

## ORGANIZATIONAL PREREQUISITES AND ANALYTICAL SIGNIFICANCE FOR ESTABLISHMENT OF THE 112 EMERGENCY CALL E-SYSTEM IN THE REPUBLIC OF SERBIA

Ilija Racić<sup>1</sup>, Maja Anđelković<sup>2</sup>

### Abstract

*The goal of the research, the results of which are presented in this paper, was to identify, scientifically describe, classify and partially explain the organizational changes that are necessary for the establishment of the 112 emergency call system, and to point out the analytical importance of reporting and information in emergencies in the Republic of Serbia. Given the fact that the 112 emergency call system has not been seriously analyzed in domestic scientific and professional literature, the paper presents the results of the research, which was aimed at finding an answer to the question: "Can the functioning of the police organization, fire-rescue organizations, and emergency medical services in the Republic of Serbia (and in what way) be improved by its organizational adjustment based on the consistent application of the emergency call system 112". The results of such directed theoretical-empirical research presented in this paper confirmed the point of view according to which appropriate adjustment of functional, structural element, as well as timely and relevant analytical reporting and information, create a necessary prerequisite for effective and efficient establishment and application of the emergency call system in the Republic of Serbia. The scientific justification of the research derives from its expected results, which can: 1) contribute to the deepening and expansion of scientifically verified knowledge in the field of criminal-police, security, and organizational scientific disciplines, 2) indicate the directions, areas, and topics of future scientific researches and 3) enrich the methodological practice of scientific research of the organization and proactive functioning of the police, fire-rescue units and emergency medical services in modern conditions.*

**Key words:** 112 Emergency services system, analytics, organizational prerequisites.

### Introduction

The emergency call system 112<sup>3</sup> is a European telephone number that is synonymous with the systematic and contemporary way of managing and acting by the police, fire-rescue units, and medical emergency services in emergencies (Vratonjić, M: 2012: 22). The philosophy of the 112 emergency call system concept is based on the speed of response in cases of

---

1 Ilija Racić, Ph.D., Assistant Professor, Faculty of Business Studies and Law, University "Union Nikola Tesla" in Belgrade, Serbia, E-mail: [ilija.racic@fbsp.edu.rs](mailto:ilija.racic@fbsp.edu.rs).

2 Maja Anđelković, Ph.D., Faculty of Business Studies and Law, University "Union Nikola Tesla" in Belgrade, Serbia, E-mail: [maja.andjelkovic@fbsp.edu.rs](mailto:maja.andjelkovic@fbsp.edu.rs)

3 The number 112 is the European number for emergency calls that is unique in the territory of all 27 member states of the European Union. The number 112 was first introduced in 1991 so that travelers in Europe could dial only one number, instead of having to remember different numbers of emergency services for each country, and since 1996 it has been mandatory for all EU member states. For more information: Lipovac, M.. Cvetković, V. (2015) Integrated system of protection and rescue in emergencies - system "number 112 for emergency calls", European legislation, Belgrade, p. 300-305.

natural disasters and technical-technological accidents the consequences of which pose danger to people, material and cultural goods (Milenković et al., 2018).

Researching the historical development of the declarative attempt to implement the 112 emergency call system in Serbia, it can be concluded that it dates back to 2009 and the adoption of the Law on Emergency Situations<sup>4</sup> and the National Strategy<sup>5</sup> in 2011. The authors Lipovac and Cvetkovic underline large material, technical, and personnel, but primarily financial costs as the key problems for its establishment, since the establishment of such a complex system is measured in millions of euros (Lipovac and Cvetković, 2015). Within the framework of the IPA 2015 program, in the period from 2019 to 2021, together with the delegation of the European Union we implemented a project entitled: "Development of an Efficient Emergency Call System for the Republic of Serbia 112". The result of the mentioned project is a comprehensive analysis of the current situation in the field of management and handling of emergency calls in Serbia, which experts from the EU countries prepared. Based on a comprehensive analysis in compliance with the ENNA<sup>6</sup> standard, in Serbia, were proposed basic elements of the 112 emergency call system, but which have not been implemented in Serbia. In 2021, Serbia established cooperation with the People's Republic of China (hereinafter: PR China) to support establishing the 112 emergency call system in Serbia. Based on the results of the European Union and Serbia project "Development of an efficient emergency call system for the Republic of Serbia 112" IPA 2015, the delegation of the People's Republic of China and representatives of the competent emergency services of Serbia defined the needs for technical equipment for the establishment of the 112 emergency call system<sup>7</sup>.

