Knowledge based public administration systems

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1.1. Public administration, e-Government

Improvement of information technology used at the level of municipalities is one of the key issues concomitant with Hungary's accession to the EU and the economic development in the region. It comes from the complex set of tasks delegated to the municipalities and comprises tasks assigned to bodies of public and local administration and public services.

It is regrettable that a traditional assumption that developed in Hungary on the basis of the former conditions (namely that IT is an expensive tool and its use is prompted by **fashion** rather than **pure necessity**) still tends to slow down the rate of progress. This fact justifies introduction of actions needed to alter this attitude, with reference to the first attempts made to introduce e-Administration (for example, e-Tax Returns) in order to reduce the costs of use of IT.

In contrast with the globally experienced cost ratios, the scope of IT costs generally accepted in Hungary yet includes primarily those related to hardware. In line with the basic conditions needed to introduce e-Municipality, the related processes should be re-designed and the resources re-allocated.

Certain extremities lie heavy on the structure of municipalities, what concerns the activities performed by district notaries or by public administration offices operated either in small settlements or towns or cities vested with rights due to the counties, or by the counties, districts of Budapest or in the capital. Their scope of authority widely differs. The number of employees varies from between 4 to 5 to several hundreds, a fact that makes development of e-Office a difficult task.

Most of the municipalities face serious difficulties in covering a multitude of tasks, in retaining a properly skilled staff and in purchasing and operating the necessary assets.

In many cases, only devices designed exclusively for voice transmission are available, in accordance with the formerly concluded concession agreements.

In addition, since the mayor's office performs also public administration tasks, the system of relationships developed by the municipality differs from what is used in other cases. The scope of clients may include citizens, NGOs, associations of entrepreneurs or other public administration bodies, prompting broadly different communication needs. An analysis of the present status of IT systems suggests that the set of communication tools ranges from the exclusive use of paper files to the availability of a relatively sophisticated inventory of IT tools. This variety of assets must be used to provide high quality services which meet the EU norms even in case of citizens living in small villages.

Another global challenge in our swiftly changing environment, that is, the development of the information society, has arrived to a new milestone. A local "island" network consuming only a limited volume of resources has been considered unsophisticated but satisfactory option that can be supplemented with a leased www static storage pool capable of providing information about the settlement concerned.

To-day, this is not sufficient: we need safe, modern and knowledge-based systems operable in 24 hours of the day and in 7 days of the week, integrated with a **re-designed set of tasks** and leading to an ASP type mode of operation.

Digital data exchange among public administration bodies would mark a significant progress. No minutes taken on municipality meetings using digital tools is worth the trouble if it is not considered an official document also in the absence of signatures and stamps. Accordingly, identification of the requirements and standards applicable to the electronic signature, data exchange and filing and controlled and used in a consistent manner is a real necessity. Also the methods of **digitalized document filing** need by regulated.

1.2. e-Government

1.2.1. Conditions of electronic administration

- electronic signature (authentication, security)

- defined procedures

- integrated data registration (citizens, real property)

- electronic data exchange with partner and superior organizations

2. System administration

2.1. Structure of the office

Proper representation of all departments and employees within the hierarchical structure of the municipality is a prerequisite of the introduction of electronic

administration. Of course, each authority has several organizational units which should be defined. Each unit is determined by its name and senior executive and consists of staff members appointed from among the municipality employees. The primary goal is to identify these organizational units and all employees of the municipality. These two sets of data should be used to develop a "tree-structure" which truly represents the authority and clearly shows the flow of subordination and the human resource composition of each unit.

2.2. The body of the municipality's representatives

In the frame of electronic administration, the citizen may get in direct relationship with the body of the municipality's representatives or any standing committee of the municipality. Therefore, also the hierarchic structure of this body should be integrated in the system. The process is identical with the above described one: the name of both the members of this senior body and the line committees of the municipality must be entered. Then, the two sets of information must be linked in order to develop the tree-structure that represents the structure and inter-relationships of the body of the municipality's representatives.

2.3. External organizations

In the next step, the municipality is expected to communicate with various existing software programs formerly developed and used internally or by external organizations. Obviously, also data related to these external organizations must be stored in a database, in a structured manner. An external organization can be represented by its name, addresses, the name and address(es) of a responsible person or any other parameter which must be accurately recorded in the database.

