

**STAFF TRAINING IN THE PUBLIC ADMINISTRATION OF BOSNIA AND HERZEGOVINA WITH SPECIAL EMPHASIS ON TIME MANAGEMENT USING ONTOLOGIES AND NEW SOFTWARE SOLUTIONS**

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**ABSTRACT:** *In this paper we examine time management in public administration. It is clearly a critical resource characterised by its limitations, impermanence and non-recoverable nature. Unlike some other resources, time cannot be bought, grown or stored. Thus, all other resources need to be adjusted to time so that we achieve the best service and satisfied customers from services delivered by public administrations. The aim of this paper is to point out to the new possibilities of time management in public administration (administrative organizations and bodies of local self-government) in Bosnia and Herzegovina with the use of new software solutions based on ontologies, knowledge bases, and the Semantic Web. Our goal is to offer a different concept of time management with the use of knowledge bases and the software tool “Protégé”. With these, employees` time can be used more effectively, which will result in better services and better customer satisfaction.*

**KEYWORDS:** Time Management, Knowledge Bases, Ontologies, More Efficient Service Delivery.

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## **INTRODUCTION**

Under the concept of "Time Management" we assume that the decision-making process gives some businesses an advantage over others. Time management is a discipline in which time is used effectively. There are strategies that a person can learn to allow them to manage their time effectively. In order to better manage time in the delivery of services, the civil servants must first learn how to manage their time. Without the use of new technologies to assist in time management it would be a much more difficult task to achieve. New technologies, expert systems, knowledge management, business intelligence and Internet directly enable better services and time management as well as a faster exchange of knowledge. Careful observation of the ways in which a person consumes time can help everyone to focus on the more important goals related to work, family or social activities. The sooner we realize what is the real value of one second, the sooner we will begin to behave rationally with our time and later it will become routine. Everyone is able to do their job, but their abilities are measured by how much time they need to do it. How, when, why and where to master the skill of time management?

## **PUBLIC ADMINISTRATION**

The work of public administration in Bosnia and Herzegovina is based on the Constitution, laws, decrees, orders, regulations and other general acts. Acts of lower legal power interpret the Constitution and laws. This allows adjustment of the administration to the tasks and duties which are services to its customers. That is the structure of the agencies and organizations and at the same time a set of jobs and tasks whose function is the interpretation and application of the law, ie. application of general rules to individual cases with the existence of judicial control. The public administration is focused on providing customer service as well as on supporting and facilitating economic development. Public administration is in the service of citizens and businesses. It is based on IT, a system of communication and the relationships that are made under the conditions of the use of modern information technology.

The work of public administration is based on the activities that aim to attain the objectives and policies of the government and the government system as a whole. The character and content of public administration are determined by:

- the mission and objectives determined by the development of democracy,
- organization and direct implementation of the laws adopted by the Assembly (Parliament), as well as the execution of the regulations of other competent bodies,
- work on the preparation of laws and regulations,
- work in the field of judicial administration and organization of the judiciary, and
- implementation of other, specific aspects of policy decision execution.

"Public administration is a group of organs, organizations, bodies, interdependent set of competencies, specifically connected and managed with a view to implement the legal norms, organizational tools, methods of management processes and procedures in order to fully comply with the mandate of the elected government. Its main functions are: service, regulatory, organizational and executive (Kavran, 2003)". The state of public administration in Bosnia and Herzegovina is affected by the tradition, cultural backgrounds, the history of relations between politics and administration and external influences. In addition to these factors, there is a process of transition and the level of development of the private sector, as well as the relationship between society and government.

