

M-Government in Hungary

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Abstract: *The paper outlines why 2 and 2.5 G mobiles appear to have taken the lead in e-government development in Central Europe. A number of best practices throughout the world are also presented, amongst them the first milestones of m-government appearing as a special, independent field in the process of the modernization of public administration. In the authors' view m-government implementations should be monitored in the information, interaction, transaction and transformation stages of e-government development. New workflow models need to be introduced in public administration in the developed, transaction and transformation stages to facilitate m-government implementations. Two general m-workflow models are shown and described. Last but not least, the paper introduces a new Hungarian university textbook on m-government. All possible aspects (present and future) of wireless and m-government applications are surveyed including the feasible legal, political, and civil environments.*

Keywords: m-government, m-workflow model, m-procedure, m-government in research and education

1. Introduction

1.1. Place of M-government

The considerable two-fold difference between Internet access and mobile phone penetration has led to the appearance of m-government all over the world. Electronic government including m-government has always accompanied the modernization of public administration with mobile telephony representing its widest social and technological cross-section. M-government, however, is – in most cases - merely a tool of sending messages such as unofficial documents. According to an Irish representative survey, 48 % of the population prefers SMS to visiting an Internet portal (34 %) and the preference for mobile communication is even higher (61 %) amongst the 15-24 age group (Puca Technologies, 2004). SMS is being used in public administration in many countries, e.g.: Ireland, Malta, the Scandinavian countries, Korea, Malaysia, Hong Kong, Singapore. In the Philippines, for example, half the government bodies use mobile technology as an everyday routine, stating that besides its wide range of access, it is also cheaper than Internet availability.

Figure 1 shows that a Central European local government must slowly accept the use of traditional (2 - 2.5 G) mobile technology. While this stands at a lower level as regards effectiveness and the capability for administrative procedures, it is the most mobile: it has the highest accessibility and is the least expensive. As regards time and effort, M-government is more effective than the traditional methods used to date. Though office PC could be an advanced competitor of 2G mobiles, it is not feasible to support that customers use of their employers' IT equipment for e-government activities, especially during working hours.

1.2. Fields of M-Government Implementations as Best Practices for Application in Hungary

Workflow steps using m-government devices are increasing throughout the world. When categorizing the workflow steps used to date, we can determine the following:

		HIGH	----	EFFECTIVENESS	----	LOW
PORTABILITY	HIGH			3 G MOBILE	2.5 G MOBILE (WAP)	2 - 2.5 G MOBILE (SMS/MMS)
		WLAN with PC and NOTEBOOK	PDA with WLAN or built in GPRS	PDA and GPRS		
		NOTEBOOK with built in GPRS	NOTEBOOK and GPRS			
		HOME PC with peripheries and BLUE TOOTH				
		HOME PC with peripheries			OFFICE PC with peripheries	
LOW	LOW	----	ICT ACCESSIBILITY		----	HIGH
	HIGH	----	PRICE		----	LOW

Figure 1 The suitability of ICT agents for electronic and mobile government

1.2.1. SMS Notifications

- in *tax administration*: on tax pre-calculations of personal income taxes by the Office, and acceptance of the calculation by the citizen (eg. in the Scandinavian countries);
- in *customs administration*: vehicle drivers can declare and receive cargo registries via SMS from the customs authorities, eg. in Sweden (Cross, 2004);
- in *education*: students receive exam results, scholarship decisions, and parents receive notices on students' absences from school via SMS, e.g. in Malta, England, Ireland, Singapore, Hungary. According to French and South African surveys, 90 % of the students require exam notification via SMS. (Source: Zalesak, 2004);
- in *jurisdiction*: courts send SMS on changes in the scheduling of hearings and trials, e.g. Malta;
- in *emergency management*: rescue teams can receive and exchange information via SMS (e.g. in Virginia, USA). SMS can be sent when drinking water supplies are limited (e.g. in Malaysia), in the case of flood danger (e.g. in England and Ohio), typhoon danger (e.g. in China), energy black-outs (e.g. in California), terrorist threats (e.g. in England), etc.. Turkey is the best example as regards earthquake danger alarm via SMS (Aria Sms, 2004). In Sri Lanka and Finland, SMS is used to notify blood donors if they are needed (Aria Sms, 2004);

