

IDENTIFICATION OF THE MAIN PROCESSES IN NEW TOWNS DEVELOPMENT COMPANY IN IRAN AND PROVISION OF THE MODEL OF IDEAL PROCESSES FOR OPTIMAL MANAGEMENT OF RESOURCES AND ACTIONS

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ABSTRACT

The processes don't equally play a role in an organization and some of them play more important role than another group. In the research project on identifying the main processes in New Towns Development Company and its 17 subsidiaries, which was performed by establishing expert teams in place and it was lasted for a year, identification of status quo and main process, extraction of information items and needs assessment with the aim of improvement of goals were examined to timely provide effective services to people, to decide accurately and to manage the sources and actions optimally. It was found that these processes can be analyzed with GIS software and the items of comprehensive spatial information database and location-based processes are the inputs and outputs of these processes. In this project, mentioned processes are explained with the use of UML diagrams and related scenarios and analyzed in a way where the analyses of GIS are clear. The most important result of this project is that after identifying the status quo, mapping the processes, revising the processes and applying revised processes, the possibility of providing conceptual, logical and physical data models has been created that together with manufacturing standards and guidelines, information preparation and editing, has become a successful introduction of two other projects of GIS data preparation and design and implementation of WEBGIS software.

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1. INTRODUCTION

The processes of organization can create added value by transforming the inputs to outputs and the effectiveness of any organization is limited to the effectiveness of its processes. Process-orientation means understanding this reality that each activity is worthwhile only when it helps a process to complete and this process also meets the need of a larger process in the network and creates new value (Rahmanzadeh, 2003).

In order to understand the organization's required processes and activities and identify proper and improper items using special charts, all activities of organization were detected and passed from the screening process that one can see each of them are placed in which loops or necessary steps of actually available and required processes of realization of organization's goals. Those activities that have no impact on the creation of added value for organization or a certain step, are passed from screening pores and are not considered as the certain activities of the process (Rahmanzadeh, 2003).

Undoubtedly, accurate and timely information is considered as an important pillar of sustainable development of the new towns. In this respect, identifying, correcting and revising processes in the New Towns Development Company were conducted with the following objectives:

- To provide timely and effective services to people
- Precise and effective decisions and optimal management of resources and actions for senior managers
- To facilitate and expedite the work
- To reduce public spending
- To increase client satisfaction
- To create coordination between governmental agencies

In this study, we use Unit Modelling Language (UML) than can be used to model the systems and make them readable. The processes will be explained using UML diagrams and related scenarios. One of these diagrams is Use Case Diagrams. In this diagram, the interaction between the user and the system is considered, which means that in this diagram, the activities appear in a level of detail which expectations of the system's users are at the same level. In fact, for final modelling, the first step is to express the required performances of the system in

the view of the users. Three-visual shape (Use Case, Actor, communication) have a fundamental role in modeling.

In this study, first, the concepts are referred and then, the methodology will be explained and ideal extracted processes will be provided.

2. LITERATURE REVIEW

Modelling: it divides a model, a complex program or a massive system into simple component that they can be studied individually and focusing on smaller parts of a system will be easier.

Use case diagram: it is an input point of a system, and the problem is analyzed in it and then provided to designers and programmers. User case diagram is simple but it shows a general review of what the system is doing, so, it will be understandable for the users.

Goals of preparing Use Cases are:

1. Looking at the Use Case, one can understand what actions should be done by the system.
2. To determine the scope of developing system
3. A means for testing the system
4. The basis for providing user guide

Use Case: Use Cases represent those activities that are done in the system and can meet the need of one or more users. In fact, overall system performance is split to Use Cases. Each Use Case is displayed by an ellipse.

Actor: each Use Case provides services to a person, organization of software or a person, organization or software provides services to it to do a work. The role of this person, organization or software is shown with the help of Actor (or user). Each Actor is displayed by a dummy.

Communication: the relationship between Use Cases with each other or between Use Cases and actors are explained by directed arrow. In cases where it is necessary, the relationship between two sides of an arrow is noted on it.

