

E-business solutions and the open source software for the small and medium size enterprises

E-business řešení a otevřené programy pro malé a střední podniky

Z. HAVLÍČEK, E. ŠILEROVÁ, Č. HALBICH

Czech University of Life Sciences, Prague, Czech Republic

Abstract: www technologies are developing very fast. The new technologies make possible the easier creation of the web applications, which support business activities. Small and medium size enterprises, which serve as the driving force for innovations and thus for economic development, can utilize these technologies for the creation of relatively inexpensive applications, which can be tailor-made for the given enterprise by using the open source software (OSS). This contribution presents several practical examples of how to create – update – the web site of an enterprise and how to supplement it with an e-shop option. Examples from the area of flower selling have been selected.

Key words: e-business, e-shop, OSS, flower producers, florists, Joomla software

Abstrakt: www technologie se vyvíjejí velmi rychle. Nové technologie umožňují snadnější tvorbu webových aplikací, které podporují business aktivity. Malé a střední podniky, které se stávají „motorem“ inovací a tím i ekonomického rozvoje, mohou tyto technologie využít pro tvorbu relativně levných aplikací, které mohou být „ušity na míru“ podniku, přičemž se využívají otevřené programy. V příspěvku je ukázáno několik praktických příkladů jak postupovat při tvorbě – aktualizaci – podnikového web site a jak jej doplnit o e-shop řešení. Příklady jsou zvoleny z oblasti prodeje květin.

Klíčová slova: e-business, e-shop, OSS, zahradnictví, květinářství, Joomla software

The European Union strategy is based on an unambiguous statement: the future of Europe depends in all directions on how successful European entrepreneurs will be, especially those in the Small and Medium Enterprises (SME), and how they will utilize the Information and Communication Technology (ICT).

Small and medium enterprises (SME) represent 99% of all European companies and approximately 66% of jobs in the private sector. As the driving force of the enterprise sphere, growth, innovations, competitiveness and employment, they are the true heart of the European economy.

The SME sector positively affects the dynamics of work productivity and the growth of GDP. The SMEs are the innovators and sources of new ideas and topics. These enterprises develop and utilize local resources, and quickly introduce new technologies.

In agriculture and rural areas, the SMEs support the preservation and development of rural environment, the advance of rural population, and they create new

employment opportunities. The development of small scale enterprises and services, including electronic business, can make a significant contribution towards the development of rural regions.

Information and communication technologies and especially www technology are developing with a speed which strongly influences the competitiveness of the enterprise. New technologies enable an easier creation of the web applications which support business activity (Havlíček 2004).

On the basis of the acquired information (data from the Czech Statistical Office), it can be stated that the number of buyers using the Internet is growing, but, at the same time, the percentage of users who have made a purchase on the Internet only once is also increasing. The main reason for a single purchase on the Internet is the “obstacle course” that the customers have to overcome before their first purchase.

The Internet shop also affects the productivity of the individual sectors of the economy through the development of new forms of marketing and retail.

Supported by the Ministry of Education, Youth and Sports of the Czech Republic (Grant No. MSM 6046070906).

There is a whole range of different forms of electronic commerce. This article focuses attention on the creation of the e-shop solution (i.e. electronic shops, which provide not only the sale of products, but also a variety of services for the end customers).

AIMS AND METHODOLOGY

The main aim of this article is to explore the technological potentials in the creation of applications. Another aim is to compare the advantages and disadvantages of using the open source software (OSS) in the implementation of tasks in the SME and to show a few practical examples how it is possible to easily and effectively create new e-business applications based on OSS.

RESULTS

The forms of electronic business

Electronic Business (e-business) represents utilization of electronic communication means in all aspects of business activities.

Electronic Commerce (e-commerce) can be divided according to several criteria (Havlíček, Šilerová 2006). The main and significantly prevailing criterion is the division according to the character of the mutually communicating subjects. This article concerns the relationship between the business entity and the end customer (Business to Consumer – B2C).

