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INFORMATION SYSTEM FOR MANAGING LOCAL GORVERNMENT ENTITIES

Introduction

The aim of the article is to present – on the basis of the practical experience of the Municipalities of Krakow and Poznań – an example of the implementation of an information system that supports the management of a local government entity. The system in question was developed within the framework of the Krakow's and Poznań's project referred to as *Public services quality monitoring as an element of integrated management system of local government entities*[1].

The development analyses of information systems that are applied in urban management make it possible to determine the main elements of such systems such as the data and information collected for the needs of:

a) Strategic management, public consultations included,
b) On-going management of public services provision,
c) Finance management (planning, budgeting, reporting),
d) Process management as regards the compliance to the ISO standards (the aim of the development and implementation of the procedures is to build an integrated management system),
e) Owner's supervision of municipal companies and entities,
f) Internal audit planning and performance,
g) Managerial control,
h) Management of investment planning and completion.

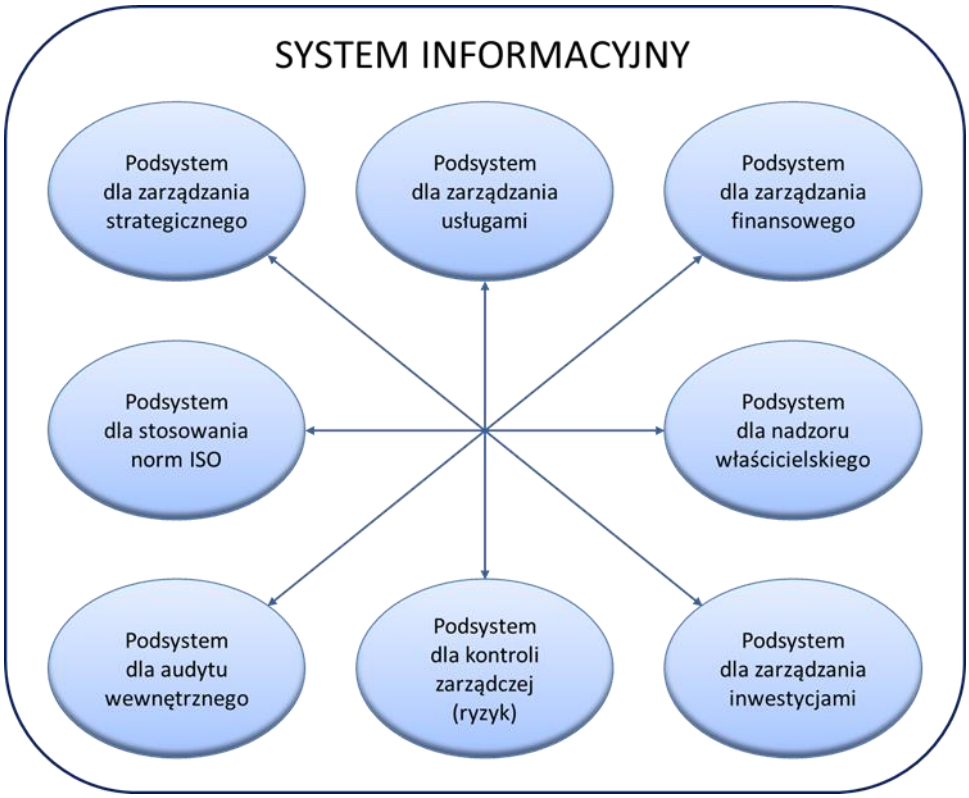
The above elements of an information system are usually developed simultaneously by various Town Hall units and organizational entities. They are built with the use of different methods and at different moments. For example, in the case of the elements listed above, several assessment indexes are determined as well as the definitions of concepts and sample reports,

[1] See: Piotr Wierzchosławski, Description of the final product of the innovative testing project: *Public services quality monitoring as an element of integrated management system of local government entities*, Kraków – Poznań March 2015, https://www.bip.krakow.pl/zalaczniki/dokumenty/n/133453/karta

which makes it difficult to achieve system coherence and which decreases the effectiveness of the systems.

Thus, it is indispensable to apply a concept of a management information system since such a concept includes – among other things – all the elements given above (from a) to h)). This will help avoid operations that disintegrate the information system by adding elements that are not integrated with the other ones and which include the development of data that can be applied by other elements of the city information system. Consequently, the effectiveness of the system development can be significantly increased and the results in the form of synthetic reports that are necessary in the decision making processes can be obtained more promptly. It must be emphasized that it is a common practice that similar data and reports are processed simultaneously in various units so the integration of the information system leads to the decrease of workload and results in the development of an information system that improves the efficiency of information delivery to decision-makers.