Different forms of communications are shown in figures1 to 4:

Figure1. Actor1 wants a service from Use Case1 (Actor1 is the activator of Use Case1)

Figure2. Use Case1 wants a service from Actor1 (Use Case1 is the activator of Actor1)

Figure3. The communication of "include"

In figure3, the communication of “include” is established, meaning that Use Case2 is within Use Case 1. In other words, the activity of Use Case 1 includes the activity of Use Case2.

In figure 4, the communication of “uses” is established, meaning that Use Case2 uses an activity of Use Case1.

Figure4. The communication of “uses”

Geographic Information Systems (GIS): GIS (Geographic Information System) is a system consisting of computers, software and methods and designed models to support, receive, manage, analyze and display data of land used in sophisticated locating planning and management problems. GIS is a bed to store, maintain, manage and analyze geographic information and it is designed to work simultaneously with that data that has spatial and descriptive dependence. The use of this system is possible in all fields which are generally associated with land and map and spatial data and spatial analysis. The system can be used as a modern tool and technology.

3. METHODOLOGY

To identify the status quo of the processes and design the model, an expert team is formed by the individuals with different and related specialists. This team began its work according to figure5 in addition to attending at headquarter of New Towns Development company and 17 subsidiaries.

Figure5. The steps of identifying the status quo of processes and designing the model

In the meetings of GIS working group of new towns held by the experts of consulting companies of different units of New Town Development Company, the workflow processes and their communication with other units were identified and documented.

The processes were explained by the use of UML diagrams and related scenarios that one of these diagrams is Use Case Diagram. Also, in this project, there is a scenario of workflow for each Use Case that explains the details of the operation of that Use Case.

Table1. The details of the operation of each Use Case

0- arrangement
1- title
2-goal
3- The former condition (precondition)

Late conditions (the condition): sometimes to do (to finish) a Use Case, a condition or some conditions are required that without its/their authentication, Use Case operation is not performed (to be not completed). These conditions are expressed in terms of late conditions.

Analyses of GIS: they are those GIS analyses used in the Use Case.

Edited information items: these are fields or information layers which are used in this Use Case. Entity is written as usual and the fields are written in parentheses and in front of the related entity.

Displayable information items: these are fields or information layers which are used in this Use Case. Entity is written as usual and the fields are written in parentheses and in front of the related entity.

Proposed thematic maps: some thematic maps, which are proper to be used in order to achieve the goals of Use Case, are proposed with title, constructor layers and tables and also their constructor information items. Of course, as is clear, only a very small portion of the numerous created thematic maps have been proposed and this does not limit the user to use mentioned thematic maps.

Proposed location-based reports and queries: some reports and queries, which are proper to be used in order to achieve the goals of Use Case, are proposed with title, constructor layers and tables and also their constructor information items. Of course, as is clear, only a very small portion of the numerous created queries have been proposed and this does not limit the user to use mentioned reports and queries.

Description: If the Use Case needs description, it will be written here.

After full identification of existing processes, 34 main processes of New Towns Development Company were identified in 8 fields as follows:

1. Assignment management
 - The process of assignment (sale)
 - The process of renaming the ownership
 - The process of issuing the replica contact
 - The process of reforming the contact
2. Property Management
 - The process of document transfer
 - The process of mortgaging
 - The process of separation
 - The process of integration

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- The process of reforming the limit
 - The process of land acquisition
 - The process of land protection
 - The process land information update
3. Rights management
 - The process of claims (civil or criminal)
 4. Technical and executive management
 - The process of selecting the contactor
 - The process of payment (prepaid / statements)
 - The process of delivery (temporary / permanent)
 - The process of monitoring the operations
 5. Urban development and agriculture management
 - The process of buying consulting services
 - The process of payment to consultant
 - The process of monitoring the construction of the city (supervision-Article 35)
 - Statistics, Information & Planning management
 - The process of developing the budget document
 - The process of preparing and sending the reports of executive and study Projects
 - The process of preparing and sending the of reports of the physical progress of infrastructure, superstructure and partnerships
 6. Investment process
 - The process of selecting the investor partner by negotiating
 - The process of preparing control project report
 - The process of mid-term and short-term planning
 7. Contract and auditing management
 - The process of contracting or consulting contract
 - The process of increasing or decreasing the contract
 - The process of notifying the Article 46 Of the general conditions of the contract (the condition of terminating the contract)
 - The process of notifying the Article 46 Of the general conditions of the contract (the condition of ending the contract)
 8. Finance and Financial Controller

- The process of implementation of payments
- The process of issuing the cheque
- The process of pursuing the demands

Then, modelling the mentioned processes was done, for example modelling the process of assignment (sales) in the field of assignment management is shown as follows.

