

IT in Improvement of Public Administration

Jerzy Kisielnicki

Idea Group Publishing



IT in Improvement of Public Administration

Jerzy Kisielnicki
Warsaw University, Poland

EXECUTIVE SUMMARY

Bialystok City Hall is an organ of public administration. The city of Bialystok has 280,000 inhabitants. In result of the political transformation in Poland, the new authorities have inherited a bureaucratic and inefficient management system as well as an outdated IT. In the electoral programme for 2000 - 2004, the following objectives have been set for the City Hall: to significantly improve the quality of operations and, in particular, to reduce time of handling affairs; to provide complex and professional customer service; to improve the management of assets. In order to improve the City Hall management system, reengineering and TQM rules have been applied. The new management system has been based on new IT solutions, including extranet network and integrated database. In consequence of those changes, some significant results have been achieved, e.g., an improvement of the quality of customer service and also a possibility to monitor the City Hall operational procedures. The vital result however, was a reduction of the decision-making time by the average of 30% and the reduction of the routine affairs handling time by the average of 25%.

BACKGROUND INFORMATION ON THE PROBLEM

The case regards the issue of the IT role and its application in the improvement of the quality of operations of the Bialystok City Hall which serves one of the biggest cities in Poland as well as the regional capitals of Podlasie region. It is based on experiences gained during the development of the IT system (MIS) for public administration purposes.

The basic objectives of the presented CASE, besides training purposes, are:

- To prove that the improvement of the Public Administration management system can be achieved only through IT.
- To show that application of IT allows, for the sake of improvement of the management process, to use such advanced organisational methods as reengineering and TQM.

Most of the existing analyses relate to reengineering and TQM application in business organisations. Here, our objective is to prove that they can be successfully applied to improve Public Administration operations.

Within the Polish Public Administration, there is a three-level system of management, i.e. a voivodship level (Poland is divided into 16 voivodships), a county level and a gmina level. Bialystok

is the capital of Podlaskie voivodship. It is located in the Northeast part of the country. It has about 280 thousand inhabitants. The Bialystok City Hall is in charge of, among the others, public finances, public health care, public security, as well as public education and transport. The organisational structure of the City Hall before the organisational transformation is presented in Appendix 1. In 2001 (according to the plan), the Bialystok City Hall will have at its disposal: a revenue of 488, 676 thousand zloty while the projected expenses amount to 543 051 thousand zloty (1USD = 4,02 PLN – according to the National Bank of Poland exchange rates of April 18, 2001).

The analysis of the Bialystok City Hall management system conducted in 1998 exposed the following: the IT system in use is very much outdated, there are numerous gaps to be filled and the existing IT resources are not being used appropriately. At the time of the analysis, all the data had been traditionally gathered on paper or on the independent, not connected into a network, computers. This situation complicated the City Hall's operations and made it very difficult. IT in the form of a PC had only been used as a tool to write letters and regulations. It was also used to access very simple databases. In consequence, there was no integrated IT system to service the Bialystok City Hall. Thus, the analysis concluded that such an integrated IT system was vital in ensuring an efficient flow of data and documents between the City Hall's organisational units and it is also of utmost importance for overall citizen (customer) services. There had been no unification of data in the field of a diversified environment of information protection either. The analysis of the City Hall organisational system showed enormous diversity in the management system as such; 12 people or organisational units reported directly to the City President, while there were only two or three people reporting directly to some members of the City Board. (The literature on the subject recommends five to seven people or units as an optimum for those managerial levels).

The city inhabitants had been grossly dissatisfied with the City Hall work. Their dissatisfaction was documented by:

- numerous complaints on the length of time spent to handle various affairs;
- long queues in front of individual desks;
- critical articles in the local press on the City Hall work as well as on individual departments and the people responsible for an efficient working system;
- the fear of the party coalition in power as to the results of the coming elections (the coalition took part in the previous elections under the banner promising to improve the existing management system in the city).

