DANISH COMPETITION AUTHORITY

The market for office software

Competition and the importance of open standards

Competition analysis 03/2009

August 2009

Danish Competition Authority
Nyropsgade 30
Copenhagen V
Tel.: +45 72 26 80 00
Fax: +45 33 32 61 44

On-line ISBN 978-87-7029-40489

Layout:
Word Specialisten

Photos:
Scanpix

Translation:
Ad Hoc Translatørservice A/S

The analysis has been prepared by the Danish Competition Authority.

Contents

Chapter 1
Summary and conclusions

1.1 RECOMMENDATION BY THE DANISH COMPETITION AUTHORITY

Based on decisions of the Danish parliament, the Danish Competition Authority has been charged with conducting a study of competition in the market for office software. The study is required to focus on the impact on competition of the use of open standards, on whether competition is influenced by problems of interoperability and on whether any technical or legal aspects exist that render it difficult to switch office suites.

The study will provide some of the foundations for the Danish parliament's decision on whether ODF, OOXML or both standards are to be mandatory for public procurement of office software in future.

Based on the studies in this report, the Danish Competition Authority recommends that not only one of the two open standards, ODF or OOXML[1], be chosen for public procurement in Denmark, but that public procurement be based on both standards so that solutions support either OOXML or ODF and accept text documents in both formats.

The grounds for the recommendation are specified in more detail at the end of this chapter.

Below follows a review of the conclusions that can be drawn from the analyses in this report. The review falls into the subjects appearing from the parliamentary decisions.

- Market for office software
- Interoperability, technical and legal aspects
- Impact of using open standards
- Choice between ODF, OOXML or both standards

---

1 The correct name of the standard is Office Open XML. The abbreviation OpenXML is often used internationally. In this report, the Danish Competition Authority uses the abbreviation OOXML, which is used in the Danish debate and by IT politicians and the National IT and Telecom Agency.

1.2 THE MARKET FOR OFFICE SOFTWARE

Office software is suites of computer programs for office use which, as a minimum, comprise programs for word processing, spreadsheets and presentations. The market comprises all types of office suites, i.e. free suites and vendor suites, regardless of whether an office suite is to be installed on user hardware or can be used via the Internet.

Market conditions in Denmark are not significantly different from those in nearby countries, and the relevant market for office software is therefore international, if not global.

Annual sales in Denmark are about 1.25 million office suites. In 2006, office software sales amounted to about DKK 800 million, or about 1.5% of total IT sales in Denmark. About one fourth of sales are to retail customers and small enterprises that buy the offices suites individually and about three quarters are to enterprise customers who buy a number of office suites.

The market is dominated by Microsoft, which is estimated to hold a market share of at least 90%. The fact that enterprise customers account for three quarters of all office suite purchases means that some two thirds of all office suites in Denmark are sold under Microsoft's enterprise customer agreements (Microsoft's Volume Licensing Programs), which in each their own way encourage customers to buy more and stay with Microsoft (reference is made to the more detailed description in the section on legal bindings below).

Although the enterprise customer agreements include a number of different discount options, Microsoft's prices for office suites sold to retail customers are lowest. According to Microsoft, one reason is that the office suites sold to retail customers may not be used for commercial purposes and another that the suites sold to enterprise customers contain more programs and assign additional rights. Such use of various product versions and prices for different customer groups helps increase Microsoft's total income.

The market is influenced by a range of barriers (network effects, high development costs, technical and practical barriers), which, over the past 10-15 years, have rendered it difficult for new players to gain market shares even though they make use of various business models such as low-price suites, subscription schemes or free suites.

Some market trends indicate that Microsoft may lose market strength over the coming years. Unlike previous suites, the latest version of the Microsoft office suite is based on open standards. This allows competitors to develop rival office suites based on the same standards. Moreover, the arrival of free suites and Internet-based office suites has exposed Microsoft to growing competitive pressure which may increase in the light of the current financial crisis where many customers focus more on costs.

However, the current outlook for the office software market is very uncertain, and trends may take different directions. It is possible that the market may remain dominated by Microsoft for still some years to come without Microsoft's competitors seriously succeeding in gaining market shares. However, we may also see a trend towards gradually improving competition between several different office suites based on open standards or a technological leap to using Internet-based office suites, for example. Given the international nature of the market and market conditions in general (e.g. in terms of switching suites), we are unlikely to see a situation of perfect market competition between many different office suite suppliers.

As already mentioned, today's market is still a market where the majority of customers choose to pay for an office suite from Microsoft despite several free alternatives. The Danish Competition Authority has asked a number of selected enterprise customers about what they consider to be of considerable importance to their choices of office suite. Their answers reveal that office suite quality and the total price for the overall solution are of greatest importance to the choice of office suite. However, 60-70% of customers also point out that technical and practical aspects are of material importance to their choices. They highlight the interaction with the enterprise's other IT systems, questions of conversion and document exchange as well as the need to train staff in a new suite, etc. Such technical and practical aspects affect a customer's choice and makes switching office suites less attractive.

This is illustrated by the fact that the number of switchovers of suppliers in the market for office software is much lower than in other markets. Even when a customer switches from Microsoft to another supplier, the study conducted by the Danish Competition Authority shows that customers – in addition to the new office suite – still decide to have a few licences for a Microsoft suite.

The competition problems are not due exclusively to conditions in the office software market, but also very much to sales-related and technical bindings in relation to products in related markets.

Hence, office software is closely associated with products in a number of other areas. According to the analyses in this report, Microsoft – in addition to being the dominant supplier in the office software market – is also the dominant supplier in the markets for operating systems and server software, i.e. for the products with technical bindings in relation to office software (reference is made to the section on technical bindings below).

In summary,

- the market is dominated by Microsoft. Microsoft has maintained a market share of more than 90% for its vendor suites over a number of years despite the fact that customers can choose free alternative suites;

- Microsoft charges a lower price for office suites for retail customers, which may not be used for commercial purposes. Such a division with different product versions and prices for different customer groups prevents enterprise customers from being able to buy the cheapest office suites from Microsoft; and

- technical aspects such as integration with other IT systems in associated markets and practical aspects such as document exchange influence customer choices and makes switching office suites less attractive.

The question is what can be done to enhance competition in the market for office software. In a situation with a large concentration on the manufacturer side and many buyers, potential measures will often aim at improving structures on the *supply side* of the market. Such measures could be to dismantle barriers to market entry and grant entry to the dominant supplier's infrastructure/technical user interfaces, requirements for separation of linked services, measures to ensure technological neutrality/independence of specific platforms, etc.

As the market for office software is an international market, measures targeting the supply side of the market will most effectively be completed at the international level. Introducing special Danish measures will entail a risk that the measures are not effective – especially in terms of big international office software suppliers and when the Danish share of the market only represents a very modest share of the overall international market.

The Danish Competition Authority will approach the European Commission to discuss possible measures to enhance competition in the market for office software.

1.3 INTEROPERABILITY, TECHNICAL AND LEGAL ASPECTS

In addition to descriptions of competition conditions in the market for office software, the decisions of the Danish parliament stated that the study conducted by the Danish Competition Authority should also address problems of interoperability and technical and legal bindings. In the broad sense, *bindings* mean all aspects that may encourage, impede or prevent customers' switchover of office suites.

As technical analyses and assessments, in particular, fall outside the normal competences of the Danish Competition Authority, the Authority commissioned Devoteam Consulting to prepare part analyses of interoperability, technical and legal bindings. Below follows an outline of the most important conclusions of the Devoteam part analyses.

Interoperability

The term interoperability means the "ability to interact". In the context of office software, interoperability problems concern the question of whether it is possible to read and process a document created in one office suite by using a program from another.

So such problems only occur in connection with editable documents. When an exchange of a document does not involve a need to process the document, the document can be converted into, say, a PDF document, which can be directly exchanged across different types of software.

The main conclusion of the Devoteam report is that great challenges still exist in terms of establishing successful interoperability between different office suites. In practice, the interoperability between ODF-based and OOXML-based office suites is inadequate as is the interoperability across different ODF-based office suites.

Interoperability problems are mainly caused by differences between standards and programs. Office software contains functions that go beyond standard specifications. Furthermore, standards differ. The specification of OOXML, for instance, is more comprehensive and detailed than that of ODF, and ODF therefore appears sometimes to be under-specified vis-à-vis OOXML according to Devoteam. Finally, suppliers implement the standards differently.

Microsoft Office 2007 SP2 is presently the only office suite supporting both standards directly as it has editing and saving features in both ODF and OOXML. Thus, Microsoft Office 2007 SP2 can serve as a conversion program that, according to Devoteam, can pave the way for significantly improved interoperability in the exchange of documents based on ODF and OOXML. In addition, Devoteam finds that it is also technically feasible to implement OOXML in other office suites, e.g. ODF-based suites, but the work may be difficult and very resource-intensive on account of the extent and greater details in OOXML.

According to Devoteam, the necessary interoperability can best be achieved if both open formats are directly supported in the office suites. As Microsoft Office 2007 SP2 is currently the only office suite supporting both ODF and OOXML, the existing interoperability problems may further induce customers to choose the Microsoft office suite.

Moreover, Devoteam points out that elements remain that are yet to be specified in the standards and that standardisation of these elements can help increase interoperability. This applies to macros, for instance, which are typically lost in the exchange of documents across office suites.

The use of open standardised formats is not a sufficient condition for achieving the necessary interoperability. According to Devoteam, this is illustrated by the currently missing necessary interoperability between different ODF-based office suites. A decision to make ODF the only format for exchanging editable documents would, according to Devoteam, therefore not ensure the necessary interoperability at present or support all users' functional requirements.

The conclusions of Devoteam's interoperability analysis can be summarised as follows:

- Open standards form a sound basis for being able to achieve interoperability, but do not in themselves ensure the necessary interoperability across office suites.
- A decisions to make ODF the only mandatory public standard will currently not secure the necessary interoperability.
- Interoperability problems enhance the incentive to choose Microsoft's office suite, which supports ODF as well as OOXML.

Technical bindings

A technical binding is a relation or dependence existing between programs. A technical binding can mean improved functionality and coherence between programs, but it may also affect users' options by encouraging, impeding or preventing replacement of programs or office suites.

Devoteam draws the conclusion that technical bindings are not fundamentally different across office suites. In practice, the most significant technical bindings, according to Devoteam, involve aspects in particular that make it difficult to replace Microsoft office suites or operating systems with products from other suppliers. The main explanation is that Microsoft's office suites and operating systems are installed in more than 90% of all PCs for commercial purposes and that most independent software suppliers therefore decide only to develop integration with Microsoft products.

Devoteam has identified bindings relating to actual office suite modifications, operating systems, server software and other types of software.

Devoteam points out that bindings related to the actual office suite are a consequence of customers being inclined to enhance the functionality of an office suite by making

modifications by means of macros, etc. In general, resources devoted to modifying the former office suite to match the needs of a specific customer are lost in the switchover to a new office suite from a different supplier. Macros are strongly connected to office suites and have to be re-developed in the switchover of office suites. Moreover, a number of conversion challenges exist when office suites are replaced as documents and templates are also bound to office suites.

Bindings may also exist between an office suite and the operating system. For instance, Devoteam finds that it is not possible to replace the Microsoft Windows operating system if the user wishes to maintain Microsoft Office 2003 and 2007. OpenOffice.org can run under the most frequently used operating systems, but Microsoft Office cannot run on Linux, for instance.

Also, Microsoft Office has, according to Devoteam, a technical binding to the repository software Microsoft SharePoint, which entails a loss of functionality and a potential loss of performance if Microsoft Office (with SharePoint integration) is replaced with another office suite.

The Devoteam analysis also indicates that significant bindings exist between Microsoft Office and other software. Microsoft Office integrates well with independent software suppliers' dedicated systems and EDM systems as suppliers of these systems are almost exclusively met with requirements for/expectations of Microsoft Office integration.

Eliminating or reducing bindings between Microsoft Office and dedicated systems/EDM systems calls for integration with these systems for other office suites. Norway has established pools for financial support for the development of integration between office suites on the one hand and, e.g., dedicated systems/EDM systems on the other, and Denmark could consider introducing similar initiatives.

Devoteam concludes that if an enterprise customer has exploited the possibilities of close integration between Microsoft products and close integration with dedicated systems/EDM systems, the customer is strongly bound to Microsoft Office and will in fact be unable to replace Microsoft Office.

The conclusions of Devoteam's analysis of technical bindings can be summarised as follows:

- Technical bindings can improve functionality, but also affect users' options by encouraging, impeding or preventing replacement of programs or office suites.

- Technical bindings are not fundamentally different across various office suites.

- In practice, it is generally more difficult to replace a Microsoft office suite than other office suites. The explanation is that Microsoft's operating systems and office suites are installed in more than 90% of all PCs and that most software suppliers therefore decide only to develop integration solutions for Microsoft products.

Legal bindings

In the broad sense, legal bindings mean the terms, bindings, incentives or other types of restrictions that follow from legal provisions and which – directly or indirectly – can influence customer behaviour when customers buy and use office suites.

The report on legal bindings, prepared by Devoteam with the assistance of lawyers Gorrissen Federspiel Kierkegaard, identifies legal bindings in connection with buying and using office suites. Bindings are related partly to licence conditions based on copyright legislation and partly to the specific provisions stipulated by office suite suppliers in agreements entered into with enterprise customers.

Copyright legislation allows laying down provisions stipulating that users' use and right of disposal of a product can be restricted in different ways. This is the case in connection with office software, where resale, etc., may not be allowed, which therefore prevents parallel imports (e.g. from third-world countries where office suites are priced lower) and a market for second-hand office suites. As mentioned above, Microsoft has relied on copyright legislation to stipulate provisions to the effect that certain versions of their office suites may not be used for commercial purposes.

As Microsoft accounts for the lion's share of total sales, their enterprise customer agreements are, in practice, of biggest importance to the market for office software. According to Devoteam, the terms of these agreements encourage customers in various ways to remain customers of Microsoft and buy more software from Microsoft.

This practice is followed because the most frequently used enterprise customer agreements include upgrade schemes or encourage subscriptions for upgrade schemes. These schemes also offer customers a host of additional services and are priced at 29% of the price of the office suite. Linking the purchase of a product to multi-year subscriptions reduces the customer incentive to switch software suppliers.

Customers are also encouraged to remain with Microsoft via the discount system. Microsoft offers volume discounts on all agreements, where the discount rate increases in tandem with the volume of software bought/leased. Moreover, Microsoft offers a discount on software bought for all PCs standing on a customer's business premises and when a customer buys products from all Microsoft product categories (e.g. operating systems and servers). According to Devoteam, the discount structure applied thus represents an incentive to pool purchases of products with Microsoft to obtain as large a

discount as possible. Moreover, by entering into an agreement with Microsoft, customers are normally bound to the agreement for a period of two or three years.

The combination of the various legal bindings (upgrade scheme system, discount structures and lives of the agreements) therefore helps reduce the incentive to buy and the possibility of buying other office suites, systems or servers, says Devoteam.

Devoteam has also examined customer agreement for the office suites Apple iWorks, Zoho Business and OpenOffice, but did not identify similar bindings in these agreements.

The conclusions of Devoteam's analysis of legal bindings can be summarised as follows:

- Copyright legislation allows laying down provisions that, for instance, prohibit resale or the use of certain products for commercial purposes.

- Microsoft's agreement structures represent an incentive to buy more software from Microsoft and to continue buying software from Microsoft – and this restricts a customer's incentive to switch suppliers and impedes Microsoft's rivals from gaining market shares.

1.4 IMPACT OF USING OPEN STANDARDS

In addition to the issues reviewed above, the decisions of the Danish parliament also stated that the study by the Danish Competition Authority should include assessments of the impact on competition of the use of open standards for document formats.

Impact on competition

The key impact on competition of the use of open standards is the potential network effects.

Office suite users form part of a network if they can exchange documents with each other without such exchange causing major problems in terms of format or data loss, etc. Users of interoperable office suites belong to the same network, while users of non-interoperable office suites belong to different networks.

Within each network – made up of users of interoperable office suites – strong network effects exist that increase the value of the office suite to the individual user. Network effects occur because users benefit from being able to exchange documents and because user competences in terms of using the office suite can be broadly applied.

As regards office software, interoperability is rarely a question of either perfect interoperability or no interoperability. On the contrary, it will almost always be a question of somewhere in between. The important thing is whether the *necessary degree* of interoperability has been achieved.

The use of open standards can help ensure the necessary degree of interoperability. The existence of open standards means that office suite manufacturers are free to apply and implement the standards in their office suites. In this way, open standards contribute to promoting interoperability, but do not in themselves ensure the necessary degree of interoperability. This would require the standards to be very specific and uniformly implemented, combined with the non-existence of technical or legal bindings preventing the necessary degree of interoperability from being achieved.

However, in all circumstances, open standards improve the framework for achieving the necessary degree of interoperability, so the use of open standards will, all other things being equal, have a positive impact on competition. The explanation is that network effects – in tandem with the rising degree of interoperability between office suites – will increasingly go across office suites. Shared network effects reduce entry barriers to new office suite manufacturers and strengthen the possibilities of existing manufacturers of less popular office suites of gaining market shares.

A number of historical examples such as QWERTY keyboards, VHS/Betamax, DVD and Blu-ray/HD DVD show that de facto standards, regardless of whether they are the result of standard wars or consensus-influenced choices, may be of great and long-standing importance to a market.

The essential element may be beneficial network effects if the market backs one standard. However, the key importance may also be in the form of unsuccessful investments or under-investments. This may be the case where several standards fight a war on standards, which induces customers to put off their investments until a de facto standard has been found.

The long-term element may be linked to the fact that it is normally very difficult to alter a choice once a standard has been selected.

Today, Microsoft Office 2007 SP2 is the only office suite where both OOXML and ODF can be used as production format, while the majority of rival office suites only have ODF as production format at present. Hence, a Danish political decision to the effect that new procurement in the public sector must support OOXML in practice – at least in the short run – will mean a rejection of all manufacturers other than Microsoft.

However, a Danish decision to implement ODF will not have a similar impact as the vast majority of office suite manufactures – including Microsoft – provide office suites with ODF as production format.

The most important conclusions can be summarised as follows:

- Standards may be of great and long-standing importance to the development of and competition in a market.

- Strong network effects exist in the market for office software. Network effects will increase in tandem with the improvement of interoperability between office suites.

- The use of open standards such as OOXML or ODF can help increase the degree of interoperability between office suites from different manufacturers. This may result in shared network effects for various office suites to the benefit of competition.

The decisions of the Danish parliament to use open standards for public procurement aim at influencing the *demand side* in the market. However, a Danish decision on mandatory standards for Danish public procurement will only have a direct impact on a small share of demand. Public procurement of office suites thus only accounts for about 10% of demand in Denmark and about two per thousand of total demand for office suites worldwide. If a decision of the Danish parliament is not followed by similar recisions in other countries, it will have only very limited impact on the total market.

This does not mean, however, that there is no reason to pass decisions on the use of open standards in Denmark. The use of open standards in as many areas as possible will, on the contrary, be one of the conditions that may help ensure interoperability and competition on an equal footing between different office software suppliers.

If open standards are introduced in several other areas, technical bindings may be reduced. Devoteam's report specifically points to open standards for macros as a measure to limit technical bindings and make it easier for customers to switch suppliers.

Decisions on standards in other countries

This report will provide some of the foundations for the Danish parliament's decision on whether ODF, OOXML or both standards are to be mandatory for public procurement of office software in future.

As a supplement to the analyses referred to above, the Danish Competition Authority has looked into what decisions on product format standards have been passed in other countries. According to the information of the Danish Competition Authority, the picture is mixed:

- So far, a majority of countries are biding their time in terms of choosing between ODF and OOXML.

- No country seems to have chosen an exclusive ODF or OOXML strategy.

- Countries having passed a decision have often opted for various formats, including ODF, OOXML, PDF and doc in different combinations.

- There seems to be a tendency in some countries towards preferring ODF or granting it a preferential position (e.g. as the recommended standard), which seems to be based on a desire for enhanced competition.

1.5 CHOICE BETWEEN ODF, OOXML OR BOTH STANDARDS

The analyses in this report all agree that the use of open standards for document formats can help enhance competition in the market for office software.

The use of open standards paves the way for improving interoperability between office suites. In this way, network effects can include various rival office suites. Shared network effects are essential for achieving efficient competition between competing suppliers in the market for office software.

From the point of view of competition, the Danish Competition Authority recommends that public procurement be based on both OOXML and ODF. There are several different grounds for this recommendation.

Firstly, the market for office software is an international market where a Danish decision will only have a direct impact on a very modest share of sales. Even though we cannot rule out the possibility of a Danish decision producing a *snowball effect* (by triggering similar decisions in other countries), a Danish decision is highly unlikely to have a major impact on the market.

Secondly, the standards are new and immature, and the direction taken by the market is uncertain. If the standard chosen does not become market standard, there will be a risk of significant unsuccessful investments.

Thirdly, a choice between ODF and OOXML as the mandatory standard may have unfortunate consequences at present:

- Off-hand, choosing OOXML will exclude all suppliers other than Microsoft.

- If ODF is chosen, competition will take place between exactly the same office suites as in a situation where both standards are chosen. Moreover, choosing ODF does not ensure the necessary interoperability.

This being the case, the Danish Competition Authority recommends that not just one of the two open standards, ODF or OOXML, be chosen for public procurement in Denmark, but that public procurement be based on both standards so that solutions support either OOXML or ODF and accept text documents in both formats.

Chapter 2
Tasks of the Danish Competition Authority

2.1 INTRODUCTION

The Danish parliament has passed two decisions charging the Danish Competition Authority with conducting a study of competition on office software, including the use of open standards for document exchange.

This chapter explains these decisions and summarises the tasks specifically to be undertaken by the Danish Competition Authority.

2.2 DECISIONS OF THE DANISH PARLIAMENT

Parliamentary decision B103

By decision of 2 June 2006[2], the Danish parliament ordered the Danish government to ensure that public-sector use of IT, including software, is based on open standards. To further competition, the decision stated that, on or before 1 January 2008, open standards[3] were to be established in all IT areas where technically feasible so that communication between citizens and companies and the government agencies could be realised in formats based on open standards.

Danish parliament spokesmen on IT specified this further in a conclusion paper in June 2007[4], from which it appeared that specific open standards in seven different areas[5] would be mandatory for public procurement of IT after 1 January 2008.

---

2 *The decision is available in Danish at http://www.folketinget.dk/doc.aspx?/samling/20051/Beslutningsforslag/B103/.*

3 *Open standards mean that standards are (1) completely documented and publicly available, (2) can be used freely without bindings and (3) are standardised and maintained in an open forum and open process.*

4 *See http://vtu.dk/filer/aabne-standarder/bilag32.html.*

5 *The standards address data exchange, document management, electronic procurement, digital signature, websites, IT security and document exchange.*

One of these areas concerns standards for document exchange, and two different standards exist, viz. ODF and OOXML. As from 1 January 2008, the government agencies were to be able to accept word processing documents in both standards (perhaps by means of a conversion program). Moreover, new IT purchases were to support at least one of the standards.

The Danish parliament must decide whether one or both standards[6] are to be mandatory after 1 July 2009 on the basis of, for instance, an assessment made by an independent expert committee.[7] The assessment[8] is, for instance, to include (1) assessments of interoperability between standards, (2) practical implementation experience and (3) "*a specific assessment by the Danish Competition Authority of the impact of the use of mandatory open standards for document exchange on competition*".

Memorandum for spokesmen on IT

In a memorandum of 17 December 2007, the Danish Competition Authority informed parliamentary spokesmen on IT that the Authority intended to examine

- the state of competition at the introduction of open standards compared to the situation when the standards had been in force for just under a year (examined by means of questionnaires for public and private IT purchasers and software suppliers and developers) and

- the longer-term impact, including the importance of choosing one or both standards (e.g. by involving relevant international experience).

Next, the IT spokesmen stated in a letter of 15 January 2008 to the Minister for Science, Technology and Innovation that they were not convinced that the Danish Competition Authority was addressing the problems in the optimum way. Instead, the spokesmen pointed out a range of areas and problems that should be covered by the Danish Competition Authority's study. As the minister subsequently responded that the Danish

---

6 *The Danish Competition Authority regards this as a minimum requirement to the effect that the office suite purchased must have either ODF or OOXML as production format (see explanation of production format in chapter 6). As appears from table 6.3, virtually all office suites with an open standard as production format can read the other open standard.*

7 *The expert committee is made up of Mads Bryde Andersen (professor, University of Copenhagen, specialist in IT/law), who has been appointed chairman of the committee, and Kim Viborg Andersen (professor, Copenhagen Business School, Center for Applied ICT), Jørgen Kristensen (chairman of the Association of Municipal IT Managers), Mogens Kühn Pedersen (professor, Copenhagen Business School, Department of Informatics) and Jens Hørlück (associate professor, Aarhus University, Department of Economics, researcher in IT-economics and open source).*

8 *The Danish Competition Authority assumes that the formulation in this respect in the conclusion paper is to be understood to mean that this forms part of the assessment by the Danish parliament (i.e. not the assessment by the independent expert committee). In this context, the Danish Open Source Business Association (OSL) has said that an interpretation to the effect that the Danish Competition Authority's report is not to be included in the assessment by the independent expert committee clearly conflicts with OSL's opinion on the intention of appointing the independent expert committee. Hence, the Danish Competition Authority has informed the authority responsible, the National IT and Telecom Agency, of OSL's opinion.*

Competition Authority should decide the extent and nature of its study, the spokesmen raised a parliamentary debate, which led to the resolution mentioned in the following.

This being the case, the Danish Competition Authority study can be organised differently and address aspects other than the ones stated in the Authority's memorandum of 17 December 2007 to the IT spokesmen.

Parliamentary resolution V45

Following an oral question debate on 25 April 2008, the Danish parliament – in addition to the guidelines on the appointment of an independent expert committee and its tasks – passed the following formulation, which conveys additional tasks to the Danish Competition Authority:[9]

"The government is requested to study the consequences for competition of the lack of interoperability and assess competition on office software based on ODF and/or OOXML, including technical and legal bindings related to the office software, and propose how, if possible, competition can be enhanced within the framework of B103 of 2006. The Danish parliament declares that the competition authorities should be involved in this process."

The Danish Competition Authority has subsequently entered into an agreement with the National IT and Telecom Agency under which the agency is to contribute financing to the Danish Competition Authority's studies as a result of this resolution. The agreement means that the Danish Competition Authority is not merely to be involved, but, in practice, to be assigned the responsibility for performing these studies.

2.3 OVERALL COHERENCE BETWEEN STUDIES

It follows from parliamentary decision B103 that the Danish Competition Authority is to:

- Make an assessment of the impact on competition of using mandatory open standards for document exchange (ODF and OOXML).

Furthermore, it follows from parliamentary resolution V45 (and the agreement with the National IT and Telecom Agency) that the Danish Competition Authority is to:

- Study competition on office software based on ODF and/or OOXML.

---

9 *The decision is available at http://www.itst.dk/regeringens-it-og-telepolitik/abne-standarder/rapport-fra-ekspertud-valg-vedrorende-abne-standarder-for-dokumentformater/Bilag%20E.pdf.*

- Study the consequences for competition of
  - the lack of interoperability between office software based on ODF and/or OOXML and
  - technical and legal bindings related to office software.

- Propose how to enhance competition (at no extra cost).[10]

The various aspects to be studied by the Danish Competition Authority according to the parliamentary decisions are closely related. The common denominator is that competition on office software is to be studied.

In addition to the general matters of importance to competition in a market area, the market for office software will also have some special matters of vast importance to competition, including, in particular, questions about:

- the use of the ODF and OOXML document formats;

- interoperability between office software based on ODF and OOXML; and

- technical and legal bindings related to office software.

Hence, according to the decisions of the Danish parliament, the tasks assigned to the Danish Competition Authority can be summarised to one study of competition on office software, comprising, for instance, assessments of the impact on competition of the use of open standards for document formats, interoperability problems and technical and legal bindings, if any.

2.4 TIME LIMIT FOR COMPLETING THE STUDIES

No actual time limits have been set for the completion of the above tasks by the Danish Competition Authority.

The original intention was that the decision of the Danish parliament on the choice of ODF, OOXML or both standards was to take effect on 1 July 2009. As the analyses and assessments of the Danish Competition Authority are to provide some of the foundations for the parliamentary decisions, meeting this time limit would require the analyses and assessments to be in place not later than at the beginning of 2009.

---

10 *It appears from the decision that the proposals must be within the framework of decision B103. The conclusion paper of June 2007 specifies that the use of mandatory open standards must take place at no extra cost to the government agencies. According to OSL, Danish parliament spokesmen on IT have subsequently pointed out that the requirement of no extra cost is to be seen over an amortisation period of 3-5 years (like all other software investments).*

Parliamentary resolution V45 entails an increase in the Danish Competition Authority's tasks as the Authority, for instance, is to include studies of interoperability and technical/legal bindings – i.e. areas falling outside the competences of the Authority and where the Authority therefore has to obtain assessments studies from external consultants. Moreover, the economic basis for launching the new studies was not in place until August 2008. This being the case, the Danish Competition Authority expected in connection with the launch of the analyses in the autumn of 2008 that the overall analyses and assessments would not be available until around 1 July 2009[11].

2.5 COMMENTS BY THE NATIONAL IT AND TELECOM AGENCY

The Danish Competition Authority therefore forwarded the above description of its task to the National IT and Telecom Agency, which is the authority responsible in the area, with a view to ensuring that the Authority's planned studies would be completed in keeping with parliamentary decision B103 and resolution V45.

The National IT and Telecom Agency stated that the planned tasks of the Danish Competition Authority lay within the political contractual basis and that it had no comments to the planned studies as the Danish Competition Authority is free to choose the method, etc. In addition, the National IT and Telecom Agency took note of the Danish Competition Authority's expectations of completing the overall analyses and assessments at around 1 July 2009.

11 *As Devoteam's report on legal bindings, which forms the basis of chapter 8 of this report, was delayed, the report could not be published until 12 August 2009, however.*

Chapter 3
Product markets

3.1 INTRODUCTION

When competition authorities are to conduct a study of competition in an area, the first step is to lay down the framework for the study. In this way, they determine the precise subject of the study.

The framework is typically laid down for two aspects – the products and the geographical areas to be studied – by defining the relevant product market and the relevant geographical market. The market definition is based on a specific product sold in a specific area in which the study focuses on whether customers have alternatives in terms of other products and suppliers in other geographical areas.