The public administration in Bosnia and Herzegovina provides services in 145 municipalities, 10 cantons, two entities, the Brcko District and at the level of the state of Bosnia and Herzegovina. In order to perform high quality work, the employees of the administration and local self-government units (public administration) must have adequate knowledge about time management. In this paper we examine the knowledge required to manage this process with the use of knowledge bases, ontologies and new software tools. Public administration must constantly adapt to its users. This could be done only if its staff and management are creative, knowledgeable, highly educated and ready to constantly learn. Providing and offering services in such an administration must be based on the efficient time management. The administration must take proper steps to respond to the challenges of time management. If administrative authorities, administrative organizations and local self – government units (municipalities and cities) do not do something to use time more effectively, or just take the minimum steps without strategic insight into the scope of the problem, they will run the risk of irrational use of time and customer dissatisfaction with their services.

New tools, new rules, new economy, more sophisticated users - all this requires an entirely new approach to the work of public administration, especially time management. For better service, for its transformation and on-line offer, public administration must reshape the grounds. These changes of public administration require new business strategy reduced to e-m-i-government (Radivojevic, 2013), or e-m-Service. All this must be based on different time management and new technologies, new business processes and new requirements. Implementing the system of time management cannot be done only by departments or sectors. The administrative authorities, administrative organizations and local self-government units are much more than their sum. If time were managed only within a single service or sector, public administration as a whole would not have a major strategic advantage. The resulting experiences through success or failure would be available only to certain departments or sectors and would not be available to all others.

So that the employees are more productive, public administration must know how to use its time rationally. The productivity of employees must be visible to the users of services and the others in the service chain. Time needs to be managed for the maximum result.

## **ONTOLOGY IN PUBLIC ADMINISTRATION**

The term ontology is quite wide and it represents a conceptual idea rather than a strictly defined formalism for expressing knowledge. In their paper, Hsu and Chi define development approach to ontologies as a process of knowledge inclusion and acquiring, storage, retrieval and use. Ontology is a description of the structure of an area of knowledge, with the formal definition of mutual relationships and connections between the various elements of the area (Clare, 2011). It is used for knowledge representation, management and organization of knowledge, modeling and designing databases, searching and downloading the required knowledge. "An ontology is a formal, explicit specification of common conceptualizations (Borst, 1997)" According to Boose and Gaines ontologies describe some domain knowledge in a generic way and provide an understanding of these domains. We can ask the question: Why develop an ontology in the system of time management in public administration? We do it because of much more efficient use of one of the most important resources which is called time.

Paulheim defines three reasons for the use of ontologies in business systems: better visibility, better interaction between the system and the user and unique knowledge base. This same reason applies to the use of ontologies for the implementation in the public administration. When talking about ontology in public administration, we look at it as a form of data (information and knowledge) representing concepts within its service system and the relationships among these concepts in order to understand their use and sharing. It should enable a better search, so search engines (agents) seek only the knowledge related to time management in this paper. The ontological model that we propose is based on the research of Savvas and Vassilakis, who first introduced the method of modeling ontologies in the domain of e-government. Those who work on the implementation of the new concept of service delivery have used ontological model in order to provide semantic interoperability in a simulated multi-agent environment.

Ontologies provide a higher level of functionality through increased precision in searching, linking information and knowledge on the pages associated with their knowledge structures and rules of inference, the exchange of knowledge between people and software, providing

structure for the transmission of information in the field of linked data, as well as the possibility of upgrading and changing when needed.

In this paper I would like to propose a part of the knowledge required to effectively use ontologies in the process of time management in public administration in Bosnia and Herzegovina. Because of the limited scope of the paper, we will discuss only the essential parts of the required knowledge for effective time management in public administration.

### **Protégé-OWL editor**

Nowadays we have a large number of languages and tools for describing ontologies. Among the ontological languages, OWL (Web Ontology Language) and ontology editing tool "Protégé-OWL" are the most widely used. OWL is a development environment represented by the World Wide Web Consortium (W3C). Protégé is an open-source platform that allows users to: read and save OWL and RDF ontologies, update and visualise classes, define characteristics, logic classes and deduct causes. Its purpose is to allow users to display the meanings of terms and relationships between those terms. It provides a rich set of structures for modeling and activities that support the creation, visualization and manipulation of ontologies represented in different formats. It was developed at Stanford Center for Biomedical Informatics Research at the School of Medicine at Stanford University in California. Here we use Protégé platform for sensing and storing OWL and RDF ontologies as well as to update the knowledge required for time management.