2.4. The role of administrators

In the course of electronic administration, the administrator's role is, at least, as important as in case of any paper-based administration. The difference lies in that, in the latter case, it is more difficult to retrieve: who did what and when and whether he was authorized to do that specific job; normally, only the local executives know the sometimes inaccurate answers. In contrast to that, the scope of authorization is always specified and recorded in electronic administration. Of course, multi-level authorization must be provided. The right of access is one level because the system designed to support electronic administration is an actual application which consists of modules which can be freely expanded, supplemented and customized. The actual administrative tasks represent the other level where the name of administrators authorized to complete specific tasks in a specific model of administration should be defined. Since definition of these levels of authorization would be a difficult and intricate task at the time when the database is initially installed, a set of roles should be developed to facilitate subsequent completion of uploading the necessary range of authorizations, in an easy and swift manner.

Obviously, a possibility should be provided for the subsequent customization of the system, meaning that the elements of authorization can be defined in respect to each administrator.

2.5. Types of authorization granted to administrators

The importance of the various types of authorization is clear from the previous section. Obtaining authorization is needed since we have to identify ourselves when entering a system of some sophistication. Then, the system loads the set of menus defined for our use, defines the tasks we are authorized to carry out and can, in case, send us a personalized message.

This way, the data can be separated and hidden from unauthorized eyes. This requirement is of particular importance while completing an administrative task. Authorization can be exercised by an administrator who distributes and maintains the scope of authorizations granted to individual users. Any improperly granted authorization may create an opportunity for abuse or permit completion of tasks that should not have been done or seen by that person. Therefore, the administrator (responsible for maintaining/updating the scope of authorizations) is particularly responsible for the due and proper operation of the system.

2.6. The structure of procedures

The basis of electronic administration is a program system designed to support the completion of administrative tasks and to define the procedures supported by the electronic system. Such procedures must be entered in the database and specified by establishing a number of parameters. Each electronic administration system is based on a workflow system which defines the models and procedures supported by the electronic system. A predefined list of procedures is not sufficient for establishing a workflow system. Therefore, the steps that should be followed by the administrator in order to implement an administrative model must be determined. Accordingly, we can develop the procedural models and their respective workflow background by combining the set of procedures and the set of the elementary steps of each procedure. The creation of both sets has been supported by the legislators: the *Act IV of 1957 (as amended several times) on the general rules of public administration procedures* gives a good approximation on how to prepare and design a workflow. Within the workflow description, an administrator responsible for the completion of the respective tasks must be assigned to each elementary step.

2.7. The exercise of the scope of authority

A module describing the scope of administrative authority must be an integral part of the software designed to support electronic administration. This module shall describe the scope of authority and responsibilities of the municipality or a specific office. This is a useful and satisfactory tool in the customer information

system where providing proper information to the customers is the primary objective of the first step. Also the scope of authority and responsibility of any and all subordinated organizations can be defined, in addition to those delegated to the municipality itself.

2.8. Internal correspondence/communication

An enormous flow of new information of private and public nature is generated as "by-product" of electronic administration. Public information shall, of course, be communicated to all interested parties, via a system designed to support internal correspondence & communication. In addition to forwarding letters (incl. attachments) from one user to another, the system must be capable of sending status reports, lists of documents related to a specific subject or communication about any action already taken. All these expectations can be met only by a customized system of internal correspondence & communication.

Another tool designed to facilitate the work of public administration executives consists of an inquiry interface (a program module) which can be used for retrieving information from databases, preparing charts, statistical tables, etc. These inquiries can be classified by persons, groups or specific periods.

The authorized users can produce reports or charts on the basis of eligible parameters, to analyze cases already completed or being in the process. The work load of the individual administrators, the average time needed to settle an administrative task, etc. can be established this way. The number or scope of such reports can increase/expand in proportion with the system's dimensions.

2.9. Client registration

In any online or off-line administrative procedure, only users registered in the appropriate system can initiate new cases. It is imperative in case of either administrative system that the citizen be registered. In order to provide protection to personal data, each citizen shall be asked whether he agrees on further use of his particulars within the electronic administration system. After granting a written authorization to the office/authority, the citizen may contact the authority via the Internet as to initiate a case concerning a certain specific and predefined type of subject, by entering the ID number received during the registration process. The only difference compared to a paper-based procedure lies in that an Internet form must be filled using the keyboard rather than filling in hard-copy forms. Hence, the two types of the official procedure are identical. The next step consists of submittal of the form. Until now, the citizen had to appear at a window to submit the form in order to initiate a case. Now, the Internet can be used as communication channel. The question of how the forms shall be signed by the citizen to authenticate his case can be answered by using the electronic signature. Since the regular use of electronic signatures shall take another few years ahead of us, the citizen must, also in the forthcoming years, visit the office to sign his form mailed electronically and printed before his arrival.

Client registration is obviously a very important aspect of electronic administration since although the citizen shall remain in the background throughout the implementation of the administrative model, all data belonging to the citizen must be available at all times in order to facilitate fast, transparent and reliable completion of the respective procedures.