The police, firefighters, rescue units and emergency medical services represent the services that are responsible for managing and responding to emergency calls and reacting to emergencies in Serbia. Currently, in Serbia, there is no single system accountable for managing and coordinating emergency calls. Citizens can make an emergency call dialing, free of charge, numbers 192 for the police, 193 for fire and rescue units, 194 for emergency medical assistance. In addition, citizens can call the police and fire services by dialing 552

---

4 Article 11 of the Law on Emergency Situations defines the obligations of the Ministry of Interior related to warning, protection and rescue. The rights and duties of all entities involved in the organization of service 112 are prescribed in Articles 103 to 110 of this Law.

5 Document (Annex that is an integral part of the National Strategy) in which the following shortcomings of the existing system of protection and rescue are recognized, namely: 1) institutional-organizational; 2) material and technical; 3) cooperation, coordination and availability of information; 4) human resources and education. For more information: Lipovac, M., Cvetković, V. (2015) Integrated system of protection and rescue in emergencies - system "number 112 for emergency calls", European legislation, Belgrade, p. 300-305.

6 ENNA (The European Emergency Number Association)

7 On September 28, 2022., the Government of Serbia (the signatory of the document is the Minister of Interior) signed an Agreement on the implementation of a grant project with the Government of the People's Republic of China for the introduction of the Serbian national system 112. The implementation of the project began on July 1, 2023 and is envisaged to last for 20 months. By the decision of the Minister of Internal Affairs, a working group was established for the establishment of the 112 emergency call system. The members of the working group are members of the competent organizational units of the MUP, the Ministry of Health, the Ministry of Information and Telecommunications and RATEL.

other telephone numbers. The European emergency number 112 is also active in Serbia, but the call is automatically redirected to the number 192.

Based on the conducted GAP analysis in Serbia were identified key analytical and technical-technological problems in the implementation of the emergency call system, which relate to the following: 1) non-standardized way of calling emergency SMS, e-applications, e-Call, etc.) whose current state of affairs makes it difficult for people with disabilities to access emergency services; 2) calls in foreign languages are not processed in a consistent and procedural manner; 3) there is a number of calls directed to emergency services that do not require urgency in handling, as well as calls that are not within the competence of emergency services (police, fire-rescue units and emergency medical services); 4) there is a long waiting period for the operator to answer, there is no possibility of identifying the location of the caller, a number of malicious calls are recorded, there is no possibility of forwarding original calls, the possibilities of identifying multiple calls about the same event are limited.

Given the previously analyzed facts, the basic problems in implementation of the 112 emergency call system in Serbia, being also the subject of the theoretical-empirical research of this paper, are classified as problems about: 1) structure (organizational structures, human and material resources); 2) function (management - management functions and CAD software (executive functions); 3) organizational environment (incompletely regulated and insufficiently harmonized legal framework and problems of political, economic and sociological nature related to resistance to changes by public opinion); 4) analytical reporting and information spreading on all reported emergency calls or emergency events. The scientific and social justification of the research is reflected in the fact that its results can contribute to the scientific verification of certain contents that have not previously been scientifically confirmed and the results that have confirmed that there is a need to adjust the emergency call system 112 in its work.