Assignment management

Assignment management of new towns is the executive of 4 following processes:

- The process of assignment (sale)
- The process of renaming the ownership
- The process of issuing the replica contact
- The process of reforming the contact

The Use Case diagram of above process is drawn as follows:

Table 2. Assignment process model (sales)

0- arrangement	1
1- title	Announcement of assignment
2-goal	Determination of Transferable lots
3- The former condition (precondition)	Relative progress of preparation
4- activator	Assignment management
5-executives	Assignment management/ director
6- workflow	Assignment management identifies the land use which is required to assign. Assigned land-uses are usually identified according to general policies of the company, individuals' demands and population living in phases. Those lots are selected which have the required land-uses in the strategic plan and transferable lots which were not assigned before, are identified according to the preparation (overlapping the executive project plan and implemented plan) and other parameters.
7- conditions (the condition)	Late Choose a piece or pieces of land for assignment
8- Analyses of	1. Select By Attribute

GIS	2. Visualization		
	3. Overlay		
9- information items	Edited ---		
10- information items	Lot (land-use, assignment status), neighborhood, phase (population, date of census), project (place, percentage of belonging, relative weight), executive project plan		
11-proposed thematic maps	Title	Layers and tables	Information items
	Preparation of lines	<ul style="list-style-type: none"> • Networks (water, wastewater, electricity,...) • lot 	Preparation status
	The status quo map of assignment	<ul style="list-style-type: none"> • Lot 	Assignment status
	Land-use map	<ul style="list-style-type: none"> • Lot 	Land-use
	Map of terrain	<ul style="list-style-type: none"> • Lot • Limit of terrains 	
12- location-based reports and queries	Title	Layers and tables	Information items
	Not assigned property which are from a certain distance of prepared infrastructure networks.	<ul style="list-style-type: none"> • Networks • lots 	<ul style="list-style-type: none"> • Assignment status • Preparation status
	The property which are not in the limit of terrains.	<ul style="list-style-type: none"> • Lot • Limit of terrains 	<ul style="list-style-type: none"> •
	A list of lots that up to next n weeks, the infrastructure lines and	<ul style="list-style-type: none"> • Networks • Lots • project 	<ul style="list-style-type: none"> • Code of lot • Land-use • Assignment

	facilities will reach the final stage in the m meters distance of them according to the contract.		status					
			<ul style="list-style-type: none"> • Completion date • Status 					
13-description								
0- arrangement	2							
1- title	Pricing							
2-goal	Determining the price of the lots							
3- The former condition (precondition)	Determining the transferred lot							
4- activator	Assignment management							
5-executives	Justice official expert							
6- workflow	After deciding on the sale of one or more pieces of lands, a justice official expert invited to announce the price with regard to all aspects affecting the price of a piece of land.							
7- conditions (the condition)	Late Determining the price of lot							
8- Analyses of GIS								
9- Edited information items								
10- Displayable information items								
11-proposed thematic maps	<table border="1"> <thead> <tr> <th>title</th> <th>Layers and tables</th> <th>Information items</th> </tr> </thead> <tbody> <tr> <td>Land price map</td> <td> <ul style="list-style-type: none"> • Lot • Assignment contract </td> <td> <ul style="list-style-type: none"> • Land-use • Assigned price </td> </tr> </tbody> </table>	title	Layers and tables	Information items	Land price map	<ul style="list-style-type: none"> • Lot • Assignment contract 	<ul style="list-style-type: none"> • Land-use • Assigned price 	
title	Layers and tables	Information items						
Land price map	<ul style="list-style-type: none"> • Lot • Assignment contract 	<ul style="list-style-type: none"> • Land-use • Assigned price 						