Once this framework has been laid down, the state of competition between the products in question in the defined geographical area can be studied.

This chapter deals exclusively with the definition of relevant product markets. In competition analyses, relevant product markets comprise all products that – in the eyes of consumers – can replace one another on account of their properties, prices and uses, etc.

3.2 THE MARKET FOR OFFICE SOFTWARE

The Danish parliament selected office software as the basis for defining the relevant product market. Below follows a description of what office software means. Next follows a study of the characteristics of office software in terms of functionality, quality, price and use and the relations between format standards and office software. Whether other market information carries importance to the definition of the relevant product market is also considered. The end of the section concludes how the product market for office software is defined.

Office software

There is no established definition of what office software covers, so the ideas behind the use of the term differ.

An office suite is a collection (suite) of computer programs for office use. A suite will typically include programs for word processing, spreadsheets and presentations, while database programs, e-mail programs and drawing programs, etc., may be included. For instance, the office suite OpenOffice contains programs for word processing, spreadsheets, presentations, databases and drawing, while Microsoft office suites come in various versions, which typically include programs for word processing, spreadsheets and presentations.[12]

Hence, while the term office software typically involves several different computer programs for office use, the political agreement between the government, Danish Regions and Local Government Denmark on implementation of parliamentary decision B103 for the public sector only concerns word processing programs (standards for exchanging editable word processing documents). Programs for spreadsheets and presentations and other programs for office use are not covered by this political decision.

The Danish Competition Authority finds that, by using the term office software in resolution V45, the Danish parliament has requested a study of a product area broader than merely word processing programs. Moreover, the open document standards ODF and OOXML do not exclusively aim at use in word processing programs, but also in spreadsheets and presentations, and programs for office use are currently available almost exclusively as suites instead of single programs.[13]

Box 3.1: Definition of office software

Office software is computer programs for office use, which come in suites and which, as a minimum, comprise programs for word processing, spreadsheets and presentations.

The term office software covers all products which can be used for office tasks, i.e. to prepare, read and edit text documents, spreadsheets and presentations. This applies to both conventional type office software to be installed on and used by user hardware (typically PCs[14]), and to the new Internet-based office suites[15], which are not installed on user hardware, but only require Internet access.

---

12 The only exception is Microsoft Office 2007 Basic Edition, which does not include a program for presentations.

13 Microsoft has stated that its programs for word processing, spreadsheets and presentations are available separately, but that they are only bought separately in this way to a small degree.

14 PCs are in this study used as an overall name for all types of personal computers regardless of the operating system used (i.e. PCs also comprise computers from Apple, which use the Mac OS X operating system).

The market therefore comprises all types of office suites that meet the above definition, regardless of whether the software is installed on user hardware or can be used via the Internet. This is true for office suites like Microsoft Office, OpenOffice, Apple iWorks, IBM Lotus Symphony, Corel WordPerfect, KOffice, Novell OpenOffice, Sun StarSuite, NeoOffice, ThinkFree Office and Gnumerics installed on user software, and for the Internet-based office suites Google Docs, Zoho Work Online, Adobe Buzzword and the upcoming Microsoft Office Web Applications.

Office software characteristics

The next question is what characterises office software in terms of functionality, quality, price and use – i.e. the very specific characteristics of the products.

The functionality of an office suite depends on the programs included in the suite. According to the above office software definition, programs for word processing, spreadsheets and presentations will always be included. The basic functionality of the suites is therefore programs for preparing text documents, making spreadsheets and presentations. Also, the suites may contain a range of other programs for, say, e-mail, databases, layout, web design, drawing, etc. The inclusion of such programs in the suites thus increases the number of potential uses (additional functionality).

Moreover, the functionality depends on the functions and options offered by the individual office suite program. Some programs may be simple and contain only a minimum of functionality, while others contain a large number of options in addition to the basic functionality and, for instance, allow highly sophisticated functions or many different layout options, etc.

Off-hand, it is impossible to describe the quality of office software specifically as there are no generally accepted divisions of office software into low quality, standard quality and high quality, etc. According to the National IT and Telecom Agency, office software products are generally stable and integration between office suite programs well-functioning. This does not mean that quality may not differ between office suites, but only that there is no objective and generally accepted way in which to determine the differences.

---

15 *Several new Internet-based office suites are available, which offer the same functionalities as other office software (can be used for preparing text documents, making calculations and presentations, etc.) and additional functionalities (e.g. allowing several people to use one document at the same time). In the opinion of the Danish Competition Authority, the Internet-based office suites will, for some types of customers (with a special need for additional functionalities) represent possible alternatives to the conventional suites installed on a PC. This is already now the case to some extent even though several of these office suites are still at the development stage, and Internet-based office suites are set to become more popular in the time to come. For other customer types, Internet-based office suites will not be a real alternative in the short term. Using Internet-based office suites means that the documents generated are saved on servers on supplier premises, and this may pose a problem in connection with the government agencies' documents containing confidential information.*

Microsoft underlines quality as the single most important competitive parameter. The company finds that the office software is most often selected based on quality, which explains the market shares held by the various office suites. According to Microsoft, the quality of office software is made up of various elements such as productivity, technical options/functionality, design, user friendliness, administrative tools and document format interoperability.

In terms of prices, distinction is made between two types of office software – free suites and vendor suites. The free suites are not represented by open source suites alone, but also of office suites from commercial companies, which base their earnings on the sale of products and services in relation to the suites. The suites are free to acquire and use, but may involve related costs of, e.g., implementation, support and training. In contrast, vendor suites are offered on conventional market terms, typically with payment of a licence fee per user.

In a comparison of the two types of pricing, it would thus be relevant to take a look at the total costs of acquiring and using the office suites (called a "total cost of ownership" assessment)[16]. The Danish Competition Authority assumes that a more detailed analysis of the difference in pricing will not conclude that free suites and vendor suites belong to different product markets. OSL confirms this and says that open source products are in fact competing with office software offered on conventional market terms and attempting to win market shares from it.

At present, bindings related to the use of office software exist in some areas – both in terms of operating systems and other programs.

Box 3.2: Bindings

A number of the analyses focus on the different forms of bindings, including technical and legal bindings. The term *bindings* is used generally in this report based on a broad definition, which comprises all types of aspects that may encourage, impede or prevent customers' switchover of office suites.

In their present versions, some office suites can only be used with certain operating systems, while other office suites can be used with the majority of commonly used

16 *For the purpose of the market description in chapter 5, the Danish Competition Authority conducted a questionnaire survey in which enterprise customers, among others, were asked about the significance of this assessment (see the more detailed description in chapter 5 and the results of the questionnaire survey in appendix 1).*

operating systems. For instance, Microsoft's office suites[17] cannot be used on PCs using Linux as operating system. In contrast, OpenOffice and its variants can be used with all the three common operating systems Windows, Linux and Mac OS X.

Such bindings to specific operating systems only exist for office suites installed directly on user PCs. They will not exist when an office suite is installed on a central server and the PCs are used as terminals. Access to the central server can be via a network in a company[18] or via the Internet.[19]

The National IT and Telecom Agency has pointed to another type of bindings relating to the use of office software. Government agencies use programs for electronic document management, accounts, portfolio management, project reporting, e-mail, calendars and a number of dedicated systems[20], and this use requires installation on a user PC of an office suite for viewing and editing text documents.

These systems can be designed to use the programs in a specific office suite (typically Microsoft Word and Excel) for viewing and editing documents. Often, this means that such programs and dedicated systems use functions such as macros from certain office suites, which, in addition to bindings to the office suite in question, can lead to bindings to the underlying operating system and IT environment in general. Even if the document format is open, this means, according to the National IT and Telecom Agency, bindings to specific software.[21] This type of bindings[22] can be eliminated by modifying the dedicated and other systems, but this will typically be a costly affair.

---

17 *The Danish Competition Authority understands that this aspect, according to Microsoft, is not related to the document standards, but that the Microsoft office suites for PC installation have not been developed for use on PCs using Linux as operating system. According to Microsoft, other suppliers are free to develop an office suite based on OOXML for PCs with Linux as operating system. OSL has said that it does not agree and has, for instance, pointed out that OOXML uses OLE (when a document object contains a link to another file) and thus has bindings to Windows. Microsoft has subsequently stated that OSL's opinion is incorrect and that neither ODF nor OOXML has technical bindings to OLE or any other requirement to implement a given object technology. The problems in this context are dealt with in chapter 6 on interoperability and chapter 7 on technical bindings.*

18 *Microsoft has said that all major organisations generally use desk top virtualisation technology, which, in practice, means that an office suites it not installed on PCs at all, but on a central server serving a large number of users at the same time. According to Microsoft, it appears to the user that the program is installed on the PC, although this is not the case.*

19 *Such office suites can be used from any Internet browser and regardless of the operating system installed on the PC.*

20 *The systems are many and different and serve different purposes. For instance, any local authority will have about 60 dedicated systems.*

21 *Microsoft stated that it should be pointed out that such bindings are created by the dedicated system – e.g. sold by KMD or ScanJour – and are not bindings in the actual office software.*

22 *Microsoft stated that the fact that MS Office has a well-defined programming model for integration with dedicated systems, which can be used by developers, does not indicate bindings. Quite the contrary, it is a quality of MS Office, says Microsoft. Microsoft also stated that dedicated systems exist that support ODF and OpenOffice. Technical bindings between office suites and other systems are dealt with in chapter 7 of the report.*

Relationship between standards, formats and office software

A document exchange standard specifies formats for using electronic documents such as text documents, spreadsheets and presentations. The specification determines how the underlying codes for computer programs are designed strictly in technical terms.

Box 3.3: Document, format and standard

An *electronic document* is a digital representation of a paper document, represented in graphic form.

A *document format* is a set of rules regulating the translation of a digital representation into a graphical representation.

A *document standard* is a set of rules for document formats laid down by a standardisation body.

Source: Eexpert committee on open standards: Report on ODF and OOXML implementation by government agencies of 1 January 2008 (1 December 2008), page 12 (see http://www.itst.dk/regeringens-it-og-telepolitik/abne-standarder/rapport-fra-ekspertudvalg-vedrorende-abne-standarder-for-dokumentformater).

So far, office suites have typically been designed to generate documents in specific formats. For example, the word processing programs in the Microsoft office suites have been doc (.doc) up to and including Office 2003 and OOXML[23] (.docx) in Office 2007, while the word processing format in OpenOffice and its variants is ODF (.odt). Similarly, spreadsheet formats are indicated by the extentions .ods in OpenOffice and .xls/.xlsx in Microsoft's office suites.

Traditionally, the standards used in office suites have been company-specific (proprietary) standards. Recent years, however, have seen a tendency towards more openness in the standards and some standards are now characterised as open. This is understood as follows:

23 *Microsoft Office 2007 uses the OOXML version approved by ECMA, while the OOXML version approved by ISO, according to Microsoft, is set to be used in the next version of the Office suite.*

Box 3.4: Open standards

An open standard means that

- the standard must be fully documented and publicly available;
- today, and in the future, the standard can be freely implemented and is not subject to any financial, political or legal constraints as regards its implementation and use; and
- the standard must be standardised and maintained in an open forum via an open process (standardisation body).

Source: Conclusion paper of Danish parliament spokesmen on IT (June 2007) (see http://vtu.dk/filer/aabne-standar-der/bilag32.html).

Two of the standards for document exchange, ODF and OOXML, are characterised as open standards in the conclusion paper of the Danish parliament spokesmen on IT[24], which contains the definition of open standards. ODF and OOXML are therefore referred to as open standards in the following.

Both OSL and Microsoft have presented some of their views of whether OOXML and ODF meet the conditions for being open standards, etc. As the Danish Competition Authority is not tasked with assessing this matter, such views have not been included in this report.[25]

Both ODF and OOXML are based on the document-oriented language XML and structured according to XML tables. XML is an abbreviation of "eXtensible Markup Language" and indicates a data formatting method (i.e. not a specific data format), so documents saved in OOXML and ODF, respectively, have different structures. As both ODF and OOXML are based on XML, the documents are no longer binary as was the case with the doc format, etc. This makes it easier to extract parts of the information contained for Internet use, database use and text readers[26], etc.

A range of other formats used for document exchange supplement the two open standards ODF and OOXML. These formats all fail to meet all the mentioned requirements for being called open. The most common format for editable text is the Microsoft doc format (.doc), which meets two out of three requirements as publicly

24 *See conclusion paper of Danish parliament spokesmen on IT (June 2007), which is available in Danish at http://vtu.dk/filer/aabne-standarder/bilag32.html. Both standards have been approved by the International Organization for Standardization (ISO).*

25 *A number of questions related to these problems are dealt with in chapters 6-9.*

26 *In this context, Microsoft has stated that the ISO-approved ODF version (version 1.0) cannot be used with text readers for visually impaired people. The two most frequently used ODF versions (versions 1.1 and 1.2) can.*

available format documentation is available and can be used freely.[27] Furthermore, there are the RTF format (.rtf), which is also owned by Microsoft, and unformatted text (.txt), which has very limited functionality, however. The most commonly used format for non-editable text is the PDF format (.pdf), which was recently approved by ISO.

Doc remains the most commonly used word processing document format, while the more recent formats ODF and OOXML have so far been used to a limited extent.

Market information

Other information about market players, customer groups, distribution and sales, entry barriers, bindings and capital requirements, etc., may be of significance to the market definition. This may be the case, for instance, if different customer preferences or distribution conditions, in practice, lead to such pronounced customer segmentation that considerable differences exist in the conditions of competition and thus separate markets.

Chapter 5 of this report contains detailed descriptions of a number of these market conditions. The following only takes a look at whether a need exists, for instance, to divide the market into separate sub-markets, etc., on the basis of very general information about the market.

Manufacturers and suppliers of office software are predominantly big international groups. This is true of the suppliers whose office suites are available on standard commercial terms, but all the important suppliers of free suites are also international groups according to information held by the Danish Competition Authority. Microsoft holds shares of at least 90% of the market for office software in Denmark and worldwide, see chapter 5.

Free office software suites are supplied on the Internet where, e.g., the open source program OpenOffice can be downloaded, shared and copied without any restrictions. Other products, like Microsoft Office, are sold on conventional commercial terms and through different outlets (under enterprise customer agreements, with PCs, through retailers and the Internet).

Customers fall into two primary different groups:

- Enterprise customers, who acquire a number of suites.[28]
- Retail customers (including small enterprises), who typically acquire office suites individually.

---

27 *Doc does not meet requirement no. 3 of being standardised and maintained in an open forum in an open process.*
28 *These are government agencies/institutions and companies/organisations.*

Customer demand for certain office suites depends on a host of factors[29], which may be of varying importance to the various customer groups. Such factors are price, quality, total cost of ownership (including the costs of switching and a need for supplementary staff training, if any), a need for exchanging editable documents, requirements of compatibility with other own systems (including product bindings), interoperability in terms of partners' choice of document format, knowledge of office suite supply (including of open source software), existing procurement agreements, etc.

In addition to the above-mentioned differences in customer sizes, neither Microsoft nor OSL has pointed to any significant differences between various customer types, which would make it relevant to divide customers into segments.

Nor are there any statutory requirements or the like that represent a barrier to supplying office suites in Denmark. Like other products, public procurement of office suites is, however, governed by public procurement rules under which total public procurement in amounts exceeding specific threshold values must take place according to a tender[30] or under framework agreements from National Procurement Ltd. (SKI).

This being the case, the Danish Competition Authority finds that the differences in the terms for supplying and selling office software are sufficient to warrant a division of the market into separate sub-markets.

Alternatives to office software

The Danish Competition Authority finds that office software comprises all relevant products for office tasks such as preparing, viewing and editing text documents, spreadsheets and presentations irrespective of whether the products run on user hardware or can be used via the Internet.

As the market thus comprises all products covered by the definition regardless of how they are sold and used, no other products seem to exist that can replace office software. Hence, there is no need to make a replacement assessment to establish whether products other than office software can be a part of the relevant product market for the Danish Competition Authority's studies of competition on office software.

---

29 *The Danish Competition Authority has conducted a questionnaire survey in this context for use in the market description in chapter 5. The overall results of the survey are described in appendix 1.*

30 *OSL has said that no public tender has taken place for procurement of a large number of office suites, but that public tenders have involved package solutions in particular. So OSL is of the opinion that public procurement of Microsoft operating systems and office suites has not been subjected to competition with similar open source products. In this respect, Microsoft has said that sales of office suites to the government agencies are based on the SKI agreement, entered into on the basis of a new EU tender every three years. There is nothing to prevent suppliers of Open Office products from participating in the SKI tender.*

Summary

The market for office software consists of suites of computer programs for office use which, as a minimum, comprise programs for word processing, spreadsheets and presentations. The market comprises all types of office suites, i.e. free suites and vendor suites, regardless of whether an office suite is to be installed on user hardware or can be used via the Internet.

3.3 RELATED MARKETS

The following considers whether a need exists to point out other markets with a close relation or of considerable importance to the market for office software. To the extent that office software has close bindings to or is closely related to other products or services, this should be clarified so these aspects also can form part of the overall assessments of office software competition.

PCs

According to Danish Competition Authority information, Microsoft's operating system Windows is pre-installed on virtually all PCs sold in Denmark. In some cases, Microsoft office suite is also pre-installed.

Such combination sales where two or more products are sold together and where it may be difficult to acquire products separately without incurring significant extra costs may be of considerable importance to competition.

Hence, in the study of competition on office software, it will be relevant to study the extent and impact on competition of such pre-installed operating systems and office suites on PCs.

Operating systems

As mentioned above, Microsoft's office suites hold a market share of at least 90% in Denmark and can only run under two out of the three most common operating systems for PCs (Microsoft Windows and Apples Mac OS).[31] Microsoft has not developed office suites able to run under the open source operating system Linux. According to Microsoft, one explanation is the modest business incentive as Linux holds a market share of around 1% only, while Windows and Mac OS, respectively, hold market shares of about 90% and 9%.[32]

---

31 *Microsoft's office suites for Mac do not have all the functions that can be used on Windows, but Microsoft states that it is only a question of small differences in detail. According to OSL, however, the differences are extensive, one being that Excel in Office 2008 does not support VBA.*

32 *The market shares stated by Microsoft were calculated at the global level in November 2008.*

When a product commanding a very strong market position in an area can only be used in combination with some of the products supplied in another area, this may impact severely on competition for the other market area. It will therefore also be relevant to consider the impact on competition of the fact that the dominant supplier's office suites cannot run under all types of operating systems.

Server software

OSL has pointed out that Microsoft's office suites contain bindings[33] to server software, which is especially due to the fact that Microsoft's office suites use a server for document sharing.[34] In this connection, OSL points to bindings between Microsoft's office suites and Microsoft's systems for document sharing – content management systems[35] and collaboration software.[36]

Such bindings where a product (e.g. an office suite) from a specific supplier works better and more efficiently in combination with other products from the same supplier (e.g. server software) may be of considerable importance to rivals' possibilities of beginning to compete with the company on the individual product (e.g. the office suite). This will especially be the case if some of the products in question hold large market shares and if the rivals do not have the same possibilities of designing their products to work just as efficiently in combination with the other products.

The extent and impact on competition of any bindings between office suites and server software should therefore also be studied to form part of the overall assessments of office software competition.

---

33 *Microsoft comments as follows: "No such binding exits. Microsoft has openly documented all connections between Microsoft Office and SharePoint and other server products such as Windows and SQL Server. This is among other things illustrated with the SharePoint plug-in for Lotus Notes: http://symphony.lotus.com/software/lotus/symphony/plugin.nsf/home. It is very concerning for Microsoft that OSL is allowed to make these accusations and that they are being reprinted in the DCA report without questioning the facts and truth behind them. Microsoft has openly asked OSL to document their critique with points to factual connections, however no such facts have been presented leading to no other conclusion that no facts exist." The Danish Competition Authority finds that when OSL at the preliminary stage of the work to prepare this report has pointed out this problem it would be relevant to examine whether the problem is of importance to competition in the market for office software. The examination has thus formed part of the terms of reference for Devoteam's studies of any technical bindings (see the more detailed description in chapter 7).*

34 *Document sharing is effected by saving documents on a shared server so several users can access them.*

35 *Content management systems is the name of IT solutions used for handling the publication of content on the Internet, etc.*

36 *Collaboration software is the name of programs designed to promote collaboration, network, sharing of information and knowledge between various parties in a computer network. It may be a question of collaboration between highly different programs and systems such as e-mail systems, calendar and meeting systems, project management tools, discussion groups, etc. The Microsoft collaboration software, a combination of Microsoft Office SharePoint Server and Office Professional Plus, allows editing, sharing and organising documents. According to OSL, Microsoft's office suites are closely integrated with Microsoft's SharePoint, where parts of MS SharePoint (e.g. InfoPath for creating forms) only can be used by means of Microsoft office suites.*

Other software

As mentioned above, the National IT and Telecom Agency has indicated that bindings may also exist between office software and other software such as programs for electronic document management, accounts, portfolio management, project reporting, e-mail, calendars and a number of dedicated systems. The design of these programs and systems often means that they use the programs in a specific office suite for viewing and editing documents. Very frequently, the programs also use functions such as macros from specific office suites.

When other software contains such preferences or bindings to specific office suites, customers will be encouraged to choose exactly the office suite with which these other systems, off-hand, are designed to work best. Such matters may also have considerable impact on competition in the market for office software.

Furthermore, extensive bindings between several markets in relation to each other could have a cumulative effect. This could be the case if a dominant supplier in one market is able to transfer its market power and become dominant in another market – which again could enhance the supplier's position in the first market.

Hence, in the study of competition on office software, it will be relevant to study the extent and impact on competition of such preferences/bindings between other software and specific office suites.

Services

Another form of close bindings can involve the services supplied with or in relation to office suites. Supplies of office suites to major companies in particular and government agencies, etc., often include services such as support, training, implementation, operation and maintenance. As already mentioned, the commercial business model with respect to free suites is precisely based on income from such services related to office software.

When office software product customers choose an office suite, it will therefore be relevant to look at the total costs of both vendor suites and free suites, including related services.

Hence, in the study of competition on office software, it will also be relevant to look at the extent of/need for related services and the total costs for customers of choices of different types of office suites.

Summary

The Danish Competition Authority's current information shows that a range of products and services seem to have close bindings or be of considerable importance to the market

for office software. This applies to pre-installation of operating systems and office software on PCs, bindings between office suites on the one hand and operating systems on the other, server software and other software as well as related services such as support, training, implementation, operation and maintenance. The extent and impact on competition of these related services should therefore be established to be used in the overall assessments of competition on office software.

Chapter 4
Geographical markets

4.1 INTRODUCTION

Following the definition of the relevant product markets that are the focus of this study, the next step is to determine the geographical extent of the markets.

Competition analyses usually determine the relevant geographical market as the area in which the conditions of competition are identical or sufficiently uniform to separate it from other geographical areas in which the conditions of competition are significantly different. The question in particular is whether the markets are national or international.

4.2 DEFINITION OF THE GEOGRAPHICAL MARKET FOR OFFICE SOFTWARE

The definition of the geographical market for office software involves an examination of any differences in the products and product versions sold in different areas, of any differences in terms and prices and of any other conditions in different areas that may be of considerable importance to the definition of the market.

Product supply differences in different geographical areas?

According to Danish Competition Authority information, the types and versions of office suites sold on the global scale are the same. This generally applies to office suites, but some suites with small market shares will sometimes not have full support of the language from small language areas.[37]

37 *Some language differences are that office suites with the Danish language, for instance, use a Danish character set, dictionary, thesaurus and word division and that program menus, dialog boxes and help functions, etc., exist in Danish versions. Microsoft Office contains all functions in Danish versions. So far, Open Office contains a Danish user interface (menus, dialog boxes, help text, etc.), spell checking and hyphenation, while a Danish thesaurus is set to be ready in the autumn of 2009. Speech recognition and synthesis are not available in Open Office, nor are they under development.*

Microsoft Office offers access to more than 200 different languages so there is no difference between the office suites sold in different countries. Other office suites such as Open Office come in a number of different language versions, including Danish, where the user chooses the desired language when downloading the office suite from the Internet.

Differences in conditions in different geographical areas?

Even though conditions differ locally in certain respects, office suites are generally sold largely on the same conditions throughout the world.

For example, office suites are sold in a market dominated by one supplier, Microsoft, which holds significant market shares everywhere. Microsoft is estimated to hold a market share of at least 90% in Denmark and globally, see chapter 5). However, the market shares can vary in some areas, and, according to OSL, ODF-based office suites command greater market shares in third-world countries than in Denmark.

The idea of Microsoft commanding dominant market positions worldwide is also reflected in there being no considerable differences in customer preferences[38] or the like between different areas.

Microsoft also explains that its way of selling office software in various countries is not noticeably different – in terms of conditions, licence conditions, outlets, etc. Moreover, Microsoft emphasises that office software is increasingly sold and distributed via the Internet and that the global supply of these products therefore becomes the same.

The price of a new office suite can to some extent vary in different geographical areas.[39] However, Microsoft says that the company uses the same price list in all developed countries[40], and that price variations between developed countries are therefore only a result of fluctuating exchange rates and pricing of local companies in charge of sales of Microsoft products.

---

38 *OSL agrees to this general view, but finds that consumers must be expected to have greater confidence in ODF-based office suites in the countries where ODF and open source office suites are mentioned by the public and used by big demand players such as public bodies.*

39 *According to OSL, Microsoft offers versions of languages that are mainly used in third-world countries at prices that are 60% lower than the price of the English version in the same country and Microsoft ascribes this price to a desire to limit the distribution of bootleg copies (see the following link: http://www.chinaeconomicreview.com/dailybriefing-/2008_12_09/Microsoft_slashes_software_prices.html).*

40 *In this connection, Microsoft has commented: "Microsoft's pricing for our products in developed markets such as the US and EEA/EFTA is subject to the same worldwide price list, except that due to exchange rates prices based on currency rates may differ. Of course, pricing may vary subject to local promotions, as well as the fact that resellers set their pricing independently. Pricing in emerging markets may naturally vary from developed markets, in part due to the higher incidences of piracy in such markets relative to developing markets. This being said, European customers can buy our products anywhere in the world at the price prevailing at the place of purchase and use them in the EU, provided they comply with the specific conditions applicable to the license program they select."*

Special conditions may also exist in specific countries in addition to such very general conditions. For example, OSL has stated that second-hand Microsoft Office licences can be distributed in the UK due to special provisions in UK bankruptcy legislation.

In Denmark, according to OSL, a special factor is that public procurement is coordinated under the auspices of National Procurement Ltd. (SKI).[41] In this connection, OSL highlights the fact that the existing framework agreements between SKI and Microsoft contain terms of volume discounts.[42]

According to Microsoft, the company complies with the EU public procurement rules when selling to the public sector. In Denmark, sales are effected under the SKI agreements according to the EU procurement regime by means of the company's Enterprise agreements, which cover all PCs of a customer, or Select agreements, which cover a number of PCs only.

The public sector accounts for about one tenth of total office suite purchases in Denmark, see chapter 5.

Other matters

OSL and Microsoft have not pointed out other matters found[43] to be of importance to the determination of the geographical extent of the market for office software.

Overall assessment

Based on the above, the Danish Competition Authority finds that conditions in Denmark do not differ significantly from those in nearby areas and that the relevant market for

---

41 *The Agency for Governmental Management's procurement secretariat, which aims at achieving significant efficiency enhancement gains through joint coordinated public procurement, has said that while the public sector can use the SKI agreement to procure software (to meet any tender obligation and achieve certain discounts), government institutions in central administration are obliged to use the agreement if they choose Microsoft software to participate in the government coordinated procurement, which grants the entire government a large discount.*

42 *OSL has said that the Ministry of Finance negotiated an agreement with Microsoft, which contained a clause to the effect that government institutions put pressure on each other to obtain larger total discounts and that they had only one week to decide to buy Microsoft's office suites. The Agency for Governmental Management's procurement secretariat stated in this respect that "it is correct that the agreement with Microsoft on government coordinated procurement under the SKI agreement was entered into under some time pressure. Unlike the other joint government procurement agreements, the agreement does not, however, contain any obligation to use a specific supplier and the central administration just obtains a larger discount on the products it already uses. The exercise was simply to calculate the discount on the basis of total government consumption instead of the consumption of the individual ministry/agency."*

43 *Microsoft has emphasised that the use of bootleg software poses a general problem and that one out of every four software programs installed on Danish PCs in 2007 was a bootleg copy (see BSA study at www.bsa.org). However, this does not seem to have any direct effect on the definition of the geographical market.*

office software is therefore international, if not global. However, in this report, there is no need for an exact definition of the extent of the international market.[44]

4.3 DEFINITION OF MARKETS RELATED TO OFFICE SOFTWARE

In addition to the market for office software, a need exists to obtain an overview of the geographical extent of other markets for products and services related or of importance to the market for office software.

Below follows a brief assessment of the geographical extent of the markets for related services defined in chapter 3. The assessment is overall and general[45] as this study does not require highly detailed and thorough analyses of the geographical extent of these markets.[46]

The assessment is particularly based on information received by the Danish Competition Authority from OSL and Microsoft about whether considerable differences exist between the offered products, versions of them or the conditions on which they are supplied in Denmark and other countries.

PCs

Chapter 3 points to the PC market as one of the areas that may impact on competition on office software. The explanation is that, according to Danish Competition Authority information, Microsoft's operating system Windows is pre-installed on virtually all PCs sold in Denmark. In some cases, office suites are also sold together with PCs.

Microsoft and OSL have stated that there is no difference between PCs sold in Denmark and other countries and that the conditions on which they are sold do not differ noticeably, either.

This being the case, the Danish Competition Authority, off-hand, finds that the market for PCs is geographically international. Both OSL and Microsoft agree that the PC market is an international market.

---

44 *However, there will be a need for a very exact definition of the geographical market when the competition authorities are to make a specific decision to clarify what area the decision applies to. As this study is not conducted with a view to a competition law decision, there is no need for an exact definition of the geographical extent of the international market.*

45 *This means that the definition of the geographical markets may be different if more thorough analyses were made. The Danish Competition Authority and the Danish Competition Council will therefore not, in connection with any assessment, according to competition law provisions be bound by the views on the extent of the geographical markets stated.*

46 *See note 44.*

Operating systems

Chapter 3 also points to the market for operating systems as one of the product markets that may have an impact on competition in the market for office software. Microsoft's office suites hold a market share of at least 90% and can only run under two out of the three most common operating systems for PCs.