SETTING THE STAGE

In 1998, the newly appointed local authorities, in order to improve the Bialystok City Hall operations, began their work to change the existing management system. The statement made by one of the party leaders, "If we do not improve the City hall operations, we may not survive until the next elections," has best illustrated the importance of the problem. On the basis of the users' needs analysis, which included the City hall authorities, clerks and Bialystok inhabitants, it had been concluded that a new management system should be based on the options provided by the IT and it should meet the following criteria:

- improvement of the City Hall organisational structure and management methods in the aspect of an integrated IT system for the entire City Hall with clearly defined hierarchy and links between all the organisational units;
- efficient flow of information in the City Hall within the newly defined organisational structure;
- diversified quality and safety of servicing the institutions in which the IT system is being installed;
- easy adaptation and an increase of service function of the IT system to meet the increasing needs and requirements;
- fulfilling open system requirements - X/Open standard - which guarantee system compatibility of the existing and future hardware and software.

In order to improve the management system and in order to develop a new IT system, the following methodology was applied:

1. *Reengineering attitude supported by TQM methods.* This attitude recommends sudden and significant changes. In order to introduce those changes, the management system is being analysed in terms of the following criteria:
 - an increase of cooperation between individual organisational units of the City Hall;
 - a reduction of intermediate stages in the task realisation process, i.e., maximum elimination of indirect links;
 - an integration of those organisational units which perform similar functions.

Thus, a typically processor-type attitude has been applied in this case. It focused on the improvement of the management system process. In order to significantly improve the quality of the citizen service, the reengineering method was supplemented with the rules applied in TQM method. The application of TQM methods results from the objective to ensure that the inhabitants receive well-justified decisions. It aimed at the reduction of the number of appeals.

2. *Integration of computer systems with the IT methods.*

Before the choice was made, several variants of IT solutions had been considered. The basic variants were as follows:

- Improvement of the existing computer system, i.e., an extension and modernisation of the existing PCs and linking local databases through a Local Area Network.
- Construction of extranet-type network connected to the Internet and winding-up local databases in favour of one major database.

The analysis of cost and results of individual variants was extremely difficult, mainly due to problems with estimating the results of the IT application in public administration. It was also difficult because of the existing regulations regarding cost registration which are still not adjusted to the management accounting system requirements. On the basis of the existing and available data and estimates of both cost and results, it has been concluded that the first solution requires about 60% less investment resources than the second one. However, the conducted SWAT analysis showed clearly that the second solution offered more prospects for the future and could ensure more feasible realisation of the electoral postulates.

This attitude was supported by the recommendation to create, subject to available financial resources, data warehouses. A data warehouse is treated as a complete repository of data created on the basis of the transaction systems already in existence in the City Hall and on the basis of the outside IT systems such as banks, statistical office and public records. The choice of solutions, which enable to benefit from the data warehouse, is justified by the fact that it ensures an immediate access to information required by the user.

3. *Creation of the Function Centres within the City Hall organisational structures.* This attitude is similar to the methods applied in business organisations where Profit Centres have been created. Mintzberg, who talks about creating of the so-called Hubs, also recommends a similar attitude.

CASE DESCRIPTION

The Procedure of Introducing Changes (Basic Phases)

The changes which aim at the improvement of the Bialystok City Hall management system have been developed in the following phases:

1. Defining the problem
2. Analysing information needs of the City Hall
3. A project of the new management system for the Bialystok City Hall
4. A project of the IT system to support the improved management system
5. Implementing changes and change evaluation

Description of the Individual Phases of the Procedure

The issue of the improvement of the Bialystok City Hall management system presented in “Setting the stage” was determined on the basis of cooperation of the project designers and the City Hall employees.

The analysis of the City Hall’s IT needs was an iterative process prepared on the basis of the following sets of documents:

1. Organisational documentation prepared by the Bialystok City Hall employees. The documentation covered, among the others, analysis of the character of acts and resolutions and also the City Hall regulations.
2. Reports prepared by individual organisational units of the City Hall on the links of the specific organisational unit with other units of the City Hall and also on the citizen service system. The objective of the prepared materials was to identify and evaluate the level and strength of connections between the City Hall individual organisational units. These materials served as the basis of the developed data flow diagrams–DFD. Interviews and discussions supported written materials with the City Hall managers and the representatives of the individual City Hall units.