	Infrastructure map	<ul style="list-style-type: none"> • Lot • networks 	<ul style="list-style-type: none"> • Land-use • Density • Status of progress
12- Proposed location-based reports and queries	<p>title</p> <p>A report of the average distance of each urban facilities from selected lot</p> <p>A report of the average price of the lands adjacent the selected lot</p>	<p>Layers and tables</p> <ul style="list-style-type: none"> • Lot • network • lot 	<p>Information items</p> <ul style="list-style-type: none"> • land-use • status of construction • assignment status • Assigned price
13-description	Announced price will be valid for 3 months.		
0- arrangement	3		
1- title	Login of applicant		
2-goal	Identification of buyer		
3- The former condition (precondition)	Identification of lot and its price		
4- activator	Assignment management		
5-executives	Buyer		
6- workflow	According to the general policies of the company, the price and the tendency to buy the lots, the company is select one of the methods of auction, calls or Bids and tenders exemption to attract the applicants. Each of these methods ultimately determines the final buyer (individual or entity). After determining the Buyer, he will be asked to deposit required funds.		
7- Late conditions (the condition)	Paying the funds by buyer		
8- Analyses of GIS			
9- Edited information items	Assignment contract (assignee, share)		

10- Displayable information items	
11-description	
0- arrangement	4
1- title	Contracting
2-goal	Granting formal ownership to the buyer
3- The former condition (precondition)	Choose the applicant / deposit into the funds by him
4- activator	The applicant
5-executives	Assignment expert/legal expert/ financial expert
6- workflow	The buyer refers to company to obtain the contract. The contract will be concluded in a form of specific contract or typical contract by the financial manager after completing the payment by the buyer.
7- Late conditions (the condition)	Awarded the signed contract to buyer
8- Analyses of GIS	
9- Edited information items	Contract(date, number, area, archives, price, type, method of assignment, cancelled, date of cancellation, termination number), installment (date, amount), Cheque (date, number, bank, about, payment, account number, check / jack)
10- Displayable information items	
11-description	The legal provisions of special contract are prepared by the help of legal manager.
0- arrangement	5
1- title	Deliver of contract
2-goal	Identifying the precise limitation of lot to buyer
3- The former condition (precondition)	Contract

4- activator	Applicant		
5-executives	Expert surveyor		
6- workflow	The dimensions of land is extracted from GIS and the land in nailed with proper tools (GPS, meter, mapping camera,) with assignee. Finally, assignment proceedings is prepared and signed by buyer and company's representative.		
7- conditions (the condition)	Late	Nailing the land	
8- Analyses of GIS			
9- information items	Edited		
10- information items	Displayable	Dimensions of land	
11-proposed thematic maps	Title	Layers and tables	Information items
	Location map	<ul style="list-style-type: none"> • Lot • Neighbor • phase 	<ul style="list-style-type: none"> • Land-use • Assigned price
	Large scale map of lot or dimensions	<ul style="list-style-type: none"> • Lot 	<ul style="list-style-type: none"> • dimensions
13-description			

Then, as table2, modelling 34 main processes of New Towns Development Company was performed that the main modified and ideal processes of new towns were prepared after feedback and holding expert meetings again.

4. CONCLUSION AND SUGGESTIONS

The most important result of this project is that after identifying the status quo, mapping the processes, revising the processes and applying revised processes, the possibility of providing

conceptual, logical and physical data models has been created that together with manufacturing standards and guidelines, information preparation and editing, has become a successful introduction of two other projects of existing data collection and preparation and design and implementation of WEBGIS software which is the most important tool for analysis, proper distribution of services, analysis of spatial occasion, optimal services to the urban population, crisis management, preparation of site selection studies for construction of new towns and preparation of comprehensive and strategic urban plans and in total, urban planning and management.

5. ACKNOWLEDGEMENT

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6. REFERENCES

- [1] Rahmanzadeh, M., 2003, the process-oriented organization and organizational paradigms, social studying-publishing office, 1st edition.

7. APPENDIX1

The members of the GIS working group of New Town Development Company who have participated in this project:

- Amir Amini
- Ibrahim Omid
- Javad Radsaeid
- shahrzad Rezaei
- Mr. Ramezani
- Nazila Siddighi
- Behzad Fakheri
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