A possible e-business solution arises from the business aim or, in the case of electronic commerce, from the commerce model. There is a whole range of commerce models. The phenomenon of the Internet has brought about new, previously unknown, commerce models such as:

e-shop – this is the most common form of electronic commerce in which the commerce activities are transferred from the “stone shop” into an electronic form. Due to the fact that e-commerce represents free business, one only needs to acquire a trade licence, make a suitable use of Internet technology and convert one’s own commerce model into an electronic form.

When implementing the e-shop solution, it is necessary to apply two main principles:

- Open an e-shop with commodities that you understand. Your success will greatly depend on your knowledge and understanding of the line of goods which you offer, on your observation of the trends, and your knowledge of the production technologies and materials used.
- Another prerequisite is the necessity to focus on goods or services that are currently absent or meet a low competition. This is due to the fact that the Internet offers an opportunity to buy almost anything. It would be wise to utilize regional opportunities and to test your own business model or ideas under the economic conditions which are well known to you.

E-mall or an electronic shopping centre is a web site that displays electronic catalogues from a variety of suppliers or electronic shops. The shops are charged a fee for this service. A shopping centre with such an extensive line of goods must automatically offer a range of functions and services that cannot be offered by a small e-shop. The advantages include registration of clients, ability to inform about the latest discounts, offers of higher discounts, posting goods free of charge or with a discounted price, etc. Examples of such shopping centres are *Vltava2000.cz*, which is the largest shopping centre on the Czech Internet, or *inShop.cz*, a catalogue of the verified and trustworthy Internet shops, which are classified according to their specialisations.

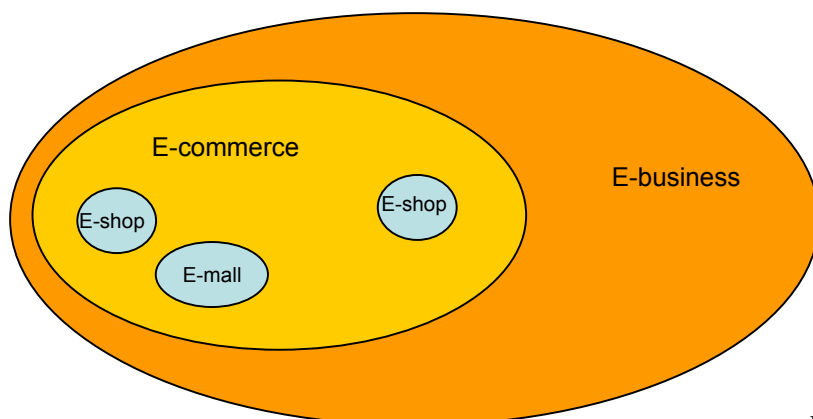


Figure 1. E-business, e-commerce, e-shop

3rd party marketplaces serve as a supplement to the traditional forms of marketing. The basis for these marketplaces is provided by the users' interface for the catalogue of services or products. This concerns, for instance, the specialised portals of well known brands. For example, for a customer who is looking for conferences, training, courses or any other forms of education, the www.educity.cz web site offers all searches concentrated "under one roof". The income for the operation of this portal is obtained from the membership fees and or commissions from the completed transactions.

A **collaboration platform** is a set of tools and environment for collaboration between companies. It makes possible the creation of joint projects and proposals in a variety of specialisations. The operating costs are covered by membership fees and from the sales of licenses for the specialised tools.

E-shop – technological options of solution

Every starting operator of an e-shop must make a decision about the implementation of a suitable solution, followed by setting of the parameters of the service application. This depends on the type of goods, the size of the assortment of goods to be offered and the requirements for other supplementary functions and services. There is a whole range of technological solutions. In principle, it is possible to select one of four options (see Table 1).

A completed e-shop is a www application which requires quality management. Most frequently, this is achieved by the use of outsourcing (hosting) from one of the Internet Service Providers (ISP) for the

actual operation of the e-shop. The firm might also decide to use its own server and thus operate its own solution. However, this solution requires expert supervision of the application's operation, particularly from the point of view of security and saving data. As shown by Table 1, if we consider the cost of the solution as one of the primary indicators, the Open Source software and using services of one of the ISP's for the operation of the www application is the most advantageous solution for the MSP type firms.

