (5,68%) and inferior total quality (3,64%) of open systems.

Contrary to this impression, many companies rely on open solutions in business critical applications. Missed budgets and deadlines are not a problem reserved to the open source development but rather a general problem. Most modern development tools originated from open solutions before being adopted by proprietary vendors. Documentation for open solutions is available by definition: The source code is the ultimate documentation accompanied by a wealth of complementary information ranging from online forums, wikis, blogs to bug tracking databases.

Recent developments in the open solution creation process have further enhanced the simplicity of

deployment and operational maintenance⁸. Open solutions have reached a technical excellence that large telecommunication providers amongst others have learned to trust those systems.

5.4. Legal uncertainty

Legal certitude resembles the absence of any kind of risk utilising and operating open solutions, ranging from patent violations to extended license requirements for adjacent software systems.

In May 2007 Microsoft claimed that open source software violated over 200 of its software patents [10]. Microsoft never provided sufficient proof or even indicated where these violations took place. They started a campaign and signed undisclosed terms with several open source vendors in order to settle these conflicts. This led to increased uncertainty about the legal legitimacy of open solutions (Legal issues, 6,14%).

Recent advances of Google and other manufacturers of mobile phones have moved away from building SD cards into their units. To maintain compatibility between different IT systems, vendors took to the ubiquitous FAT file system which in fact is covered by a patent held by Microsoft. In 2012 Microsoft sued Motorola and other Google partners for copyright infringements. It seems a business strategy of Microsoft to maintain this sword of Damocles in order to keep businesses from migrating to open solutions in larger scales.

All of this does not necessarily affect corporate businesses utilising on open solutions. A wealth of customized licenses are available to fit any business purpose. Major licenses have been acknowledged by courts both in the US as well as the EU [11][12][13].

Unless IT managers are willing to accept current court rulings and take on some risk themselves it is unlikely that this threat will lose its power soon

5.5. Irrefutable arguments

Some arguments are undeniably true and require strategic remedy in order to obsolete them.

There is no wide-spread acceptance of open solutions

8 e.g. Ubuntu and Fedora are prominent for their few click installation, OpenStack cloud software can be rolled out by launching a few scripts from the command line. Webmin, Usermin and Cloudmin are web-based server management systems. Major CMS systems offer out of the box graphical experience during set-up and operation

being a valid and effective means to operate IT services (Missing user acceptance, 7,05%). Publicly announced adoption of open solutions followed by equally publicly proceeded re-migration back to proprietary systems⁹ increase insecurity, reduce confidence in open solutions and support the position of proprietary vendors.

A small installed user base (2,50%) provides not fertile ground for companies to invest into large-scale development. This mainly limits open development to in-house development projects. Network effects are only achievable for core infrastructure technology (e.g. development frameworks, special purpose servers) and not on larger ground in the area of business process support.

Large service providers outed themselves as open solutions supporters: Google and its Android initiative, Amazon with its cloud approaches and – in company with Facebook and Twitter – as a supporter and utiliser of non-relational NoSQL databases. Other than those prominent examples open solutions remain without political influence (,45%) and strong lobbying parties. This needs remedy for open solutions to exploit their full potential.

Finally, lack of interface design and a unified user experience prevents open solutions from gaining wide-spread acceptance. This seems to pose no problem for web-based services though. It is thus not surprising that most development of open solutions is web-based.

It seems that these irrefutable arguments are not considered serious show stoppers adopting open solutions.

6. Comparison with Swiss findings

In 2012 Swiss ICT and Ernst & Young conducted a survey with 202 IT related companies [9]. Their main findings include an adoption of open solutions of about 93% overall with an adoption of 100% in large companies and official authorities.

The study dealt with advantages, perceived disadvantages and future development. The perceived disadvantages are comparable to the survey discussed in this report and thus will be taken to validate the results discussed in this report.

The Swiss study identified 15 major disadvantages. They correlate with the results found in this report in ranking and percentage. Lower ranking arguments

9 2004 – 2009 Vienna, MA14, Austria, 2007 – 2012 Freiburg municipal, Germany

were covered by ICT and Ernst & Young in the motivating discussion of the results. Both reports identify:

- Missing support
- Missing vendor liability
- Missing skilled personnel
- Missing user acceptance and
- Lack of information
- Legal issues

as top priority disadvantages anticipated with open solutions.

Taken the high accordance of the results of both studies it is reasonable to assume that the findings in this paper are representative of the current situation.

7. Conclusion

CIO's and IT managers are forced to reduce the total cost of IT. Open solutions are a means to ease this pressure. However, adoption of open solutions does not take place as wide-spread as the maturity of the underlying technology would suggest.

Reasons identified were:

- Insufficient confidence in the professionalism of open solutions
- anticipated inferior functionality
- anticipated inferior overall quality
- anticipated legal uncertainties

Most arguments can be clarified, countered and revised with a clear information policy. Lack of lobbying parties and political will to commence open solutions hinder faster adoption by companies, private users and governmental institutions alike.

It turns out that irrefutable arguments like a lack of common interface design criteria or missing lobbying are not considered severe enough to refrain from using open solutions.

This report has identified specific arguments used to support the selection and adoption of proprietary solutions. They can be addressed during an offering of open solutions.

Further work in the area of common interface design and usability is due as the results indicate.

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