- in *security and police administration*: victims and their relatives are kept informed by the police via SMS (eg. in the Philippines), the deaf can send and get police information this way (e.g. in Great Britain and Hungary), repeated police notices are sent to stolen mobile phones (e.g. in The Netherlands), illegal waste deposits can be reported (e.g. in the Philippines), notifications can be sent to those who have forgotten to pay the fines (e.g. in New Zealand), the data of the vehicle can be checked by the police (e.g. in Hungary);
- in *document administration*: notifications can sent when owners need to renew their license (e.g. in Malta and in Singaporean MyeCitizen Service) and SMS is also used to book appointments at document- and marriage offices (e.g. in Hong Kong);
- local municipalities initiate a *public opinion survey* via SMS (e.g. in Ireland);
- in *border guard service*: the Canadian wireless portal takes the lead with WAP based services as regards the estimated waiting times at borders, or customs offices and in issuing passports (Government of Canada 2005);
- in *labour administration*: job offers via SMS can accelerate the process of seeking employment.

1.2.2. Mobile Payment Services

- payment of parking fees (e.g. in Stockholm 8 % of total parking fees is paid via mobile calls (Cross, 2004),
- payment of dues and fees (so-called “micro-payment”),
- payment of local taxes (Semops, 2005).

The greatest advantage of e-government is the 24 hour/7 days-a-week service that provides continuous access to the local government offices. In the case of m-government, accessibility *from anywhere* is the added plus. This broad base of *accessibility* and the fast transfer of data makes administration *more and more productive and efficient*, ensuring a constant link between the office and the citizen. Only the elderly and the poor are the ones for whom this new way of “conversation” is not necessarily available (Heeks – Lallana, 2004). SMS is an especially important tool in m-government, as it makes possible the reaching of a great number people in a relatively short time. There are no other means that make it possible for the authorities to reach so many citizens simultaneously. The various uses, as mentioned above, fully support this statement.

Curiously enough, in the Philippines - in a region that is not exactly known as the homeland of democracy as far as an exemplary public administration is concerned - complaints about impolite treatment and attempts to bribe the authorities, can also be sent via SMS (Lallana, 2004).

To date, m-government in Central Europe is on shaky grounds due to the following: WPKI, the problem of identifying citizens and the lack of sufficient data security, all of which are due to the lack of widespread intelligent mobile-chips. In Hungary, for example, the law on personal data protection and security does not permit local-governments and mobile service providers to collect and use data on local residents (such as the use of SIM codes for mobile identification). As a result, it is difficult to provide data for the registration and certification of authority roles in WPKI. In addition, the introduction of m-government workflow models in local administration requires the restructuring of the workflows. This means additional tasks for the clerks who feel they are underpaid and overloaded with work. Moreover, the new channels of mobile communication would have to be introduced in the offices to make them capable of receiving, registering, and automatically answering SMS (IDABC, 2005).

1.3. Entry of M-government

According to the findings of a 2003 UN survey, the Philippines ranked 4th after Singapore, South Korea and Japan in South East Asia as regards the readiness to change to m-government. Canadian researchers have, however, said that the Philippines is the first worldwide as regards the number of m-devices used in public administration (Bautista, 2004). This kind of 'mobilization' of public administration can also be felt in the European Union.