The development of a city information system separately by particular organizational units is more expensive and less effective than constructing it by an interdisciplinary team that guarantees the integration and optimization of the system elements. Below, a schematic diagram presents specific elements that have to be practically integrated in order to improve an information system for city management.



INFORMATION SYSTEM

Strategic management subsystem	Service management subsystem	Finance management subsystem
ISO compliance subsystem		Owner supervision subsystem
Internal audit subsystem	Managerial (risk) control subsystem	

Source: Author's research

1. Descrption of the project product

The information system developed by the Municipality of Kraków and the City of Poznań (later referred to as the System):

1. improves the effectiveness of public services rendered by the commune;
2. facilitates decision-making processes concerning the commune thanks to the access to information;
3. constitutes a set of coherent elements mainly due to the integration of:
    a. strategic management,
    b. finance management,
    c. public services quality management,
    d. risk management,
    e. the principles of internal audit.

In other words, the System is a set of methods and tools that are applied to rationalize the management of a local government entity. It is based on social participation and the monitoring of effects that are presented in the form of the quality indexes of inhabitant's life and public services.[2]

[2] See: Piotr Wierzchosławski, Description of the final product of the innovative testing project: *Public services quality monitoring as an element of integrated management system of local government entities*, p.3, https://www.bip.krakow.pl/zalaczniki/dokumenty/n/133453/karta

As a result of the work on the System the following elements were determined:

1.	**Dziedziny** zarządzania (DZ) i **stanowiska** odpowiedzialne za DZ
2.	**Strategia** i programy strategiczne (PS), w tym **cele** strategiczne
3.	Wskaźniki **jakości życia** (JŻ)
4.	Wskaźniki **jakości usług publicznych** (JUP) w podziale na DZ lub/i na PS
5.	Zasady formułowania i planowania **zadań budżetowych** (B - bieżących i P - projektowych)
6.	Zasady rozwoju **ewidencji** i tworzenia **hurtowni danych**
7.	Zasady monitorowania i oceny **wykonania zadań** (wskaźniki, kamienie milowe)
8.	Zasady **raportowania**, czyli przetwarzania ww. danych w łatwo dostępne i przydatne **informacje** do podejmowania decyzji
9.	Zasady planowania **audytu** i kontroli oraz nadzoru nad wykonaniem zaleceń
10.	Zasady **zarządzania ryzykami** operacyjnymi, strategicznymi oraz bezpieczeństwa informacji
11.	STRADOM - narzędzie **informatyczne**

1. **Management** fields (MF) and **positions** responsible for MF
2. Strategy and strategic programs (SP), including strategic **targets**
3. **Life quality** indexes (LQ)
4. **Public services quality** indexes (PSQ) with the breakdown for MF or/and SP
5. Principles of the formulation and planning **of budget tasks** (C – current and P – project tasks)
6. Development principles of **filing** and construction of **data warehouse**
7. Principles of monitoring and assessment of **task completion** (indexes, milestones)
8. Principles of **reporting**, i.e. of processing the above data into **information** that is easily available and useful in decision-making
9. Principles of planning the **audit**, the control and supervision of the recommendation achievement
10. Principles of operational, strategic and information security **risks management**
11. STRADOM – an **IT** instrument

Source: Author's research

The main target of the information system that was developed by Kraków and Poznań is to facilitate the processing of numerous and difficult to access data that are generated in a municipality office and its units into clear sets of information that will help decision-makers make right and effective decisions based on substantive grounds. The information system in question constitutes a set of coherent documents that determine the rules as regards **organization, filing, planning, control, IT and motivation.**

The **organizational** documents of the System include responsibility centers (the so called municipality management fields) and positions that are responsible for the development of an IT system for particular fields and for the generation of field reports. The documents that include the **filing** principles concern the condition for filing financial and non-financial data that are necessary to calculate the indexes under analysis. The documents that include the **planning and control** principles are used to determine detailed methods of processing the data into useful information to be presented to the decision-makers in the form of synthetic reports. The documents that describe **IT** tools present principles concerning their application in an efficient generation of the indispensable information. The documents presenting the motivation principles concern the approved by the local government entity methods of matching the indexes (work effects) with the elements that motivate a further increase of the quality of services. A mutual **coherence** of the above documents is necessary for the System to be implemented.