The analysis of needs, as previously stated, was conducted in iterative way. In the first stage, the working hypothesis on information needs had been developed and project tasks had been determined on the basis of source materials delivered by the City Hall. Then, a number of interviews had been conducted and number of discussions with the appropriate representatives of the organisational units attended. The data required to answer two vital questions was obtained:

- What type of information do you pass to other City Hall units?
- What type of information do you need to obtain, from other City Hall organisational units, in order to operate properly?

On the basis of this data, taking into consideration all the materials gathered previously, the appropriate conceptual models regarding individual operating procedures of the City Hall have been developed.

The Project of the New Management System for the Białystok City Hall

The conducted analysis served as the basis to suggest a new organisational structure of the City Hall based on the functional centres. On the basis of the conducted analysis and the applied methodology, the project of an improved City Hall organisation takes the following shape:

- Centre for Securing the City Hall operations
- Centre for Finance and Administration
- Centre for Social Affairs
- Centre for Social Infrastructure
- Centre for Technical Infrastructure and its Management
- Security Centre

Two other centres were proposed to be created in the future (2002 - 2004):

- Information Centre
- Centre for the City Development Strategy

I would like to stress that social problems are the main concern of two Centres, namely the Centre for Social Affairs and the Centre for Social Infrastructure. It is a direct result of the fact that social issues are treated very seriously in Białystok and also that the handling of current social problems is not connected to the issue of managing resources allocated to this field. The list of organisational units within the new organisational structure is presented in Appendix 2. Appendix 3 presents mutual connections of the Centres. The new organisational structure approved by the appropriate City authorities has the following advantages:

- Concentration by the similarity of the performed functions allows close linking of the appropriate organisation. In consequence, it allowed development of an overall policy of the City Hall authorities and also ensured much quicker and more efficient citizen and organisation services.
- Even allocation of tasks which ensures more effective monitoring of the citizen service system than the one existing so far.

Within the applied methodology, the changes are to be introduced constantly and the improvement of the management system is to be a constant objective. Thus, the recommendations for the future directions (for the period of 2002 - 2004) in the Białystok City Hall organisational improvement have now been determined. These include:

- In order to meet the present and future city Hall information needs, it would be advisable to create a special organisational unit in charge of the overall introduction of the information technology in the Białystok City Hall. I would suggest creating the Centre for Securing the City Hall Operations—a Department of the City Hall Information Services which should later transform into the City Hall Information Centre in charge of the overall information flow within the City Hall and in the field of the City Hall and a citizen, as well as in the field of the City Hall and the Outside Units including the Council and Gmina organisations. Improving effectiveness of the local authorities will require much stronger assistance than the one provided at present.
- I also suggest creating a Centre for the City Development Strategy in the future. This suggestion results from the need to separate operation and tactical management issues from the strategic issues. The Centre will focus on the future model of the City of Białystok through development of overall forecast connected to such issues as public transport, education, health care etc.

The new organisational structure is a very modest one. This is to be considered an advantage as no additional organisational units are being created except for those absolutely necessary in order to fulfil tasks undertaken by the City Hall.

A Project of the IT System to Support the Improved Management System

On the basis of the new organisation, the IT solutions suggested will support the new management system. The developed information system takes into account a new functional division of organisational units. It was based on the functional modularity of the system: each of the seven centres has been allocated an information system module marked with the same number. It means that such a module creates a unified group of functions supported by the computer processing and electronic exchange of data (EDI). The life span of the newly created IT system, due to fast ageing of the IT, is about eight years.

The basic assumption in creating the system was an integration of data at the logical level. It ensures access to the unified data in all the utilised applications. As a result, the requirement of common hardware and software platform had to be fulfilled even in the environment of diversified data safety. The system also allows for a certain leeway for system modification and further development in line with new needs and requirements arising during the use of the IT system.