According to both OSL and Microsoft, there are no significant differences between products and conditions in Denmark and other countries when it comes to operating systems. Microsoft has added that operating systems can be acquired as pre-installed on PCs or separately and that all PC manufacturers are free to decide whether to install a Microsoft operating system or a rival system. When the operating system comes pre-installed, the PC manufacturer is responsible for support, not Microsoft.

Against this background, the Danish Competition Authority, off-hand, finds that the geographical market for operating systems is an international market. OSL and Microsoft both agree with the Danish Competition Authority.

Server software

Bindings between office software and different types of server software such as CMS systems[47] and collaboration software[48] may also impact on office software competition. The market for server software has therefore been singled out as one of the relevant markets for related services in chapter 3.

Microsoft and OSL have in this respect also stated that there is no difference between server software sold in Denmark and other countries and that the conditions on which it is sold do not differ noticeably.

Microsoft has also stated that the product supply of collaboration software is extensive and that several of the biggest global software suppliers offer products in this category, some of these being Microsoft, IBM, Oracle and SUN Microsystems. Also, a number of local suppliers of CMS systems and collaboration software in Denmark such as Umbracoa and Site-core sell their products in both Denmark and abroad.

---

47 *Content management systems is the name of IT solutions used for handling the publication of content on the Internet, etc.*

48 *Collaboration software is the name of programs designed to promote collaboration, network, sharing of information and knowledge between various parties in a computer network. This includes collaboration between highly different programs and systems such as e-mail systems, calendar and meeting systems, project management tools, discussion groups, etc. The National IT and Telecom Agency has pointed out that even though this understanding of the term "collaboration software" was used in the Danish parliamentary debate on V45 in April 2008, such use of the term is not common. Such integrations between systems are more often referred to as "middleware", while collaboration software – or collaborative software – is generally understood as software such as Microsoft Sharepoint and GoogleApps, enabling people to work on the same product/project.*

Off-hand, the Danish Competition Authority considers the geographical market for server software to be an international market. Microsoft and OSL agree with the Danish Competition Authority.

Other software

Chapter 3 defines a market for other software, which may be related to office software in different ways. This software may be programs for electronic document management, accounts, portfolio management, e-mail, calendars and dedicated systems that use the programs in specific office suites for viewing and editing documents or use macros and similar functions from specific office suites.

In this context, OSL has stated that, with respect to the majority of these other programs, there are no significant differences between products and conditions in Denmark and other countries. OSL is therefore of the opinion that the markets for most of these products are international markets. However, according to OSL, one exception is software for electronic document management (EDM)[49] where Denmark has set up a joint, public framework agreement (FESD) for public procurement in particular. In the opinion of OSL, this agreement may have considerable impact on competition in Denmark.

The National IT and Telecom Agency has also pointed out that Denmark has special software systems, including particularly the document management systems under FESD and KMD systems. Other countries have similar systems, which are specific to the countries. The National IT and Telecom Agency thus points out that the problems of bindings between office software and other software are the same as in other countries, but that the specific software may sometimes vary from one country to the next.

Moreover, Microsoft has pointed out that the dedicated systems and electronic document management systems offered by most major software suppliers are often significantly customised to local conditions applying individually to a customer. For instance, KMD Sag, used by a large number of local authorities, is based on IBM's Document Store. Thus, the international product has been tailored to meet local Danish conditions and requirements. ScanJour, used by central government to some extent, is based on an ORACLE database and platform, but features Microsoft product integration. This is also the case with many financial reporting products, which are tailored to Danish accounting legislation. Against this backdrop, Microsoft finds it reasonable to assume that programs for electronic document management, accounting programs and dedicated systems contain significant differences in the light of the supply and versions in markets in other countries.

---

49 *FESD is the Danish abbreviation of joint, public electronic document management systems and a joint standard for EDM systems. Following a tender, a framework agreement has been entered into with three main suppliers for the government agencies according to a joint specification of requirements.*

Hence, the Danish Competition Authority, off-hand, finds that the problems of bindings between office software and other software are the same internationally, but that they may sometimes relate to software linked specifically to certain countries, including software that is exclusively used in Denmark.

When software is specific to the Danish market, Denmark will thus be the relevant geographical market. As regards other software where products and conditions are the same as those in other countries, the geographical markets will be international markets.

Services

Office suites often include services such as support, training, implementation, operation and maintenance. Hence, in the context of the study of competition on office software, it is relevant to examine the extent of/need for related services and the total costs of choosing different types of office suites.

According to both OSL and Microsoft, there are no noticeable differences in services and conditions in Denmark and other countries. Both Microsoft and OSL regard the geographical market for services related to office software as an international market.

However, Microsoft has subsequently stated that services are typically sold and supplied locally in the individual countries, but that the service suppliers often decide to have the development work performed in countries other than the one where the service is supplied. According to Microsoft, this applies to service suppliers such as IBM, CSC, Siemens, KMD, etc.

The Danish Competition Authority finds that the provision of services is often conditional on local presence. For instance, some services require the supplier to speak the local language (e.g. services of training) or to be able to be physically present urgently to render the service (e.g. implementation, operation and maintenance).

This being the case, the Danish Competition Authority is, off-hand, of the opinion that the relevant geographical market for some types of services will be a local market, e.g. Denmark, while the market will be international for other types of services.

Summary

On balance, the Danish Competition Authority finds that the geographical markets for PCs, operating systems and server software are international markets.

However, it is impossible to define total geographical markets for other software and services in advance. The extent of the relevant geographical markets will be Denmark for some software products and services, while it will be international markets for other products and services.

Chapter 5
Market description

5.1 INTRODUCTION

This chapter outlines a number of areas important to competition in the market for office software and markets related to office software.

Although most of these markets are international seen from a geographic perspective, see chapter 4, the following descriptions mainly focus on the Danish market. However, whenever there is access to information about e.g. international suppliers, sales, market shares, etc., such information will be included in the descriptions.

The market descriptions centre on the primary market for the studies, viz. the market for office software. In respect of related markets, only very general market descriptions have been prepared for assessing the impact the related markets have on competition in the market for office software.

5.2 THE MARKET FOR OFFICE SOFTWARE

The following section describes some of the conditions important to competition in the market for office software.

Market size

Annual sales in the market for office software reach approx 1.25 million office suites in Denmark and approx. 275 million office suites worldwide.[50]

In 2006, sales of office suites (i.e. vendor suites) reached approx. DKK 800 million in Denmark[51] and approx. DKK 57 billion worldwide.[52] Microsoft accounted for more than 98% of sales in Denmark and worldwide.

To these sales should be added indirect sales in connection with free suites where the suppliers' earnings come from sale of package solutions, services, advertisements, etc.

---

50 The Danish Competition Authority estimate is based on information from Microsoft.

51 According to information from Microsoft. Most of these sales stem from Microsoft's enterprise customer agreements (volume agreements), see below.

52 See Gartner Dataquest: Market Shares: Office Suites and DCC Software, Worldwide, 2005-2006.

and sales from pirate-copied[53] software, which, according to Microsoft, is quite substantial.

However, office software sales only account for approx. 1.5% of total IT sales in Denmark and approx. 0.7% of total IT sales worldwide.[54]

Box 5.1 includes overviews of how IT costs break down in various categories. Office software costs (1.5%) account for a modest share of Danish companies' and authorities' software expenses (22-26%)

Box 5.1: IT expenses in Denmark

In 2006, Danish companies with at least ten employees spent DKK 37.4 billion on IT, while the public sector spent DKK 6 billion in 2007. On top of this come the IT expenses of small enterprises and consumers. Total IT sales reach approx. DKK 65 billion annually.

IT expenses break down as follows:

	Enterprises	Central government	Local government
IT services	47%	59%	47%
Software	23%	22%	26%
Hardware	20%	13%	20%
Other IT equipment	10%	5%	6%

In 2006, the average IT expense per full-time employee totalled approx. DKK 35,000. The largest companies have the highest IT expenses. Companies with more than 100 employees have average IT expenses of approx. DKK 48,000 per employee, while IT expenses in companies with less than 100 employees are DKK 16,000-18,000 per employee.

Note: Expenses for IT training are included under IT services.
Source: Statistics Denmark: Statistiske Efterretninger 2008:17: It-udgifter 2006/2007 (30 June 2008).

Suppliers and products

Product range has evolved considerably in the past 15-20 years. In the 1980s and the beginning of the 1990s, office suites were typically marketed as individual, autonomous

53 I.e. copies produced without the rights holder's permission.
54 Total IT sales (hardware, software and IT services) came to DKK 65 billion in Denmark and approx. DKK 8,250 billion worldwide in 2007 according to IDC Worldwide Black Book Query Tool, Version 3, 2008.

products. Among the most common products were the WordPerfect word processing program and the Lotus 1-2-3 spreadsheet.

During the 1990s, some of the software manufacturers started offering office programs in suites. The advantage of the suites was that the programs in the suites were so closely integrated that the user had a uniform experience and that users were offered attractive prices compared with buying the programs individually.

Today, office programs are almost only sold in suites. According to the Danish Competition Authority's information, Microsoft's office programs can be bought individually; however, the sale of such individual programs is so modest that it has no impact on the market.

The most important suppliers are:

Table 5.1: Suppliers of office suites

Supplier	Office suite	General description
Microsoft	Microsoft Office	Vendor suite. The latest version (Office 2007 SP2) uses both OOXML and ODF as production formats.
Open source	OpenOffice.org	Free suite using ODF as production format.
Novell	OpenOffice.org Novell Edition	Low-price suite using ODF as production format.
Apple	iWork	Vendor suite designed for Mac computers. Production format not based on an open standard.
Corel	WordPerfect Office	Vendor suite. Production format not based on an open standard.
Google	GoogleApps	Internet-based free suite. Production format not based on an open standard.

IBM	SmartSuite and Symphony	SmartSuite is a vendor suite where the production format is not based on open standard, while Symphony is a free suite with ODF as production format.
Red Hat	Red Hat Enterprise Linux 5 Desktop	Subscription scheme for total open source solution, incl. Linux operating system, OpenOffice suite with ODF as production format, Firefox browser and Thunderbird e-mail, etc.
Sun Microsystems	Star Office	Low-price suite with ODF as production format (OpenOffice suites were initially based on Star Office).
Zoho (AdventNet)	Zoho	Broad selection of internet-based programs which are free for retail customers and low-priced for enterprise customers. Production format not based on an open standard.

Source: Based on information from supplier websites and Devoteam's overview of office suites and formats, see table 6.3.[55]

As appears from table 5.1, suppliers use different business models when it comes to product range, prices and terms. Some office suites are sold as vendor suites, others as low-price suites, subscription schemes or free suites.

Vendor suites involve conventional business models where suites are sold on market terms and where each user usually pays a licence fee. This is not the case with free suites, which are both marketed as open source and by commercial companies. The commercial companies' business model is to achieve earnings through sale of products and services related to the office suites.

Office suites are often available in different versions and with different programs for retail or enterprise customers. As outlined below, office suites can be acquired on various terms as concerns subscription schemes for updates and discounts when buying several office suites or buying other products from the same supplier.

---

55 *Microsoft has stated that the table ought to reflect the following providers' support of OOXML: "OpenOffice.org (Version 3.0+ has read support for OpenXML); Novell OpenOffice.org Novell Edition (read and write support for OpenXML); Corel WordPerfect (read support for OpenXML); GoogleApps (has just announced upload support of OpenXML); and IBM (read support of OpenXML in version 1.3 and write support shortly after). Devoteam has prepared an overview of the office suites and their production formats and their read and write support, see chapter 6. This overview shows that so far, Microsoft Office 2007 SP2 is the only office suite using both ODF and OOXML as production formats.*

Office suites are sold to two different types of customers:

- Retail customers and small enterprises, which typically acquire office suites individually.

- Enterprise customers, which acquire a number of suites.

According to the information obtained by the Danish Competition Authority, private customers account for about one quarter and enterprise customers for about three quarters of all purchases of office software. The enterprise customers' acquisition of office suites is typically part of agreements that include clauses on volume discounts.

Since Microsoft accounts for the majority of total sales in the market for office software, including the enterprise customer segment, see the section on market shares below, Microsoft's enterprise customer agreements generally have a substantial impact on the market. Microsoft's system for enterprise customer agreements is therefore described in the following section.

Microsoft's enterprise customer agreements

Around two thirds[56] of all office suites in Denmark and worldwide are sold under Microsoft's enterprise customer agreements. The majority of Microsoft's sale to enterprise customers take place under three types of agreement[57] – Enterprise agreements, Select agreements and Open agreements – which are described in detail below.

The agreements make it possible to either buy (indefinite licenses) or lease (fixed-term licenses) office suites.

Moreover, it is possible to subscribe to upgrading schemes that entitle the customer to upgrade to new versions and a number of extra services, including various tool suites for the customer's IT department, support, e-learning, training lessons, office suites for employees' private use, possibilities of spreading payments, etc. Upgrading schemes must be concluded at the time of purchase.[58] If the customer at some point chooses to terminate the upgrading scheme, the customer will have to buy a new license to subscribe to upgrades again.

---

56 *Microsoft has forwarded some specific information about market shares, prices, discount rates, etc. which the company has asked the Danish Competition Authority to process confidentially. For the purpose of this report, this information, which is known by the Danish Competition Authority, is only referred to in general terms as in this formulation.*

57 *Microsoft also uses other types of enterprise customer agreements for educational institutions and service providers.*

58 *Even though the agreements do not concern sale of licenses for operating systems, the agreements may comprise an upgrading scheme related to operating systems.*

The annual price of upgrading schemes is 29% of the purchase price of the office suite. If a customer expects to continue using an office suite from Microsoft and also expects to switch versions more frequently than every 3-4 years, it will generally be cheaper for the customer to subscribe to the upgrading scheme than buying a new license.

The same agreements apply to buying other Microsoft products (except operating systems), and discounts are granted on the total purchase within three overall software categories.[59] All agreements come with volume discounts, meaning that the discount increases the more software is bought/leased (or the more PCs to which software is bought/leased).

In practical terms, the agreements entail that the customer has access to product keys for installation of the required number of Microsoft licenses for each type of Microsoft software. The customers must then state and pay for the number of licenses installed. This is done somewhat differently depending on the agreement. However, common to all agreements is that at some point Microsoft can check whether the number of Microsoft products used corresponds to the number of licenses bought.

The agreements include provisions preventing the customer from making changes to the office suite and from lending, leasing, transferring or selling the office suite to a third party.

Although these are standard agreements, which Microsoft uses worldwide, the agreements include provisions on confidentiality preventing the customer from disclosing the terms, conditions and requirements of the agreement.[60]

The agreements between Danish enterprise customers and Microsoft are concluded with Microsoft Ireland and are thus governed by the laws of Ireland.[61]

---

59 *In Open agreements the three categories comprise product lists for (1) Windows Desktop Operating Systems, (2) Office and (3) CAL (Client Access Licenses), while the three categories in Select and Enterprise agreements comprise (1) programs, (2) systems and (3) servers. Moreover, Microsoft has informed us that "Each product is available on a stand-alone basis. Customers have the option, and exercise the option, to acquire products stand-alone. Volume discounts are thus calculated separately in each category and not combined (systems pool, applications pool, and servers pool). There is a programmatic discount for the platform (e.g., Windows Upgrade, Office and CoreCAL), but pricing is otherwise calculated separately."*

60 *Microsoft has added to this that "The standard agreements are not subject to confidentiality, only the specific pricing terms, which is to protect the privacy of Microsoft's customers." The agreements to which the Danish Competition Authority has had access (and where the agreements do not specify prices), includes confidentiality provisions that go beyond what Microsoft has stated. Thus, the following phrase on confidentiality is included in the agreements: "To the extent sanctioned by current legislation, the terms and conditions of this Agreement are confidential. Neither party will disclose such terms and conditions, nor the substance of any discussions that led to them, to any third party…"*

61 *The Danish Competition Authority has asked Microsoft why the agreements with Danish enterprise customers are concluded with Microsoft Ireland and how this affects the customers and Microsoft. Microsoft has stated that all EU customers enter agreements with Microsoft Ireland due to the wish to treat all EU customers alike and for cost reasons. According to Microsoft this does not affect customers.*

Open agreements are mainly used for procurement of software for 5-250 PCs. Open agreements are the second-most popular agreements for buying office suites (after Enterprise agreements, see below).

Open agreements can be used to buy or lease software. If software is bought, it is possible to buy a subscription scheme for upgrades, whereas the upgrading scheme is mandatory for lease agreements. In connection with lease of software, the agreements allow customers to buy favourably[62] priced software when the agreements expire.

Agreements solely concerning purchase of software licenses last for two years, and payment is made every time software is bought. Other agreements last for three years, payment being distributed throughout the term of the agreement.

As mentioned, volume discounts are offered. However, the discount gap between the lowest and highest discount rates is modest when buying under the Open agreements. Conversely, considerable extra discounts are offered if the customer buys both office suites and upgrading schemes for all PCs in the customer's business (company-wide discount). Further discounts are offered when the customer buys Microsoft software from all three overall product categories for operating systems, office suites and client access licenses (platform discount).

Open agreements do not include support.

Although Microsoft has laid down all conditions (incl. standard discounts) for sales under Open agreements, the specific deal is made via a middleman (wholesaler/distributor). The middleman is in charge of advising customers and determining pre-discount customer prices.

Select agreements can be used when buying software for more than 250 PCs. These three-year agreements allow the customer to adjust the number of Microsoft licenses regularly. Select agreements are not as common as Enterprise and Open agreements; however, Microsoft still sells more office suites under Select agreements than all its competitors combined.

Select agreements can be used to either buy software licenses or licenses together with an upgrading scheme. Under the Select agreements, the upgrading scheme comprises an overall scheme for all products in each of the product groups (1) programs, (2) systems and (3) servers. Payment is based on annual estimates of the number of PCs on which the software is expected to be used.

---

62 *The price is fixed (as are other prices) by the middleman, however, in the agreement, Microsoft states that the middleman's price from Microsoft will correspond to 1.75 the annual lease amount.*

The discount gap between the lowest and highest discount rates is much wider for Select agreements than for Open agreements. When a customer's total purchase reaches an amount that entitles the customer to the highest discount, the prices per office suite will be considerably lower than the prices payable by customers offered the lowest discount rate.

The discount scale is based on a system where the customer gains points for each purchase. For example, buying an office suite is worth two points, an upgrading subscription two points and a Windows Server 15 points per year. The discount scale is divided into three different pools for (1) operating systems, (2) servers and (3) programs (including office software). The scale for each pool looks as follows:

Table 5.2: Discount scale for Select agreements

Level	Min. points per year	Discount
A	500 points	Basic price
B	4,000 points	Discount based on basic price
C	10,000 points	Greater discount based on basic price
D	25,000 points	Substantial discount based on basic price

Source: The Danish Competition Authority's understanding of the discount scale used in Microsoft Select agreements.

Discounts are fixed annually. The first time, the discount may be fixed on the basis of a forecast or the actual order. The following years, the discount will be adjusted according to the actual volume bought.

As for Open agreements, the specific deal under the Select agreement is made via a middleman (wholesaler/distributor). The middleman is in charge of advising customers and determining pre-discount customer prices.

Enterprise agreements: The Enterprise agreements last for three years and can be applied to purchase or lease of software for more than 250 PCs. Enterprise agreements are the most widely used agreements for purchasing office software.

The agreements allow regular adjustments in the number of licenses. Under these agreements, payment is not linked to the specific number of Microsoft licences but rather the number of PCs that the customer has. This entails fewer counts and registrations of licenses, lower administrative costs for Microsoft and thus lower prices than under the Select agreement. The price includes an upgrading scheme.

Just as Select agreements, Enterprise agreements entail a considerable difference between the lowest and highest discount rate for the customer's total purchase. In addition, the prices forming the basis of the discounts are lower under the Enterprise agreements. The discount scale is as follows:

Table 5.3: Discount scale for Enterprise agreements

Level	Criterion	Discount
A	250 PCs	Basic price (lower than for Select)
B	2,400 PCs	Discount based on basic price
C	6,000 PCs	Greater discount based on basic price
D	15,000 PCs	Substantial discount based on basic price

Source: The Danish Competition Authority's understanding of the discount scale used in Microsoft's Enterprise agreements.

The discount rate is fixed for the entire agreement period based on the scope of the first order – i.e. if the first order comprises office suites for 5,000 PCs, discount level B applies throughout the agreement period, regardless of whether office suites are subsequently bought for another 2,000 PCs.

In addition, as with Open agreements[63], Enterprise agreements come with extra discounts when the customer buys Microsoft software from all of the three overall product categories for programs, systems and servers (platform discount).

Microsoft handles sales directly to the customers under the Enterprise agreements.[64]

Market shares

Statements of market shares are normally based on sales figures stated in volume or value (sales). A statement based on volumes will typically be relevant when the products are homogenous, whereas a statement based on the suppliers' sales is applied for more differentiated products.

In the market for office software, a statement of market shares based on the supplier's sales would not produce a true picture as the suppliers apply different business models for vendor suites, low-price suites and free suites. In this case, it would be necessary to include earnings from other services for suppliers of free suites. According to information obtained by the Authority, no such statements have been made. In practice,

63 *However, for Open agreements, the platform discount is offered for the Open Value agreement only.*
64 *However, according to OSL, a Microsoft Large Account Reseller is often involved in the deal.*

it would also be difficult to determine how much of the earnings from other services should be included as office software sales.

Market shares should therefore be stated based on the actual number of office suites sold by suppliers and used by customers.[65] However, no specific statements exist to this effect.

The Danish Competition Authority will therefore have to estimate the market shares on the basis of information obtained by the Authority.

The Authority estimates that Microsoft has a market share of at least 90% of the market for office software in Denmark and worldwide. This estimate is for the share of office suite licenses sold and is based on information obtained by the Authority in connection with a questionnaire survey, see below, the Authority's information about the market in general (e.g. the spread and use of OpenOffice, etc.) and the fact that Microsoft accounts for more than 98% of the sale of office suites.[66]

Microsoft thus holds a very dominant market position. Microsoft has held this highly dominant market position for a number of years, during which Microsoft's office suites have been based on proprietary formats. Some trends are seen in the market, which indicate that Microsoft may lose market strength in the coming period. For instance, the latest version of Microsoft's office suite is based on open document formats, and Microsoft has in recent years been facing increasing competition from free suites and internet-based office suites. This competition pressure may deepen in the future, for example due to the current financial crisis where many customers increase focus on costs.

Customers

As stated above, customers can be divided into two overall groups – retail customers and enterprise customers.

The division is based on the application of various terms for the two customer types in connection with purchase of vendor suites. Retail customers (and small enterprises) typically acquire office suites individually. In contrast, enterprise customers' acquisitions are typically made by entering multi-year agreements offering volume and combination purchase discounts, see above.

---

65 *As concerns free suites and internet suites, it must be assumed that some of the customers, who have downloaded a free suite or registered as users of a free internet-based suite, choose not to use these suites as their primary office suites after having tested them. Such customers should in principle not be included when stating accurate market shares for sales and the use of office suites.*

66 *See Gartner Dataquest: Market share: Office Suites and DCC Software, Worldwide, 2005-2006.*

Retail customers (incl. small enterprises) usually acquire office suites in one of the following manners:[67]

- Together with the purchase of a PC (as an additional acquisition).
- Via the employer's enterprise customer agreement, under which employees can acquire an office suite for their home PC on favourable terms.[68]
- As a purchase in an ordinary retail store.
- As a download from the Internet.
- By applying an Internet-based office suite on the Internet.

As regards vendor suites, the majority of the enterprise customers' acquisitions are made by entering agreements. In the case of free suites, acquisitions are made in the same way as for retail customers, i.e. via downloads from the Internet or by using Internet-based office suites.

In some situations, certain enterprise customers may achieve better terms than other enterprise customers. This is especially the case for the largest customers and some educational institutions.

In Denmark, government institutions thus achieve slightly better discounts than most other enterprise customers. The reason for this is that government agencies' purchase of office suites are coordinated by National Procurement Ltd., which, based on contract procedures, have concluded a framework agreement on supplies of office suites from Microsoft. Under this agreement all government institution acquisitions are coordinated so that total government procurement is applied in calculating volume discounts. According to information obtained by the Danish Competition Authority, local governments do not apply the same coordinated procurement procedure, and local government institutions therefore pay more for Microsoft office suites than government institutions.

Besides offering major enterprise customers better terms than minor customers, educational institutions may also in some situations achieve favourable terms. The reason for this is that the educational area constitutes a strategically important area for suppliers of office suites. When students use a certain office suite during their studies, they are assumed to be more likely to acquire the same office suite as either retail or

67 *To this should be added pirate-copied software.*

68 *According to the responses to the Danish Competition Authority's questionnaire survey, more than half the enterprise customers have concluded such an agreement with Microsoft where prices, according to the information obtained by the Authority, are between DKK 200 and 300. The employee scheme is comprised by the upgrading scheme, which is either included in or can be acquired in addition to Microsoft's enterprise customer agreements.*

enterprise customers. By supplying office suites to the educational institutions, suppliers can have their office suite marketed and tested in practice by potential future customers. Consequently, educational institutions may often achieve more favourable terms than other customers.[69]

Enterprise customers' choice of office suites

In a market with efficient competition, customers will choose between products based on their own quality, functionality and price requirements. However, in markets with less efficient competition, the customers' options or possibilities of making a choice solely based on quality, functionality and price will typically be limited.

For the purpose of this report, the Danish Competition Authority has conducted a questionnaire survey of aspects crucial to enterprise customers' choice of office suite. The questionnaires were sent to 100 randomly chosen enterprise customers and 20 enterprise customers who, according to information obtained by the Authority, had supposedly switched office suite supplier in the past five years. The Authority received responses to these questions from 58 of the 100 randomly chosen enterprise customers and from 10 of the 20 customers who had supposedly switched office suite. The criteria for picking respondents and the results of the questionnaire survey are in appendix 1 to this report.

The enterprise customers' responses to the questions on which aspects that are crucial when choosing an office suite can be seen in the following table:

69 *In this connection, OSL has stated that Microsoft applies both lower prices in relation to educational institutions and offers educational institutions to buy the right to distribute Microsoft programs (on favourable terms) to the students. Microsoft's comment to this is that "in the software business, prices are adjusted to make software accessible to schools under budget restraints with limited resources to pay for software. Therefore, all suppliers, including Microsoft, offer cheaper prices compared with the commercial sector. Microsoft's biggest competitors, including IBM, Oracle, Google, SunMicrosystems, Adobe, Corel, RedHat Linux, Fronter, Its'Learning and Novell offer substantial discounts or free offers to academic customers. In this respect, Microsoft's academic offers are in no way unique compared to its competitors. The conditions observe industry practice and are necessary to make software accessible to schools, students and teachers".*

Table 5.4: Crucial aspects when enterprise customers choose an office suite

What aspects are important when choosing an office suite?	Yes answer (unweighted)	Yes answer (weighted)	Importance (scale from 1-5)
Quality and functionality	82%	77%	4.3
Total cost of ownership	76%	95%	3.8
Technical matters	68%	56%	3.4
Practical matters	59%	65%	3.1
Price of office suite	59%	64%	3.0
Impact on competition conditions	37%	81%	2.1
Other	16%	49%	2.0

Note 1: The answer to the question on impact on competitive conditions was formulated as follows: 'Desire to impact competitive conditions etc. (e.g. in terms of product range, use of open standards, etc.)?' see appendix 1.

Note 2: The percentage of the unweighted yes answers is stated as an average compared with the total answers to the question. The percentage of the weighted yes answers is stated on the basis of the number of licenses for office suites the respondents have acquired.

Note 3: The customers have specified the importance on a scale from 1-5 where 1 is without significance and 5 is highly significant. The statement is made as an unweighted average.

Source: The Danish Competition Authority's questionnaire survey (appendix 1).

As the table illustrates, different aspects are rated as important to the customers' choice of office suite.

The aspect rated most important and significant to most customers is the quality and functionality of the office suite. The customers thus emphasise that the office suite comes with certain functions, is safe, reliable, easy to use, increases efficiency, etc.

Then, the customers consider total cost of ownership – i.e. an overall assessment of the price of both the office suite and the various spillover costs related to switching office suite. Such spillover costs may include costs of implementing the office suite into the company's IT environment, costs of consultancy services, training of staff, support,

etc.[70] It is also clear that the total cost of ownership is the aspect receiving the highest percentage of weighted yes answers. The weighting is made on the basis of how many office suite licences the respondents buy. Consequently, it is mainly the buyers of most office suites that consider the cost of ownership important.

The two matters rated as most important are thus typically requests in respect of office suite quality and price. This could be viewed as a sign that competition is efficient.

However, 60-70% of customers also emphasise technical and practical matters as being most important when choosing office suite. These customers have been asked to specify such technical and practical matters. The answers can be seen in table 5.5 (technical matters) and 5.6 (practical matters):

Table 5.5: Technical matters

What technical matters are important when choosing a future office suite?	Yes answer (unweighted)	Yes answer (weighted)
The need to integrate the office suite with the company's other IT systems?	96%	99%
The need to convert existing documents to the format of a new office suite?	65%	67%
The need for technical adjustments of the company's IT environment?	52%	75%
The possibilities of technical support, etc.?	46%	84%
The need to extend office suite functions with third-party products (add-ins)?	35%	31%
Other?	4%	1%

Note: *These questions have only been given to the 70% of respondents in the survey who stated that technical matters are important when choosing an office suite. The percentages in the table are therefore calculated based on these 70%.*

Source: *The Danish Competition Authority's questionnaire survey (appendix 1).*

Among technical matters, emphasis is mainly placed on interaction with the company's other IT systems and the issue of converting existing documents. The issue of interaction with other IT systems is further described in chapter 7 on technical bindings, whereas the issue of conversion is dealt with in chapter 6 on interoperability.

70 *OSL has stated that customers' costs when switching office suites are substantial and increase over time. In this respect, OSL refers to reports from Rambøll Management from April 2007, available at http://www.itst.dk/arkitektur-og-standarder/Standardisering/Aabnestandarder/baggrundsrapporter/okonomiske-konsekvensvurderinger-vedr-abne-standarder-1.*

Table 5.6: Practical matters

What practical matters are important when choosing a future office suite?	Yes answer (unweighted)	Yes answer (weighted)
The need to exchange documents with the company's customers and partners without losing data, etc.?	78%	71%
That the company staff must use a different office suite (and may need training)?	60%	68%
Other?	20%	44%

Note: These questions have only been given to the 61% of respondents in the survey who stated that practical matters are important when choosing an office suite. The percentages in the table are therefore calculated based on these 61%.