For an information system to function correctly, it is necessary that coherence is maintained in the following areas:

1) Organization rules (e.g. the appointment of coordinators of particular fields who develop indexes, data and analyses necessary to diagnose the field; prepare field analyses; provide expert opinions for top management and offer consultancy when making decisions that concern strategies and policies; suggest activities adequate to the targets; administer the data that regard the field they are in charge of; suggest public service systematics in their fields and add it to the IT system after receiving the approval of the adequate manager; suggest and reach agreement as regards the indexes in analysis),
2) Filing rules that facilitate the acquisition of a more significant amount of financial and non-financial data resources to calculate the necessary indexes and to develop the indispensable reports,
3) Planning and control rules whose application enables the provision of necessary information to decision-makers,
4) Functioning rules of the integrated IT tools that ensure efficient operation of the System,
5) Motivation rules that result in a positive impact of the generated information on work quality.

The diagram below presents relationships between particular elements of the System developed by Kraków and Poznań

Consultations > Strategy> Strategic programs

Strategic targets Operational targets

Management fields > Filed coordinators

Public services > Field indexes

Budget tasks > Task indexes

Current tasks (C) Project tasks (P) Investment tasks (P)

a) Task monitoring rules
b) Task filing rules
c) Planning rules (LFF)
d) Reporting rules (including task risk, programs, targets)

Source: Author's research

In order to develop an information system for the management of a municipality, it is necessary to reach a stage when the documents concerning the strategy and strategic programs (being the result of social consultations) include **clear objectives and measures of their achievement**. It is also indispensable to develop a set of **fields** that is adequate to a particular municipality and to appoint their coordinators. Then, a list of **public services** should be

assigned to particular fields and appropriate indexes of target achievement should be defined. The next stage consists in the determination of tasks and task indexes for the services. Moreover, it is necessary to define the monitoring **rules** of target achievement, the rules of task filing, as well as the planning (including the development of municipality long-term financial forecasts) and reporting rules (concerning the risks that are involved with particular tasks, the completion of the approved programs and the achievement of the targets)

A list of fields within which a local government (a municipality) may operate is given below. Such a list can be modified with the consideration of the specific features of the municipality which is implementing the System.

1.	Przestrzeń i architektura
2.	Transport
3.	Gospodarka komunalna
4.	Ochrona i kształtowanie środowiska
5.	Oświata i wychowanie
6.	Bezpieczeństwo publiczne
7.	Mieszkalnictwo
8.	Kultura i ochrona dziedzictwa narodowego
9.	Sport i rekreacja
10.	Zdrowie
11.	Pomoc i integracja społeczna
12.	Przedsiębiorczość
13.	Społeczeństwo obywatelskie
14.	Turystyka i promocja
15.	Nauka i technologie informatyczne