OWL (Web Ontology Language) is a language for describing ontologies on the Web. It is based on the RDF syntax and it emerged as a need to expand the RDF and RDF schemes. Data and information described with the use of OWL become knowledge rather than a data set, so we can say that it is a language for knowledge representation. It is characterized by a higher level of expression compared to the RDF scheme. By its use, it is possible to accurately describe the characteristics of the information system. OWL language, as the most complex one, is located on the top of the hierarchy defined scale. Within OWL it is possible (Štrbac 2007) to define the cardinality of a property, define synonyms for objects, classes and properties, define limits on the value of some property as well as to define a new class by using a set of operations above the existing classes.

The first step in creating ontology is to define the basic concepts as well as the relationships and constraints of a given domain.

### **KNOWLEDGE UPGRADE**

Continuous training and education, as well as effective time management provides employees with a feeling of greater security, independence and the clients with satisfaction with efficient and faster service delivery tailored to the needs. Developed countries have long since begun to argue that the only profitable investment is investment in knowledge. They came to a stage where business efficiency and service quality depend on the state of science and technology development levels. In order to have higher quality personnel in the region, all employees should go through different forms of additional education and training. Additional training in public administration should be understood as a function of improving and increasing the efficiency of service activities. In order to talk about the training of employees in public administration, it is necessary to know what they should know. Here we broadly list the areas which the employees in public administration must have knowledge from:

1. The constitutional arrangement of Bosnia and Herzegovina with administrative procedures and office operations.
2. Public policy, its design, the basics of sustainable development, social inclusion and poverty reduction.
3. Fundamentals of the legislative process, planning, development and implementation of regulations, harmonization of national legislation with the EU acquis.
4. Civil service system and work relations in administration, planning and personnel management.
5. Fundamentals of the European Union, regional, European and social policies.
6. Management and planning of public administration, quality management and organizational development.
7. Public finances with the basics of the budget system, tax business and public procurement procedures.
8. Project Cycle Management and EU funds, monitoring and evaluation of programmes.
9. Ethics in public administration, mechanisms for the prevention of corruption, and the right of access to information of public importance.
10. Leadership in public administration, human resource management, change, conflict, stress, time management and leadership meetings.
11. Personal development and individual potentials.
12. Protection of human rights and confidentiality.
13. Business communication skills and relations with the legal and natural persons.
14. Information and communication technologies with the basics e-m-i -Management and E-m- Services.

The knowledge required for employees in public administration is shown in a graph (Figure 1). Leadership and time management are presented in more detail in this paper.

We will provide only the basic elements related to the concept of leadership as one of the important segments of quality service delivery and time management.

Here, under the leadership we do not mean only the management concerning the work of managerial staff in the public administration, but the management of each employee in their segment of more efficient service delivery.

Successful management, planning and leadership in public administration are crucial for the modernization and professionalization of public administration. All employees in public administration must be aware of their own work style and have a personal improvement plan. Management staff in the modern administration needs to know to build a team and how to motivate all employees to serve efficiently. They must be able to efficiently and effectively respond to changes. For this, they need the appropriate knowledge that can be ensured through a new tools based on ontologies and the Semantic Web. In addition to the above, new tools and new technologies need to provide knowledge of change management, ways to respond to change, resistance to change, the challenges of managing and sustaining change. Staff needs to be ready for teamwork, be aware of team organization, team management, methods of team decision-making, and the fact that decision-making is a competency.

In the area of management in public administration, time management is very important and we will examine it in detail in the next section. All employees must know the significance and importance of efficient use of time and planning for more effective service delivery, work organization and customer satisfaction. Staff should be able to set priorities, styles and models of time management in order to achieve higher service productivity.