Source: The Danish Competition Authority's questionnaire survey (appendix 1).

The most important practical matters also cover the issue of interoperability, viz. the need to be able to exchange documents with the company's customers and partners. Practical considerations to the effect that company staff would have to use another office suite and may need relevant training when switching suppliers are also important.

When such a large proportion of customers state that these matters are important when choosing an office suite, it may be seen as a sign that technical and practical matters are considered to affect the customers' choice and making it more difficult to switch office suites.

Entry barriers

Competition analyses often consider whether any barriers exist that may make it difficult for new players to enter the market.

In recent years, the market for office software has seen several new players, e.g. OpenOffice and Google. Consequently, there are no absolute market barriers that prevent market entry.

However, trends show that for the past ten years new players have found it extremely difficult to gain market shares from the dominant supplier in the market, Microsoft.

There may be many reasons why a supplier is able to maintain a dominant market position for a long period of time. For example, the dominant supplier may have better products than its competitors, be more efficient or offer lower prises, etc. However, it may also be due to various types of market barriers.

The following types of barriers exist in the market for office software.

- Network effects
- Massive development costs
- Technical barriers
- Practical barriers affecting supplier switchover

One significant barrier to entering the market for office software is that the market is influenced by network effects. Network effects comprise situations where the value of a product increases the more users use the same product; see a more elaborate description of network effects in chapter 9.

As stated in chapter 6, the market for office software has been and continues to be affected by problems related to loss of data and formatting during document exchange between different office suites (interoperability problems). Users can only have problem-free document exchange if they use the same office suite. Since more than 90% of customers use office suites from Microsoft, the presence of interoperability problems and network effects make it difficult for Microsoft's competitors to gain market shares.[71]

Another barrier to entering the market for office software is the massive costs of developing a new office suite. All suppliers in the market (except one) are large international groups marketing other IT products. The exception is OpenOffice, which is marketed as an open source product. However, the basis for OpenOffice is developed by one of the large groups, viz. Sun Microsystems.

Although the significant capital requirements related to developing a new office suite should basically be considered a barrier to market entry, it does not constitute a major problem in practice since the suppliers are generally large international IT companies that have their massive development costs covered through sales in a large international market.

A third barrier to entering the market is technology. Considerable technical skills are required to develop a new office suite. In addition, making a new office suite interact with other formats, IT systems and products as expected by the market entails a number of technical challenges. Chapters 6 and 7 below focus on these technical issues such as

---

71 *In this connection, Microsoft has commented: "Microsoft believes, however, that the DCA understates Microsoft's industry-leading efforts to promote interoperability and reduce such barriers, by fully documenting its formats, APIs and specifications (including implementation notes). Microsoft's interoperability efforts and support for file formats is explained in detail in its submission to the DCA on February 23, 2009 (Background on Microsoft's Interoperability Efforts and Support of File Formats), and notes that most of Microsoft's efforts are not captured in this report." The relevant document is available at http://download.microsoft.com/documents/UK-/Danmark/office/Background_on_Interoperability_FINAL.pdf.*

interoperability between various office suites and technical bindings between office software and other software, etc.

A fourth barrier may be elements that make it difficult or costly for customers to switch suppliers. If such barriers exist in the market, it will make it more difficult for new suppliers to enter the market. Barriers to switching supplier may be caused by practical and technical matters.

Practical matters comprise switchover of supplier that may entail costs of training the customers' staff in using the new office suite, very large/complicated spreadsheet models in the current office suite or a special need to exchange documents with customers or partners via a specific office suite to avoid loss of data, etc.

Technical barriers to switchover may encompass integration between the office suite and the customer's general IT environment (e.g. that system integration in an EDM solution[72] is based on Microsoft Office only) or conversion of existing documents to the new office suite format.

A number of these aspects have been described above in the section outlining the results of the Danish Competition Authority's questionnaire survey and in chapters 6-8 below on technical and legal issues.

In this connection, it should be mentioned that in recent years, the increasing use of open standards and greater openness about technical documentation, etc. have resulted in a clear reduction in technical barriers, which is expected to contribute to greater competition in the market for office software. Some office suite suppliers thus emphasise in marketing that their office suites are compatible with other office suites based on doc, OOXML or ODF.

In conclusion, it should be noted that the market for office software is influenced by a number of market barriers,[73] which for the past 10-15 years have made it difficult for new players to gain market shares from the dominant supplier in the market, Microsoft. However, there are signs that some barriers are becoming smaller and that this may contribute to increased competition in the future.

Market information

Furthermore, easily accessible and comparable information about the range of products, prices, quality and options may impact the customers' possibilities of switching supplier.

---

72 *EDM is short for Electronic Document Management.*

73 *The assessment that the market is influenced by considerable barriers is shared by e.g. Gartner, see. Gartner Dataquest: Market Shares: Office Suites and DCC Software, EMEA, 2005-2006, section 4-2.*

In general, the most important information about office suites from different suppliers is available on the suppliers' websites. These websites include information about the suites, the programs they contain, formats supported, new functions in the individual programs, prices of various versions of the suites, etc.

Thus, easily accessible information on product range and prices is available at an overall and general level. Generally, lack of information about options, etc, should not constitute a barrier to switching office suites. This is a general assessment for all suppliers, but not in respect of Microsoft's enterprise customer agreements.

OSL has stated that information about license terms and technical matters is paramount to the customers' considerations to switching suppliers. Overall assessments of quality, prices, license terms, etc. are highly resource-demanding for the customers because of the technical nature of the topic and Microsoft's complicated price and license strategy. A number of the issues pinpointed by OSL are described in chapters 7-8, which focus on technical and legal issues that may affect the customers' considerations to switch office suites.

Microsoft has stated that the effect of the company's enterprise customer agreement system is that customers are given maximum flexibility in choosing products and solutions.[74]

In connection with the review of Microsoft's system for enterprise customer agreements, the Danish Competition Authority has found that, as stated by OSL, the agreement system is highly complex and difficult to comprehend. It is not possible to access and gain insight into Microsoft's general standard agreements as applied worldwide, since the agreements contain confidentiality provisions. The complexity of the system is illustrated by the fact that Microsoft has stated that the agreement is so complex and contains so many different price items that it is impossible to make any statements as to e.g. the trend in average prices of standard products, etc.

Against this backdrop, the Danish Competition Authority is of the opinion that easily accessible information at an overall and general level about product range and prices is available, but that this assessment does not apply to Microsoft's enterprise customer agreements.

---

74 *Microsoft comments as follows: "Microsoft's volume licensing programs offer customers maximum flexibility in exercising choice and a range of options how to acquire and license product. In this regard, choice should not be viewed as a negative, as it provides customers the freedom to license software under a range of options that best suit the customers' needs."*

Switching suppliers

The Danish Competition Authority assesses that only few enterprise customers in Denmark have switched office suites in recent years.

According to information obtained by the Danish Competition Authority, Microsoft has had a market share of more than 90% for a number of years. Maintaining such a high market share clearly indicates that only a few percent of customers switch from one supplier's office suite to another.

In connection with the questionnaire survey, the Danish Competition Authority therefore expected that a random selection of respondents would result in answers from very few customers who had actually switched office suites. To gain more information about experience with switching suppliers, the Authority wanted to send out questionnaires to both 100 randomly chosen respondents and to 20-50 customers who had switched suppliers. However, (with assistance from Microsoft and OSL) the Authority only succeeded in identifying 20 specific enterprise customers that should have switched suppliers in the past years.

Among the 100 randomly chosen respondents, the Authority received 58 answers, of which just four had switched office suite suppliers during the past five years. In addition, five of the 20 specifically chosen customers have said that they have experience in switching suppliers.

In total, the Authority has thus received responses from nine customers who in practice have switched office suite suppliers. Experience clearly shows that when the customers concerned have switched from a Microsoft suite to another office suite, they have in all cases chosen to keep (a few) licenses for a Microsoft suite in addition to the new office suite.

Compared with other markets, the total number of switchovers in the market for office software is significantly lower. The low number of switchovers gives a clear indication that competition in the market is not efficient.

Prices

The office software market has seen significant product development over time. The quality of office programs has continuously been improved and more functions have been added. This can be illustrated by the fact that spreadsheets and graphical presentation programs were sold separately in the 1980s as was the case for word processing programs and spellcheckers. These functions are now integrated in the programs.

When considering price trends, this product development must be kept in mind. Comparing prices ten years ago with the prices today involves a considerable difference in quality of the products compared.

The Danish Competition Authority has asked Microsoft for information that may shed light on the average price trend of e.g. standard editions of Microsoft's office suites and/or Microsoft's word processing programs or spreadsheets. Microsoft has stated that the company markets so many different versions of the office suites under so many different agreements and terms that it is highly complicated to make any statements of e.g. average prices of standard products. Unfortunately, Microsoft is therefore unable to deliver the information requested by the Danish Competition Authority.

Instead, Microsoft has stated that the price of the most popular Microsoft office suite from retailers dropped from approx. DKK 1,499 in 1998 to approx. DKK 899 in 2008.[75] This corresponds to a 40% price drop. Stated in fixed prices, which are adjusted for inflation, the price drop during the ten-year period comes to 51%.

This example shows that the price of the office suite concerned has dropped despite the fact that in recent years Microsoft has held an almost monopolistic position, with a market share of more than 90%. One explanation of this could be that the presence of competitors, including the emergence of free suites and Internet-based office suites, has resulted in some competition that may have affected price trends.

The example also shows that the price of a Microsoft office suite sold from retailers is currently less than DKK 1,000. By comparison, the prices of office suites sold under Microsoft's enterprise customer agreements are, according to our information, DKK 2,300-4,000 depending on edition, discounts, etc.[76]

The Danish Competition Authority has asked Microsoft to state the reason for this considerable difference in price, and what advantages enterprise customers get by buying office suites at a higher price under the enterprise customer agreements.

Microsoft has stated that there are a number of very different reasons for the price differences. The price difference is due to several circumstances, see below. However, Microsoft also emphasises that in addition to the advantages of an enterprise customer agreement causing the higher price, the most successful suite in retail (Office Home and Student) must not be used for business purposes.

---

75 *The amounts have been specified by Microsoft as estimated average prices that may vary: The 1998 price of DKK 1,499 is for Microsoft Office 97 Home and Teacher. In 2002, the price of Office XP Home and Teacher was approx. DKK 1,299: In 2003, the price of Office 2003 Home was approx. DKK 999 and in 2008 the prise of Office 2007 Home was DKK 899.*

76 *In connection with enterprise customer agreements, Microsoft offer schemes where an enterprise customer's staff can have a Microsoft office suite for their home PC for e.g. DKK 200-300.*

The additional circumstances which Microsoft specifically point to as grounds for the price difference include:

- sales take place via different sales channels,
- the editions of the office suite differ, and the enterprise customer suites include more programs[77] and
- the enterprise customer agreements give customers extra rights to downgrade to previous program versions, subscribe to upgrading schemes, spread payments over several years, receive support, etc.

The Danish Competition Authority's questionnaire, see table 5.4 above, revealed that most customers look at prices when choosing a new office suite. Almost 60% have responded that they emphasise the price of the office suite, and more than 80% say that they emphasise the total cost of ownership. However, the survey revealed that customers also attach importance to other aspects than price, including the quality and functionality of the office suite and a number of technical and practical matters.

When more than 90% of customers still choose to buy vendor suites in a market with free suites, the reason may be that free suites are not quite as attractive when considering the total cost of ownership, that the vendor suites are considered to be of a higher quality than the free suites and/or that there are technical or practical reasons for choosing vendor suites instead of free suites.

Summary

The market for office software sells about 1.25 million office suites in Denmark per year. In 2006, sales amounted to about DKK 800 million, or about 1.5% of total IT sales in Denmark. Sales divide into about one quarter to retail customers (incl. small enterprises) and about three quarters to enterprise customers.

The market is dominated by Microsoft, which is estimated to hold a market share of at least 90%. Since enterprise customers account for three quarters of all office suite acquisitions, it means that about two thirds of all office suites in Denmark are sold under Microsoft's enterprise customer agreements.

Microsoft's enterprise customer agreements constitute a highly complex agreement system that makes it possible to buy or lease office suites and subscribe to upgrading schemes. The upgrading schemes, which also offer customers a host of additional services, are priced at 29% of the price of the office suite. This price may encourage

77 *In this connection, Microsoft has commented: "For example an Office Home and Student includes Word, Excel, PowerPoint and OneNote whereas Office Enterprise also includes an E-mail Client (Outlook), a database client (Access), a program to design and submit electronic formulars (InfoPath), a program for online collaboration (Groove), an enterprise instant messaging program (Communicator) and the possibility to administer company policies regarding security etc., electronic formulars, and other content, across the users".*

some customers to stay with Microsoft. The agreements also include a discount system that encourages customers to buy more Microsoft products. Thus, customer discounts increase the more the customers buy, if they buy software to all the company's PCs and if they buy software from all Microsoft's product categories.

Although the enterprise customer agreements include these discount options, Microsoft's prices of office suites sold to retail customers are lowest. Microsoft has stated that the reason for this is that office suites sold by retailers must not be used for business purposes, that sales take place via different sales channels, that different versions of the office suite are sold, that suites for enterprise customers include more programs and that enterprise customer agreements give the customers extra rights.

The market is influenced by a number of barriers (network effects, development costs, technical and practical barriers), which, over the past 10-15 years, have rendered it difficult for new players to gain market shares even though they make use of various business models such as low-price suites, subscription schemes or free suites.

Some trends are seen in the market, which indicate that Microsoft may lose market strength in the coming period. Unlike previous suites, the latest version of the Microsoft office suite is based on open document formats. This allows competitors to develop rival office suites based on the same standards. Moreover, the arrival of free suites and Internet-based office suites lead to a growing competitive pressure on Microsoft that may increase in the light of the current financial crisis in which many customers focus more on costs.

However, the market is still a market characterised by a majority of customers choosing to pay for an office suite from Microsoft despite several free alternatives. The Danish Competition Authority has therefore asked selected customers about what they consider to be crucial when choosing an office suite. The survey reveals that office suite quality and the total cost of ownership are paramount for the customers' choice of office suite. However, 60-70% of customers also emphasise technical and practical matters as being most important when choosing office suite. They highlight the interaction with the enterprise's other IT systems, conversion issues and document exchange as well as the need to train staff in a new suite, etc. Such technical and practical matters affect a customer's choice and makes changing office suites more difficult.

This is illustrated by the fact that the number of switchovers of suppliers in the market for office software is much lower than in other markets. Even when a customer switches from Microsoft to another supplier, the study conducted by the Authority shows that – in addition to the new office suite – customers still decide to have licences for a Microsoft suite.

5.3 RELATED MARKETS

The market descriptions of the markets for related services are very general and limited to information illustrating the impact the related markets may have on competition in the primary market for office software.

PCs

When two or more products are sold together, it is often termed as a combination sale or bundling. If it is difficult to acquire the products separately without significant extra costs, such combination sales may limit competition.

A combination sale is where an office suite is sold pre-installed on a PC and where payment for the office suite is included in the total price of the PC.

Microsoft has stated that such combination sales with a total price for PCs with pre-installed office suites rarely take place in Denmark. However, trial versions of office suites are to some extent installed on new PCs, just as it is possible to buy PCs with pre-installed office suites when making a separate buying decision.

Around one quarter of the PCs[78] sold by retailers in Denmark thus have pre-installed trial versions of office suites that make it possible for customers to try the office suite for two or three months for free. Subsequently, the customers will have to buy[79] an activation key to continue using the office suite. The Danish Competition Authority does not have any information about how many customers buying PCs with trial versions subsequently choose to buy the office suite.

As it appears above, about one fourth of the sale of office suites in Denmark go to retail customers and small enterprises. According to information from Microsoft, when making a separate buying decision, up to one third of these customers (including in particular smaller enterprises) ask the supplier to ensure that the PC is pre-installed with an office suite at the time of the purchase.[80]

Against this background, the Danish Competition Authority estimates that at least one third of all retail customers' and small enterprises' acquisitions of office suites take place in connection with the purchase of a new PC.

---

78 *This data is based on information from an IDC statement of 5 June 2009 ordered by Microsoft for this report.*

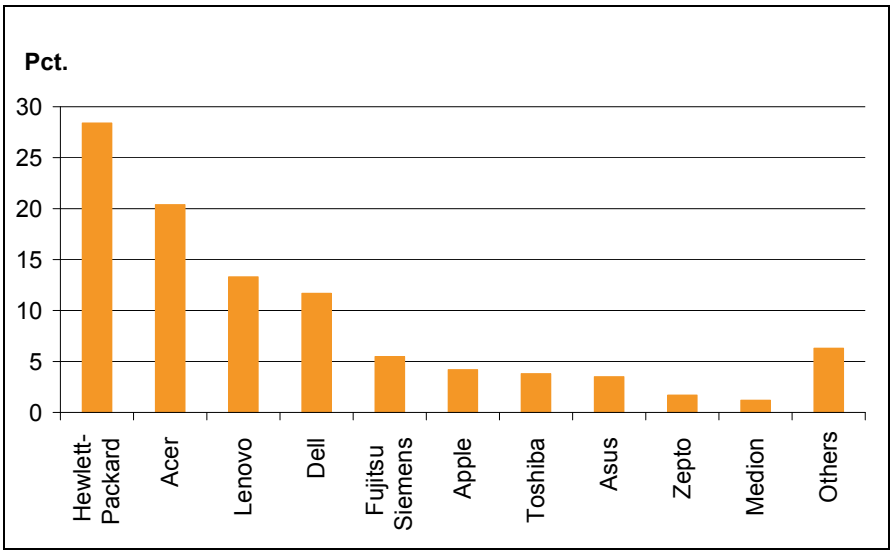
79 *This is done as an online purchase.*

80 *Microsoft has stated that "the customer needs to make two separate buying decisions: one to buy a PC and one to acquire an office suite (if desired). For PC manufacturers such as Dell, customers make 'build to order' PCs, and thus at the time of the order choose to acquire a PC with or without Microsoft Office (or an alternative office suite) pre-installed."*

Moreover, Microsoft has stated that the PC manufacturers handle the installation of office suites on new PCs, and the PC manufacturers typically pay around DKK 1,000 per office suite.[81]

These figures should be seen in relation to the fact that a total of 1.4 million PCs were sold in Denmark[82] and 257 million PCs were sold worldwide[83] in 2008. Sales in Denmark break down as follows between the various suppliers of PCs:

Figure 5.1: PCs sold in Denmark in 2008



Source: IDC EMEA Quarterly PC Tracker, Q4 2008 Final Results, 03 February 2009.

In conclusion, at least one third of all retail customers' and small enterprises' acquisitions of office suites take place at the same time as their acquisition of a new PC; but, according to information from Microsoft, this does not typically take place as actual combination sales. Thus, on the basis of the information at hand, it is not difficult to acquire PCs and office suites separately.

81 *Microsoft has stated that Microsoft Office Business Edition 2007is the most common software sold for installation on new PCs in Denmark.*
82 *See IDC EMEA Quarterly PC Tracker, Q4 2008 Final Results, 03 February 2009.*
83 *See http://www.gartner.com/it/page.jsp?id=904412.*

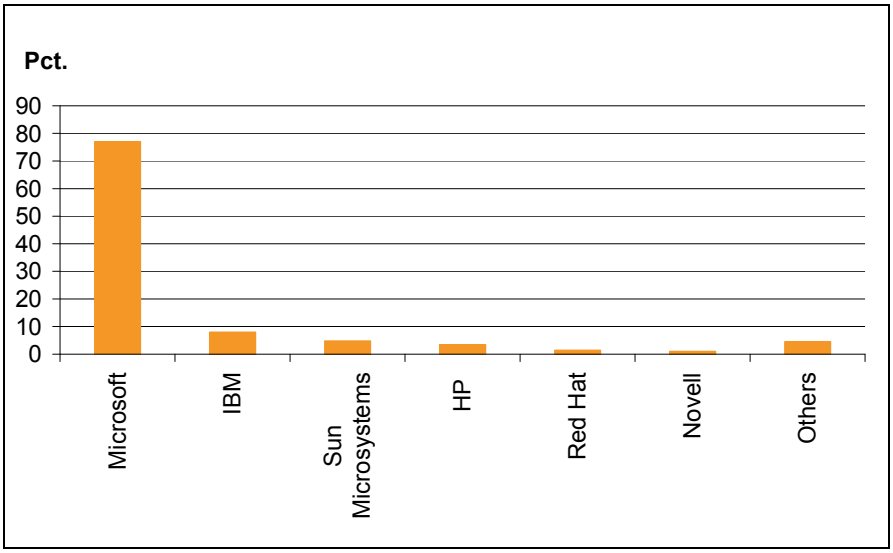
Operating systems

When a product commanding a very strong market position in an area can only be used in combination with one or some of the products supplied in another area, this may impact on competition for the other market area.

Microsoft's office suites, which hold a market share of at least 90%, can only run under two out of the three most common operating systems for PCs (Microsoft Windows and Mac OS X). Microsoft has not developed office suites that can run under the open source operating system Linux.

In 2007, sales of operating systems for both PCs and servers amounted to approx. DKK 1.2 billion in Denmark and approx. 160 billion worldwide.[84] Worldwide sales between various suppliers broke down as follows:

Figure 5.2: Sales of operating systems for PCs and servers in 2007



Source: Gartner Dataquest: Market Shares: Operating System Software, Worldwide, 2007.

84 See Gartner Dataquest: Market Shares: Operating System Software, EMEA & Worldwide, 2007. These figures do not include sale of Apple's operating system Mac OS X. Moreover, a statement of total sales should also include indirect sales in connection with the free open source operating system Linux.

According to Microsoft, market shares of operating systems for PCs distribute as follows:

- Microsoft Windows approx. 90%
- Mac OS X approx. 9%
- Linux approx. 1%

The competitive impact of Microsoft not developing office suites for Linux is twofold:

Firstly, a Linux user cannot get a Microsoft office suite. This may impact users differently, including in terms of interoperability when exchanging documents with users of other office suites. As mentioned in chapter 6, these impacts are not a specific consequence of Microsoft not developing an office suite for Linux.[85] The Danish Competition Authority is therefore of the opinion that it does not have an anti-competitive effect on the market for office software when Microsoft chooses not to develop an office suite for Linux.

Secondly, a customer wanting to use Microsoft's office suite cannot choose Linux as operating system. This circumstance could have an anti-competitive effect on the market for operating systems. However, the Danish Competition Authority has not studied whether this is in fact the case as it lies outside the scope of this study.

In conclusion, the Danish Competition Authority therefore assesses that the fact that Microsoft has not developed an office suite for the Linux operating system does not significantly impact on competition in the office software market.

Server software

If a product from a supplier works better technically and is more efficient in combination with other products from the same supplier, it may have a great impact on the competitors' possibilities of taking on the competition with the company concerned. This will especially be the case if some of the products in question hold considerable market shares and if the rivals do not have the same possibilities of designing their products to work just as efficiently in combination with the other products.

As mentioned in chapter 3, OSL has pointed out that Microsoft's office suites contain bindings to server software, which is especially due to the fact that Microsoft's office suites use servers for document sharing. The issues related to such bindings are further described in chapter 7.

---

85 *The direct impacts are thus primarily related to, e.g., interoperability problems, which, as outlined in chapter 6, may occur because different office suites are based on different document formats.*

Danish and worldwide sales of server software reach approx. DKK 400 million and approx. DKK 62 billion, respectively.[86]

There are no precise statements of how the market shares of server software distribute in the Danish market. The following table specifies 2007 market shares calculated according to two different statements, indicating market shares for server software in Denmark. The statements are based on IDC's statement of sales of infrastructure software and Gartner's statement of total sales of operating system software less any part of sales stemming from PCs and mobile phones.

Table 5.7: Sales of server software 2007

Supplier	Infrastructure software (% market share)	Operating system software (% market share)
Microsoft	28	57
IBM	16	18
HP	8	5
Others	48	20

Sources: IDC Market Analysis: Denmark Software 2007 Vendor shares and 2008-2012 Forecast, Table 17 Infrastructure Software Revenues, and Gartner Dataquest: Market Shares: Operating System Software, EMEA & Worldwide 2007

The market shares in the table indicate that Microsoft is the largest supplier of server software in the Danish market but also that Microsoft's market share on server software is much lower than on office software.

Chapter 7 looks into whether there are any conditions in the server software market that significantly impacts on competition in the office software market.

Other software

Other types of software may be tied or include bindings to specific office suites. This may encourage customers to choose the office suite with which this software has been made to work best. Consequently, such bindings from other software may also have a considerable impact on competition in the office software market.

The term "other software" covers programs for, e.g., sales and document management, accounting, portfolio management, project reporting, e-mail, calendar and a number of dedicated systems. The design of these programs and system means that they use the

86 *See Gartner Dataquest: Market Shares: Operating System Software, EMEA & Worldwide 2007. Server software sales are stated as total sales of operating system software less desktop and mobile sales.*

programs in a specific office suite for viewing and editing documents. The programs also use functions such as macros from specific office suites.

Chapter 7 looks specifically at the bindings between other software and office software and assesses the scope and impact of these bindings on competition in the office software market.

It is not possible[87] to make an accurate statement of sales of these other types of software that impact on competition in the market for office software.

Gartner has made a statement of sales of all types of software sold to enterprise customers. Using this statement as background and deducting any sales related to operating systems, office suites and infrastructure software included in the sales figures in the previous sections, remaining sales of software for enterprise customers totalled around DKK 6 billion in Denmark and more than 600 billion worldwide in 2007.[88]

These figures cover much more software than the types of software that may include office software bindings. However, they can be used to illustrate that sales in both the overall software market and of the types of software that may impact on competition in the market for office software are quite substantial. Sales of other software is thus considerably larger than sales in the market for office software, which, as mentioned, totalled approx. DKK 0.8 billion in Denmark and approx. DKK 57 billion worldwide in 2007.

Services

Enterprise customers often receive various services in connection with office suites. Such services may include support, training, implementation, IT architecture consultancy, operation and maintenance, etc.

For some of the suppliers, the commercial enterprise model in connection with free suites is based on earnings from such services related to office software – indeed, payment from the services makes it possible to supply the office suites for free. When an enterprise customer chooses an office suite, it is relevant to look at the total costs of both vendor suites and free suites, including related services.

As mentioned, the Danish Competition Authority's questionnaire survey asks about the aspects that are important when customers choose a new office suite.

The survey showed, see table 5.4 above, that the total cost of ownership, including spillover costs related to implementation into the company's IT environment, costs of

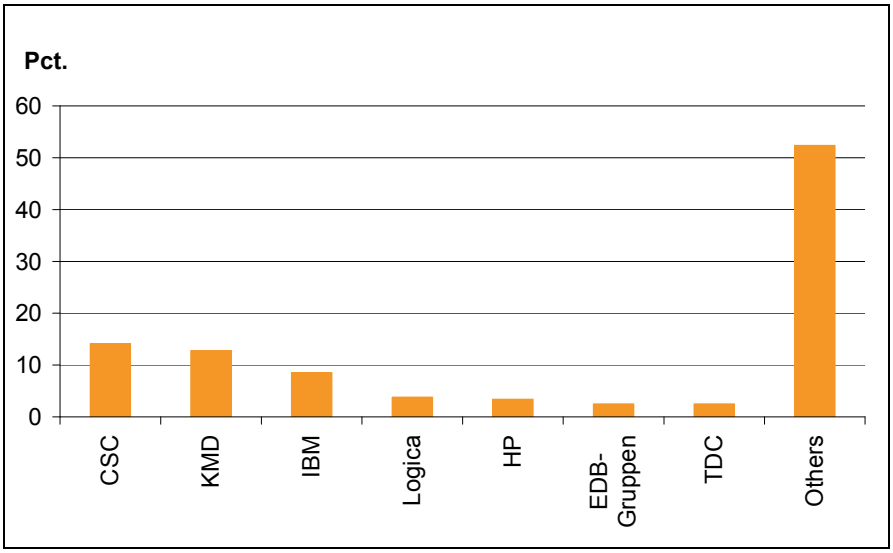
87 *This would in principle require a mapping of all types of software with some form of binding to or integration with office software.*

88 *See Gartner Dataquest: Market Shares: All Enterprise Software Markets, Worldwide 2007.*

consultancy services, training of staff, support, etc., is the second-most important aspect when customers are to choose an office suite (office suite quality and functionality rank first). Customers thus look at the total cost of ownership, which ranks higher than the price of the office suite.

In 2007, total sales of IT services reached just over DKK 22 billion in Denmark and around DKK 4,000 billion worldwide.[89] The largest suppliers of IT services in Denmark are:

Figure 5.3: Sales of IT services in Denmark 2007



Source: Gartner Dataquest: Market Shares: IT Service Market, Nordic Region 2007

Sales in the IT services market are thus 25-30 times greater than sales in the office software market. It is these substantial sales in the IT services market that allow suppliers of free suites to base their business models on, e.g., earnings from related services.

Summary

Conditions in other markets may have a significant impact on competition in the market for office software. For instance, this is the case when an office suite is sold in combination with other products (e.g. PCs or services), when an office suite works best

89 *See Gartner Dataquest: Market share: IT Services, Nordic Region & Worldwide Rankings 2007, where IT services in 2007 total DKK 4,069 billion (USD 748 billion) and http://www.eito.com/reposi/Free-DataSheets/ICT-MarketOverview-world, where EITO lists 2007 sales at DKK 3,366 billion (EUR 449 billion).*

with another product (e.g. specific server software) or can only be used with another specific product (e.g. operating system) and when another product (e.g. a dedicated or document management system) can only be used together with a specific office suite.

Chapter 7 considers various technical bindings between office suites and other products, etc. The following supplementary information can be given on the markets for related services:

- It is estimated that one third of the sale of office suites to retail customers and small enterprises in Denmark is accompanied by a purchase of new PCs; however, according to Microsoft, this does not take place as actual combination sales.

- Microsoft's office suites are only developed for application on two of the three most common operating systems for PCs (cannot be used on Linux). The Danish Competition Authority assesses that this does not impact on competition in the market for office software significantly.

The dominant supplier in the market for office software, Microsoft, is also the dominant supplier in the markets for operating systems and server software.