The basic development tool for the analysis of the data flow diagrams in the system at the level of the introduced centres are DFDs (Data Flow Diagrams) developed in the Upper CASE IT tools style. These diagrams, presented in Appendix 4, made it possible to create a unified IT system.

Implementing Changes and Changes Evaluation

The improvement of the existing City Hall management system along with the supporting IT system has been implemented in phases. At present, the basic IT modules have been implemented. These modules service individual centres which are linked together through a MAN-type computer network called BIMAN. This network is connected to the Internet. There are extranet-type networks operating in the City Hall. The Steering Committee, headed by the City President's Attorney, is monitoring the implementation and development of the IT system in the City Hall. It can be assumed

that the system, in its basic shape has already been implemented and from mid-2000 it has began operating. It is currently being developed and modified in accordance with the re-engineering rules.

The vital rule to be followed within the implemented IT system was the requirement of a common hardware and software platform where the software project adjusted to the proposed organisational structure and data flow must precede the computer hardware solutions regarding servers, workstations, structural wiring, etc.

Problems Facing the Organisation—Remarks on Project Realisation—Introducing Organisational Changes Within the City Hall Organisation and Development of the IT System

Realisation of the project required close co-operation of many project teams. It is very difficult to determine the return on investment period, i.e. ROI. In the public administration organisations, the most important results are those visible on the outside, i.e., shortening of the customer servicing time. Those results have been estimated on the basis of the specially designed questionnaires. There are no such categories as, for example, profit or share value, in the organisation under analysis. Those categories exist only in business organisations.

The investment outlays for the IT will be compensated by shortened decision-making time, easiness of monitoring the activities and fast creation of work teams for complex problem solving with parallel lack of arguments on competence and authority.

The City Hall Management, after the first year of the system utilisation, listed the following results as the most significant:

- shortening of decision making time regarding the citizen issues, such as for example: issuing a driving licence or a passport, probate matters, permits to build houses (the estimated time for consideration of those issues was shortened by up to 30%),
- ease in monitoring the individual employee and team activities which resulted in the reduction of claims by 20% in comparison with the previous period;
- fast creation of work teams for complex problem solving with parallel reduction of significant arguments on competence and authority;

It is believed that the success of project implementation had also depended on:

- training of the IT system users which ensured correct usage;
- work of the Steering Committee, which headed the project and directly monitored the works in progress at individual Centres and Departments (the role of a Steering Committee was played by the Computer Technology Department of the Białystok City Hall).

The British experts from Cranfield School of Management estimated that, in the first half of the 1990s, more than 70% of the attempts to re-organise institutions by re-engineering in Great Britain ended in failure. Why then has the project presented by us been a success? I think, it results from the fact that our project designers cooperated closely with the City Hall employees. However, we shall be able to talk about full success only when the IT project is fully implemented and tested. We can talk about such full implementation and testing not sooner than 2002 – 2004.

FURTHER READING

Andrews, D.C. (1995). *Enterprise Reengineering, The Electronic College of Process Innovation*, <http://www.c3i.osd.mil/bpr/>

Caudle, S.L.. (1995). *Reengineering for Results: Key to Success from Government Experience*. Nat'l Academy of Public Administration, Wash D.C.

Carr, D.K., Johansson, H.J. (1995). *Best Practices in Reengineering*. N.Y. New York, McGraw-Hill.

Davenport, T.H. (1993). *Process Innovation, Reengineering Work through Information Technology*. Boston, Massachusetts, Harvard Business School Press.

Hammer, M., Champy, J. (1993). *Reengineering the Corporation, A Manifesto for Business*

- Revolution*. New York, NY: HarperBusiness.
- Laudon, K.C., Laudon, J.P. (1999). *Management Information Systems, Organization & Technology in the Network Enterprise*. New Jersey, Prentice Hall.
- Laudon, K.C., Laudon, J.P. (2000-20001). *Essential of management Information Systems*, New Jersey, Prentice Hall.
- ProSci study report, (1999). *Future Role of IT in Reengineering*, <http://www.prosci.com/IT99.htm>
- Senn, A. J.(1995). *Information Technology in Business- Principles , Practices, and Opportunities*. New Jersey, Prentice Hall.
- Stair, R.M. (1992). *Principles of Information Systems, A Managerial Approach*. Boston. Boyd&Fraser Publishing Company.

