DEVELOPMENT OF THE EGOVERNMENT USERS' COMPETENCIES IN SPATIAL INFORMATICS

© Csaba Zoltán Béres
(University of Pécs)

beres@gamma.ttk.pte.hu

This paper offers a holistic approach of the educational challenges in the Hungarian e-government service development in relation to the following three target groups: public government officers and informaticians, and the service users citizens. As regards the multiplication of its functionalities, spatial informatics has more and more complex applications in the sphere of public service. On one hand, the functionality of "back office" systems becomes more integrated while applying programs previously used just in several special fields. For this reason back office work depends on advanced competences in spatial informatics. On the other hand, the e-government services are available for the citizens and enterprises via Internet, which requires an improved knowledge base, primarily a new kind of digital and information literacy.

Keywords: spatial informatics, e-government, information literacy, digital literacy

The EU membership of Hungary offered new economical resources and perspectives as well as new challenges in falling into the line of the information societies of more developed Western countries. On the other hand, Hungary has to meet its engagements while adapting to the EU directives, regarding the inseparable aspects of economic, social and cultural competitiveness of Hungary with the consideration of optimal solutions.

Hungary joined the eEurope Action Plan (renewed many times from 1999 till the newest i2010 version) which has established the theoretical frames and practical priorities of IT development all over the EU. Among these priorities a common list of a minimal group of basic public services (CLBPS) was defined which could be regarded as the first step to provide an e-governance with maximum availability. The aforementioned minimal group contains 20 public services which can be divided into two parts. One of them embodies the services for citizens (12) meanwhile the other includes the services for businesses (8).[1] The CLBPS lists 20 services and only 9 out

---

[1] *Capgemini Summary Report: Web-based Survey on Electronic Public Services*, October 2001. Public services for citizens: 1. Income taxes; 2. Job search services; 3. Social security benefits; 4. Personal documents (passports / driver's license); 5. Car registration; 6. Application for building permission; 7. Declaration to police; 8. Public libraries; 9. Certificates; 10. Enrolment in higher education; 11. Announcement of moving; 12. Health-related services. Public services for businesses: 1. Social contributions for employees; 2. Corporate tax; 3. VAT; 4. Registration of a new company; 5. Submission of data to statistical offices; 6. Customs declaration; 7. Environment-related permits; 8. Public procurement

of these 20 has been measured for 5th level of sophistication. Consequently this group should be broadened. Hundreds of different services has been described just in Hungary. It is important to define the methods of description, to enforce discovering proactive and user-centric possibilities and draw attention to this problem. It is barely enough to develop the electronic services supporting any of the public administration procedures if the actual users simply do not know how to use it. A good suggestion could be to help the users proactively find out the solutions from one procedure to another by linking smart services together in a framework of a metaservice.[2] This can be called united service infrastructure. The focus has to be shifted from the abstract problems of public administration and governance to the users and especially to their problem-solving efforts. Different opportunities have to be offered for the citizens to help them finding new ways in problem solving. When we think about the minimal digital knowledge attained in public and higher education, it is necessary to plan also with knowledge about state, governance and intuitive user interface design. A step-by-step evaluation of portals and other interfaces can be suggested. The cognitive walkthrough is a good old method for task-centred user interface design.[3] Users usually like to know where they are and what are their further problem solving possibilities.[4]

According to the eEurope Action Plans 4 sophistication levels were defined for measuring the efficiency of e-services.