Chapter 6
Interoperability

6.1 INTRODUCTION

The need for exchanging documents with other parties without incurring loss of data, formatting, etc., is a key element in selecting an office suite, see chapter 5.[90] This chapter analyses and evaluates the key interoperability problems between office software based on primarily ODF and OOXML.

For this task, the Danish Competition Authority was assisted by external consultant company, Devoteam Consulting, which company prepared a report[91] on interoperability between office suites based on various document formats. This chapter reviews the main contents of the Devoteam report.

6.2 KEY CONCEPTS

The following section explains concepts and conditions pivotal to the interoperability analysis. The section will define the concept of interoperability and provide a short description of how interoperability is assessed. Subsequently, fundamental characteristics of the ODF and OOXML document standards as well as the relevant office suites in that context will be provided. The section will also specify other concepts such as document formats and office software.

Interoperability

The term interoperability means the "ability to interact". The concept is today primarily used to describe the ability of an IT system or product to interact with other systems or products without requiring the user to perform special actions or have special knowledge. Devoteam uses *interoperability* when users can "read and work seriously with documents from one office suite in another office suite".

---

90 *Between 60-70% of customers underline technical and practical conditions, including interoperability in relation to other systems, as imperative to their choice of office suite.*

91 *The report "Analyse om interoperabilitet" (analysis of interoperability) primarily focuses on technical assessment, using previous works, including the Committee of Expert report of December 2008 and analyses from the National IT and Telecom Agency on open document formats, as its point of departure. See http://www.ks.dk/service-menu/publikationer/publikationer-2009/markedet-for-kontorsoftware/.*

Devoteam uses *full interoperability* to describe interoperability between two different office suites, when users can receive, read, edit and save imported document formats using the functionalities relevant for the user and the system to provide a high quality level.

When users can only receive and read imported documents, but cannot process them or if functionality and document quality are limited, Devoteam describes this as low or medium interoperability maturity.

Devoteam explains that interoperability is achieved either by *converting* or by *transferring and reading/editing* the imported document format directly in the office suite. The latter option distinguishes between the option of *reading* imported formats and being able to *edit* the formats and subsequently save the changed documents.

According to Devoteam, the major challenges of interoperability lie in document exchange between users applying differing office suites with differing formats in varying versions. However, Devoteam also states that interoperability is not necessarily ensured even though users use the same formats and same office suites. Insufficient interoperability typically arises when macros fail to function across various IT environments or in cases where users have installed differing sets of typographic typefaces, templates, etc.

Functionality ceiling

The volume of interoperability problems increases on a par with the number of more advanced functionalities used in office suites. When interoperability is to be assessed, it may therefore prove relevant to determine a framework for the functions and content types that are specifically significant for interoperability needs.

Jointly with government agencies and suppliers, the National IT and Telecom Agency has defined a functionality ceiling[92]. The functionality ceiling determines a level or ceiling for interoperability, at which a number of functionalities should be interoperable.

The functionality ceiling covers a number of functionality areas that set the standard for the requirements that may reasonably be made to ensure full interoperability between office suites. The Devoteam report bases many of its conclusions on the experience gained from the areas covered by the functionality ceiling.[93]

---

92 *The functionality ceiling is described in detail in the report "Analyse om interoperabilitet", p. 11, Devoteam Consulting.*

93 *The functionality ceiling is based on word-processing system functionality with focus on government agencies' functionality needs. For this reason, no expectations were set up to guide the interoperability level for private users or for spreadsheet and presentation formats in a Danish context. However, significant interoperability problems for such areas will also be discussed in the analysis to the extent that they are seen as relevant for users.*

Compatibility

Compatibility means that two systems can work together. Compatibility is interoperability, but without inserting any additional steps. In connection with document formats, this is typically a question of backward compatibility. This means that an office suite supports historical file formats (typically allowing a later version of an office suite to use documents from previous versions).

Document formats

As described in chapter 3, box 3.3, a document standard is a set of rules for document formats. In principle, standards are "papers" that describe the rules to be observed in constructing a format. ODF and OOXML standards, for instance, require formats to be drawn up in the XML programming language.[94] Today, both document formats are implemented in a number of different file types, e.g. text documents, spreadsheets and presentations, see table 6.1.

Table 6.1: ODF and OOXML file types

	ODF-based file types	OOXML-based file types
Text document	.odt	.docx
Spreadsheets	.ods	.xlsx
Presentations	.odp	.pptx

Note: *The table above shows a small selection of the file types contained in the ODF and OOXML formats.*
Source: *"Analyse om interoperabilitet", p. 15, Devoteam Consulting.*

Text documents in ODF and OOXML are file types .odt and .docx, respectively, but both document formats cover a number of other file types, e.g. spreadsheets (.ods and .xlsx) and presentations (.odp and .pptx).

Devoteam explains that, in reality, two different versions of OOXML and three versions of ODF exist, between which suppliers can choose when implementing the standards. They appear from table 6.2.

94 *The ODF and OOXML standards were originally developed by SUN and Microsoft, respectively, but both standards are now maintained by standardising organisations.*

Table 6.2: Different versions of ODF and OOXML

OOXML versions	Launched	Implemented in office software
ECMA-376	December 2006	Yes
ISO/IEC 29500	November 2008	No
ODF versions		
ISO/IEC 26300:2006	November 2006	Yes
OASIS OpenDocument v.1.1	February 2007	Yes
OASIS OpenDocument v1.2	Under preparation	Implemented in preliminary versions of some office suites.

Source: "Analyse om interoperabilitet", p. 17, Devoteam Consulting.

According to Devoteam, ODF version 1.0, an ISO standard, is less widely used than versions 1.1 and 1.2. For instance, Microsoft Office 2007 Service Pack 2 supports ODF in version 1.1.

ODF versions 1.1 and 1.2 have not been processed in ISO, but according to Devoteam version 1.2 is expected to become the next version to be presented for ISO approval. The future version 1.2 will significantly expand the ODF standards, which will, according to Devoteam, improve future interoperability.

As to OOXML, only the ECMA versions (ECMA 376, 1st edition) is fully implemented in software products, for instance in Microsoft Office 2007. Microsoft's coming Office version is expected to implement the ISO-approved OOXML version (ISO/IEC 29500).[95]

Assessments of ODF and OOXML characteristics may differ – partly reflecting commercial interests.[96] Devoteam states that one standard is not necessarily better than the other, but that the standards differ and have been developed from differing starting points and objectives. The development of OOXML, for example, focused highly on ensuring compatibility with the doc format and ensuring match with the functionalities offered in the Microsoft Office suites. ODF focused more on functioning as an open format for office suites other than Microsoft's. This is why the two document formats differ widely and are suited for solving differing needs.

---

95 *See http://www.microsoft.com/Presspass/press/2008/may08/05-21ExpandedFormatsPR.mspx*

96 *Both OSL and Microsoft have presented their views of how OOXML and ODF meet the conditions for being open standards, etc. As the Danish Competition Authority is not tasked with assessing this matter, such views have not been included in this report.*

Devoteam generally establishes that OOXML is more expressive than ODF. This means that OOXML contains definitions and descriptions of more functionalities than ODF. Further, OOXML also offers more integration options with other program types. OOXML specifications are therefore more comprehensive and detailed than ODF. Therefore, ODF appears, in Devoteam's view, to be underspecified in some areas compared to OOXML.[97]

Devoteam states that both document formats comprise most of the functionalities defined for the functionality ceiling, but vary in how the functionality is implemented. Further, both standards are rated as open standards under the definitions set up in connection with the parliamentary decision on open standards use for software in the public sector (B103).

Production format

Devoteam uses the term "production format" to cover the format(s) which an office suite can read, edit and save without needing to convert to another format.

Most office suites work on the basis of one production format, which they are typically developed to utilise. Thus, office suite functions will typically be optimised for that format.

Office software

In practice, document formats are implemented in office suites. According to Devoteam, the key aspects of ODF and OOXML are not linked to the standards as such but to the dissemination and functionality of the office suites that support ODF and OOXML.

Table 6.3 contains a non-exhaustive list of existing office suites as well as an overview of their production formats and possible support of third-party open document formats:

97 *This applies, for instance, to track changes, use of formulas and "bidirectional layout" options relevant for users of Arabic typefaces, etc. However, Devoteam states that the coming version 1.2 of the ODF standard will be significantly expanded in relation to, e.g. formulas, which will ensure improved interoperability in future.*

Table 6.3: Overview of office suites and formats

	Produc-tion format ODF	Produc-tion format OOXML	Read OOXML	Write OOXML	Read ODF	Write ODF
Microsoft Office 2007 SP2	X	X	X	X	X	X
OpenOffice 3.0	X		X		X	X
Apple iWorks 09			X			
IBM Lotus Symphony 1.2	X		X		X	X
Corel WordPerfect X4			X		X	
Koffice 1.6	X				X	X
OpenOffice.org Novell ed. 3.0	X		X	X	X	X
Sun Star Office 9	X		X		X	X
NeoOffice 3.0	X		X		X	X
ThinkFree Office			X			
Google Docs			X		X	X
Zoho Work Online			X	X	X	X
Adobe Buzzword			X	X	X	X

Note: In Microsoft Office 2007 SP2, ODF can be set as standard format. For some office suites, it proved impossible to determine the production format.

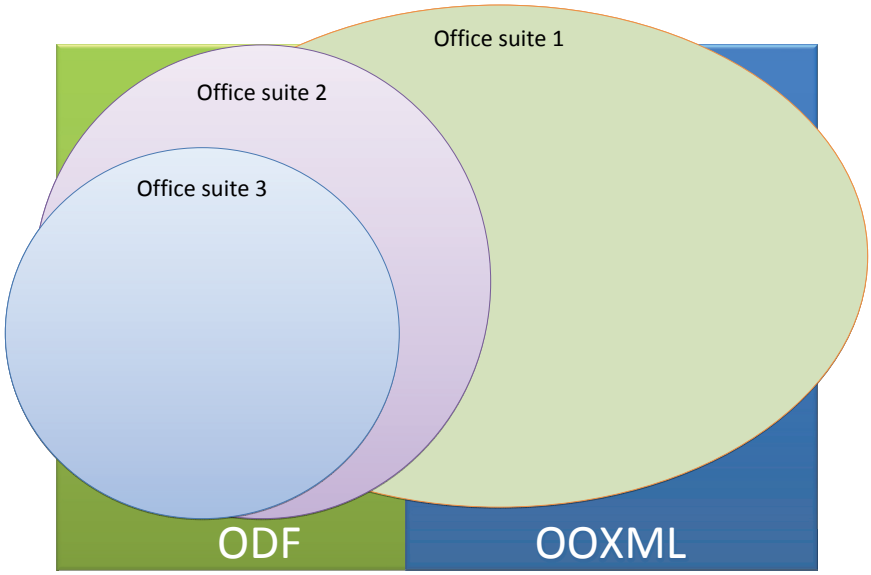
Note: Devoteam states that, technically, office suites work in binary (i.e. closed) formats. Binary formats represent documents when users write, edit and are only translated to ODF or OOXML formats when they save documents. This means that if an office suite can only "write" and "read" a document created with a third-party format (e.g. OOXML), interoperability problems only arise when the document is to be saved and therefore converted to another format. When the term "production format" is used in the context of open document formats, the office software manufacturers have designed their office suites to save directly from the internal binary formats to ODF or OOXML, which process is called internal direct connection between format (e.g. ODF or OOXML) and the object model. This makes conversion unnecessary, thus reducing the interoperability problems inherent in conversion.

Source: "Analyse om interoperabilitet", p. 22, Devoteam Consulting.

Devoteam underlines that, of the Microsoft office suites, only Office 2007 Service Pack 2 supports ODF as production format. In addition, various ODF-based office suites enable reading of OOXML documents. The office suites use document formats in different ways. This means that office suites utilise the standards differently and may

deviate from the standard to varying degrees. At the same time, some office suites may support both standards to varying degrees, as illustrated in figure 6.1.

Figure 6.1: Varying utilisation of and conformity with standards



Note: The illustration does not show the actual proportional overlapping between standards nor the scope or relative volume of the standards and office suites.

Source: "Analyse om interoperabilitet", p. 23, Devoteam Consulting.

6.3 INTEROPERABILITY BETWEEN OFFICE SUITES

According to Devoteam, the use of open document formats is in practice relatively modest, as the doc format is still by far the most popular format for production and exchange of editable documents. This means that practical experience of interoperability between the ODF and OOXML formats is limited.

This section will identify significant interoperability problems related to exchange of documents (primarily word-processing documents and, secondarily, spreadsheets and presentations) based on particularly ODF and OOXML. The section will mainly focus on identifying interoperability problems when:

- OOXML user receives ODF document
- ODF user receives OOXML document

Further, the analysis describes other general interoperability problems between various office suites as well as backward compatibility in the two document standards in relation to the currently very widely used doc formats. Thus, the section also describes interoperability problems when:

- OOXML user receives doc document
- ODF user receives doc document
- ODF user receives document prepared in another ODF office suite
- OOXML user receives document prepared in another OOXML office suite.

The effect and scope of various interoperability problems will be evaluated in relation to each scenario.

OOXML user receives ODF document

To receive and read ODF in OOXML-based office suites, users must install a converter or Microsoft Service Pack 2 (SP2) for Office 2007.[98] However, the interoperability problems identified in this section relate to ODF documents imported into Office 2007 by means of a converter, because Office 2007 SP2 was only released on 28 April 2009.[99] Devoteam finds that converting ODF to OOXML by means of converters is inadequate and poses a number of challenges.

Experience shows that correct conversion of text documents may pose challenges in relation to the following functionalities:

- OLE objects (e.g. inserted spreadsheets or presentations)[100]
- Drawings
- Images
- Fields and various types of text boxes
- Formatting, including bulleted lists and tabulations
- Footnotes
- Text wrapped around text box
- Tables of content
- Section breaks

Further, macros are not interoperable between the two formats, because macros are program-specific and reflect the structure and functionality of individual programs.

---

98 *In theory, Microsoft Office 2007 SP2 could also be seen as an office suite with ODF production format, as users can select ODF as default format. Thus, the office suite also belongs in the ODF to ODF scenario. But for practical reasons, the office suite will be treated as an OOXML-based office suite in the scenario review.*

99 *As Devoteam's time limit for submitting the interoperability report to the Danish Competition Authority was 1 May 2009, Devoteam could not assess Microsoft Office SP2.*

100 *OLE objects are objects inserted into, e.g., a text document but originally prepared and edited in another program, e.g. a spreadsheet or drawing program.*

Footnotes and various types of fields represent major challenges in a simple conversion. Significant challenges are also found in converting ODF to OOXML in both spreadsheets and presentations. Formulas in spreadsheets and graphs do not always convert correctly, and major challenges arise in connection with drawings and tables in presentation formats.

Devoteam estimates that the problems identified will affect most users of OOXML-based office suites who receive ODF documents. Most often, users will experience visual changes, and in some cases users will also experience confusing changes and loss of information.

Users exchanging documents between them several times will, in practice, not be able to achieve the desired interoperability, and the process will severely reduce the productivity of the involved parties.

According to Devoteam, the choice of a given office suite may depend on the uncertainty of whether ODF documents can be read by other relevant users, thus reducing the incentive to choose an ODF-based office suite.

As more users switch to the newly released Microsoft Office 2007 Service Pack 2, the scope of the above interoperability problems will, according to Devoteam, diminish, as it will no longer be necessary to convert ODF documents to OOXML.[101]

ODF user receives OOXML document

Several of the problems identified in relation to conversion from ODF to OOXML also appear in conversion from OOXML to ODF. Today, a conversion solution is needed if users are to receive and read OOXML in office software using ODF as production format.

Conversion from OOXML to ODF is, with the technology accessible today, inadequate, and poses, according to Devoteam, a number of challenges. Experience shows that challenges may arise in connection with the following functionalities:

- OLE objects (e.g. inserted spreadsheets or presentations)
- Fields
- Footnotes
- Page layout
- Text wrapped around text box

---

101 *Devoteam states that the ODF support option in Microsoft Office 2007 SP2 is so new that practical experience is insufficient of interoperability between Microsoft Office 2007 SP2 and other office suites based on the ODF document format.*

- Tables of content
- Soft returns

Footnotes and various types of fields represent major challenges in a simple conversion from OOXML to ODF. According to Devoteam, the conversion process has caused outright reading errors, so that the conversion has made it impossible to open documents.

Some of the ODF-based office suites support direct OOXML reading[102], but experience of retaining formatting, tables, images, etc. generally reveals poor results in exchanging text documents, spreadsheets and presentations.

Again, Devoteam identifies macros as a significant source of interoperability problems. Microsoft products use VBA (Visual Basic for Applications) as their macro language, while no common standard has been established for ODF or the ODF-based office suites. However, it should be noted that VBA is not an element of the OOXML standard.

Devoteam further explains that significant challenges are related to converting presentations from OOXML to ODF. Some of these significant challenges relate to drawings in presentations. Other major challenges lie in spreadsheet formulas, as formulas are not part of the ODF standard in the current 1.1 version.

Devoteam estimates that the problems identified will affect most users of ODF-based office suites who receive converted OOXML documents. Most often, users will experience visual changes, and in some cases users will also experience confusing changes and loss of information. Users will also experience major interoperability challenges in connection with spreadsheets and presentations.

Users exchanging documents between them several times will, in practice, not be able to achieve the desired interoperability, and the process will severely diminish the productivity of the involved parties.

As significant interoperability challenges are still related to receiving OOXML documents, many users run parallel solutions – i.e. an OOXML-based office suite or viewer to supplement the ODF-based office suite. According to Devoteam, users of ODF-based office suites may therefore also have to purchase Microsoft office suites.

OOXML user receives doc document

In practice, full interoperability exists between doc and OOXML, so OOXML is backward compatible with the doc format of the Office 2007 office suite. Since the doc

---

102 E.g. OpenOffice 3.0.

format is still the most popular word processing document format, it is particularly important for many office suite users to be able to receive and process doc formats.

Microsoft Office 2007 SP2 is fully backward compatible with the doc format. Previous Microsoft office suite versions contained the option of converting forwards and backwards between OOXML and doc formats, if the user installed a Compatibility Pack. In Devoteam's view, it is doubtful whether other suppliers could develop the same functionality without expending considerable efforts, even though Microsoft has published comprehensive documentation of the binary Office formats (doc).

Therefore, Devoteam believes that if OOXML users want full backward compatibility to doc formats, they must purchase a Microsoft office suite.

ODF user receives doc document

In general, users can receive and open doc documents in an ODF-based office suite without experiencing confusing loss of content. However, examples of minor data loss have been experienced in connection with conversions.

Devoteam underlines that correct conversion of text documents may pose challenges in relation to the following functionalities:

- Table of contents
- Images and graphics
- Page layout
- Headers and footers
- Formatting

However, Devoteam states that, in addition to such data loss, only few visual deviations have been noted in relation to conversions. More extensive deviations arise at multiple conversions.

Thus, Devoteam concludes that interoperability is better when ODF users receive doc documents than when they receive OOXML documents.

ODF user receives ODF document (prepared in another office suite)

No systematic studies are available of interoperability between various ODF-based office suites, but according to Devoteam several examples indicate that significant interoperability challenges arise between the various ODF-based office suites. Some of the challenges are rooted in the functionality being implemented differently in the different office suites.

Devoteam identifies the track changes option as an area posing significant challenges. In general, the ODF standard is, according to Devoteam, not particularly specified in this area, which means that suppliers implement functionality differently thus causing interoperability problems. Interoperability is generally best between the office suites applying the OpenOffice.org code.[103]

Another problem between ODF-based office suites is that no macro language has been specified for ODF, so that the preconditions for achieving interoperability in that area are non-existing. This is true of macros that are special functions in spreadsheets and macros that extract data from a dedicated system to a text document. Another example of functionality being implemented differently appears in the word wrapping option for text boxes, which does not function uniformly in ODF-based presentations.

In practice, a consequence of the many implemented ODF-based solutions is that a given office suite must be designed and tested for interoperability in relation to all other ODF-based office suites. Thus, complexity increases as the number of ODF implementations grows.

Devoteam states that this complexity can be lowered markedly, if one reference implementation – for example OpenOffice – and comprehensive test methodologies, etc., can be established. However, that would generally require full implementation of the standard as well as extensive reference documentation, etc. Neither OpenOffice 3.0 nor any other ODF-based office suite has yet achieved this status.

Devoteam concludes that a decision to make ODF the only format for exchanging editable documents would therefore not ensure the necessary interoperability at present nor support all users' functional requirements.[104]

OOXML user receives OOXML document (prepared in another office suite)

Currently, only one OOXML-based office suite is available on the market – Microsoft Office 2007.[105] As only Microsoft has implemented OOXML, interoperability between two office suites from different manufacturers with individual OOXML implementation cannot be evaluated.

---

103 When office suites use the same code, interoperability between ODF documents will, all other things being equal, be significantly better.

104 To achieve full interoperability, all users would have to use the same ODF-based office suite, if ODF were to be selected.

105 However, other Microsoft Office versions can also use OOXML as production format by using the Microsoft Compatibility Pack. According to Microsoft, this applies to the office suites Microsoft Office 2008 (Mac), 2004 (Mac), 2003, 2000 and XP.

Interoperability between office suites summarised

In practice, full interoperability does not exist between office suites based on ODF and OOXML, nor does interoperability between office suites based on the same ODF standard exist in practice. In the scenario, in which an OOXML user receives an ODF document, however, interoperability problems will most likely be reduced because of the direct support of the ODF format in Microsoft Office 2007 SP2.

Repeated conversions between various open formats are, according to Devoteam, in fact impossible today, if document content and quality are to be retained. For this reason, cooperation scenarios involving various open formats are not realistic today.

In the cases where no need exists to be able to edit received open document formats, alternatives exist that are better suited for retaining the visual appearance of documents (e.g. PDF). They are supported directly in recent office suites like Office 2007 SP2 and OpenOffice 3.0.

6.4 BACKGROUND TO INTEROPERABILITY PROBLEMS

This section describes the most important reasons for interoperability problems between office suites. It also suggests a number of measures that could improve the interoperability.

To appreciate why full interoperability is so difficult to achieve, the general interaction between office software and document formats must be understood. The following describes some of the general conditions that contribute to creating interoperability problems.

Insufficiently developed converters

A chief reason why interoperability problems arise is the fact that converters are not yet sufficiently developed to convert correctly. However, this only explains the problems in part, as it is doubtful whether converters will, long term, be able to overcome all fundamental interoperability challenges existing between the two formats and the different office suites. According to Devoteam, the differences between the standards (described below) mean that converters will never be able to ensure full interoperability. Further, office suites and formats develop at a faster pace than converters and will therefore always be one step ahead.

Differences between standards

Even though both ODF and OOXML are rooted in open standards, they remain different in terms of scope and content and thus also mutually incompatible in terms of key

functionalities, including collaboration functionality, formulas, fields, etc.[106] Thus, document formats are not interchangeable, as they support various sets of functions and thus meet various needs.

Devoteam states that, in general, OOXML offers more functions than ODF, but that none of the standards fully cover all functions found in modern office suites. ODF does not cover all the functionalities comprised in advanced office suites (e.g. editing functionality, formula handling, etc.), and would therefore not, in Devoteam's view, be able to function as the only format in the market without necessitating significant non-standardised concurrent development.[107]

Devoteam concludes that use of open standards as a precondition is not sufficient to achieve full interoperability.

Differences between document formats and software

Devoteam states that, typically, office suites are not developed to support open document formats directly but generally have individualised functions that become apparent in the document format in connection with document saving. Thus, the format and the program functions are not necessarily in full compliance, which may prove a contributory factor of some of the problems experienced.

Differences in standards implementation

As the above text reveals, formats and implementing of standards differ. This is why a concrete implementation may cause interoperability problems, as it may use the standard differently from other programs. Further, elements of the standard may not be implemented and, reversely, functions may be implemented but not specified in the standard. These factors may trigger interoperability challenges even though they may not necessarily conflict with the standard.

Interpreting standards and enhancements

As a standard is a set of rules that allow for interpretation and prioritisation, any supplier of office software must interpret and implement the standard so that it fits the relevant software. In this way, each office suite achieves its own implementation or *dialect* of the standard, and challenges may arise from having different dialects. Thus, practice of

---

106 *Devoteam assesses the differences between the ECMA and the ISO versions of OOXML as less important to the practical interoperability. Therefore, none of the crucial interoperability challenges will be solved by implementing the ISO version in office software in future, nor will it trigger any major new challenges.*

107 *However, it seems that important new functions in ODF v 1.2 will, in part, be able to cover some of the lacking functionalities.*

using the standard may differ even though document structure complies with the standard, and this fact may give rise to interoperability problems.

As office suites differ and cover differing market needs, they often comprise functions that exceed the specifications of the standards. The standards offer varying options for embedding enhanced functionalities, thus allowing office software suppliers to differentiate by offering new functionalities that are not directly specified in the standards but comply with them. However, differentiating may challenge interoperability, as functionalities defined as enhancements may not necessarily be understood by other office suites nor be precisely translated to other formats.

Possible solutions

The analysis reveals, e.g., that many of the interoperability challenges experienced today cannot merely be ascribed to immaturity of converter products or similar reasons; a more likely reason is the fact that the preconditions for achieving full interoperability are complex and require a multipronged approach. Devoteam underlines that several measures are needed to improve interoperability, as interoperability problems are rooted in several different conditions.

In Devoteam's view, full interoperability is best achieved by supporting the open formats directly in the office suites. If document formats can be retained when documents are exchanged, the document will appear in its original layout and can also be edited and saved in the same format.

As previously mentioned, ODF is supported in Microsoft Office 2007 SP2, a fact that will improve interoperability when a user of the office suite receives an ODF document. ISO OOXML has still not been implemented in any office suite. Devoteam explains that, technically, other suppliers than Microsoft can implement ISO OOXML, even though the ease with which the standard can be implemented will differ, depending on the platform a supplier uses for development and the development tools available.

Devoteam writes that a key challenge of implementing the OOXML standard is the resources needed for preparing the comprehensive specification if the entire standard is to be supported.[108] Further, OOXML was originally designed on the basis of Microsoft office suites and may therefore not necessarily match the paradigm used by, for instance, OpenOffice.org.

Other possible solutions lie in continuously striving to turn the development of formats and related technologies in the direction of openness, so that, for instance, open standards become the foundation of new functionalities used in the contexts of the

108 In this connection, it should be noted that many resources are also required for implementing other standards, including ODF or PDF.

standards or struggling to become part of the standards. It would, for example, prove advantageous to standardise macros to some extent as they are the source of significant interoperability problems.[109]

Devoteam also identifies other possible solutions such as independent certification of office suites and their ability to support interoperability and improved transparency in the differently implemented formats.

6.5 SUMMARY AND ASSESSMENT

Interoperability between office software suites based on different formats still represents a major challenge, according to Devoteam. A range of interoperability problems exist between ODF-based and OOXML-based office suites and between different ODF-based office suites.

Interoperability problems are mainly rooted in differences between standards and software. Office suites contain functions that exceed the standard specifications. Devoteam further states that the standards differ. OOXML is more normative than ODF, while ODF is in some areas underspecified compared to OOXML. Finally, suppliers have implemented the standards differently.

Devoteam therefore concludes that use of open standards as a precondition is not sufficient to achieve full interoperability between the office suites. Devoteam also concludes that a decision to make ODF the only format for exchanging editable documents would not ensure the necessary interoperability at present nor support all users' functional requirements.

In Devoteam's view, full interoperability is best achieved by supporting the open formats directly in the office suites. In addition, some elements that are yet to be specified in the standards can be improved and standardised (e.g. macros).

Devoteam's report reveals that the interoperability problems may in general work as incentives for selecting Microsoft office suites, as Microsoft Office 2007 SP2 supports both ODF and OOXML, and as it is pivotal to many users still to have full backward compatibility with the old Microsoft formats (doc).

---

109 *Any future work expended on improving interoperability between macros should be carefully considered, as existing proprietary macros implemented by companies in document templates, spreadsheets, etc., represent major investments. Thus, this is not an easy area in which to create new standards and interoperability.*

Chapter 7
Technical bindings

7.1 INTRODUCTION

The need for other IT systems and programs to interoperate with a new office suite without necessitating extensive adjustments or incurring productivity loss is a key aspect of selecting or switching to another office suite, as described in chapter 5. Technical aspects related to an office suite or to integration of office suites and other software types may discourage, impede or directly prevent customers from switching to another office suite.

This chapter identifies and evaluates the technical conditions and bindings having the greatest impact on competition in the office software market. As in the previous chapter, the Danish Competition Authority has been assisted by the external consultant company, Devoteam Consulting. Thus, this chapter is based on Devoteam's report on technical bindings of office software.[110]

7.2 DEFINITION OF TECHNICAL BINDINGS AND OTHER CONCEPTS

The following section explains concepts and conditions pivotal to the analysis of technical bindings. The section starts by defining *technical bindings*, and moves on to review the software categories that may be comprised by bindings.

Definition of technical bindings

In its term of references for the Devoteam report, the Danish Competition Authority states that, in its view, the definition of technical bindings may both encompass technical specifications that, e.g., bind the use of a software type to the use of another software type as well as other incentives or measures that in practice mean that the use of a software type encourages or makes it particularly attractive to use another software type from a specific supplier.

110 *The report entitled "Tekniske bindinger knyttet til kontorsoftware" (technical bindings related to office software) is appended to this report.*

In this way, the Danish Competition Authority recommended Devoteam to use a wide definition with a view to identifying the various types of technical conditions that could, as a minimum, discourage customers from switching office suite supplier. A wide definition would enable the technical conditions that impact on customers' possibilities of switching suppliers to be identified. However, it should be emphasised that this does not imply identification of bindings for competition law assessments and that the identified bindings therefore do not necessarily pose any competition problems.

Devoteam defines a *technical binding* as "a relation or a state of dependence existing in a well-defined program suite". A technical binding can mean improved functionality and coherence between programs, but may also affect user options by encouraging, impeding or preventing replacement of programs or office suites.

Thus, the concept of technical binding encompasses a number of aspects that may prevent or impede replacement of specific software products or will in practice mean that the use of one software type will encourage or make it particularly attractive to use another software type from the same supplier. The concept has been considered in broad terms to ensure identification of all technical aspects of significance to choice and use of office suites.