Several IT conferences are held each year throughout Europe, where m-government issues are likely to appear, while at the same time exclusively m-government issues have been the focus of only a small number of conferences to date. To the best of our knowledge, the very first m-government forum was launched at the Public Administration Faculty (the former National School) of the Corvinus University of Budapest, Hungary on 4th February 2004 with the participation of the Pannon GSM, a Telenor affiliated company (e-government.hu 2004). The second - an international level - event entitled 'The First International Survey on Mobile Government', was held in Prague by the Czech Mobile Marketing Society, the Electronic Commerce Center and the Web Projects, on 16th April 2004. (Amm.cz, 2004)

The third international event - also organized in the CEE region - was held at the Public Administration Faculty of the Corvinus University of Budapest entitled 'The First International Conference On M-government' on 29th October 2004 (FITCOM, 2004). The M-Government Study Group (MGSG, 2005) was established at this forum. In parallel with this event, a seminar was held on 20th October 2004 at the London Townhall on the challenges of mobile technology influencing the municipal functions of the British capital (Demosgreenhouse, 2004).

On 8th March 2005, the biggest international m-government conference to date was held with the title 'Government Goes Mobile' (Govnet, 2005). This was followed by a conference in Brighton 11-12 July 2005, organized by the California M-Government Consortium International: 'The First EU Conference on Mobile Government' (MGCI, 2005).

2. Development Stages of M-government

In Hungary m-government implementations at the local government level are still very few (some towns where it is used are: Hajduszoboszlo, Jaszbereny, Kalocsa) which put e-government development in the very first stage. What does this mean? The development of e-government is often categorized in four stages, a categorization that can be applied to m-government, as well. There are gaps between the development stages that discourage "innovators" at the local governments, even if they are as enthusiastic as those in Malta or the Philippines, not to mention the clerks and officers in the Central European post communist countries, who lack both bureaucratic commitment and incentives. In the CEE countries government officials and clerks look upon e- and m-government as extra tasks with no funding and resources. The four stages of development are:

- The *information* stage: when information concerning the operation of the office (e.g. opening hours, consulting hours of departments, deadlines) is transmitted via SMS, or when it is possible for local residents to express their opinion in the course of local voting.

Gap: '*reservedness*' (there is a fear regarding data security and safety, and the assumed lack of ICT skills generates reservations as regards the offer and demand of m-government services)

- The *interacton* stage: when there is a real response to a request or question via SMS, or a reply from the local authority given to a notice or report (e.g. acknowledgement, promising measures to be taken; feedback of bookings; sending list of data required for procedures, listing duties; directing public employees in the field of social care or emergency jobs).

Gap: „*organisational*” (bodies and departments of the local government or municipality, which have operated semi-independently so far, have to enter into real co-operation. M-government necessitates the interaction of the employees of different departments, thus the instinctive concern for organisational integrity may generate resistance to the introduction of m-government).

- The *transaction* stage, when numerous steps of the workflow can be performed with the help of mobile devices, permitting an official conversation between the clerk and customer, independently of place and time (e.g. payment of local tax, official dues or public service fees via mobile phones).

Gap: '*resistance*' (A whole procedure can be performed via mobile devices which necessitates re-structuring in both the front and the back office activity; it requires the establishment and introduction of local legal ruling facilitating – besides the traditional way of administration – the new electronic and mobile forms. The resistance of clerks to the new procedure is understandable as they may fear overwork, or are afraid of losing their jobs because of a lack of ICT skills. They may also simply wish to avoid having to go to training courses).

- The *transformation* stage, when the back office is re-structured, to be suitable for e- and m-administration and new management and legal systems are introduced.

3. The Importance of Workflow Modelling in M-government (Research Result I)

There are two possible ways of transforming administrative procedures into m-government in Hungary. The Hungarian Law on personal data protection does not permit the use of push SMS, with which the mobile service provider could easily build up a local community database for m-government, thus performing the duty of the registration authority, as suggested by the European Union (ETSI, 2003).