Figure 1. Sophistication levels of online services, Capgemini, 2007
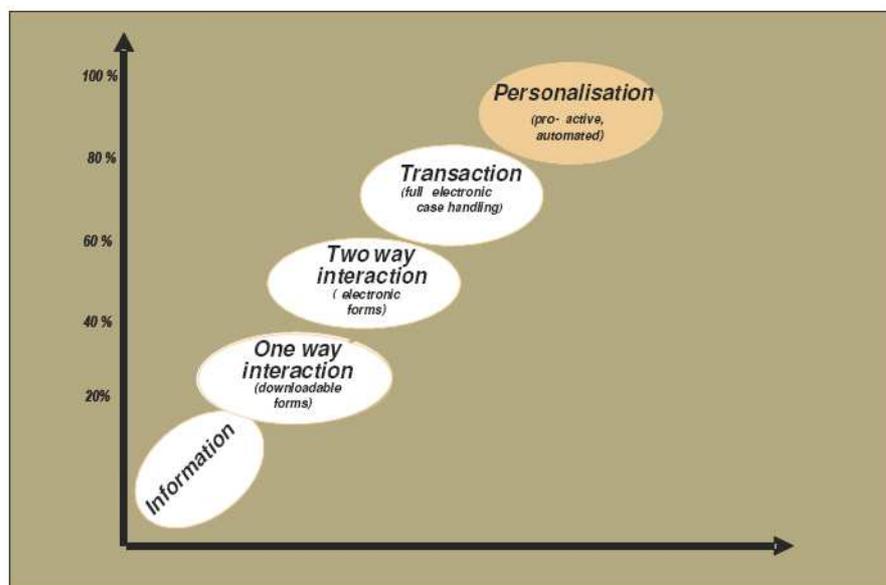
The fifth level of sophistication has to be integrated into the existing framework. Therefore new indicators were added in 2007. However, the number of available services meets the old, four level system which were measured for comparative studies the introduced 5th level (indication of

---

[2] Péter Ács & Csaba Zoltán Béres: *The 5th level of CLBPS as a new way of network communication in e-government,* SEFBIS Journal, 2008, N° 3 (under publishing)

[3] Lewis, C. & Rieman, J.: *Task-centered User Interface Design*, 1994. http://bmrc.berkeley.edu/courseware/cs160/fall99/Book/chap-4.v-1.html [14-10-2007]

[4] Fleming, J.: *Web Navigation: Design the User Experience*, O'Reilly, pp. 3-8, 1998

fully integrated electronic procedures, front and back-offices integration, use of available data, pro-active service delivery) was also in scope.

The main new concepts to be mentioned are: pro-active and automatic service delivery which means that users don't have to ask for services (e.g. automatic warning, provided services triggered by evidences of secure, official and personalized data constellation).

In the aforementioned i2010 programme entitled "A European Information Society for growth and employment" of the EU the importance of broadening the on-line services is highly emphasized. According to the key role of the public sector it's essential in the field of e-government.

It is of great importance to create flexible and interoperable dynamic structures for the support of the rapidly developing services all across Europe. It is feasible by designing systems based on self-descriptive data representation (e.g. XML), model driven tools and user-centric, adaptive interfaces for all levels and parties (e. g. citizens or enterprise organizations).

According to the WIP 2006 and Szonda Ipsos 2006 surveys on mass perception, access and use of e-government services users have a relatively low level digital and information literacy all over the EU, just like in Hungary.

Figure 2. World Internet Project, 2006

48% of citizens contacted with public institutions via Internet
What did you search on the sites of public offices?
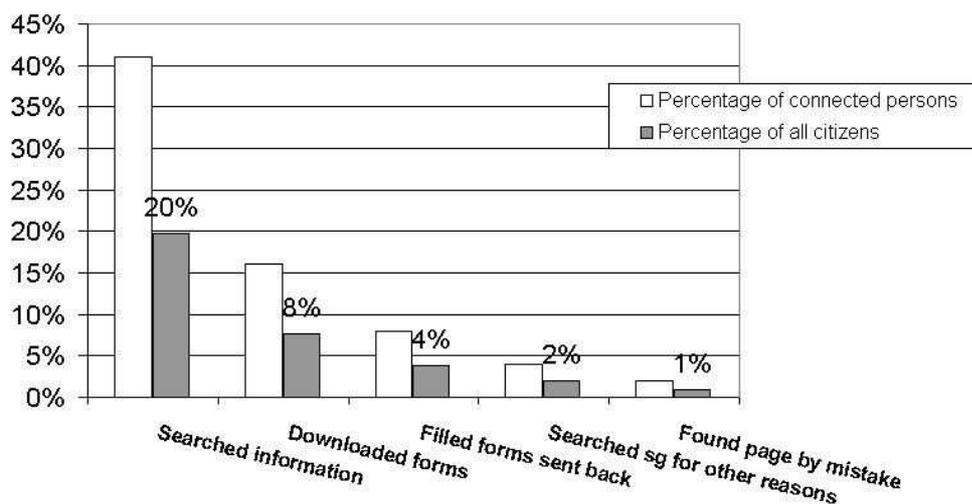
In the Szonda Ipsos survey those citizens (31%) who have never known about the possibilities of online services are placed at the lowest level of the knowledge hierarchy. At the same time, people (7%) who know and already tried the governmental website of the Client Gate are placed at the higher level of online service users' skills.