### **Methodology**

In this research were used following methods: general scientific, logical, and empirical. In particular, among many general scientific methods, were used comparative and statistical methods while among the logical methods, were used analysis (descriptive and explicative analysis), synthesis, generalization, induction, and deduction.

In terms of empirical methods used for data collection, there was applied the research method, including the survey technique, as well as content analysis, with an insight into historical sources of a theoretical nature, which refer to the 112 emergency call system. The method was used to learn more about the attitudes and opinions of the survey participants, and for that purpose was created a survey questionnaire in which, in addition to general questions, were defined specific ones, adapted to the category of employees for which it was designated in particular. The survey was conducted among 30 employees who represented members of the working group created for the establishment of the 112 emergency call system, which includes 100% of the sample population dealing with this subject. In the observed sample, the distribution by gender was such that 17.0% of women and 83.0% of men were surveyed. The professional education of all respondents was 100% higher education. The average age in the examined sample was  $40.87 \pm 7.41$ , a minimum of 32 and a maximum 52 years of age. According to the years of employment in the current position, an average value of  $6.15 \pm 2.67$  was obtained, as well as that the experience span in the current position ranges from 1 month to 1 year.

## Results of the research

The results of the conducted theoretical and empirical research are divided into two parts. The first part presents the results of theoretical research in which the concept and goal of the 112 emergency call system in Serbia are discussed. The second one refers to the organizational prerequisites for the establishment of the 112 emergency call system in Serbia.

### *Concept and goal of establishing Emergency Calls 112 in Serbia*

The 112 emergency call system in Serbia can be defined as a modern system of connected operational centers that enable quick and efficient calling of emergency services by dialing number 112, optimization of their operations, and faster and better assistance to vulnerable citizens. The system ensures unique standards and procedures for emergency services, unique application and classification of events, and high-quality coordination of activities in emergencies. With the establishment of the 112 emergency call system, we envisage the integration of telecommunications and information systems, which enables operators to respond promptly and quickly to citizens' calls and manage the resources needed to deliver assistance. Modern technological solutions that are applied include automatic identification of the geographical location of the caller, software support for shortening the time of obtaining information from the caller, reliable forwarding of voice and/or non-voice information to the nearest units of the services responsible for response, GIS (geographic information system) support for deployment and response unit, event reporting and analysis mechanisms, analytical tools and more. The 112 emergency call system that is being established fully follows the standards, structure, and quality of the directives and recommendations of the European Union, the EENA standard, and the systems of developed countries in Europe and worldwide.

As part of the 112 emergency call system, it is planned that the police, fire-rescue units and emergency medical aid exchange data and information with each other in emergencies, as well as with all state entities that have the necessary data, namely: the Serbian Army, services of public interest, legal entities that, as part of their regular activities, are engaged in recording, analyzing, dealing with and forecasting certain phenomena and conditions in hydrometeorology, seismology, fire protection, water management, chemical and radiological protection, healthcare, agriculture, electricity industry, traffic and other areas.

The main goals of establishing the 112 emergency call system in Serbia are as follows: 1) to enable all citizens of Serbia and foreign nationals, when they are in Serbia, to receive help from the emergency services in emergencies by calling a single, well-known, international number 112 via telephone and other means communications; and 2) to ensure the maximum reduction of the response time of emergency services to citizens' calls, response in emergencies and improve the quality of treatment

Organizational prerequisites for the establishment of the 112 emergency call system in Serbia

The results of the theoretical research in which the key organizational prerequisites for the establishment of the 112 emergency call system in Serbia are stated (namely: 1) establishment of a centralized (specialized) organizational unit; 2) standardized functions of subjects; 3) improvement of analytical and technical capacities through descriptions of business processes; 4) improvement of the legal framework) were presented through the theoretical positions of the ENNA standards and were verified empirically, by examining 30

employees in the working group for the establishment of the emergency call system 112. The aforementioned employees answered as shown in tables (1-4).