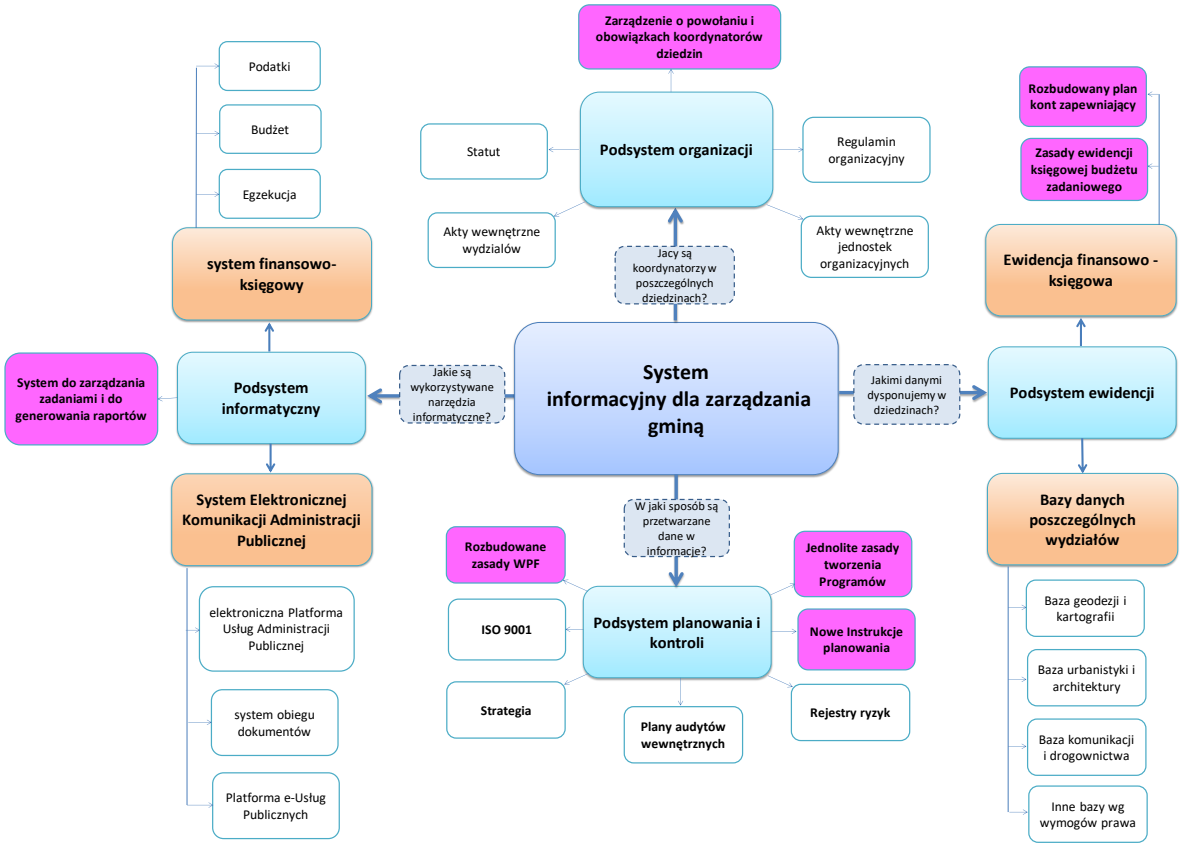
1) Space and architecture
2) Transport
3) Municipal services
4) Environmental protection and development
5) Education and learning
6) Public security
7) Housing
8) Culture and protection of national heritage
9) Sports and recreation
10) Health
11) Social help and integration
12) Entrepreneurship
13) Civic society
14) Tourism and promotion

15) Science and IT

2. Map of the information system

The practical experience of the POLINVEST company proves that in the course of implementing the System it is useful to develop a map of the hitherto municipality information system as well as a target map of the System to be implemented. The maps should be developed on the basis of the analysis of organizational structures and codes and interviews with the municipality representatives.

An **exemplary map** of a municipality information system is given below. It presents the range of documents that are included in four subsystems (without the motivation subsystem). The pink elements - on the basis of analyses - were defined as the ones that should be added to the existing elements of the System. Each of the subsystems answers the particular questions that are included in the map.



Tłumaczenie wg 6 kolumn (po kolei od lewej do prawej)

1. Task management and report development system
2. Taxes, Budget, Execution, Finance and accounting system, IT subsystem, SEKAP (Public Administration e-Communication System), ePUAP (electronic platform of public administration services), Document flow system, PeUP (electronic platform of public services)
3. Statute, Department internal regulations, What IT tools are applied?, extended LFF rules, ISO 9001, Strategy,
4. Regulation on the appointment and responsibilities of field coordinators, organization subsystem, What are the coordinators of particular fields? Niejasne sformułowanie!! Jacy są?? Dobrzy/źli – to wtedy What…… like?), Information System for Municipality Management , How are data processed into information?, Planning and control subsystem, Internal audit plans,
5. Organizational rules, Internal regulations of organizational units, What data are available in the fields, Standard rules of program generation, New planning instructions, Risk registers
6. Expanded account plan zapewniający ???, Task budget accounting rules, Finance and accounting records, Filing subsystem, Databases of particular units, Geodesy and cartography, Urban planning and architecture, Road system and transport, Other databases as required by law.

Source: Author's research

In order to develop reports on the completion level of the approved municipality budget expenses it is usually necessary to implement changes in the account plans and particularly to expand analytical accounts. Moreover, the application of an adequate IT tool facilitates current monitoring the of the expenditure plan:

a) by budget classification,
b) by tasks.

It is useful in the management of municipality task completion to expand the budget files by a task scheme. This idea is expressed in the Municipality of Krakow document which is an element of the System and is referred to as *General principles of finance and accounting records adjusted to a task budget model*. According to the document, the implementation of task budgeting should be performed on the basis of a division of tasks by a special logical structure. On the basis of the solutions applied by the Municipality of Kraków, the description methodology of municipality tasks should be as follows;

1) First of all, it is recommended that the terms of municipality's own tasks and the mandated ones should be differentiated.
2) Then, it should be taken into consideration that every budget task should have its unique denotation and name in the information system and there should be a possibility to continue it and compare in the subsequent budget years. The denotation should consist of the symbol of the unit responsible for the task and the order number of the task performed by that unit.
3) In the case of budget tasks in which it is justified to assign particular operations (i.e. the components of the task), it is necessary to denote them by an appropriate extension of the task denotation.
4) In the cases when sub-operations are generated, the authors of the System suggest the application of the analytics that was developed for particular items of budget classification.
5) Finally, it suggested that the symbol assigned to a task is combined with the particular detailed budget expense category.