Devoteam states that some bindings are the result of the method suppliers have used to develop or document their solutions, while other bindings are the result of the investments represented by integration, customised solutions or adaptations, which users have on their own introduced into their IT environments. Devoteam primarily focused on the situation in which a user wants to replace an office suite or other related programs.

Devoteam characterises a technical binding as *strong* if it cannot be broken without triggering considerable use of resources (time, money), and as *of great importance* if a large, installed base of programs is comprised by the binding. A given technical binding is characterised as *essential* if it is both strong and of great importance.

Platform

In this context, platform is the overall term for an operating system, several programming languages, framework (defined below) and software libraries used in developing software for the individual platforms.

Operating system

An operating system allows the individual programs to communicate with a range of physical computer resources (keyboard, display, net card, harddisk, etc.). An operating system is an essential element of a platform on a PC that runs the office suite and other software types. Without an operating system, office suites and programs cannot run on PCs.

The operating systems relevant for this chapter are:

- Microsoft Windows
- Mac
- Linux

Framework

Frameworks like .Net and Java are compilations of basic functions that program developers can use instead of developing the functions by themselves.

Hosted solutions

Hosted solutions are software offered as a service (often called Software as a Service or SaaS), i.e. a service not running on a PC but offering the same functionality as products running on a PC. In most cases, the service is delivered via the Internet. It can be described as an office suite on the Internet, which each user can use via an Internet access.

Other software

In this context, other software denotes software integrated into the office suite (e.g. repository software, dedicated systems and EDM[111] and communication software) and entering into digital production and interoperation with the office suite.

IT landscape

In this context, IT landscape denotes the complete collection of programs installed and in use in a given enterprise, including office suite, operating system, server software, hosted solutions and other types of software.

7.3 LIMITATION AND METHODOLOGY

To ensure focus on the most essential technical bindings, Devoteam has studied programs that are either widely disseminated on the market or represent alternatives to the most common products on the market. Devoteam also decided primarily to analyse enterprise use of office suites, as seen in private and public companies. The reason for this limitation is that the technical bindings and problems typically arise in such complex IT environments and that enterprise sales account for three quarters of total sales of office software, see chapter 5. Some of the bindings identified in the analysis would also apply to private users.

---

111 EDM is short for electronic document management.

With a view to exemplifying what the bindings actually mean as well as illustrating their practical scope and effect, Devoteam set up seven differing archetypical IT landscapes that represent various types of companies with differing compositions of the selected software products. The procedure is described in more detail in box 7.1. Typical IT landscapes were selected on the basis of Devoteam's professional assessment of the products available in the market and the combinations used.

The following products were selected:

- Office suites
  - Microsoft Office 2003/2007
  - OpenOffice.org version 3
  - iWork
  - Zoho Writer, Sheet, Show

- Operating systems
  - Microsoft Windows XP/Vista
  - Linux
  - Mac OS X

- E-mail programs
  - Outlook
  - Linux SMTP
  - Lotus Notes
  - Zoho Mail

- Repository software[112]
  - SharePoint
  - Lotus Domino
  - Microsoft file server
  - Samba file server
  - Zoho Share

In addition, Devoteam considered Danish EDM products and KMD's dedicated and administrative systems.

---

112 *The main task of Sharepoint and Lotus Domino is to store data and files. File servers serve the same purpose (but in a simpler way). The English term is "repository", translated into the Danish "arkiv" in the Devoteam report. Devoteam has deliberately avoided using the concept of "collaboration tool" in the report, as the concept is associated with many differing and very wide definitions. Typically, Sharepoint and Lotus Domino would belong to the "collaboration software" category.*

Box 7.1: Devoteam's procedure for identifying technical bindings

To elucidate the problems of technical bindings, Devoteam chose to base its work on a selection of typical IT landscapes. In these typical IT landscapes, Devoteam studied the bindings existing when users wanted to replace a component in the landscape.

The IT landscapes are of a general nature but should, according to Devoteam, cover most of the market. The vast majority of enterprises should be able to recognise their own scenarios in one of these IT landscapes or in a combination of several of these IT landscapes.

The IT landscapes consist of these archetypes:

- **"Full Microsoft house"**
  - Almost all parts consist of Microsoft products.
  - Devoteam estimates that this typical IT landscape covers about 20%[113] of enterprise IT landscapes.
- **"Dedicated system control"**
  In this landscape, the choice of software is primarily determined on the basis of whether an enterprise has one or more dedicated systems determining the previous choice of software.
  - Devoteam estimates that this typical IT landscape covers about 50% of enterprise IT landscapes.
- **"Hospital"**
  - This landscape uses both Microsoft and OpenOffice.org products.
  - Devoteam estimates that this typical IT landscape covers less than 2% of enterprise IT landscapes.
- **"Combi – (Town Hall)"**
  - This landscape has open-source strategy for its servers but runs Microsoft office suites.
  - Devoteam estimates that this typical IT landscape covers about 20% of enterprise IT landscapes.
- **"Firm of architects"**
  - This IT landscape primarily features Apple products.
  - Devoteam estimates that this typical IT landscape covers less than 10% of enterprise IT landscapes.
- **"School"**
  - This is a full open-source strategy.
  - Devoteam estimates that this typical IT landscape covers less than 1% of enterprise IT landscapes.

113 *Devoteam notes that the assessed distribution of Danish enterprise customers on these seven IT landscapes is subject to a high degree of uncertainty. The assessment is based on an interrelation of market statements for office suites and Devoteam's immediate assessments of distribution on IT landscapes.*

- **"SaaS"**
  - This landscape uses cloud computing, outsourcing and similar services to the extent possible.
  - Devoteam estimates that this typical IT landscape covers between 0% and 1% of enterprise IT landscapes.

Characteristic of each IT landscape is its composition of software in the categories of operating system, office suite, communication software, repository software and other types of software.

Note: The IT landscape names carry no specific meaning. The names were selected to avoid calling them A, B, C, etc.

Source: "Tekniske bindinger knyttet til kontorsoftware", p. 33, Devoteam Consulting.

7.4 IDENTIFIED TECHNICAL BINDINGS

On the basis of the method described above, Devoteam identified several different technical bindings in the context of office software. Technical bindings can be divided into the following categories:

- Technical bindings related to office suite
- Technical bindings between office suite and operating system
- Technical bindings between office suite and other software

The section below describes the identified technical bindings in the three categories.

Technical bindings related to office suite

Devoteam has found several technical bindings in the office suite itself. The bindings arise because enterprise customers expand office suite functionality to adapt it to their own enterprises.

Macros developed for one office suite cannot be reused in another. If an enterprise wants to switch to another office suite and has developed a string of macros for its previous office suite, it faces a sizeable job in adapting or developing new macros for the new office suite. Thus, this binding arises out of product use.

Today, no real user solutions exist that can reduce the binding. The binding could be reduced by having a common standard for macros or a common meta-standard for macros (i.e. a standard prescribing how macro standards should be made).[114]

Generally, user customisations prepared in one of the products studied cannot be used in another product. The complications of this binding are, according to Devoteam, greatest when users switch from Microsoft Office to another product, because Microsoft Office has more enhancements than any other office suite. Users risk, therefore, that an enhancement is not available for OpenOffice.org, iWork or Zoho.

The complications are generally not as severe when users switch *to* Microsoft Office, as other office suites have fewer enhancements. In any case, enterprise customers may seek to alleviate the effects of the binding by finding replacement enhancements suited for the new office suite.

Document formats represent another binding in office suites. When users switch from Microsoft Office to OpenOffice.org or Zoho, they cannot use OOXML formats in the new office suite. According to Devoteam, the switchover will require old documents to be converted, which will both trigger costs in the form of manual adaptation and loss of functions. The complications are less severe, when users switch from OpenOffice.org (or Zoho) *to* Microsoft Office. In such cases, no essential bindings exist for document formats, as Microsoft Office 2007 SP2 supports ODF.[115]

When switching from Microsoft Office to iWork, users cannot work with OOXML documents. Thus, the technical binding related to document formats is of greater importance in such cases, as users must either retain at least one copy of the old office suite or use a third product to convert their OOXML documents. This description also applies for switches from iWork to Microsoft Office.

According to Devoteam, the effect of these bindings will diminish, as the number of old documents needing conversion reduces and the use of the new document formats ODF and OOXML increases in the various office suites.

Technical bindings between office suite and operating system

As table 7.1 shows, not all office suites can run on all operating systems.

---

114 Any future work expended on improving interoperability between macros should, according to Devoteam, be carefully considered, as existing proprietary macros implemented by companies in document templates, spreadsheets, etc., represent major investments. Thus, this is not an easy area in which to set new standards. Further, Microsoft underlines that macros are more closely related to the actual office suite functionality and internal structure than is, for instance, a format. Standardising macros would therefore be significantly more complicated.

115 However, Microsoft has explained that ODF documents may comprise enhancements (e.g. formulas in spreadsheets) that are program-specific and exceeds the ODF 1.1 specification. In such cases, the user will experience interoperability challenges related to ODF even though Microsoft has implemented ODF 1.1 into Microsoft Office 2007 SP2.

Table 7.1: Support of office suite

	Windows	Linux	Mac (Apple)
Microsoft Office 2003	Windows 2000, XP and Vista	Not supported	Not supported
Microsoft Office 2004	Not supported	Not supported	OS X – Tiger and Leopard
Microsoft Office 2007	Windows 2000, XP and Vista	Not supported	Not supported
Microsoft Office 2008	Not supported	Not supported	OS X – Tiger and Leopard
OpenOffice.org 3.0	Windows 2000, XP and Vista	Supported	OS X – Tiger and Leopard
Apple iWork	Not supported	Not supported	OS X – Tiger and Leopard
Zoho	Via Internet browser (option of enhanced functionality with Firefox or Internet Explorer)	Via Internet browser (option of enhanced functionality with Firefox)	Via Internet browser

Note: Microsoft Office 2003 and 2007 are supported by Linux and Mac (Apple) by means of simulation, see footnote 5.
Source: "Tekniske bindinger knyttet til kontorsoftware", p. 66, Devoteam Consulting.

Table 7.1 shows that Microsoft Windows cannot run on Linux, and that only Microsoft Office 2004 and 2008 can run on OS – X from Apple. In contrast, OpenOffice.org can run on all three operating systems.

The fact that only Microsoft Office 2003 and 2007 can run on Microsoft Windows represents, according to Devoteam, an essential technical binding. The binding means that if users want to replace the Microsoft Windows operating system, they also have to replace the Microsoft Office 2003 and 2007 office suites.[116]

In the matter of technical bindings between office suites and operating system, Devoteam assesses that the scope of bindings is great, if users want to replace Microsoft Windows with another operating system. In other cases, the scope is limited. OpenOffice.org and Zoho run, for instance, independently of the operating system.

Further, Devoteam has identified special circumstances related to the Java and .NET frameworks that are enhancements to operating system functionality. Developed and owned by Microsoft, the .NET framework is accessible to all, but only available in full

116 *On their basic operating system, users can, however, install a simulation of another operating system, thus achieving the possibility of running all the office suites they want to use. Often, the simulation will reduce performance for the users. Consequently, the solution will probably only be used by a limited number of users with special needs.*

version for Windows. In 2006, parts of .NET became an ISO standard.[117] Originally, Sun Microsystems developed Java. Since 2006, Java has been developed jointly with several companies and stakeholders (called Java Community Process).

As these frameworks enhance operating system functionality, they may in certain instances intensify any binding that may exist between operating system and office suite.

Technical bindings between office suite and other software

The third technical binding category applies between office suites and other software. In that context, Devoteam studied various types of software, including repository software, dedicated systems and EDM.

As to repository software, Devoteam underlines that, technically, Microsoft Office interrelates extensively with the SharePoint repository software. This aspect is particularly interesting, as Devoteam sees highly optimised interrelations between office suite, repository software and operating system. The close technical integration existing between Microsoft Office and Sharepoint means that users must expect major loss of functions and possibly loss of performance if they replace Microsoft Office (with SharePoint integration) with another office suite. Devoteam states that this binding is of particular interest due to the extensive functionality loss inherent in switching office suites. The scope of this binding is moderate but expected to increase as Sharepoint becomes more popular.

The technical binding between Microsoft Office and Sharepoint may, in Devoteam's view, diminish if other office suites develop integration with Sharepoint by means of SharePoints APIs.[118] Today, this option is only used to a limited degree.[119]

As to dedicated systems, Devoteam states that, in general, independent software suppliers' dedicated systems only integrate well with Microsoft Office. The reason is that the Microsoft Office suite is used in more than 90% of all commercially used PCs, and that suppliers of dedicated systems are almost only faced with requirements of integration with Microsoft Office. Therefore, the scope of this binding is great.

If this binding is to be removed or diminished, dedicated system integration must be developed that will allow other office suites to integrate with the dedicated systems. To

---

117 *According to Devoteam, the Novell software company has made a part implementation of the .NET framework called Mono. The implementation enables .NET programs to run on other operating systems, e.g. Linux and Apple's OS X.*

118 *An API (Application Programming Interface) is a description of how one particular program can be used by several other programs – i.e. a description of how the program can be used in purely technical terms, the information needed to be transferred to the program and the information being received from the program.*

119 *IBM's Lotus Symphony has, according to information from Microsoft, already developed an integration. See http://symphony.lotus.com/software/lotus/symphony/plugin.nsf/web_DisPlayPlugin?open&unid=0C527FD5A41C137C8525754300034EEE&category=Sharing and Collaborating.*

facilitate integration between dedicated systems and office suites other than Microsoft Office, major joint efforts must be expended by customers having the need. [120]

In many public administrations, EDM is a key software element. The most popular EDM systems integrate with Microsoft Office and OpenOffice.org. However, Devoteam has been unable to find an EDM supplier with concrete experience in integrating with any other office suite than Microsoft Office.

If users use an EDM system highly integrated with the Microsoft office suites and switch to another office suite (e.g.OpenOffice.org), they will, according to Devoteam, experience significant functional performance loss. Further, the process will be resource-demanding, as the EDM supplier must accumulate experience in solving integration problems in relation to OpenOffice.org.

Technical bindings between EDM systems and Microsoft Office can, like in the case of dedicated systems, be reduced, if suppliers expend joint efforts aimed at integrating EDM systems with office suites other than Microsoft Office.

A possible solution is to establish initiatives like those of Norway where pools have been set up to provide financial support to develop integration between office suites on the one hand and, e.g., dedicated systems and EDM systems on the other. Box 7.2 describes the initiatives in more detail.

Box 7.2: Norway's initiatives for integration with other software

To support use of OpenOffice in the public sector, Norway's Ministry of Government Administration and Reform has earmarked a pool for developing solutions enabling integration between OpenOffice and other systems.

For many public sector enterprises, the challenge lies in integration with dedicated and EDM systems, and the Ministry's objective is therefore that the pool is to help provide solutions for the area. Another objective is to support the Norwegian government's decision of mandatory use of ODF in exchange of editable documents.

Source: http://www.regjeringen.no/nb/dep/fad/pressesenter/pressemeldinger/2008/stotter-okt-bruk-av-openoffice-i-offentl.html?id=536651.

120 *Devoteam states that the problem is widely rooted in the fact that customers are not sufficiently demanding integration with office suites other than Microsoft Office. According to Devoteam, the interviewed suppliers of other software types replied that they are either already able to develop or already have developed integration with OpenOffice. However, none of the interviewed supplies reported that they had sold solutions integrating with OpenOffice.*

Summary of technical bindings

The report identifies several technical bindings. Most of the bindings share the characteristic that it is generally more difficult to switch *from* Microsoft Office than *to* Microsoft Office. According to Devoteam, the reasons are

- that Microsoft Office has more functions than the other office suites
- that Microsoft Office integrates with more products than do the other office suites
- that Microsoft Office has been optimised to run on the most popular operating system, Microsoft Windows.

As the Microsoft Office 2003 and 2007 office suites actually run on at least 90% of all commercially-used PCs in Denmark, the technical bindings of these office suites have the greatest impact on competition on the office software market.

7.5 SUMMARY AND ASSESSMENT

A technical binding is a relation or dependence between a collection of programs. A technical binding can mean improved functionality and coherence between programs, but may also affect users' options by encouraging, impeding or preventing replacement of programs or office suites.

Devoteam draws the conclusion that technical bindings are not fundamentally different across the various office suites. But in practice, the most essential technical bindings involve, according to Devoteam, aspects that make it particularly difficult to replace Microsoft office suites or operating systems with products from other suppliers.

This is because Microsoft's operating systems and office suites are the most popular, and that most independent software suppliers choose only to develop integration with Microsoft products. Thus, it is generally more difficult or more resource-demanding to replace a Microsoft office suite than any other office suite.

Devoteam has identified technical bindings that can be categorised as follows: Bindings in the actual office suite, bindings between office suite and operating system and bindings between office suite and other software, including server software.

Technical bindings in the actual office suite result from individual enterprise customers' enhancing the functionality of an office suite to customise it to their own companies. Generally, time and resources spent on adapting a previous office suite to specific enterprise use cannot be reused. This problem may also arise in connection with

upgrading from one office suite version from one supplier to a more recent office suite from the same supplier.[121]

Additionally, Devoteam has identified bindings between an office suite and the operating system. For instance, the Microsoft Windows operating system cannot be replaced if users wish to retain Microsoft Office 2003 and 2007. In contrast to Microsoft Office, OpenOffice.org and Zoho can run on all operating systems.

The analysis also identifies significant binding between Microsoft Office and other software types. Microsoft Office integrates well with independent software suppliers' dedicated systems and EDM systems as suppliers of these systems almost exclusively face requirements of Microsoft Office integration. Also, Microsoft Office has, according to Devoteam, a technical binding to the Microsoft SharePoint repository software, which binding entails a loss of functionality and a potential loss of performance if users want to replace Microsoft Office (with SharePoint integration) with another office suite.

Eliminating or reducing bindings between Microsoft Office and dedicated systems/EDM systems calls for better integration being developed with these systems for other office suites.

Devoteam concludes that if an enterprise customer has exploited the possibilities of close integration between Microsoft products and of close integration with dedicated systems/EDM systems, the customer is strongly bound to Microsoft Office, in fact being unable to replace Microsoft Office.

---

121 *According to Microsoft, ScanJour has spent a great deal of time on preparing interoperability between the Captia EDM system and Microsoft Office to enable the Captia system to operate together with Office 2007. In practice, this fact could impede a customer from upgrading to a more recent Microsoft Office version in the same way as a customer could be impeded from switching to an alternative office suite from another supplier than Microsoft.*

Chapter 8
Legal bindings

8.1 INTRODUCTION

This chapter focuses on the legal aspects in connection with buying and using office suites. As described in the chapter on technical bindings, the Danish Competition Authority has obtained assistance from the consultant company, Devoteam Consulting, which – in cooperation with the law firm of Gorrissen Federspiel Kierkegaard – has prepared a report on legal bindings related to office software. This section is based on this report.[122]

8.2 DEFINITION OF LEGAL BINDINGS

In the terms of reference for Devoteam's report, the Danish Competition Authority recommends a broad definition of the concept of legal bindings to be able to identify the different types of legal aspects that are capable of affecting customers' consideration of choosing a new office suite, if appropriate.

Devoteam's report defines *legal bindings* as conditions, ties, incentives or other legal aspects that can influence customer behaviour when customers choose and use office suites as well as products related to office suites.[123] This could both be aspects that give the customer an incentive to choose or keep a given office suite and aspects that impede or prevent an office suite switchover. The report aims to identify the contract terms that may influence customers' consideration of switching to another office suite from a different supplier.

It should be emphasised that this does not imply the identification of bindings for competition law assessments and that the identified bindings therefore do not necessarily pose any competition problems. Moreover, the report does not contain an assessment of the specific market effects of the identified legal bindings.

Devoteam's report exclusively relates to the contents of the actual terms of selected office software agreements.

---

122 *The report entitled "Juridiske bindinger knyttet til kontorsoftware" (legal bindings related to office software) is appended to this report.*

123 *"Juridiske bindinger knyttet til kontorsoftware", p. 3, Devoteam Consulting.*

The agreements have been selected on the criteria of focusing on the office suites with the greatest market impact, but also on the criteria of focusing on office suites based on different business models and technologies. Devoteam has not examined licence terms for comparable suppliers of other types of software, nor whether other suppliers for instance use terms corresponding to those of the examined suppliers.[124]

Based on the definition and interpretation set out above, Devoteam has examined licence agreements for the purchase of the office suites Microsoft Office, Apple iWork, Zoho and OpenOffice.[125]

According to Devoteam, the identified bindings are related partly to licence conditions based on copyright legislation and partly to the specific provisions stipulated by office suite suppliers in agreements entered into with enterprise customers. Copyright legislation allows laying down provisions stipulating that the right to use and dispose of a product can be restricted in different ways. For instance, according to Devoteam, the possibility of imposing a ban on resale. The agreements also lay down specific provisions on matters such as coupling of services, terms of payment, discounts and price guarantees which are not based on copyright legislation.

Devoteam has divided the various types of legal bindings related to office software into three overall categories, which are specified in more detail in box 8.1.

---

124 *Microsoft has argued in that connection that it finds the report unbalanced because the report fails to assess the commercial licence terms of other software suppliers, including members of OSL (for instance IBM, Sun and Oracle), who – according to Microsoft – use a licence practice similar to that of Microsoft. As Devoteam was tasked with describing legal bindings related to office software and not with describing legal bindings in the software market in general, Devoteam has not amended its report against the background of this objection. Hence, Devoteam's report does not relate to whether Microsoft's licence terms differ substantially from those of other enterprises.*

125 *In relation to Microsoft, these are Enterprise agreements, Select agreements and Open agreements. The other commercial agreements are "Licence agreement for multiple users" (Apple), "Business Master Subscription Agreement" (Zoho) and "GNU - Lesser General Public License LGPLv3" (OpenOffice). The agreements are specified in more detail in appendix 1 to the report entitled, "Juridiske bindinger knyttet til kontorsoftware" by Devoteam Consulting.*

Box 8.1: Description of categories

Coupling of goods and/or services contains bindings that have the direct or indirect effect that the customer's purchase of a product is linked to purchases of other products or services.

Preference-building discounts and pricing contains bindings with the effect that the customer is encouraged to place more orders with the supplier. This may be in the form of orders for the same type of software as the customer has already bought or for other types of software.

Other relevant restrictions on the customer's options concerns provisions which, although not falling into the above categories, also affect the customer's choice of office suite. For instance provisions restricting the customer's possibilities of using the software by imposing a ban on copying, resale, transfer, etc.

Source: "Juridiske bindinger knyttet til kontorsoftware", p. 8, Devoteam Consulting.

8.3 IDENTIFIED LEGAL BINDINGS

This section elaborates on the legal bindings identified by Devoteam within the categories listed above.

Coupling of goods and/or services

The selected licence agreements are divided into four office suites: Microsoft Office, Open Office, Apple iWork and Zoho. The suites contain ordinary products for word processing, spreadsheets and presentations. Devoteam states that the licence agreements, for this reason alone, may be said to contain bindings in the form of coupling of different product types in office suites – even if the individual products can be acquired separately from some suppliers. Buying an office suite may therefore engender an incentive for the customer not to acquire products from other suppliers so long as a desired functionality is provided by products in the suite already acquired.

An essential instance of coupling in relation to licence agreements for Microsoft products is the *Software Assurance* services suite, which is either an integral part of the licence agreement or an additional purchase option.[126] Software Assurance, explained in more detail in box 8.2 below, offers upgrading features and a broad spectrum of other services.

126 *Licences purchased under the Microsoft Enterprise Agreement, the Microsoft Open Value Agreement and the Microsoft Open Value Subscription Agreement include Software Assurance. Under the Microsoft Select Agreement and the Microsoft Open Licence Agreement, Software Assurance is available as an additional purchase.*

Box 8.2: Description of Software Assurance[127]

All Microsoft's enterprise customer agreements either give the licence buyer the possibility of buying Software Assurance as an additional purchase or include Software Assurance in the licence purchases. This suite of services contains various benefits, including:

- Access to new version releases of the software in question, for instance office suite.
- The option to spread customer payments over three years (payment in instalments).
- Consulting services in connection with product implementation and optimisation.
- Training vouchers for certified Microsoft training.
- E-learning for employees.
- Licensed copies of programs for employees' home computers (Home Use Program).
- Entitlement of employees to buy licences for private use (Microsoft Employee Purchase Program) at favourable prices.
- 24x7 problem resolution support (i.e. access to phone or online help and advice on how to use the products).
- Subscription to Microsoft's knowledge database for IT professionals (TechNet).

Source: "Juridiske bindinger knyttet til kontorsoftware", p. 24, Devoteam Consulting.

Devoteam states that an instance of coupling of goods and services exists when Software Assurance is included in the agreement. Moreover, *the individual* product services that cannot be accepted or rejected by the customer are also coupled.

Devoteam further points out that if a customer fails to continue Software Assurance at the expiry of the term of the agreement, the customer's right to update to new version releases of the office suite will lapse. If the customer again wishes to buy Software Assurance for the acquired office suites at some later point, the customer cannot do this without re-acquiring the office suite licences in question. This may, according to Devoteam, involve an incentive for the customer to continue Software Assurance coverage.[128]

Devoteam concludes that the effect of the coupling between Microsoft Office and Software Assurance may involve an incentive for the customer partly to conclude

---

127 In the section on Microsoft's enterprise agreements in chapter 5, Software Assurance is described as an upgrading scheme entitling the customer to upgrade to new versions as well as a range of extra services.

128 Microsoft has objected to Devoteam's decision to include Software Assurance on the ground that software-related services such as maintenance and support are not included in relation to the other office suites embraced by the report. Devoteam states that the reason for including Software Assurance here is that Microsoft is the only supplier to include maintenance and support etc. (Software Assurance) directly in the licence terms of its commercial agreements. Devoteam has not been tasked with examining whether other suppliers provide maintenance, support or other services in relation to the office suites which are not regulated by the office suite licence terms.

comprehensive agreements with Microsoft, partly to preserve the business relationship with Microsoft.

Devoteam has found no specific instances of coupling in relation to goods and/or services for the other office suites, Apple iWork, Zoho Business and OpenOffice.

Preference-building discounts and pricing

Devoteam has identified a number of legal bindings in the price structures and discounts applied in Microsoft's agreements.

Microsoft offers volume discounts on all agreements where the discount rate increases in tandem with the volume of software bought/leased. Moreover, Microsoft offers a discount on software bought for PCs standing on a customer's business premises and when a customer buys products from all Microsoft product categories (e.g. operating systems and servers). According to Devoteam, the discount structure applied represents an incentive to pool purchases of products (both within and across the individual product categories) with Microsoft to obtain as large a discount as possible. At the same time, the customer's incentive to buy, say, servers from a competing supplier is reduced as this could affect both the volume discount on purchases of Microsoft products in the same product category and the combination purchase discount on purchases of products from Microsoft's other product categories (platform discount).

To be eligible for the Microsoft Enterprise Agreement, the customer is required to buy licences for all the customer's PCs.[129] The price for the licences depends on the number of different Microsoft products the customer buys and on the number bought within the different categories. Devoteam states that a special platform discount is granted if the customer buys from all three product categories of the Enterprise agreement. In addition, a volume discount is granted according to the number of licences within each product category. Against the background of the above discounts, the final price is frozen for the entire term of the agreement of three years. This means that future purchases will be made at the prices applicable at the time of the first order.

According to Devoteam, the platform and volume discounts give the customer an incentive partly to pool purchases with Microsoft, partly to buy more products within the same category and across the categories.

---

129 *Devoteam has stated that by entering into a Microsoft Enterprise Agreement, the customer – i.e. the legal entity ordering the licences in question either as a party to an Enterprise Agreement or as an enrolled business under an existing Enterprise Agreement (Enrolment Agreement) – is required to buy licences for all 'Qualified Desktops' as they are called, i.e. personal desktop computers, portable computers, workstations or similar devices that are used by or for the benefit of the customer and meet the minimum requirements for running any of the Microsoft Enterprise products within the legal entity. This means that a customer may form part of a larger business provided that the customer is a separate legal entity.*

Devoteam states that similar discount structures are available under Microsoft's Open agreements. The Open Value agreement, for instance, offers both a volume discount, a platform discount and freezing of prices for the term of the agreement. A "company-wide discount" is another benefit offered when the customer buys office suite licences and Software Assurance coverage for all PCs for the three-year term of the agreement.

Microsoft's Select agreements feature four discount levels[130], which basically depend on the customer's estimate of the number of PCs on which the software is expected to run within the product categories: Programs, systems and servers. As opposed to the Enterprise agreements and the Open agreements, the price level is adjusted each year to reflect the actual consumption of licences during the preceding year. According to Devoteam, the price structure may also involve an incentive for the customer to pool purchases of products with Microsoft.

Devoteam has found no specific instances of coupling in relation to goods and services for the other office suites, Apple iWork, Zoho Business and OpenOffice.

Other relevant restrictions on the customer's possibilities

According to Devoteam, the enterprise agreements used by Microsoft, Apple and Zoho include provisions preventing the customer from changing the office suite and from renting, leasing, transferring or selling the office suite to a third party.

Ordinary use of OpenOffice products, by contrast, imposes no restrictions on the user. The user is entitled to manufacture, use and change the relevant products in any way unconditionally as long as these products are not resold, but are solely used by the user and the user's enterprise. However, if the Open Office products are changed or improved and if they are used for purposes other than internal use, the improved product has to be made freely available to everyone.

Legal restrictions of the ODF and OOXML standards

Devoteam assesses that there are no legal provisions that in practice restrict the possibilities of implementing and applying the ODF and OOXML standards.

If suppliers implement the OOXML standard, for instance, this will not, in Devoteam's view, constitute an infringement of Microsoft's rights although OOXML was originally developed by Microsoft. As the standards are a set of rules regulating format design, specific functions set out in the standards may typically be achieved in different ways. Hence, the implementation of an open standard will not, in Devoteam's opinion, force manufacturers to copy other office suite functions or user interfaces.

130 *The discount system and other aspects in connection with Microsoft's enterprise agreements are described in more detail in chapter 5.*

8.4 SUMMARY AND ASSESSMENT

In the broad sense, legal bindings mean the terms, ties, incentives or other types of restraint that follow from legal provisions and which – directly or indirectly – can influence customer behaviour when customers buy and use office suites.

Devoteam has identified a number of legal bindings in this connection. Bindings are related partly to licence conditions that are based on copyright legislation and, for instance, allow the imposition of bans on resale, partly to the specific provisions stipulated by office suite suppliers in customer agreements.