In view of this, there is only one choice left: the local government, lacking any financial incentives or special motivations, would need to play the role of the registration authority. The central government has no resources to support such innovations and the three mobile services providers of considerable means do not as yet feel the necessity of conquering the market of public administration. The three providers are the T-Mobile, affiliated with Deutsche Telecom (with a 47 % market share), the Norwegian Telenor affiliated with Pannon GSM (35 %), and Vodafone (18 %). In *Figure 2* we can track how the local self-government tries to persuade the local population (with leaflets, posters, letters, local cable TV programa, local newspaper announcements, etc.), to visit the municipality with their personal m-identifying data and register for m-government procedures. By signing an agreement form, the local resident authorizes the local government and the local mobile service provider to manage the personal data (including mobile phone number and SIM code) required for m-government procedures. The returned and signed registration forms serve as one of the main sources for setting up the local m-government database.

Having registered, when the customer chooses a local administration procedure and sends his/her code via SMS to the office, where in its role as certification authority, the SMS center immediately recognizes and identifies the caller as an authenticated local citizen. When the

caller is known to the local authority, the identification is performed. The automated SMS center offers appointment times (if the type of procedure requires the personal presence of the customer in the office, e.g. an official photo has to be taken using the office equipment), then asks for the data necessary for the procedure. The customer chooses an appointment time (if necessary), and sends all the required information. The answering machine of the SMS center sends an acknowledgement for the chosen appointment and repeatedly asks for the necessary data until each item is sent by the customer via SMS and the data set is complete.

The customer can also pay the required dues via mobile phone. The notice of payment-completed is transmitted to the clerk together with the customer's appointment and all the necessary data for the filling in of the official document (certification or license). The clerk prepares the required official document as an official issue. The customer arrives on time (if personal appearance is needed) and receives the required document without having to wait.

The general workflow model shown in *Figure 3* is not quite the same as the previous one. In this model the customer, calling the office, is anonymous, not having pre-registered for m-government services. Unfortunately in Hungary citizens cannot be expected to respond to the call of the local government in great numbers. It is, thus, unlikely that the local m-government data base can be constructed relying on the returned declarations of the citizens, authorizing the self-government and the local mobile service provider to use their mobile identification data.