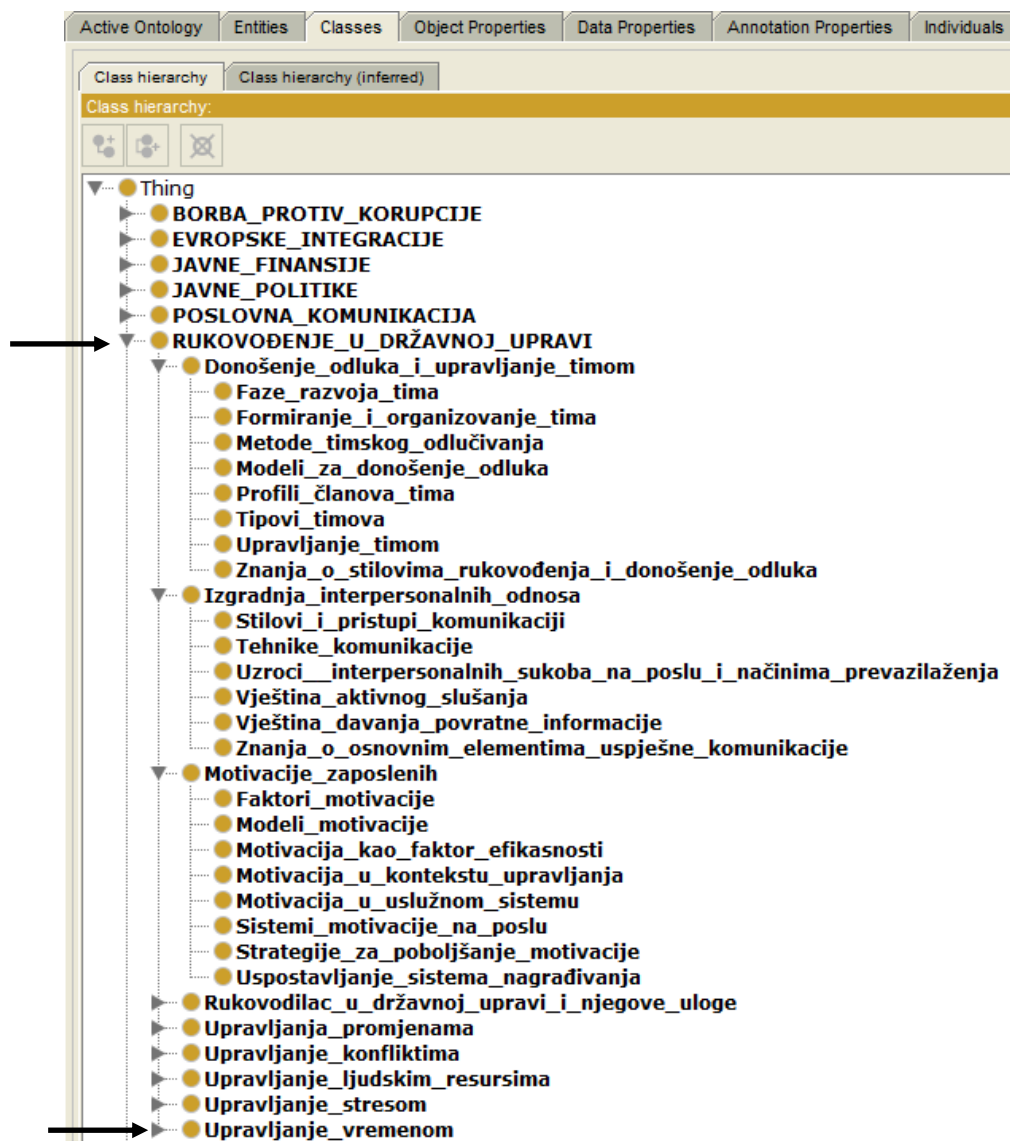


Figure 1. Leadership in Public Administration and Time Management

## TIME MANAGEMENT IN PUBLIC ADMINISTRATION

Under the term time management we mean organization, distribution and duration of work in different periods such as day, week, month, or year.