**Table 1:** Employees' answers to the question: "Do you think it is necessary to establish one National Center with headquarters in Belgrade and four interconnected regional centers with headquarters in Belgrade, Novi Sad, Niš and Kragujevac for processing 112 emergency calls in Serbia?"

Employees' answers to the question		Total	
I fully agree	N	24	
	%	78.3%	
I mostly agree	N	6	
	%	21.7%	
Total		N	30
		%	100.0%

**Table 2:** The employees' answers to the question: "Do you think that the described business processes correspond to the functions of the subjects (operator on the connection system, dispatcher) in the 112 emergency call system in Serbia?"

The employees' answers to the question		Total	
I fully agree	N	20	
	%	66.7%	
I mostly agree	N	10	
	%	33.3%	
Total		N	30
		%	100.0%

By analyzing the answers of the working group members given to the questions from Tables 1 and 2, it was found that there was no statistically significant difference ( $\chi^2=0.004$ ,  $p>0.05$ ), that is, they agree with the view that it is necessary to establish a National Center based in Belgrade and four interconnected regional centers with headquarters in Belgrade, Novi Sad, Niš and Kragujevac for processing 112 emergency calls in Serbia. Also, the mentioned respondents agree with the position that the described business processes correspond to the functions of the subjects (operator on the connection system and dispatcher) in the 112 emergency call system in Serbia ( $\chi^2=14.696$ ,  $p<0.001$ ).

**Table 3:** Employees' answers to the question: "Do you think that the CAD<sup>8</sup> software of the 112 emergency call system fully enables timely and relevant analytical reporting and information on all emergency calls and emergency events?"

The employees' answers to the question		Total	
I fully agree	N	21	
	%	70%	
I mostly agree	N	9	
	%	30%	
Total		N	30
		%	100.0%

---

<sup>8</sup> CAD software is an analytical tool that receives and processes all calls in the 112 emergency call system

**Table 4:** Employees' answers to the question: "Do you think it is necessary to pass the Law on the emergency call system 112 in Serbia?"

The employees' answers to the question		Total
I fully agree	N	27
	%	90%
I mostly agree	N	3
	%	10%
Total	N	30
	%	100.0%

By analyzing the answers of the working group members to the questions from Tables 3 and 4, it was found that there was no statistically significant difference ( $\chi^2=0.007$ ,  $p>0.05$ ), that is, they agree with the view that the CAD software of the emergency call system 112 fully enables timely and relevant analytical reporting and information on all emergency calls and emergency events. Also, the mentioned respondents agree with the position that it is necessary to pass the Law on the emergency call system 112 in Serbia ( $\chi^2=12.696$ ,  $p<0.001$ ).

### Discussion

The results of the conducted theoretical and empirical research show that the 112 emergency call system will provide citizens with an effective, efficient, and economical service available 24/7/365, in accordance with European standards in this area; however, its success largely depends on the prerequisites that must be met, and which are indicated in further subheadings.

#### *Establishing a centralized (specialized) organizational unit*

The general theoretical position regarding the establishment of a centralized (specialized) organizational unit, more precisely the National Center with headquarters in Belgrade and four interconnected regional centers with head offices in Belgrade, Novi Sad, Niš, and Kragujevac is a key condition for the establishment of emergency calls 112 in Serbia, which is empirically supported by 78.3%, (out of 30 respondents), i.e. statistically significantly more respondents in the observed sample gave a positive answer ( $\chi^2=14.696$ ,  $p<0.001$ ). The proposal is that the National Center for 112 becomes a Command and Operations Center. The key tasks of such a National Center for 112 are planning, organization, implementation, supervision, and control of the work of the entire 112 system, coordination of the work of regional centers, data processing, and data analysis. It will carry out the exchange of data and information with all relevant entities in the country and abroad and perform international cooperation tasks. Also, the National Center will provide support in the work of the Republic HQ for Emergencies. Regional center 112 will be responsible for receiving and recording emergency calls, identifying the geographical location of the caller, collecting and processing data, entering data into a single application, classifying data, call history, forwarding data and calls to competent units, engaging and directing resources for dealing with emergency calls, information and reporting of the National Center, analysis, preparation of statistical and other reports.