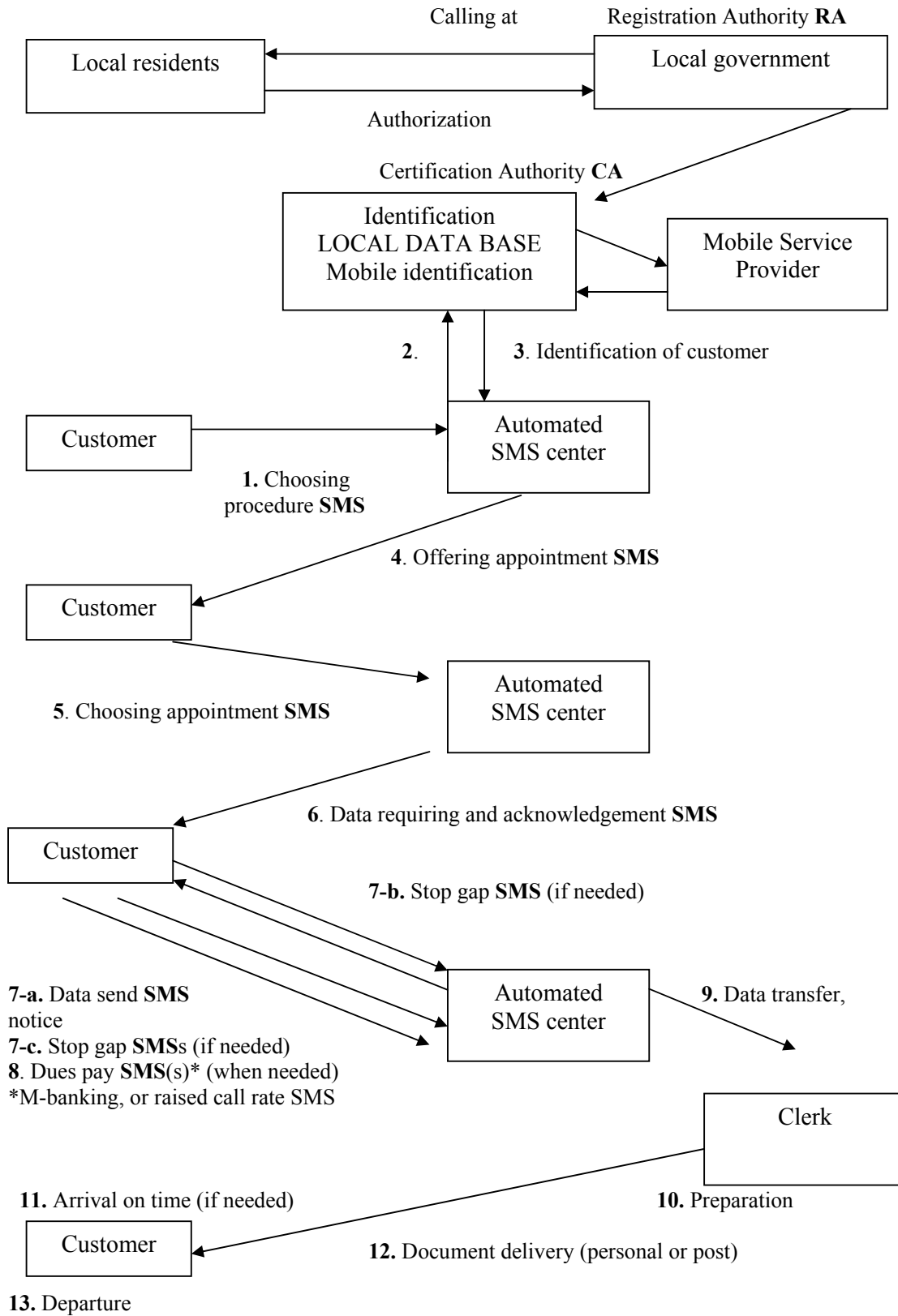


Figure 2 Registered general workflow model for local m-government

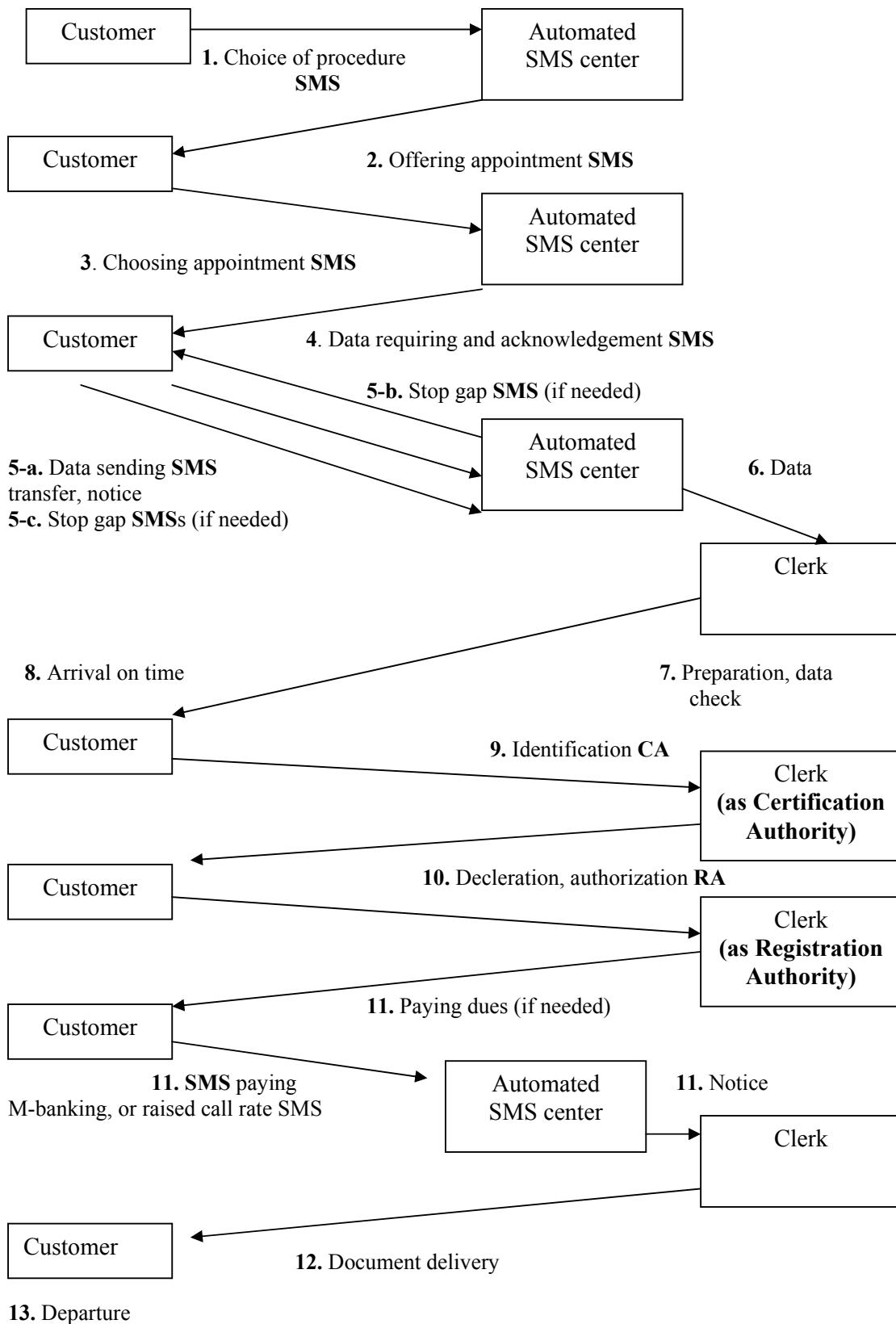


Figure 3 Unregistered general workflow model for local m-government

In this latter case the customer sends an SMS when s/he wishes to choose a procedure. The SMS call center cannot identify the caller, but offers an appointment, acknowledges it, then asks for the caller's data needed for the documents and accepts them. After the required data are complete, the SMS center conveys them to the clerk who, after checking the data, prepares the required document.

The customer arrives on time and identifies himself/herself without having to wait. Thus the certification authority role is performed. The customer then signs a declaration to authenticate the self-government and the local mobile service provider to manage and certify the personal and mobile identification codes. This is a post-registration authority action. This is also what happens in Hungary in the XR System. In this case, administration is made easier and more convenient for the citizens in the document offices with the help of the Internet in booking appointments (E-magyarország.hu, 2005). The customer can pay the official dues via a mobile handset, and the transaction notice immediately appears on the clerk's display. The clerk then can issue the official receipt for dues paid and the customer can leave. If the customer consents, the post registration authorizes the self-government to use his or her m-identification data in the local m-government data base. In such cases, the next time when the same customer wants to use an m-government service, the workflow shown in *Figure 2* will take place.

M-government workflow modeling is a major research project at the department for Public Management and Urban Studies of the Public Administration Faculty of the Corvinus University of Budapest. The models are being applied in practice as a pilot application at Budaörs, a small town west of Budapest. As such a degree of interoperability in m-government is surely rare in the EU the present project represents a transformation stage of m-government. The research project is supported by the Pannon GSM Telecommunication Corporation.

From November 2005, within the frame of the pilot project, there will be 10 m-government procedures available for the citizens of Budaörs: the obtaining of birth-, marriage-, and death certificates, address registration cards, changing and renewing identity cards, entrepreneurial license cards, and the payment of vehicle tax.

4. M-government – M-democracy: University Textbook (Research Result II)

The Hungarian Academic Publishing Company issued a professional book in March 2005 which will probably be one of the very first textbooks dealing with m-government independently, not just as a part of e-government applications. The E-Government Foundation supported the authors of the book (Budai – Sukosd, 2005). The Foundation operates within the Department for Public Management and Urban Studies of the Corvinus University of Budapest.