As Microsoft accounts for the lion's share of total sales, their enterprise agreements are, in practice, of greatest importance to the market for office software. According to Devoteam, the terms of these agreements encourage customers in various ways to remain customers of Microsoft and buy more software from Microsoft.

This practice is followed because the most frequently used enterprise agreements include upgrade schemes or encourage subscriptions to upgrade schemes and related services. Linking the purchase of products to multi-year subscriptions reduces the customer incentive to change software suppliers, according to Devoteam.

Microsoft also offers volume discounts on all agreements where the discount rate increases in tandem with the volume of software bought/leased. Moreover, Microsoft offers a discount on software bought for PCs standing on a customer's business premises and when a customer buys products from all Microsoft product categories (e.g. operating systems and servers). According to Devoteam, the discount structure applied represents an incentive to pool purchases of products with Microsoft to obtain as large a discount as possible.

The combination of the various legal bindings (upgrade scheme system, discount structures and lives of the agreements) therefore helps reduce the incentive to buy and the possibility of buying other office suites, systems or servers, says Devoteam.

Devoteam has also examined customer agreement for the office suites Apple iWork, Zoho Business and OpenOffice, but has not identified similar bindings in these suppliers' agreements.

Chapter 9
Effects of open standards

9.1 INTRODUCTION

This chapter focuses on how the use of open standards impacts on competition.

The chapter opens with a description of various fundamental economic contexts, which provide the basis for the analysis later in the chapter. This includes the interrelationship between network effects and standards which is capable of strengthening or impeding competition, depending on whether the standards are open or not.

Subsequently, a section outlines a few historical examples where standards have been of vital importance to economic and competitive trends. Attention is directed to various markets, including the market for typewriters/computers where the QWERTY keyboard standard has been dominating the market for years and the market for physical video media where first Betamax and VHS and, later on, Blu-ray and HD DVD have been fighting wars on standards.

Then the competitive situation in the market for office software is summarised, with special emphasis on the underlying economic contexts, followed by an analysis of how a political decision to implement either OOXML, ODF or both in the public sector in Denmark must be expected to have an impact on competition.

The end of the chapter addresses public procurement questions in connection with government agencies' procurements of office suites as well as possible implications of a political decision to opt for OOXML, ODF or both.

9.2 FUNDAMENTAL CONTEXTS

Consumers are not interested in standards. Instead, consumers take an interest in the products that are based on standards. But the standards, including the question of open or proprietary standards[131], may be of significance to the products in terms of their functionality and integration options to other products. This affects consumers' assessment of the products and, consequently, consumers' product choice. In this way, consumers' interest in standards is indirect.

---

[131] *See chapter 3, box 3.4, for a definition of open standards.*

The effects of both open and proprietary standards depend on a – often complicated – interplay between quite fundamental, economic contexts. This section outlines some of these contexts.

It explains what an externality is and, subsequently, how externalities in the form of network effects can provide an important analytical framework for the IT area, for instance. Finally, the section describes how standards, whether open or proprietary, are vital to network effects.

Externalities

Any economic transaction[132], for instance the weekly shopping at the supermarket or a restaurant visit, involves a buyer and a seller. Without the buyer and seller, the transaction will not be executed, and the buyer and seller can therefore be referred to as *internal* parties to the transaction. In addition, the transaction may involve *external* parties, who – though not taking part in the transaction – are still affected by it.

On the assumption that the buyer and seller enter into the transaction voluntarily and are also fully aware of the consequences of the transaction, the buyer must consider that it is worth paying the agreed price to gain the benefits of receiving the goods or services, whereas the seller must consider that the agreed price outweighs the drawbacks or costs of delivering the goods or services, for instance production costs.[133] This means that the transaction is to the benefit of buyer and seller alike.

However, benefits and costs are not always limited to the buyer and seller context. Some economic transactions also have an impact on third or external parties in the form of either a benefit or a cost. The external parties are affected involuntarily by the transaction. For this reason, the transaction is not necessarily to the benefit of the external parties. The impact on the external parties is called an externality, see box 9.1.

Box 9.1: Definition of externality

If an economic activity, for instance the production of goods or services, has an impact on consumers or businesses not involved in the activity, this impact is called an externality.

Note: As several definitions of the concept of externality are available, the definition above may differ from those of other sources.

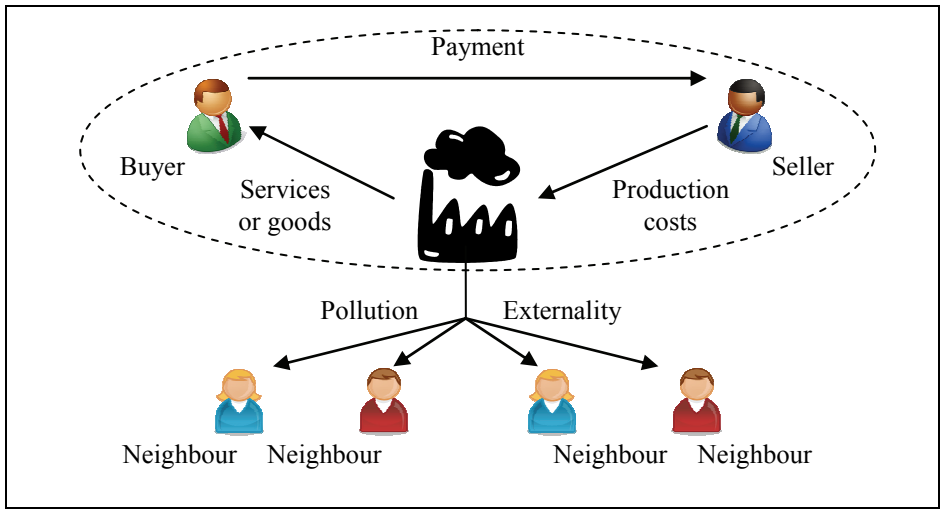
---

[132] *It may also be an economic activity that does not seem to be a transaction on the face of it, for instance travelling by car. In this case, for instance, the car owner can be perceived as the buyer and the car dealer, the petrol company and the insurance company as sellers.*

[133] *The buyer' and seller's consideration of benefits and drawbacks is subjective and cannot be valued objectively.*

Externalities may cause benefits or costs to the external parties. A classic example of an externality causing costs to external parties is pollution. If the production of goods or services generates pollution, the internal parties, the buyer and seller, will include any nuisances they may encounter personally as a consequence of the pollution in their decision to enter into the transaction for the goods or services concerned. But the same is not the case of external parties (for instance neighbours of the production site) who may also be inconvenienced by the pollution, but have no influence on whether production can be executed or not, see figure 9.1.

Figure 9.1: Externality



Note: Also the buyer and seller are likely to be affected by the pollution/externality, but in that case they will include this in their decision to enter into the economic transaction.

Another example of an externality may occur if a derelict property is renovated. In such a case, the internal parties are the owner of the property and the contractor performing the work, respectively. The external parties are the neighbours, who may be subjected to costs in the form of temporary noise nuisance and benefits in the form of a beautiful, completely refurbished property and rising property prices in the local neighbourhood. This example involves both benefits and costs for the external parties.

If costs outweigh benefits, the total impact is called a *negative externality*, and if benefits outweigh costs, the total impact is called a *positive externality*.

Network effects

In some cases, externalities are connected to consumers who participate in a network. This is known as network effects, see box 9.2.

Box 9.2: Definition of network effect

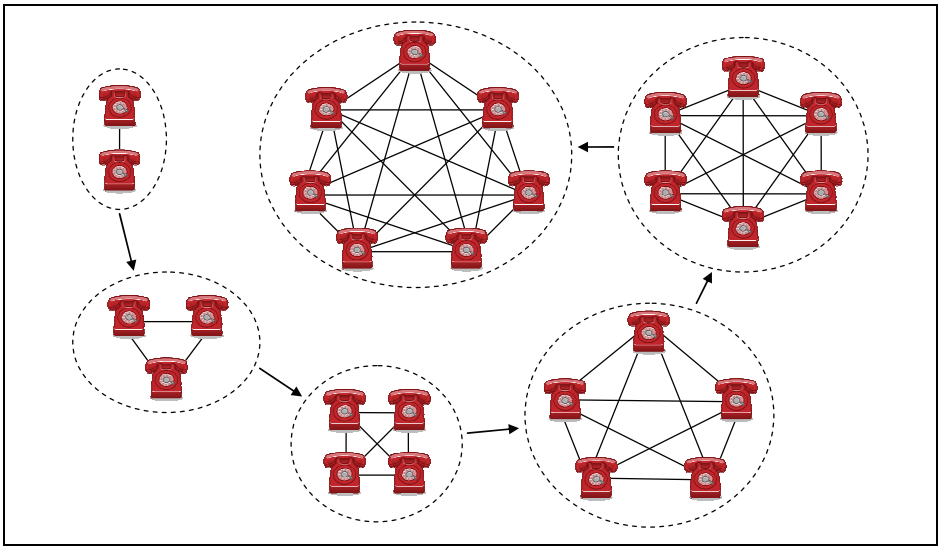
If a consumer's value of consuming particular goods or services is affected by the number of other consumers who consume similar goods or services, this impact is called a network effect.

Note: As no official definition of the concept of network effect is available, the definition above may differ from those of other sources.

The classic example of a network effect is the telephone. Each time a new subscriber is connected to a telephone network, it has a consequence not only for the new subscriber, but also for the existing subscribers, who do not enter into the transaction between the new subscriber and the telephone company. That is the externality known as the network effect.

The network effect means that the existing subscribers are given the opportunity to talk on the phone with the new subscriber. In this fashion, the existing subscribers gain increased benefits from their subscriptions, see figure 9.2.[134]

Figure 9.2: Network effect



Note: The lines between the telephones indicate possible calls, thus providing a good illustration of the network effects. The number of lines increases at a significantly higher rate than the number of telephones. This illustrates the wide differences that may be found in the network effects of a large and a small network.

[134] *Harmful or negative network effects may also occur, for instance in the form of congestion, which reduces the functionality of a network.*

Based on the telephone example, figure 9.2 shows that the network effects, i.e. the number of possible phone calls, increase as the telephone network grows. This may cause the telephone network to reach a critical size at some point when the number of new subscribers soars because the network effects become extremely high relative to the price for a subscription.

In connection with network effects, it is again relevant to distinguish between positive and negative effects. The phone example offered positive network effects because the number of possible calls increased as the telephone network grew. Similarly, positive network effects will be observed in connection with office suites because the possibility of exchanging documents increases with the size of the network. This will be explained more elaborately in section 9.4, and it should be emphasised that the phone example is very simple, which therefore excludes the possibility of drawing direct parallels to the market for office software.

Moreover, it is relevant to distinguish between direct and indirect network effects. The phone example showed an instance of direct network effects, which were connected directly to the size of the telephone network and the possibility of making phone calls.

Indirect network effects occur if the size of a network contributes to increasing the supply of related products, which can benefit the consumers in the network. This could for instance be maintenance services or products contributing additional functionality.

Entry barriers, tipping and lock-in

Network effects may have a major bearing on developments in a market. In some cases, the presence of network effects may impede competition and involve the risk that one business gains a dominant market position.

In markets with significant network effects, consumers will, all other things being equal, be inclined to prefer products characterised by massive network effects. This will typically be products from manufacturers with large market shares. Hence, manufacturers with small market shares will be forced to set a markedly lower price than their competitors to maintain demand. This will correspond to an extra cost for manufacturers with small market shares and, consequently, pose an entry barrier for new manufacturers who are considering market entry.

Another result of network effects could be that total demand, or at least the greater share of demand, is targeted at the manufacturer with the largest network if the related network effects reach a level the competing manufacturers are unable to match through price reductions, for instance. This phenomenon is known as *tipping*.

Finally, network effects may contribute to lock-in.[135] Lock-in is the name for a situation where a consumer or a business will incur very heavy costs by switching from a given supplier or manufacturer to a competing supplier or manufacturer. Such costs may for instance be due to technical and legal bindings, see chapters 7 and 8, but may also stem from network effects. Network effects can give rise to lock-in under circumstances where a consumer or a business consider switching from a supplier or manufacturer whose product exhibits substantial network effects to another supplier or manufacturer whose product exhibits less substantial network effects.

Standards

Networks are often based on some form of standard. A standard is usually necessary to ensure communication between the members of the network or, in another way, create coherence inside the network. Standards may also be necessary to ensure interoperability between the individual network member's different products, for instance office suites and related products.

Standards can be easily comprehensible, for instance the rail gauge[136] or highly complicated, for instance a standard for the IT or telecommunications area.

The use of the same standard throughout a network will often result in the generation of network effects. Moreover, it can be argued that a network with related network effects is delimited by the dissemination of the standard on which the network is based.[137]

A network can comprise users of products, for instance DVD players, from just one manufacturer or from two or more manufacturers. If the network comprises users of products from different manufacturers, the use of the same standard to the products from all the manufacturers can ensure coherence in the network. This can be achieved most easily if the standard is open, which means that the standard should be (1) completely documented and publicly available, (2) freely implementable and (3) maintained in an open forum, see definition in box 3.4 in chapter 3 on product markets.[138]

On the other hand, a proprietary or company-specific standard will limit the scope of a network with related network effects to users of products, for instance game consoles

[135] *Lock-in can also occur in markets without network effects. For instance, high expenses for training staff in how to use products from a new supplier can cause lock-in for a business as far as choice of supplier is concerned.*

[136] *Nearly 60% of the world's railway lines are built to the Standard Gauge, with a distance between the inside edges of the rails of 143.5 cm. For the rest of railway lines, however, great differences are observed from one area to the other, see http://en.wikipedia.org/wiki/Standard_gauge*

[137] *Even so, a network may also comprise two or more standards, and network effects may occur in networks involving two or more standards. In such cases, however, it is a condition that the use of two or more standards does not prevent interoperability between network users, see the description of the significance of interoperability later in this section.*

[138] *The definition in box 3.4, outlined in the text in this section, originates from the conclusion paper of IT spokesmen of the Danish parliament of June 2007, see http://vtu.dk/filer/aabne-standarder/bilag32.html.*

from a single manufacturer or a group of manufacturers, who are given the possibility of using the standard through licence agreements or the like.

But the use of an open standard is not tantamount to saying that one network can comprise users of products from different manufacturers. For instance, a new manufacturer cannot be certain that it will be possible to link up to an existing network with its related network effects merely because the used standard is open. Ambiguities in the standards, different implementation of standards, non-standardised functionality as well as technical and legal bindings are examples of occurrences that may prevent this, see chapters 6, 7 and 8.

Interoperability between different manufacturers' products is a precondition for the ability of the users of the products to form part of the same network with shared network effects. Interoperability between two users in a network can for instance be defined by the ability of the users to (1) exchange information and (2) use the exchanged information.[139] Interoperability between different manufacturers' products is achieved more easily if the products are based on open standards. In addition, there can be no technical or legal bindings to an extent that prevents interoperability. In this fashion, the use of open standards will be able to contribute to achieving interoperability, but open standards alone are no guarantee of interoperability.

It is essential to emphasise that interoperability is not restricted to networks that only comprise a single standard. Interoperability between users of two or more standards, for instance users of different office suites supporting different document formats, is also possible although it will often present greater difficulties than interoperability between users of the same standard, for instance users of different office suites supporting the same document format.

Furthermore, it is important to underscore that interoperability is not a question of either perfect interoperability or no interoperability at all. On the contrary, it will usually be a question of somewhere in between. Therefore, the term *interoperability* will often be used to describe *the necessary degree of interoperability*.[140]

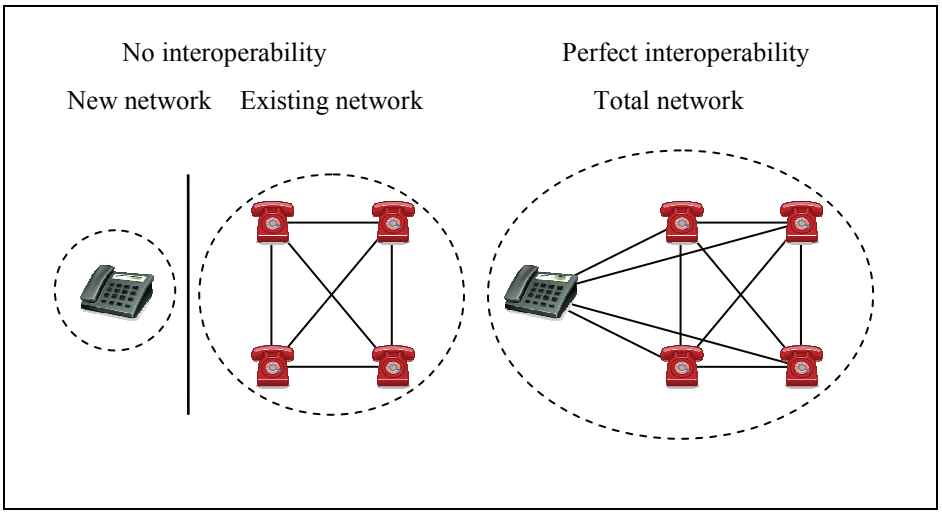
---

[139] *Many different definitions of interoperability are available, for instance from standardisation bodies and government agencies.*

[140] *It is extremely difficult to give a precise definition of the required degree of interoperability as it depends on the need in the specific situation. The National IT and Telecom Agency has defined a functionality ceiling for the purpose of identifying the office suite functions needed in the public sector. Hence, the functionality ceiling is an indication of the requirements for the required degree of interoperability in the public sector. The functionality ceiling has been used in experiments aimed at identifying the degree of interoperability across standards and office suites. The functionality ceiling of the National IT and Telecom Agency can for instance be seen on page 116 in the annexes to the expert committee report on open standards for document formats. The report was published in December 2008 and is downloadable from the National IT and Telecom Agency's website: http://www.itst.dk/regeringens-it-og-telepolitik/abne-standarder/rapport-fra-ekspertudvalg-vedrorende-abne-standarder-for-dokumentformater/Bilagssamling271108.pdf.*

It is thus the possibility of interoperability, or the necessary degree of interoperability, that determines whether different manufacturers are capable of linking up to each other's networks, see figure 9.3.

Figure 9.3: Interoperability and network effects



Note: The vertical line denotes an obstacle preventing interoperability between the new and existing networks. The obstacle can for instance be in the form of the use of proprietary standards or technical and legal bindings.

Based on the phone example in the preceding section, figure 9.3 shows that the possibility of interoperability determines whether a small, new manufacturer is capable of offering a product with the same degree of network effects as those offered by existing manufacturers. But it should be emphasised that interoperability in many other contexts, for instance in the IT area, can be far more complicated than is the case in the phone example.

9.3 HISTORICAL EXAMPLES

This section provides a description of various historical examples where standards and wars on standards have been of paramount importance to economic and competitive trends in a particular market.

Overall, the following general conclusions can be drawn from the historical examples:

- *A winner standard lives long*
  Once a standard has achieved success through widespread adoption, most consumers and businesses will be inclined to support the standard for a long period, and the

widely used standard might only end in connection with a giant technological step forward, which makes it obsolete.

- *Costly to make the wrong choice*
  At a time when more standards are fighting to gain a dominant position for a long or short period, committing to a losing standard may involve considerable costs and unsuccessful investments for consumers and businesses.

- *Risk of underinvestment*
  For fear of suffering a loss, both consumers and businesses will be inclined to hold back on purchases and investments if the choice of the future standard is associated with uncertainty.

- *Competition between standards may foster innovation*
  In periods of competition between standards or even wars on standards, businesses can choose to commit additional resources to innovation to promote a particular standard. This will be to the benefit of consumers.

- *Choice of standard depends on expectations*
  The market choice between competing standards is widely driven by consumer expectations. Therefore, expectations may be in the nature of a self-fulfilling prophecy, and it may be rational for businesses to commit many resources to influencing consumer expectations.

All things considered, standards and wars on standards can have a vital impact on both competition and the national economy. But much caution needs to be exercised before drawing conclusions about, for instance, the market for office software on the basis of the following examples as the affected markets may differ widely.

Typewriters

Today by far the majority of keyboards are laid out to conform to the QWERTY standard where the top row of alphabet keys begins with the letters Q W E R T Y. The development of the QWERTY standard into a worldwide de facto standard is a classic example of strong network effects and long-lasting consequences of early standardisation.[141]

The first commercial typewriters were produced under the brand name of TYPE WRITER and entered the US market in the early 1870s. The typewriter keyboards followed the QWERTY standard format. In the 1870s sales of typewriters were limited,

[141] *For an in-depth description of Qwerty, reference is made to David, P. A., 1985, Clio and the Economics of Qwerty, American Economic Review 75(2), pages 332-33 and Liebowitz, S. J. & S. E. Margolis, 1990, The Fable of the Keys, Journal of Law and Economics.*

but the TYPE WRITER was the only product in the market. In the 1880s sales of typewriters soared markedly, and many new competitors with different keyboard standards emerged. Nonetheless, QWERTY became the de facto standard for the entire market from around 1895.

Users of typewriters with the same keyboard standard formed part of a network with strong network effects. This was because of the substantial costs involved in developing fast typing skills on a keyboard of a given standard. As a result, a network based on the same keyboard standard ensured that users of typewriters had relevant skills and proficiencies to offer an employer, while employers were able to find qualified labour.

The QWERTY standard has long been the subject of debate. For example, it has been argued that the DSK standard (Dvorak Simplified Keyboard), which was developed in the 1930s, is superior to the QWERTY standard. Today some keyboards are convertible into the DSK standard, but by far the majority of keyboards appear as QWERTY keyboards. Against this background, the QWERTY standard has often been claimed to be an example of what is known as a *market mistake* where network effects have allegedly made the market maintain the use of an inferior standard. Today such claims are to a wide extent considered to be incorrect, though.

At all events, QWERTY is an example of a standard exhibiting significant network effects which have been dominant for a very long period of time from the introduction of typewriters in the late 19th century to present-day computer keyboards.

Physical video media

With a broad definition of the video concept, three relevant stories about the significance of standards and wars on standards can be told. These are (1) VHS/Betamax, (2) DVD and (3) Blu-Ray/HD DVD.[142]

Betamax was introduced by SONY in 1975.[143] VHS (Video Home System) was introduced shortly afterwards by JVC. Other manufacturers' systems, launched both before and after Betamax and VHS, never achieved widespread use to match Betamax or VHS, which became competitors in the following war on standards.

---

[142] *For an in-depth description of physical video media, reference is made to, for instance, Wikipedia, http://en.wikipedia.org/wiki/Videotape_format_war and Shapiro, C. & H. R. Varian. 1999. Information Rules. Harvard Business School Press.*

[143] *In the early 1970s, other commercial video systems were available, but Betamax was the first system to achieve widespread use to an appreciable extent.*

When the war on standards began, the picture and sound quality of Betamax was marketed as superior to that of VHS.[144] On the other hand, VHS offered a longer playing time than the Betamax system.

It turned out that the playing time would play a vital role in the war on standards between Betamax and VHS. The first versions of Betamax could not fit an ordinary movie into one tape. VHS could do that, which meant that the movies that could be rented in video stores were typically in VHS format. Many of the big film companies consequently rejected Betamax although later Betamax versions offered considerably longer playing time.

As early as at the beginning of the 1980s, Betamax held only a minor share of the US and European markets, whereas Betamax remained quite successful in Japan. However, Betamax increasingly became a niche product, and in 1988 SONY, who had developed Betamax, launched their first VHS recorders. VHS remained the de facto standard for video media until the DVD standard took over.[145]

The DVD standard first entered the market in Japan in 1996. In 1997 and 1998 the standard was introduced to the US and European markets. The markets gave broad backing to the DVD standard, which had been developed by the DVD Consortium[146], whose members comprised a wide array of electronics and IT companies, including both SONY and JVC[147], former supporters of Betamax and VHS, respectively. The introduction of the DVD standard therefore did not result in another war on standards.

An attempt was made to find the replacement of the DVD standard without fighting a war on standards, but this failed when two rival formats emerged in 2005: the Blu-ray standard, supported by SONY, Sun and others, and the HD DVD standard, supported by Toshiba and Microsoft. Both Blu-ray and HD DVD were introduced to the market in 2006.

This time the war on standards lasted only two years. In February 2008 Toshiba announced that it would stop producing HD DVD players. Subsequently, two important factors have been identified as the reason why the HD DVD standard lost the war.

First, a Blu-ray player was a built-in standard component of SONY's game console, PlayStation 3, which caused sales of Blu-ray players to outperform sales of HD DVD

---

[144] *The quality of both Betamax and VHS was continuously improved with the effect that differences in quality, if any, were eliminated over time.*

[145] *JVC finally stopped producing VHS recorders in 2007. The DVD standard had become the dominant standard long before, however.*

[146] *DVD Consortium has subsequently changed its name to DVD Forum.*

[147] *JVC was represented in the DVD Consortium through the parent company Matsushita.*

players.[148] Second, the HD DVD standard lost its support from important film companies and distributors,[149] which resulted in the sudden downfall of the HD DVD standard.

The example of physical video media shows that standards can have a vital impact on developments in a market. Wars on standards can boost innovation and development, but also involve heavy costs. Manufacturers supporting a winning standard can achieve high profits, whereas manufacturers supporting a losing standard can suffer substantial losses. Finally, another effect of wars on standards can be that some consumers invest in equipment that becomes practically useless if the standard in question loses.

In all circumstances, it should be emphasised that the conclusions drawn from the example of physical video media cannot necessarily be transferred to the market for office software.

Digital video, audio and image formats

In the market for typewriters/keyboards and physical video formats, one de facto standard has won a war on standards. By contrast, the market for digital video, audio and image formats is characterised by a variety of standards. Some standards are open, some are proprietary, and others are somewhere in between. Competition between the standards certainly exists, but it cannot be denied that more than one de facto standard may be able to survive in the longer term also.

Digital video and audio formats include the open and ISO-approved MPEG standard, which was developed by the Moving Picture Experts Group. Today the experts group has grown to include several hundred members from mainly the IT industry, universities and research institutions. At a very early stage, the MPEG standard offered a high degree of compression, which has contributed to ensuring its widespread use as a file download tool. The MPEG standard is used for both video and audio media. MP3 files, for instance, are based on the MPEG standard.[150]

---

[148] *It has later been argued that SONY initially sold PlayStation 3 at a substantial loss and, in that manner, subsidised the new Blu-ray standard.*

[149] *As early as in June 2007, Blockbuster chose to focus on Blu-ray instead of HD DVD. In January 2008 Warner Bros. decided that future movies would only be released on Blu-ray. Various other film companies, including producers of adult movies, made similar decisions. In February 2008 Wal-Mart announced that it would phase out HD DVD over the next six months.*

[150] *The MP3 standard typically involves payment of licence fees to patent holders, however. It is therefore not an open standard according to the definition used in this report, see box 3.4 in chapter 3.*

Digital image formats include the JPEG standard, which – in common with the MPEG standard – is an ISO-approved open standard. Within the JPEG standard, the degree of compression and, therefore, the image quality and file size are easily adjustable, which has made JPEG widely used in websites where file size can be of vital importance. JPEG is developed and maintained by the Joint Photographic Experts Group.[151]

Besides the open standards (a few of which are mentioned above) that are developed and maintained by standardisation bodies, the market comprises a broad spectrum of sponsored standards, which are developed and maintained by businesses, for instance by Microsoft or Apple. The sponsored standards may be either proprietary or somewhere between proprietary and open.

A common feature of many video, audio and image standards is that an ordinary PC is capable of supporting by far the majority of standards without imposing significant costs on consumers. In many cases it will merely be a question of collecting free software downloads from the Internet. This means no or low *switching costs*, and many users apply different standards concurrently.

On the other hand, substantial costs may be involved in switching from one video, audio or image standard to another one when it comes to video, audio or image recordings. Switching standards will often call for the replacement of hardware, for instance a camera, which can involve substantial costs.

The example of video, audio and image formats shows that multiple standards can co-exist and that this may be ascribed to the insignificant costs involved in switching between standards or using more standards concurrently on an ordinary PC.

Based on the examples of (1) typewriters, (2) physical video media and (3) digital video, audio and image formats, generalisations to other markets, such as the market for office software, should be made with great caution as the affected markets may differ widely.

9.4 DOCUMENT FORMAT STANDARDS

The office software market is summarised below on the basis of the correlations and experience presented in sections 9.2 and 9.3.[152]

---

[151] *For more information about the JPEG standard and Joint Photographic Experts Group, reference is made to the website of the experts group: http://www.jpeg.org.*

[152] *The description also rests on the descriptions of the product markets and the geographical markets as well as the market description in chapters 3-5.*

- *Network effects*
  Very strong network effects exist in the market for office software. Users of an office suite benefit from being able to exchange documents with other users of the same office suite or other office suites, depending on whether the office suites are interoperable or not. Another benefit to users is that the personal resources they have invested in achieving skills in the relevant office suit will also be appreciated elsewhere, for instance at other workplaces.

- *Tipping*
  The office software market is extremely concentrated and has for a number of years been tipped in favour of Microsoft's office suite. A rough estimate in the market description is that Microsoft has a share of at least 90% in both Denmark and worldwide, see chapter 5. Microsoft's office suite was previously based on proprietary standards. This is true of, for instance, the .doc standard for Word, but the .doc standard can no longer be considered proprietary, since Microsoft has released the specifications for the standard.[153] Greater openness in respect of the standards in Microsoft's office suite means that today – to a higher degree than was previously the case – Microsoft office suite users form part of a common network with users of other manufacturers' office suites, where previously they formed their own network with separate network effects.

- *Lock-in*
  Several circumstances have had the effect that for many enterprises heavy costs would in practice be involved in switching from Microsoft's office suite to an office suite from another manufacturer, and that the enterprises have probably been in a lock-in with respect to using Microsoft's office suite. The strong network effects connected with Microsoft's office suite mean that for this reason alone choosing a competing office suite will involve a loss. Moreover, integration with Microsoft products in neighbouring markets as well as other products that integrate with the office suite will also make a switchover to a competing office suite cost-intensive. The lock-in problems may have been reduced in connection with Microsoft's release of the specifications for the .doc standard. For ordinary consumers, i.e. private individuals, the lock-in problems are probably smaller.