Open source software (OSS)

We believe that the most suitable solution for the small and medium firms (starting entrepreneurs) is the one, which is based on the Open Source programmes. Such programmes (OSS) are characterised by having the source code issued under the licence which corresponds to the definition of open source. This allows its users to use, change and improve the given programme and to redistribute it in a modified or unmodified form. According to the definition of the Open Source Initiative Organization (www.opensource.org), the OSS distribution conditions must fulfil ten criteria of which six are the most important:

- free distribution
- source code in distribution
- derived tasks – the licence must permit modifications and derived tasks
- integrity of the author's source code
- the licence must not be specific towards a single product
- the licence must be technologically neutral

Table 1. Technological options for the solution of an e-shop application

Type of solution	Advantages	Disadvantages	Cost
A personal application (a static web site)	A personal, original solution created with one's own effort	Necessity to be experienced with HTML	Comparatively low, if the e-shop requirements are low
Open source e-shop	Open Source Software. GPL licence. Easy installation	Not a very individual appearance, but it can be adapted according to requirements	This solution is free, but it requires knowledge in the IT area
An "out of a box solution" (InShop, 4Shop, Vltava2000)	A number of modules and templates are offered. They allow adaptation of appearance according to one's own ideas	Solution of a given application is limited	Very diverse. This case does not concern purchase of products but leasing of time limited licences
Custom created solution from an external supplier	E-shop according to one's own ideas. Can be completely original	Cooperation with the supplier and service provider	The price depends on the agreement with the supplier. Typically it is high (30–50 thousand CZK)

There is a whole range of reasons for using the OSS. One of them is the security aspect in the use of the given programme. For example, in 2006 the Internet Explorer – the major web browser – had not been secure for 284 days, while the Firefox product, the nearest OSS competitor, had not been secure for only 9 days (www.symantec.com).

The growth in the use of the OSS is documented by the example of the internet banking. Access to the internet banking service by means of web browser of the OSS type has been best secured by the Raiffeisenbank, followed by the Citybank, the eBank and the Ceska sporitelna (Halbich 2006). Such access had not possible with the Komerční banka for a long time, but as of November 2007 this bank also provides access to its banking services by means of the OSS type web browsers.

The small and medium enterprises communicate not only with the banks but also with the state authorities. When comparing the individual web sites of several state ministries, it was discovered that, from the viewpoint of the OSS search engines, the web sites of the Ministry of Finance and the Ministry of Agriculture were the easiest to access.

The Department of Information Technology at the Czech University of Life Sciences Prague has carried out a comparison of 46 OSS programmes (Klouzal 2007). The detailed evaluation has used 16 different criteria (e.g. the size of the users' basis, the Czech localization of the product, installation interface, being user friendly, the method of administration, options for new technologies such as RSS 2.0 etc)

and determined that the most successful product for the creation of one's own e-shop was the Joomla product.

The Joomla represents a complex programme product which exceeds the requirements of the classical editorial system for the creation of a web site. Together with e + Virtue Mart, the additional part, it provides sufficient possibilities for the creation and management of a complex, sophisticated e-shop solution.

A case study – a florist

The MSP include enterprises which provide a variety of services at the regional level, such as the sale and distribution of flowers and floral arrangements. At present, there is a huge competition in this sphere. The Google.cz search engine provided 37 000 links for the term "Kvetiny online" (= flowers on line). Marketing in this area is changing in a fundamental way with the development of the Internet and with the arrival of large shopping centres. A formerly romantic branch is becoming a very aggressive business and battle for the customer's favour. Some of the most significant players on this market include the multinational companies which distribute gardening supplies, such as the Hornbach, the OBI or the Baumax, and also the large gardening centres.