What is time? Some even say that time does not exist because the past is unreachable, the future is unknown, and the present is immeasurable, which is an interesting theory. We will allocate a simplified definition of time which says that time is actually movement in space.

Time management is often used in the modern business world because people have realized that the proper management of time has the same importance as the capital management - loss of either is difficult to make up for. Therefore, a person should learn to manage time because it is a useful skill. Many employees in public administration mistakenly believe that keeping track of the time means time management. Time management refers to the introduction of changes **in the way we spend time.**

Each employee must thoroughly monitor and optimize their activities. A good part of the work done can be optimized. This can be a savings of only a few seconds per activity, but to the end of the day it can come up to a few minutes, which annually saves plenty of time for other activities. So that employees are productive, it is necessary to build quality, universal and daily model that will enable them to better plan and execute all daily activities. Being a productive employee means to have a plan and organize responsibilities so that each has its proper place. Planning process determines the goals and development. It predicts and defines future tasks, as well as the conditions under which these tasks are to be performed and the goals achieved. In business and in life we make long-term, medium-term and short-term plans depending on the time covered.

Time management implies the use of different techniques and tools for planning and organizing time in order to increase service effectiveness and personal effectiveness of each employee in the public administration and public administration as a whole. Public administration effectively serves if it, in given circumstances, presents a favorable relationship between the service goods, services and resources used (Osmanagić 2006). Estimates show that the utilization of human resources in business systems is only 30 - 40%, while the most energy and time are wasted because there are no clear objectives and good planning (Seiwert, Lothar J., 1999).

Better organization of time and thereby effectively used time leave room for greater opportunities for exploitation of quality time (JC Messenger, 2004). Figure 2 in Protégé presents the basic form of basic skills that are necessary for effective time management: recommendations for management of time, what the employees in public administration in Bosnia and Herzegovina must bear in mind, what influences decisions about the allocation of time, the reasons why it is necessary to manage time and mistakes in time management. From the recommendations given in Figure (2) we shortlist: Determine how time is spent. Keep workplace tidy. Work smartly, quickly and efficiently. Analyze and write your obligations. Set priorities and the like.

What civil servants should bear in mind is given in Figure 3. Here we list some of them: time cannot be controlled, we can only manage ourselves in time. Time never goes back. Wasted time can never be recovered. Time is the scarcest resource and the like.

Those who work in public administration in Bosnia and Herzegovina need to know how to organize their activities, how to manage time and what they want. Time is the most important life content that a person needs to learn how to manage. Thus, by learning to manage the time and we learn how to manage ourselves in time. Employees must manage time, not vice versa. They must know why it is necessary to manage time and the required knowledge is presented in Figure 4.

Some of these reasons are: deadlines, reducing errors and mistakes, increase in efficiency, the success in managing change, improvement of relationships with supervisors, co-workers and customers, and the like. Can employees make appropriate decisions when needed? How to learn to make decisions faster and better? What are the most important elements of the decision-making process? What is the importance of decision making in the management of time?