Knowledge of the possibilities of online services
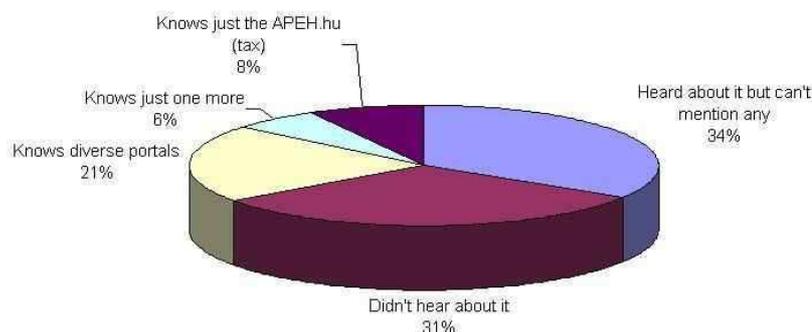
At the levels in the middle are placed the following three groups of citizens:

       1. who have already heard about online possibilities but they can't name any concrete website (34%) or know just one or two services (e.g. APEH.hu 25%, okmanyiroda.hu 15%, Magyarorszag.hu 11 %)

       2. who know several websites except the Client Gate

       3. who have already heard about the Client Gate but didn't try it

This survey declares also that some key elements of e-services like the digital sign are not enough well-known the citizens' (36%), while the knowledge of the governmental portal (Client Gate) is lower (22%).[5]

It is worth mentioning that these surveys do not reflect to the most important element of the successful e-services: the competencies of the users. E-government services can't exist if there are no individuals who can use them. High percentage of Hungarians do not use online services because they are not able to do it. The problem is the lack of special competencies.[6]

From this viewpoint the aim of the present paper is to highlight the educational challenges of the Hungarian e-government service's development especially focusing on the following three target groups of e-government users:

    1. officers working in public government offices

    2. informaticians supporting the "back office" systems

    3. citizens using the services.

The lack of a higher-level e-government use in these groups indicates the need of an improved knowledge base, an up-to-date digital and information literacy. While the digital literacy mostly referes to basic hardware and software competences, information literacy would augment the users' competence in the field of evaluating, managing and using information. Furthermore there's also a need for special competences since the e-government system contains many services, (much more than the already mentioned CLBPS 20) a big part of which is based on spatial informatics.

---

[5] Krisztina Csüllög & Anikó Varga: *Felmérés a hazai e-közigazgatás lakossági fogadtatásáról* [A survey on mass perception of e-government service in Hungary], Információs Társadalom, 2007, vol.7, N° 1, pp. 86-96.

[6] Csaba Zoltán Béres & Judit Zsák: *Új kihívások az e-önkormányzati szolgáltatások sikeressé tételében és azok összefüggései az információs műveltséggel* [New challenges for successful e-government services and their connections with information literacy], Tudásmenedzsment, vol. 8, N° 4, 2007, pp. 108-114.

Spatial problems and spatial decisions are extremely important in e-government. Spatial informatics offers solutions that require of a system to be able to collect, evaluate and display spatial data. As regards the multiplication of its functionalities, spatial informatics has more and more complex applications in the sphere of public service.