On the other side of the business spectrum, we find small firms and traders. They often operate only a single shop. These shops try to be different by the

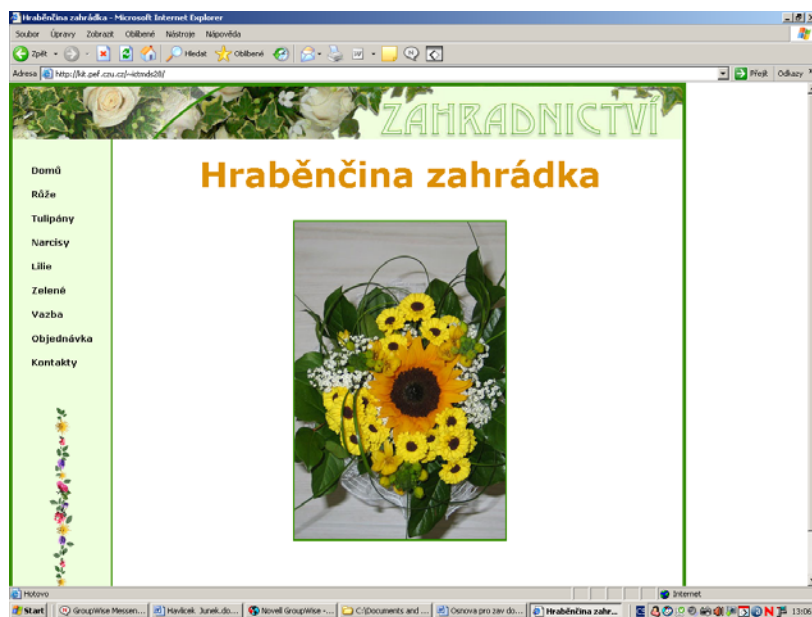


Figure 2. Example of the Hraběňčina zahrádka (The Baroness' Little Garden) project

Table 2. Types of projects

Name	Town	Size of the firm (number of employees)	Stone shop
ANO Květiny	Dobříchovice	20	6×
Hraběňčina zahrádka s.r.o.	Jaroměř	6–10	2×
Květinka s.r.o.	Černošice	1	in preparation
Květinářství Flóra	Kutná Hora	3	1×

range of goods on offer, personalised approach, quality, and with an offer of services with added value, such as the flower delivery or an e-shop.

The options for using new e-business models have been investigated in several regional florist shops (see Table 2). For each florist shop, a new static web site has been proposed, with an option of a subsequent addition of an e-shop application.

Figure 2 shows an image of the Hraběňčina zahrádka (The Baroness' Little Garden) project. This concerns a static web, where the offers of flowers are only of an informative nature. The aim of the web is merely to bring attention to the existence of the shop and to gain a potential customer. Orders are made by the means of the JavaScript form via email.

A specific e-shop has been created for the Flora flower shop (see Figure 3). This solution is based on Joomla open source and is very flexible. It enables registration of a customer, creation and management

of a shopping trolley, realization of the selected commerce model (discount prices, fidelity cards). The administration interface for the management of the shop or warehouse as such is very simple. The actual solution required about 20 hours for a person with the basic knowledge of IT.

There is already a number of Internet Service Providers (ISP) on whose servers it is possible to place e-shops that have been constructed in this way (in this example the e-shop has been filed as flora.kx.cz and free hosted by the ISP "Centrum" (ic.cz)

DISCUSSION

The above mentioned examples show that ICT makes possible the creation of inexpensive applications, which can support a given commerce model. A