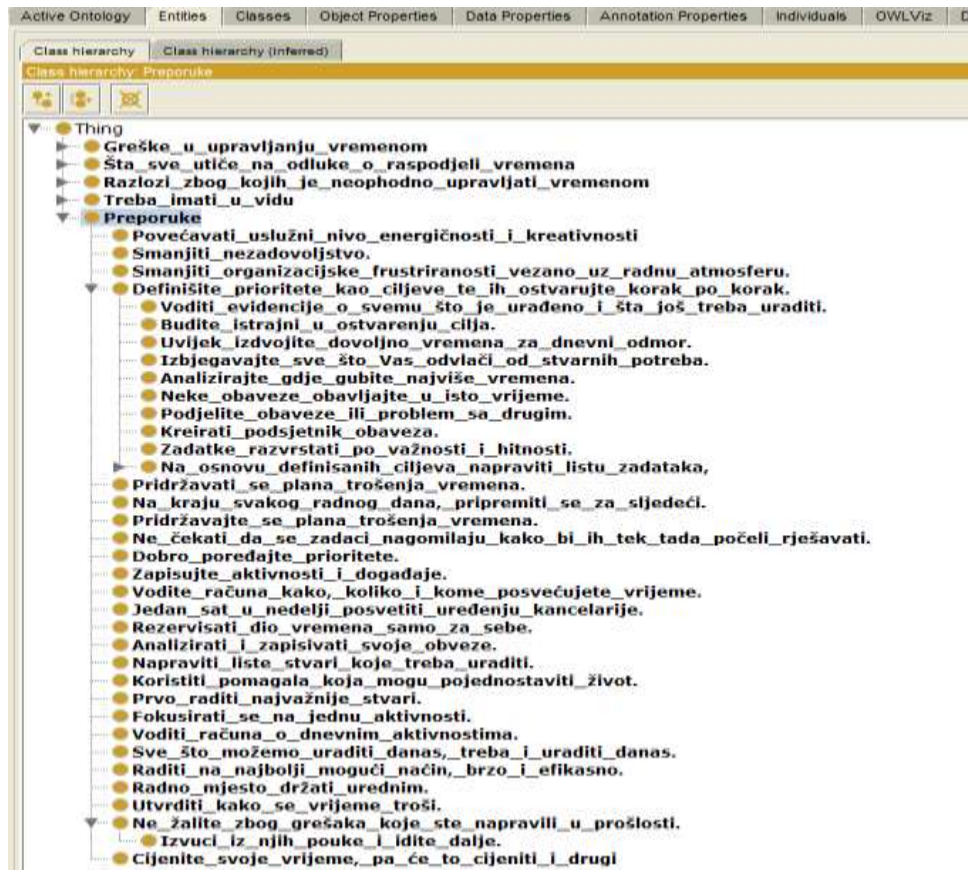


Figure 2. Basic knowledge on time management

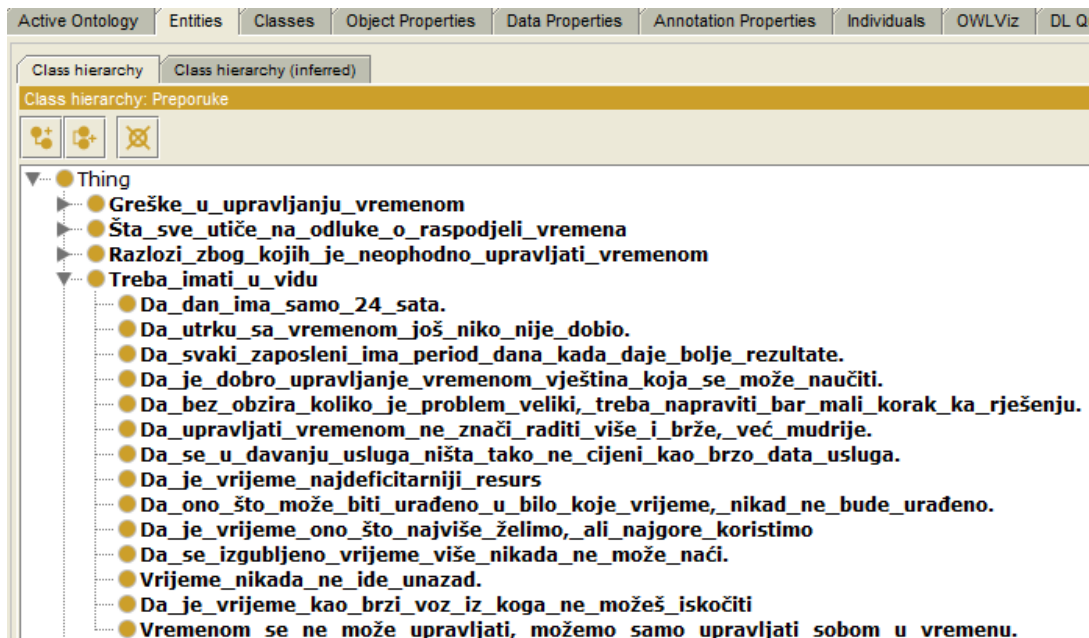