- *Entry barriers*
  Large barriers to entry potentially exist in the office software market. Firstly, the network effects in themselves constitute a barrier to entry, since, due to

[153] *In 2008, Microsoft made the specifications for the .doc standard and other standards in Microsoft's office suite freely accessible on Microsoft's website. This was part of Microsoft's Open Specification Promise, which means that further use can be made without paying for patent rights to Microsoft. According to Microsoft, before this time, a great number of enterprises had been supplied – often under licence terms – with the specifications to the .doc standard. This was also true of competing software manufacturers, and this practice had been applied since the mid-1990s. However, the .doc standard does not meet the condition of being standardised and maintained in an open forum via an open process, see box 3.4, and is thus not an open standard according to this definition.*

interoperability problems, users of new manufacturers' office suites can only to a limited extent get part in the existing network effects in the market. Secondly, office suites are very development-intensive products that require a long time and many resources to produce. Thirdly, consumers will often be reluctant to switch office suites, because to a certain extent a switchover may involve training/learning costs in the short term. The possibility exists that barriers to entry for web-based solutions are lower in some areas. This should be seen in light of the fact that Google and Zoho have recently introduced web-based office suites.

- *Interoperability*
  For a number of years, Microsoft has based its office suite, which has made up the major part of the office software market, on proprietary standards. The result was that there was only limited interoperability between Microsoft's office suite and competing office suites. This is probably changing as Microsoft has released the specifications for existing standards, e.g. the .doc standard, and has implemented OOXML and ODF in the latest version of its office suite.

Against the background of this summary, the effects of open standards in the office software market will be analysed and the consequences of a political decision to implement OOXML, ODF or both standards in the public sector will be assessed.

Firstly, some important aspects of a Danish political decision will be analysed, i.e. (1) the effects of interoperability, (2) one or more standards, and (3) the risk of underinvestment or bad investment.

Interoperability

Open standards may help improve interoperability between office suites from different manufacturers. Thus, the use of open standards for document formats in the public sector must be expected to result in a better framework for interoperability.

However, the use of open standards is not enough to ensure interoperability. For example, ambiguities in the specification of a given standard or differences in the implementation from one manufacturer to another may result in interoperability problems. Moreover, parts of the functionality in many office suites are beyond what is specified in the standards used, which may also prevent interoperability. In any event, problems may arise even when open standards are used, see chapter 6. In addition, technical and legal bindings that may prevent or frustrate replacement of, for instance, office suites may also lead to interoperability problems, see chapters 7 and 8.

Increased interoperability between office suites from different manufacturers will also impact on competition. This is because interoperability – i.e. the necessary degree of

interoperability[154] – means that office suites from one manufacturer become better alternatives to office suites from other manufacturers since the office suites can exchange documents. All else being equal, this will increase competition.

Moreover, interoperability means that the network effects connected with the use of office suites will become increasingly shared across competing office suites. This may reduce the risk of tipping and lock-in, as both may be a result of unequal distribution of the network effects.

The office software market is very concentrated. A rough estimate in the market description is that Microsoft has a share of at least 90% in both Denmark and worldwide, see chapter 5. Thus, tipping exists in the office software market, and it is possible that the situation is locked in because of problems with lack of interoperability. This means that it may be important to competition if interoperability[155] can counter tipping and lock-in.

All in all, the assessment is that increased interoperability between competing office suites will sharpen competition in the office software market. In this respect, it is found particularly important that the office software market has tipped in favour of a single manufacturer and may be locked in this situation because of interoperability problems. Consequently, a political decision should give weight to whether the choice of OOXML and/or ODF will contribute to the necessary degree of interoperability between various office suites.

One or more standards

Whether one or more standards exist may be of major importance. Section 9.3 presented a number of historical examples showing that several competing standards may lead to reluctance to acquire new technology, but also to increased innovation and more options.

It is important to establish that consumers are not interested in standards. Consumers are interested in the products based on the standards, in this case office suites. Consequently, the number of standards is only interesting to the extent that the office software market is

[154] *See the description of the required degree of interoperability in the subsection on standards in section 9.2. Whether OOXML and ODF can result in the required degree of interoperability is not assessed in this chapter, but is discussed in chapter 6 on interoperability.*

[155] *In theory, interoperability may also result in reduced competition. The consequence of increased interoperability is that competing office suites increasingly benefit from common network effects. Common network effects mean that the importance for a manufacturer of losing or winning market shares is reduced because the market shares lost or won are not matched by correspondingly reduced or increased network effects for users of the manufacturer's office suite. In this way, increased interoperability may have the result that fewer costs will be involved in losing market shares and less profit involved in winning market shares, which, all else being equal, may reduce competition. However, it is estimated that this theoretical effect will have no immediate importance for the office software market, because it will be overshadowed if increased interoperability can counter tipping.*

.

affected by it. A couple of general conclusions on the correlation between the number of standards and the competition in the office software market can be drawn:

- *More standards may sharpen competition on functionality*
  If several standards can survive at the same time, it may be because innovation within the standards has developed them in different directions and given them different specialities. This opens up the possibility for competition on functionality, one reason being that increased functionality in an office suite based on one standard may be difficult to copy in a competing office suite based on another standard.

- *One standard may sharpen competition on price*
  If the market – with or without influence from the authorities – gather around a single standard, the various competing office suites will to some extent be forced to innovate in the same direction, i.e. the direction of the current innovation of the standard chosen. This may limit the possibility of competition on functionality[156], but does not limit the possibility of competition on price, and it may increase the users' focus on price which may thus become an important competitive parameter.

All in all, the choice of one standard – with or without influence from the authorities – may lead to the result that competition takes place within the framework of the chosen standard, which may mean focus on competition on price. The choice of several standards – also with or without influence from the authorities – may lead to the result that competition takes place both between the standards chosen and within the framework of individual standards. This may give ample opportunity for competition on functionality, but does certainly not exclude competition on price.

Dispersion, first-mover advantage and development costs

The supply of office suites with OOXML and ODF as production format[157] may be decisive for the effect of a Danish decision to use open standards for document formats in the public sector. This is because Microsoft is presently the only manufacturer that offers an office suite with OOXML as production format, see table 9.1.

---

[156] *Competition on functionality within the same standard will, however, still be possible. For example, OOXML offers the possibility of defining own "extensions" which may precisely be used to extend functionality beyond what is defined in the standard. However, this type of extensions may lead to reduced interoperability. Furthermore, an essential part of the functionality of an office suite is independent of the document format standards used. This may, for instance, apply to the user interface, the use of templates and the possibility of automation. In these areas, it may in all circumstances be possible to extend functionality.*

[157] *The term "production format" is defined in chapter 6 and is used to cover the format(s) which an office suite can read, edit and save without needing to convert to another format.*

On the other hand, a great number of manufacturers offer office suites with ODF as production format, see table 9.1. However, these office suites have a very limited market share, see the market description in chapter 5, where it is estimated that Microsoft has a share of at least 90% of the office software market in both Denmark and worldwide.

Some office suites using ODF as production format support a certain degree of reading and writing of OOXML, e.g. through built-in converters, see table 9.1. But the quality of this type of support is not as high as had OOXML been a production format.

Table 9.1: Status for use

	Production formats	Can read OOXML	Can write OOXML	Can read ODF	Can write ODF
Microsoft Office 2007 SP2	OOXML and ODF	X	X	X	X
OpenOffice 3.0	ODF	X		X	X
Apple iWorks 09		X			
IBM Lotus Symphony 1.2	ODF	X		X	X
Corel WordPerfect X4		X		X	
Koffice 1.6	ODF			X	X
OpenOffice.org Novell ed. 3.0	ODF	X	X	X	X
Sun Star Office 9	ODF	X		X	X
NeoOffice 3.0	ODF	X		X	X
ThinkFree Office		X			
Google Docs		X		X	X
Zoho Work Online		X	X	X	X
Adobe Buzzword		X	X	X	X

Note: The best framework for interoperability in connection with OOXML or ODF is achieved if the standard has been implemented as production format. Generally, the production format in Microsoft Office 2007 SP2 is OOXML, but the production format can be set to be ODF.

Source: "Analyse om interoperabilitet", p. 22, Devoteam Consulting.

On the face of it, the use of OOXML and ODF among manufacturers of office suites, see table 9.1, means that in the short term a possible Danish decision to implement only

OOXML in the public sector may mean rejecting all other manufacturers than Microsoft, since in such a situation the public sector may only choose office suites with OOXML as production format.

However, it should be stressed that in time manufacturers other than Microsoft may be expected to implement OOXML as production format in their office suites. But such a process may involve considerable development costs, and it is not known when manufacturers other than Microsoft will be able to offer office suites with OOXML as production format.

Moreover, the non-use of OOXML as production format for office suites from manufacturers other than Microsoft is an indication that (1) massive development costs are involved in implementing OOXML as production format, and (2) Microsoft is ahead of the other manufacturers of office suites as regards OOXML, i.e. Microsoft has a first-mover advantage.

The first point is supported by the fact that OOXML is considerably more extensive than ODF as regards both functionality and documentation. This applies, for instance, to the use of track changes, which are typically used in cooperation between several users, and the use of formulas in spreadsheets, see chapter 6 on interoperability. The second point is supported by the fact that OOXML was originally created and developed by Microsoft, only later to be made an open standard.

All in all, the development costs involved in implementing OOXML and Microsoft's first-mover advantage in respect of OOXML means that any Danish political decision to implement OOXML only in the public sector may mean a rejection of all other manufacturers than Microsoft, not only in the short term, but probably also in the long term.

Risk of underinvestment and bad investment

A political decision to implement OOXML, ODF or both standards in the public sector in Denmark may as regards new acquisitions of office software in the public sector lead to risk of (1) underinvestment or (2) bad investment.

A risk of underinvestment in the public sector may arise if the political decision leads to uncertainty about the future situation for document format standards. Uncertainty may occur if the political decision is delayed or is perceived as imprecise or temporary, for which reason a subsequent clarification is awaited. Uncertainty may result in reluctance

in the public sector in respect of the acquisition and implementation of new office suites.[158]

The risk of bad investment in the public sector may arise if the political decision turns out to be *wrong* in relation to other trends in the office software market, i.e. if the Danish decision turns out to be inappropriate because the rest of the office software market subsequently decides otherwise.

A *wrong* Danish decision may lead to substantial bad investments in the Danish public sector. This may be true of the office suites themselves as well as other software integrated with the office suites and training of staff. The consequence may be a need for extra investments in the IT area to solve possible compatibility problems and possible replacement of software before originally planned.

All in all, the possibility exists that a political decision to implement both OOXML and ODF may lead to uncertainty and thus risk of underinvestment. The risk of underinvestment is, however, considerably reduced because several manufacturers of office suites, including Microsoft, have plans or are in the process of integrating both standards in their office suites.

The possibility also exists that a political decision to implement either OOXML only or ODF only may lead to a risk of bad investments if, for instance, it turns out that the standard chosen loses a subsequent international standard war. With regard to a political decision on ODF only, it must be assumed that such decision may have a significant political signalling value. Thus, a political decision on ODF only may involve the risk of bad investments although the number of possible manufacturers of office suites for the public sector is not limited in relation to a political decision on both standards. This is because the only manufacturer having OOXML as production format, Microsoft, also has ODF as production format, see table 9.2.

Effects of a Danish decision

Danish politicians are facing three options when a decision is to be made on implementing open standards for document formats in the public sector in Denmark. The politicians may choose (1) OOXML only, (2) ODF only, or (3) both standards.

Table 9.2 summarises a number of general consequences for competition for each of the three options.

---

[158] *Outside the public sector, uncertainty may also result in reluctance in respect of development of new products especially aimed at the public sector, including in particular products requiring integration with office suites.*

Table 9.2: Consequences for competition

<table>
<tr><th></th><th>OOXML only</th><th>ODF only</th><th>Both standards</th></tr>
<tr><td>Interopera-bility</td><td colspan="2">The choice of one standard only may in both cases, because the standards are open, improve the conditions for interoperability for the benefit of competition.

However, ambiguities in the standards, different implementation of the standards, non-standardised functionality as well as technical and legal bindings may in both cases limit the degree of interoperability.</td><td>The choice of both standards may, because the standards are open, improve the conditions for interoperability for the benefit of competition.

The choice of both standards instead of only one standard may reduce the risk that legal or technical bindings limit the degree of interoperability.</td></tr>
<tr><td>One or more standards</td><td colspan="2">The choice of one standard only means that competition will take place within the framework of the standard chosen, which may mean focus on competition on price.</td><td>The choice of both standards instead of only one may give greater possibilities of competition on functionality.</td></tr>
<tr><td>Use, first-mover advantage and development costs</td><td>The choice of OOXML only may in the short term restrict government agencies, so that they can only choose office suites from Microsoft.

Depending on the costs of implementing OOXML for other manufacturers, this may also be the long-term consequence.</td><td colspan="2">The choice of both standards or ODF only will give government agencies the possibility of choosing between office suites from a large number of manufacturers.</td></tr>
<tr><td>Risk of under-investment</td><td colspan="3">The risk of underinvestment in the public sector may arise if the political decision leads to uncertainty, for instance if the decision is perceived as imprecise or temporary, for which reason subsequent clarification is expected. The risk may arise in all three decision scenarios.</td></tr>
</table>

Risk of bad investment	The choice of one standard only may in both cases lead to bad investments in the public sector if it turns out that the standard chosen loses a subsequent standard war.	The choice of both standards instead of only one standard will reduce the risk of bad investments.

Note: The items "risk of underinvestment" and "risk of bad investment" may have major economic impact, but they have no direct importance for competition.

Table 9.2 shows that to some extent it is possible to compare the consequences of a political decision on one standard only and a political decision on implementation of both standards.

Apparently, the most advantageous choice for competition seems to be a political decision on both standards, as such decision may result in (1) increased interoperability between competing office suites for the benefit of competition, (2) possibility of general competition on both price and functionality, and (3) as few limitations as possible on government agencies in their choice of office suites from different manufacturers.

Table 9.2 also shows that it is difficult to compare the consequences of a political decision on OOXML only and a political decision on ODF only.

9.5 PROBLEMS INVOLVING THE PUBLIC PROCUREMENT RULES

The acquisitions of contracting authorities must usually be made in accordance with the public procurement rules. Under the public procurement rules, contracting authorities must specify the desired acquisition. The general public procurement rule is that such specification is made with reference to standards, functionality, functional requirements or a combination of the three. When reference is made to specific standards, the reference must be followed by the expression "or equivalent".

This general rule may be dispensed with, however, if other provisions exist in legally binding national technical regulations which are compatible with Community law.

The National IT and Telecom Agency has stated that a parliamentary decision has been made and a contractual basis exists, see box 9.3, that precisely bind contracting authorities to use specific open standards when new information technology is acquired. The National IT and Telecom Agency states that such contractual basis is comparable to legally binding, national technical regulations compatible with Community Law. The agreement was notified to the European Commission in September 2007 before the commencement on 1 January 2008.

Thus, the public procurement rules do not prevent the making of a parliamentary decision that results in legally binding, national technical regulations on the use of a specific standard, such as ODF, provided that such regulations are compatible with Community law. However, such decision must be notified to the European Commission before implementation.

Box 9.3: Preparation of technical specifications in general conditions

A public contract on the procurement of goods, services or works, the value of which exceeds the current threshold limits, must usually be concluded according to the public procurement rules. These rules follow from the Public Procurement Directive (Directive 2004/18/EC) and the Utilities Directive (Directive 2004/17/EC) implemented into Danish law by orders and the Danish Invitation to Submit Tenders Act (Consolidating Act No. 1410 of 7 December 2007).

In connection with public procurement, the contracting authority must make a technical specification of the desired acquisition. The specification must give tenderers equal opportunities and must not create unfair obstacles to competition.

It follows from both the Procurement Directive and the Utilities Directive that contracting authorities must generally draw up technical specifications with reference to standards, functionality, functional requirements or a combination of the three. If reference is made to a standard, such reference must be followed by the expression "or equivalent". This requirement follows from the EC treaty principle of equal treatment and is established with a view to avoiding that tenderers consider references to a specific standard as an inevitable requirement and not as the reference, of which the standard is in fact an expression. As an expression of a general principle, this requirement is also considered to be of importance to procurements covered by the Invitation to Submit Tenders Act.

The general rule for the preparation of the technical specification may, however, be dispensed with if other rules are laid down in legally binding, national technical regulations which are compatible with Community law.

The National IT and Telecom Agency has stated that on 2 June 2006 the Danish parliament adopted parliamentary decision B103 on the use of open standards for software in the public sector. B103 instructs the government to ensure that the public sector's use of information technology, including software, is based on open standards. Moreover, on 1 October 2007, an agreement on open mandatory standards was concluded between Danish Regions and Local Government Denmark. It means that from 1 January 2008, in connection with the purchase of, for instance, software, central government, the regions and local authorities have been obliged to use open standards in

seven specific areas, including ODF and OOXML, when exchanging editable documents.

The National IT and Telecom Agency states that such contractual basis is comparable to legally binding, national technical regulations which are compatible with Community law. It is pointed out that the agreement was notified to the European Commission in September 2007 before its commencement on 1 January 2008.

The National IT and Telecom Agency does not find that the specification under the agreement implies that tenderers are discriminated against or that unfair obstacles to competition are created. The National IT and Telecom Agency further states that if requirements are made for use of one of the mandatory standards in the seven specific areas, it will be impossible to reject solutions based on "similar internationally recognised open standards. Furthermore, the Agency states that currently no similar internationally recognised open standards exist for the exchange of editable documents other than ODF and OOXML.

Thus, the public procurement rules do not prevent the making of a parliamentary decision that results in legally binding, national technical regulations on the use of a specific standard, such as ODF, provided that such regulations are compatible with Community law. However, in pursuance of the Information Procedure Directive (Directive 98/34/EC of 22 June 1998) such regulations must be notified to the European Commission before implementation.

Chapter 10
Other countries

10.1 INTRODUCTION

This report will provide some of the foundation for the Danish parliament's decision on whether ODF, OOXML or both standards are to be mandatory for public procurement of office software in future.

As a supplement to the analyses referred to in the other chapters, the Danish Competition Authority has looked into the decisions on product format standards that have been made in other countries.

Much of the information provided below originates from table overviews at the websites of the ODF Alliance and Microsoft. In both of these overviews, the decisions of the individual countries are outlined in brief bullet form, from which it is not always clearly evident whether the endorsed standards are exclusive, mandatory or merely recommendations. The Danish Competition Authority would therefore like to emphasise that it is necessary to keep in mind these reservations when reading the following information.

The sections below first provide information about the decisions of European countries and, afterwards, decisions made by countries elsewhere in the world. The chapter ends by summarising the comprehensive picture across the countries.

10.2 EUROPE

The member states of the European Union and the European Economic Area have adopted public procurement rules, requiring government agencies to observe the principle of equal treatment of tenderers. If a government agency, in a tender under the EU procurement regime, demands office suites based on specific standards, for instance ODF and/or OOML, the words *"or equivalent"* generally need to be added after the standard according to the public procurement rules. This general rule may be dispensed with, however, if other provisions exist in legally binding national technical regulations which are compatible with Community law. The problem is described in more detail in chapter 9.

Moreover, the Danish Competition Authority has compiled the following information about decisions concerning document standards in European countries:

Norway

The Norwegian government has decided that HTLM, PDF and ODF will be the mandatory formats to be used by government agencies for posting documents on the Internet from 1 January 2009. HTLM will be the primary format for posting public information on the Internet. If the appearance of the original document needs to be preserved, this must be done in PDF, while ODF should be used to allow document editing after download, for instance in connection with completion of forms etc. OOXML is being observed/considered.

These decisions only apply to publications on the Internet, and no decisions have been made in Norway with regard to standards for document exchange.

Sweden

A survey has been conducted in Sweden, the result of which was a decision not to implement preferences for particular formats.[159]

Netherlands

In the Netherlands, ODF and DOC have been endorsed as mandatory standards for exchanging editable documents by government agencies. In addition, PDF has been endorsed as the mandatory standard for non-editable documents.

The Netherlands applies the same type of "comply or explain" principle[160] as the one that also applies to government agencies' use of open standards in Denmark. Therefore, central government agencies in the Netherlands are permitted to use other formats than the mandatory ones if reasonable grounds justify such practice.

Belgium

In 2006 the Belgian government decided to endorse ODF as the preferred, yet not exclusive format for exchanging editable documents between federal agencies and citizens. The non-exclusiveness of the format means that government agencies are permitted to acquire and use other formats and that other formats, such as OOXML, may be endorsed at a later point. From September 2007, government agencies were required to be able to access documents in ODF, and from September 2008 it became mandatory for them to exchange documents in ODF format. Moreover, PDF is expected to be endorsed as the preferred format for exchanging non-editable documents in the future.

---

159 *This information has been provided by Microsoft.*

160 *In Denmark a "comply or explain" principle is employed where public agencies may exempt themselves from the requirement to use mandatory open standards if the agency will otherwise be forced to a solution that either increases costs considerably, has a significant adverse effect on the level of security, results in a significant functional deterioration, increases implementation time drastically or conflicts with international standards.*

The decision to endorse ODF as the preferred document exchange standard in Belgium is, according to the information available to the Danish Competition Authority, rooted in a desire – in the longer term – to reduce the total costs of office suites, to ensure freedom of choice and avoid bindings to specific suppliers and to secure access to documents after 10, 20 or 30 years.

Germany

Germany has decided that federal agencies should be able to receive, read, send and edit documents in ODF format from 2010 onwards. This is not an exclusive ODF strategy, however, and other formats will therefore also be allowed.

France

Conflicting information about the French decision has been provided.

According to the ODF Alliance, France has decided that government agencies are required to use ODF. Central government agencies are required to accept ODF documents. In addition, central government agencies are encouraged to install and use the OpenOffice office suite if they do not do this already. According to Computerworld[161], the French decision will mean that close on half a million public sector employees are going to switch to OpenOffice. The ODF Alliance further states that government agencies in France are prohibited from migrating to any office suite that is not based on the ODF format.[162]

Contrary to this statement, Microsoft mentions that on 15 June 2009 the French government issued new draft framework conditions for interoperability, from which it appears that XML-based ISO-approved standards will be required for editable documents. Both ODF and OOXML satisfy this requirement, and no preference is given. According to Microsoft, a neutral policy with options is recommended in France.[163]

United Kingdom

In the United Kingdom it was decided in February 2009 to use open standards when this is possible. No preferences have been given to specific standards.

---

161 *See article in Computerworld, 27 November 2007.*

162 *See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.*

163 *This information has been provided by Microsoft, which mainly refers to page 61 in the following link: http://www.references.modernisation.gouv.fr/sites/default/files/RGI_Version1%200_0.pdf.*

Ireland
No decisions about document formats have been made in Ireland as uncertainty about market developments is still found to be too high.

In its recommendations of December 2008, the Irish Department of Finance therefore recommends to continue using the office suites already acquired until stable office suites, based on mature open standards, have been developed.

Switzerland
In Switzerland[164] central government agencies are required to use PDF (recommended), ODF (recommended under observation) or OOXML (recommended under observation) when exchanging documents with citizens, businesses, etc.

Italy
According to information available to Microsoft[165], regional government agencies in Italy have been looking into ODF, but a proposal to endorse ODF as the mandatory standard has been rejected.

Spain
Spain has decided not to give preference to specific formats.[166]

Lithuania
No decision on mandatory standards for document exchange has been made in Lithuania. A committee for the development of the information society, appointed by the Lithuanian government, has broadly recommended the use of doc/xls, OOXML, ODF or PDF.

Croatia
In Croatia there are generally no restrictions or recommendations with regard to formats for public procurement of office software. But in connection with the posting of documents on the Internet, Croatia has made a decision along the lines of Norway, requiring government agencies to use free programs when posting documents on the Internet, including formats such as HTML, PDF or ODF.

---

164 See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.

165 Microsoft has also stated that "The national government recently initiated an action to overturn on constitutional grounds a regional preference for OSS", see http://www.affariregionali.it/Normativa/EsameLeggi-Regionali/SchedaLegge.aspx?idDelibera=5704&Start=0.

166 This information has been provided by Microsoft.

Slovenia
Government agencies are required to pursue a neutral policy without showing preference for specific formats. In connection with tenders, attention must be focused on financial and functional matters.[167]

Poland
In its recommendations from 2007, the Polish government calls on government agencies to use publicly available IT standards in a technology-neutral manner. Hence, no specific decisions regarding document standards have been made.

Malta
PDF, HTML and doc currently make up the recommended document exchange formats in Malta. Malta is also considering whether ODF and OOXML should be added to the list of recommended formats.

According to the information available to the Danish Competition Authority, the Maltese recommendations on formats are mainly rooted in historical and practical reasons for choosing the formats that are most popular and most cost-efficient to use.

10.3 REST OF THE WORLD

USA
In the United States, no decisions on standards for document exchange have been made at the federal level, but only in some of the states.

According to Microsoft, several states have considered and rejected to give explicit preference to ODF. Microsoft has stated that this is the case in the states of California, Connecticut, Florida, Massachusetts, Minnesota, New York, Oregon and Texas.

Canada
In Canada no political decisions on document standards have been made. On the contrary, it appears from an IT procurement policy that preference may not be given to specific formats and that decisions on public procurement of, for instance, office suites must exclusively be based on business needs and aspects such as interests for complexity

167 *This information has been provided by Microsoft.*

reduction in regard to integration, safety/privacy, tested technologies and the total cost of the package solution.[168]

New Zealand

The official policy is that government agencies must be neutral as far as standards are concerned and base procurements on ordinary assessments of prices and quality, etc.[169]

Russia

In Russia no decisions on document formats have been made, but plans to introduce public procurement rules are in the pipeline, requiring software purchases to comply with widely-used standards.[170]

Japan

In Japan public procurements are subject to a requirement of using open standards. Government ministries and agencies are obliged to invite bids from software suppliers whose products support open standards. Preferences have not been given to specific standards, but whenever it is possible, government authorities are required to use open standards.[171]

Korea

In 2007 the Korean government, according to Computerworld[172], endorsed ODF as the national standard. The approval does not impose a requirement for government bodies to use ODF, but ODF merely becomes an option in the choice of formats. The Danish Competition Authority has no information about any other standards that may have been approved.

Malaysia

In 2008, according to the ODF Alliance[173], it was decided to launch a plan for the implementation of ODF in the public sector in Malaysia with effect from 1 April 2008.

According to Microsoft, no such decision has been made in Malaysia, and it is up to the users themselves to determine the format they want to use.[174]

---

168 This information has been provided by Microsoft.
169 This information has been provided by Microsoft.
170 This information has been provided by Microsoft.
171 This information has been provided by both Microsoft and the ODF Alliance.
172 See article in Computerworld, 27 November 2007.
173 See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.

India
In India a decision to use ODF has been made, but the decision is not exclusive, and other document formats are also allowed.[175]

China
In China no decisions on document formats have been made. However, a policy applying to the Hong Kong province has been adopted, allowing government agencies to use both ODF and OOXML.[176]

Taiwan
According to Microsoft, there are no recommendations or preferences for specific standards in Taiwan.

South Africa
According to the ODF Alliance, since 2007 government agencies in South Africa have been required to use ODF, ASCII or CSV as standards for exchanging editable documents, whereas XHTML or PDF are mandatory for publication of non-editable documents.[177] However, the implementation of this policy has been a low-priority area, according to Microsoft, and government agencies have also been permitted to acquire and use other formats, such as OOXML.[178]

Brazil
ODF was upgraded from the recommended to the mandatory standard in 2006. Central government agencies are required to use mandatory formats such as ODF in connection with the procurement of new IT systems or upgrades to existing systems.[179]

According to Microsoft, this is not an exclusive recommendation, and government agencies are therefore also permitted to use other formats, including OOXML.

---

174 *Microsoft has stated that "The official Malaysian standards body, Sirim BHD, decided not to endorse or mandate any specific document format standard because it is up to the users to determine the format they wish to use, according to the CEO of Sirim", see http://www.computerworld.com/action/article.do?command=viewArticleBasic&taxonomyId=11&articleId=9015902&intsrc=hm_topic.*

175 *This information has been provided by Microsoft.*

176 *This information has been provided by Microsoft.*

177 *See article in Computerworld, 27 November 2007, and http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.*

178 *This information has been provided by Microsoft.*

179 *See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.*

Moreover, the Brazilian Supreme Court has ruled, according to Microsoft, that it is generally illegal to give preference to open source software.[180]

Uruguay

According to the ODF Alliance, ODF has officially been recommended as the standard for editable documents, whereas PDF is recommended for non-editable documents.[181]

Contrary to this information, Microsoft has stated that there are no recommendations or preferences for specific formats in Uruguay.[182]

Venezuela

In January 2009, Venezuela decided according to a press release from the ODF Alliance[183] to adopt ODF as government agencies' mandatory standard for editable documents.

Microsoft has stated that no final decisions have been made in Venezuela.

Argentina

In Argentina no national decisions have been made, but at the regional level it has been decided that the authorities are required to use PDF, ODF or alternatives such as OOXML.[184]

Chile

Chile pursues a policy that prohibits preferences for specific standards or formats in connection with public procurement.[185]

Peru

In Peru it follows from the public procurement rules that government agencies are required to be neutral as far as IT standards etc. are concerned.[186]

---

180 Microsoft refers to "http://www.computerworld.com/action/article.do?command=viewArticleBasic&taxonomyId=11&articleId=9015902&intsrc=hm_topic cited in Sieverding, Choice in Government Software Procurement, Journal of Public Procurement, Volume 8, Issue 1, 70-97 2008 ".

181 See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.

182 This information has been provided by Microsoft.

183 See http://www.odfalliance.org/resources/Adoptions-ODF-Dec2008.pdf.

184 This information has been provided by Microsoft.

185 This information has been provided by Microsoft.

186 This information has been provided by Microsoft.

10.4 SUMMARY

To sum up the information provided above, outlining the decisions on document format standards made in other countries, the following mixed picture emerges:

- So far, a majority of countries are biding their time in terms of choosing between ODF and OOXML.
- No (or at least few) countries have adopted an exclusive strategy where only one document standard is permitted.
- The countries where policy decisions have been made have either chosen a neutral policy, which does not give preferences to specific standards or have opted for various formats, including ODF, OOXML, PDF and doc, in different combinations.
- It seems that certain countries tend to prefer ODF or give ODF some form of preference over other formats.

Danish Competition Authority
Nyropsgade 30
DK-1780 Copenhagen V
Tel.: +45 72 26 80 00
Fax: +45 33 32 61 44
E-mail: ks@ks.dk
http://www.ks.dk

Ministry of
Economic and Business Affairs