REFERENCES

- Grochowski L., Kisielnicki J. (1999). Reengineering in upgrading of public administration: Modelling and Design. *International Journal of Services Technology and Management*, 1(4), 331-339
- Hammer, M. and J. Champy (1993), *Reengineering the corporation, A Manifesto for Business Revolution*, New York: Harper Business;
- Hammer, M. and S.A. Staton (1995). *The Reengineering Revolution*, Harper Revolution;
- J. Kisielnicki, (1999), Reengineering: problems with theory and practical application, *BIS'99 in: 3rd international Conference on Business Information Systems*, Poznan, Poland, Springer – Verlag London Berlin Heidelberg p. 191-202.
- Kisielnicki J and Sroka H. (1999). *Systemy Informacyjne Biznesu* (Business Information Systems), Placet, Warszawa .
- Mintzberg H., Van der Heyden L. (1999). Organigraphs: Drawing How Companies Really Work, *Harvard Business Review*, Sept.-Oct, 87-94.
- Yourdon, E. (1996), *Współczesna analiza strukturalna* (Modern structured analysis), WNT, Warszawa.

APPENDIX I

Previous organisational structure of the City Hall:

The City President:

City Council Office (functionally dependant–in the field of human resources it reports to the President, but substantially it reports to the President of the City Council), Spokesman, the Team of Legal Advisors, Department of Geodesy Land Management and Agriculture, Municipal Inspectorate of Civil Defence.

I Vice President

Department of Physical Education, Department of Health, Department of Culture, Registry Office.

II Vice President

Department of Architecture, Spatial Management and Environment Protection, Department of Communal Management, Municipal Guard, Department of Computer Technology.

III Vice President

Department of Social and Economic Policy, Department of Constructions and Investment, Department of Public Transport.

1st Member of the Board

Department of Housing Policy, the Board of Communal Property

2nd Member of the Board

City Board Attorney for Public Commission, Municipal Centre for Social Assistance, Daily Social Assistance House, Social Assistance House.

City Secretary

Organisational Department, Administrative and Economic Department, Department for Citizen Affairs.

City Treasurer

Finance Department, Department of Books and Accounts.

APPENDIX II

Present organisational structure of the City Hall:

- **Centre for Securing the City Hall operations**
City Council Office, Organisational Department, City Hall Information Department (after transformation of the Department of Computer Technology), Team of Legal Advisors, Spokesman.
- **Financial and Administrative Centre**
Department of Finance, Department of Books and Accounts, Administrative and Economic Department, City Board Attorney for Public Commission.
- **Centre for Social Affairs**
Department of Citizen Affairs, Department of Social and Economic Policy, Registry Office.
- **Centre for Social Infrastructure**
Department of Culture, Department of Physical Education, Department of Health to which the following would report: Municipal Centre for Social Assistance, Daily Social Assistance House, Social Assistance House.
- **Centre for Technical Infrastructure and its Management**
Department of Architecture, Spatial management and Environment Protection, Department of Geodesy Land Management and Agriculture, Department of Constructions and Investment, the Board of Communal Property, Department of Public Transport, Department of Housing Policy.
- **Security Centre**
Municipal Inspectorate of Civil Defence, Municipal Guard.

APPENDIX III

Information Exchange based on Functional Centres at Municipal Offices

BIOGRAPHICAL SKETCH

Jerzy Kisielnicki is a Professor and the Head of the Department of Management Information Systems at the Faculty of Management of Warsaw University. He specialises in organisation and management and, in particular, in: systems analysis, management information systems (IT), process innovation (re-engineering), strategic management, transition systems organisation and management in market economy. He is the author of numerous projects developed for the government and various companies. He is also a member of the Institute for Operations Research and the Management Science TIMS-ORSA and IRMA (representative for Poland).