Figure 3. Recommendations to keep in mind



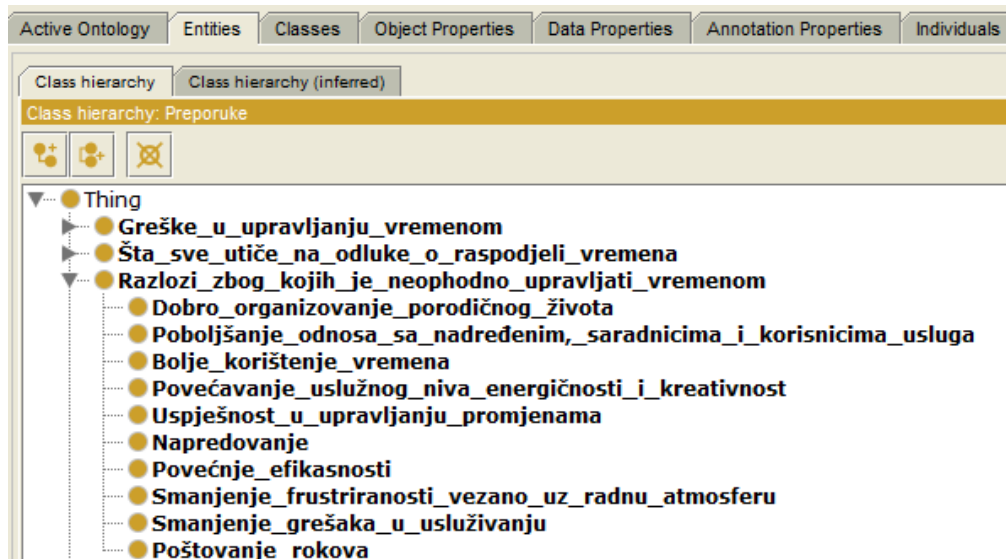
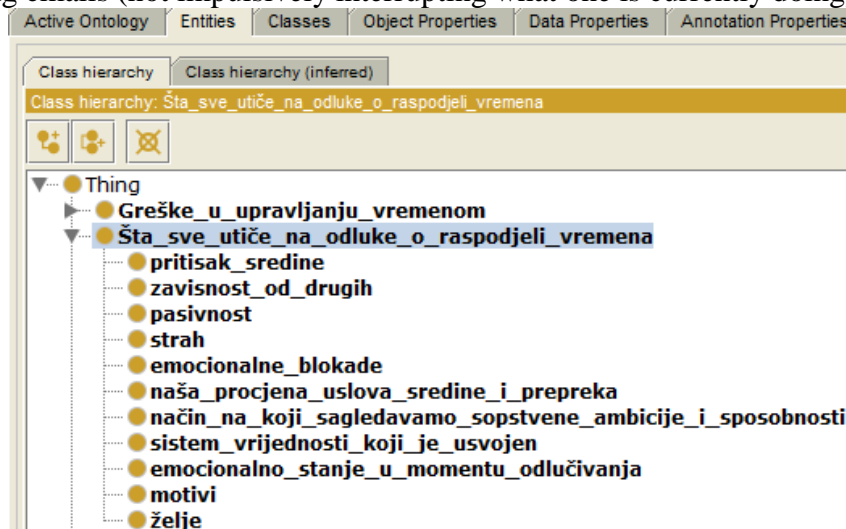