The implementation of the above rules enables a more effective planning and monitoring of expenses as regards the objectives. The application of task budgeting makes it also possible to implement motivational mechanisms, e.g. on the basis of the efficiency monitoring of operations that aim at cutting unjustified costs that are performed by a particular organizational unit.

However, one should also bear in mind that a methodologically correct construction of a budget with a task breakdown depends on correct definitions of budget tasks. Here the standards are helpful that are presented in the document which was developed in Krakow and is referred to as *General rules of budget task development*. The document points at the following elements that have to be taken into consideration when constructing the tasks:

1) Before planning a task for the next budget year, data and information must be collected that are important for the plan. They should result from:
   a) the strategy and long-term programs,
   b) the long-term financial forecast,
   c) the current values of contextual, strategic and task indexes, etc.,
   d) the need analysis and management's guidelines as regards the priorities,
   e) the monitoring results of tasks, risk analysis as well as the conclusions from the audits.
2) It is a must that a precise objective is defined for each of the budget tasks.

   When defining the objective, the following elements should be determined:

   a) an overall presentation of the objective – it should present the change and the benefit (which may be connected with the provision of a public service),

b) operations to be performed (given in general or with a presentation of their material scope)
c) particular benefits in the form of direct effects (products) presented in a measurable way (in line with the SMART rule).

3) Setting the target should lead to the determination of indexes and measures of the task that will enable the assessment of specific results of the task achievement.
4) After the target and indexes are defined, the material scope of the task should be planned. Furthemore, it should be verified whether the expected specific results (products) are achievable with the available (and initially determined) means and resources. The structure of the material- financial schedule of the budget task depends on its type and may consist in the formulation of:

a) a complete current task - the following operations should be conducted in the course of planning: a list of the subsequent operations that are necessary for the task accomplishment, a definition of crucial products, the calculation of the workload (i.e. the number of working hours/days necessary to complete particular operations) necessary to complete the task by the municipality resources, the calculation of the costs expected for particular task operations based on the working hour cost and the number of hours required or the prices of goods and services (in the cases when particular operations are to be performed by a third party), the assignment of budget classification symbols to adequate expenses.
b) a simplified current task - the task plan is developed without the specification of particular operations. Each task has its resources, i.e. the number of job posts to perform the task and the accepted expenditure limits with adequate symbols of budget classification.
c) a project task - in the case of an investment task (or other project task) the financial plan should include stages (in some cases, one stage) to which schedules or the so called milestones (approvals and checkpoints) should be assigned.

5) Every budget task should be assigned to a management field and an adequate strategic target. Numerous tasks involve public services and that relation should be denoted in the System. The task (or its part) can also belong to a program that was approved by the city as the strategic plan.
6) For each of the task the rules and frequency of risk monitoring should be formulated.

Conclusions

The following conclusions can be drawn from the practical experience in developing information systems to manage municipalities:

1) Particular elements of information systems are usually developed simultaneously by various organizational units of town halls and by various organizational entities. They are constructed in different time periods and with the application of different methods which hinders the achievement of their coherence and decreases the effectiveness of their functioning.
2) An information system should constitute a set of coherent documents that define the rules of organization, filing, planning and control, IT and motivation.
3) The organizational documents of the system should include responsibility centers (the so called city management fields) and positions that are responsible for the development of the information system for particular fields and for the generation of field reports.
4) In order to develop an information system for municipality management it is necessary to:
   a) reach the point when the documents concerning the municipality strategy and its strategic programs (which are developed after social consultations) include clear targets and measures of their achievement,
   b) develop a set of fields and appoint coordinators that are adequate to the specifics of the municipality,
   c) determine a list of public services and appropriate target achievement indexes for each field,
   d) determine tasks and task indexes for the services,
   e) define the rules of task achievement monitoring, evidence, planning (including e.g. municipality long-term financial forecasts) and reporting (including risks related to particular tasks, the completion of the approved programs and the achievement of the targets).
5) When developing information systems, it is useful - as the practical experience of the POLINVEST company shows – to prepare map of the system that was used before and to develop a target map of the System to be implemented.

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