The main fields and application possibilities of electronic government, as an unavoidable part of public administration reforms and modernization, were outlined already in 2002 in Hungary, in the university textbook entitled 'E-government, or Governmental and Self-governmental Challenges in the Age of On-line Democracy (Budai, 2002). With the passing of time, modernization in Central and Eastern Europe has found a new direction in addition to and instead of Internet. This is manifested by the unbelievable boom of mobile hand phones, probably a social reaction of the demand for telephony that had been completely oppressed during the decades of communism. It is expected that in a few years' time the young generation will have a large demand for m-government, thus m-government makes its first move in Central Europe, as by this textbook, as well.

M-government – M-democracy characterizes the so called knowledge-based society served by mobile technology, the mobile market, the technological parameters of mobile

communication, the legal background of mobile government, the wireless emergency systems, the possibilities of mobile community construction, best practices in the international context, the challenges hidden in the regional mobile administrations, the m-government application by local municipalities, the convergence of politics and mobile interactivity. The book gives a cross-sectional description and recommendations regarding the administrative, social and political possibilities of mobile communication.

The research results published in the book include:

- The role and possibilities of communication via mobile technology in a customer-friendly public administration.
- Analysis of market possibilities, users' habits and the waves of GSM diffusion.
- Survey of public administration determinants (ICT use, culture, administrative attitudes).
- Outline of the possibilities provided by the frequencies, the questions of concessions and frequency management.
- Research into the technological determinants, standards, and compatibility, with a special emphasis on the possibilities of replacing traditional workflow elements like WPKI.
- Survey of the international recommendations and the domestic ones derived from them.
- A chapter deals with the emergency wireless systems and the possibilities for development.
- A collection of SMS based domestic and foreign best practices.
- Description of WAP applications.
- Research into SMS application as a tool of marketing and community building.
- Survey on the driving forces of public administration coming from commercial mobile applications.
- Research on the mobile use habits of the representatives and the mayors of local self-governments depending on the size of a given settlement (small villages, towns and districts of the capital city).
- The characteristic ways of mobile phone application during the time of general, local, and regional elections.
- The possible public administration role of digital television networks in the future of the Central European region.

The 430 page book is divided into 4 main and 16 subchapters. It contains a list of sources and references, a glossary, a list of websites, and the collection of legal rules relevant to information society. There are many figures, , controlling questions, tasks and marginal emphasizing key statements to make the textbook didactic and easy to study.

The recommendations and the structuring of m-government aspects represent useful information for civil servants and the employees of the public sector, state administration and local governments who are committed to the modernization of public administration. On the other hand, the future practitioners (today's university students at the faculties of law and economics) badly need the knowledge to be able to structure m-government fields, to have access to information on the various wireless possibilities and best practices, and all this with practically no technical knowledge. This "pioneer" textbook, available in CD format, as well, is a response to the future challenges in public administration (*Figure 4*).

5. Conclusions

In the past few years it has become evident that certain research areas in the field of public administration and political studies will become independent. Based on this knowledge, the researchers of electronic government and electronic democracy (the interactive media from the political communications) formed their own field of interest. Today, as best shown by the First EU Conference on Mobile Government, m-government and m-democracy is being

shaped as an independent branch of research and application within social sciences. This independence is shown not only in the conferences that bear the titles of m-government. More and more research workshops focus on m-government. In Hungary for example:

- Social surveys regarding the 'mobilizing' society, conducted by K. Nyiri (Philosophical Research Institute of the Hungarian Academy of Sciences: www.phil-inst.hu).
- Issues of Mobile Democracy Workshop (www.edemokracia.hu) led by J. Laszlo and M. Sukosd (Department for Political Sciences at the Central European University: www.ceu.hu).
- Legal surveys regarding e- and m-government, conducted by Zs. Balogh (Research Center for ICT Law at the University of Pecs: www.law.pte.hu).
- Public administration management and workflow issues of e- and m-government are surveyed by I. Tozsa and B. Budai (E-Government Foundation and M-Government Study Group respectively: www.e-government.hu and www.mgsg.org).
- Governmental issues on e- and m-government are dealt with by the Electronic Government Center of the Hungarian Government led by F. Baja: www.ekk.gov.hu and by the Ministry of Informatics and Communication headed by K. Kovacs: www.ihm.gov.hu

University professors are obliged to publish research results in a didactic form both in the graduate and postgraduate training of civil servants. A textbook aimed at surveying a newly evolving scientific branch is, therefore, of primary importance. It is the above principle that lies behind the M-government – M-democracy university textbook, describing the characteristics of the new field via an empiric approach. This fact is also reflected in the growing number of m-government research projects all over the world. We try not only to have a continuously updated list of these projects, but we also do our best to contribute to the research work.

The *introduction* (Part 1) of this paper includes an overview of m-government, the newly developing area of e-government, answering questions such as: **1.1.** What is the place of *m-government within e-government*? **1.2.** What are the *best practices* already operating in m-government, as far as **1.2.1. notifications** and **1.2.2. payment** are concerned? **1.3.** How is *m-government evolution* manifested in Europe? Part 2 deals with the *stages of m-government development* as derived from e-government. The next two parts report on *Hungarian m-government research results*: on the importance of *m-workflow models* to achieve m-interoperability (3) and on the publication of the first *university textbook of m-government* (4).

References:

- Amm.cz (2004): www.amm.cz/mgovernment/index.php?pageID=press
- Aria Sms (2004): <http://yakaseneklim.sitemynet.com/aria.htm>
- Bautista, K. (2004): www.itmatters.com.ph/news_09012004a.html
- Budai, B. (2002) E-Government or Governmental and Self-Governmental Challenges in the Age of On-Line Democracy (in Hungarian) *Aula Publishing Company*, Budapest 367 p.
- Budai, B. – Sukosd, M. (2005) M-Government, M-Democracy in Public Administration, Politics and Non-Profit Sector (in Hungarian) *Akademiai Publishing Co.*, Budapest, 430 p.
- Cross, M. (2004) Channel for change = *The Guardian* 2004. June 10.
- Demosgreenhouse (2004): www.demosgreenhouse.co.uk
- E-government.hu (2004): Studies of the presented papers of this local conference were published by the E-Government Foundation entitled Mobile electronic government solutions in local administration in Hungarian. The presentation can be downloaded from www.e-government.hu in Hungarian.

E-magyarország.hu (2005): The citizens' portal to the o-line document office system, via the Hungarian e-government portal: www.e-magyarország.hu

ETSI (2003): European Telecommunications Standards Institute TR 102 203 V.1.1.1 technical report on Mobile Signatures Source: www.etsi.org (2003.05)

FITCOM (2004): www.diamond-congress.hu/mgov2004

Government of Canada (2005): http://www.canada.gc.ca/mobile/wireless_e.html

Govnet (2005): www.govnet.co.uk/mobilegov/background.htm

Heeks, R. – Lallana, E. (2004): www.egov4dev.org/mgovprocon.htm

IDABC (2005): www.europa.eu.int/idabc/en/document/3449/586

Lallana, E. (2004): www.e-devexchange.org/eGov/xtcsc.htm

MGCI (2005): Homepage of the conference: www.icmg.mgovernment.org

MGSG (2005) English web portal of the MGSG: www.mgsg.org from where the FITCOM presentations can be downloaded.

Puca Technologies (2004): www.i-policy.typepad.com/informationpolicy/2004/12/survey_finds_st.html

Semops (2005): 'Secure Mobile Payment Service' website: www.semops.com

Zalesak, M. (2004): www.store1.digitalcity.eu.com/store/release/hir/doc/AAAALWTW.doc