Figure 4. The reasons for time management

So that employees can make good decisions in their service tasks, it is necessary to recognize the hold-ups at the moment of decision-making and to provide services in order of importance and urgency. Figure 5 shows the factors that affect decisions on the allocation of time: desires, motives, value systems, fears, the pressure of the environment and the like. One of the most common causes of problems in the management of time are emotional blocks. These originate from fear of making mistakes when managing time. The concern is based on the belief that employees set unrealistically high standards for themselves and do not accept that some level of mistakes are inevitable in their work. This irrational belief is often followed by the pressure to be the best at everything and infallible. There are moments when employees' thoughts wander and they think about many unrelated things. Sometimes their worries distract them. Sometimes they neglect what they started and they are not even aware of it. When work is boring or uninteresting it is often difficult to focus.

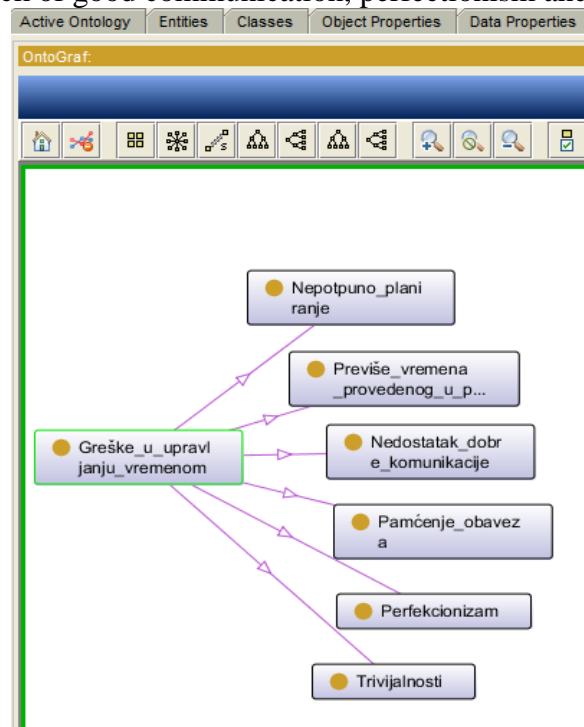
Also, employees need to think about the time they spent doing planned tasks. This is a positive use of time during the work day because it controls what is set to be an objective. The planned tasks include: phone calls (planned in advance), meetings previously scheduled and answering emails (not impulsively interrupting what one is currently doing).



**Figure 5. Factors that affect decisions on the allocation of time**

Spending time must be constantly analysed. The analysis of spending time can point out to the following: more and less productive activities, how much time during the day is spent on routine tasks and how much on development and creative work, whether routine tasks are authorized to be carried out and to what extent, number of tasks left, the tasks that can be delegated and how much time is spared.

Time management mistakes may occur and some of them are shown in Ontograph in Figure 6. Some of these mistakes are: Insufficient planning, too much time spent on planning, memorising of tasks, lack of good communication, perfectionism and the like.

**Figure 6. Mistakes in time management**

## CONCLUSION

Successful time management encourages creativity in service delivery, better organization of leisure time and the reduction or even the elimination of stress. Employees must be energetic, know how to set objectives, accurately define priorities and build successful communication with other employees. In order to improve the efficiency of their working time, employees in public administration must pay particular attention to the following: setting goals and priorities, organization and self-discipline, management of late and delayed tasks, the efficient transfer of jobs, adjustment of work tasks, effective prevention and management of interruptions, effective communication, efficiency meetings, and the consequences of ineffective time management. New tools based on knowledge, new technological solutions and a different approach to work can help to achieve these tasks through more effective time management in public administration. In the future we need to work to further update knowledge bases and extend their implementation to all administrative bodies in Bosnia and Herzegovina.

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