1. The functionality of "back office" systems becomes more integrated, working with programs previously used just in special fields. For this reason back office work demands spatial informatics competences especially when public government officers have to query and handle spatial data interpreting legends and layers of digital maps for city planning, building permissions, public areas and infrastructure.

2. On the other hand, e-government services are available for citizens and enterprises via Internet, which requires an improved knowledge base, primarily a new kind of digital and information literacy.

Two main approaches exist discussing the educational challenges of the Hungarian e-government development:

1. there's a need to develop the e-governance competencies of the employees in public administration (according to the priorities of the new Hungarian public governance act „KET")

2. there's a need to develop digital literacy

The frames of possible solutions for the three target groups are the followings:

1. The integration of the officers' and informaticians' education into the already existing system of further education/trainings and HEFOP (H-EU). This mainly covers the following attempts:
   - Not only basic spatial informatics skills should be taught for officers, but also their training for the previously used systems should be emphasized (it can be integrated into the ECDL and OKJ trainings and exams for basic digital literacy).
   - A special further education in spatial informatics should be validated for informaticians (spatial databases, workflow, structures, geographical background, MCP, MCSE, Oracle, DB2, MS SQL)

2. A kind of „education marketing" popularising on spatial informatics based services for citizens and in addition to that motivating the participation in the e-government
   - learning how to use spatial informatics based softwares for gathering, sending information needed (e.g. integrated to ECDL or through personal applications of google maps, google earth services, GPS navigation systems, route planning)
   - motivate citizens with better, non-bureaucratic solutions e.g. digital company foundation, everyday and all day digital registration in public offices
   - help the citizens with workflow diagrams, screenshots, printable forms with sample data

3. Possibilities in higher education for all the three target groups
   - vocational trainings
   - possibilities of different specializations during the undergraduate education (offered not exclusively for geograficians and informaticians)

The above-mentioned educational challenges should be interpreted in the close context of the following 5 aims:

1. *User centricity*: This approach should consider the current, common knowledge or preparedness of users. "Pro-active personalization as we defined it has much to do with user-centricity, i.e. the way the services are organized around the needs of the citizens."[7] Users are going to solve their problems relying on their preparedness. The IT solutions also have to deal with the dynamism of this preparedness. The knowledge partly affected by possibilities is not only offered by as but it is obtainable through education, information and orientation processes as well. The user centricity means – as it sounds – that the user (both citizen and enterprise) stands in the centre of the public services. The user has to trust the government, the technical environment and the implementation of the workflow. The key element is the knowledge that makes the user to feel secure and gives the real control over the processes taking place.

2. *Broadening the e-government systems*: From the viewpoint of the Hungarian public institutions and local governments it is essential to implement high-impact key services for citizens and businesses, targeting a 100% electronic availability of public procurement with 50% actual usage and making agreements on cooperation on high-impact online citizen services. Nowadays we have just 28 e-government systems in Hungary with different functionalities and service levels.

3. *Fulfilment of e-democracy*: Encouraging e-participation, active citizenship and dynamic democratic decision-making. To provide effective tools for public debates and participation in democratic decision-making. To ensure the access and benefit of e-services for all citizens according to the following principle of the EU "no citizen left behind".

4. *Equality for all in the information society*: Diminish the "digital gap" between Hungarian citizens and regions.

5. *Efficiency*: Easier, transparent and accountable administration for all. Convenient, secure and interoperable authenticated public service access for all citizens and businesses. If the users have the required level of digital and information literacy competences all the e-government systems will become more efficient.

Summarizing it could be stated that from the viewpoint of pedagogy and andragogy these relations reveal the importance of the aim of user centricity, which implicates the need for digital and information literacy trainings as in the frames of the public education as in the BA programs of higher education. No methods and models for this kind of education have been presented in Hungary, but there are some international and American surveys (e.g. Boyer Survey, ALA ACRL indicators), which offer partly adaptable strategies and competence-centred methods of education.

---

[7] Capgemini, 2007