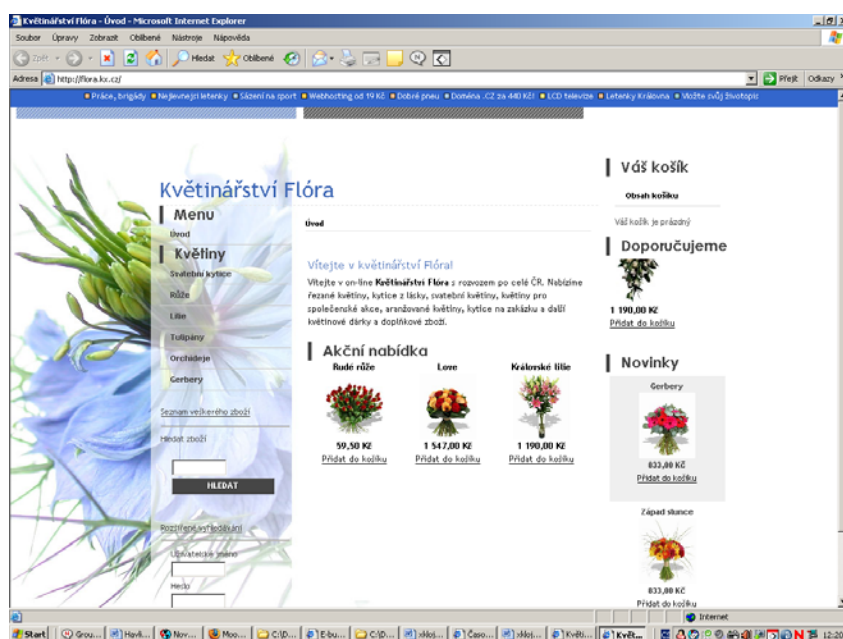


Figure 3. Example of the Flora e-shop

cheap solution – for example the use of open source programmes, requires specialised knowledge in ICT, in some cases the support from ICT specialists.

Literature (<http://news.zdnet.co.uk>) provides the results of a survey which was investigating opinions concerning the advantages of OSS over a custom created solution and vice versa. The most important advantages of the OSS are the price, access to the source code and the programmers' community. The advantages of a custom made approach are professional services, easier implementation, and automatic updating. In any case, all the mentioned advantages are debatable and depend on the subjective opinion of the respondents and their experience. In a number of cases, the OSS provides a higher quality automatic update than the commercial products.

When investing into ICT is concerned, we believe that the most important point is to find a balance between the commerce model and the potential of the given enterprise. In some cases, an inexpensive partial solution can bring a favourable response from a customer. Partial solutions can be gradually updated and expanded.

On a regional scale, the contact between the firm and its customer is also important. A virtual contact by means of an e-shop can usefully expand the existing communication channels.

CONCLUSION

Ten years ago, in the beginnings of the development of the Internet in commerce, the Internet business was more suitable for large companies which were able to utilize the knowledge in the ICT area.

At present, we can consider the Internet as a natural tool for the support of the SME business. Even a small firm can operate an e-business solution with only a small cost. It can use the latest technologies and thus, with the help of www applications, provide higher quality services for its customers.

The use of the OSS in business is very realistic and is recognized on an increasing scale. There are less expensive variants in the operation of e-shops for the SMEs. In a number of cases, the open source solution is not only cheaper but also more secure.

REFERENCES

- Havlíček Z. (2004): Web technology and farmers. *Agricultural Economics – Czech*, 50 (6): 243–247.
- Havlíček Z., Šilerová E. (2006): E-business in the agrarian sector. *Scientia Agriculturae Bohemica*, 37 (3): 128–132; ISSN 1211-3174.
- Halbich C. (2006): The software for Open Document Format in agrarian sector (in Czech). In: *Proceedings of Agrarian perspectives XV – Foreign trade and globalisation processes*. ČZU, Prague; ISBN 80-213-1531-8.
- Klouzal J. (2007): Web Content Management. [Diploma Thesis.] PEF ČZU, Prague.
<http://ec.europa.eu/youreurope/nav/cs/business/shortcuts/information-sme/index.html>
<http://www.opensource.org/docs/osd>
http://www.symantec.com/security_response/write-up.jsp?docid=2006-092111-0525-99 (30.5.2007)
<http://news.zdnet.co.uk/software/0,1000000121,39237500,00.htm>

Arrived on 28th February 2008

Contact address:

Zdeněk Havlíček, Edita Šilerová, Čestmír Halbich, Czech University of Life Sciences Prague, 165 21 Praha 6-Suchdol, Czech Republic
e-mail: Havlicek@pef.czu.cz Silerova@pef.czu.cz Halbich@pef.czu.cz