#### *Standardized functions of subjects and business processes of CAD software in the 112 emergency call system.*

The general theoretical position regarding the establishment of a standardized function of subjects as one of the key conditions for the establishment of the 112 emergency call system

in Serbia was empirically supported by 66.7% (out of 30 respondents), that is, statistically significantly more respondents in the observed sample gave a positive answer ( $\chi^2= 12.754$ ,  $p<0.001$ ). The basic functions of subjects in performing business processes of the 112 emergency call system are as follows: 1) operator on the 112 connection system (eng. call taker) in regional centers with the basic tasks of receiving, identifying the location of the caller, redirecting, processing, recording, classifying, and depending on the event, forwarding to dispatchers emergency calls sent to the number 112, from the entire territory of the Republic of Serbia. In the regional centers, only operators are employed on the connection system and they use the CAD application for their work; 2) 112 dispatchers are not employed in regional centers, they are exclusively located in the on-call services of regional police departments, fire-rescue units, and emergency medical services, with the basic tasks of taking over the information on the incident, identifying and locating resources, engaging resources and managing and coordinating the event. In addition to on-call services in the aforementioned organizational units, 112 dispatchers will be located in police stations, as well. Depending on the type of incident, 112 dispatchers from the regional police administrations will forward the information on the incident to further jurisdiction in the police stations (so-called cascade dispatching). They use a CAD application for their "dispatching" job; 3) emergency services units that act according to the incident, with the basic tasks of receiving information from the dispatcher 112, departure and arrival at the scene of the incident (measurement of reaction time), verification of notifications, direct intervention, informing and reporting on the incident and closing the incident. To digitize this procedure, the aforementioned subjects primarily use "service" information systems. In the case of Ministries (police of general jurisdiction and fire service), they use the Incident Reporting application

#### *Developed analytical and technical capacities using CAD software during reporting and information in the emergency call system 112*

The general theoretical position regarding the development of analytical capacities by applying CAD software when reporting and informing in the emergency call system 112 was empirically supported by 70%, (out of 30 respondents), that is, statistically significantly more respondents in the observed sample gave a positive answer ( $\chi^2=14,855$ ,  $p<0.001$ ). Digitization of the 112 system will be carried out through CAD software in which every call to the number 112 will be recorded, which will contribute to the fact that every call from citizens (whether it is the responsibility of the police, fire-rescue units, or emergency medical services) will be able to be analytically processed and analyzed, which will affect the production of analytical products of higher quality, and relevant and timely reporting and information.

#### *Improved legal framework of the 112 emergency call system*

The general theoretical position regarding the improvement of the legal framework of the emergency call system 112 is the adoption of the Law on the emergency call system 112, which was empirically supported by 90%, (out of 30 respondents), that is, statistically significantly more respondents in the observed sample gave a positive answer ( $\chi^2=15, 652$ ,  $p<0.001$ ). The existing regulations of Serbia related to the 112 emergency call system confirmed the need for further reform of the national legal framework, especially by the adoption of the Law on the 112 emergency call system. It seems that the legislator has not paid enough attention to the complexity and importance of the 112 system. For this reason, it would be more important to regulate general obligations in the legal text, while by-laws

would regulate standard work procedures and other technical issues. Another characteristic of Serbian legislation is the mutual inconsistency of regulations on the same issue from different aspects, which are under the jurisdiction of different ministries or other institutions. Furthermore, the lack of an existing legal framework related to the 112 system can be attributed to the fact that the structure and main features of the 112 emergency call system are prescribed by the Law on Emergency Situations, which regulates natural disasters and technical-technological accidents while ignoring other situations in which the emergency call system 112 can also be engaged.

The proposed special Law on the emergency services system 112 should contain provisions harmonized with the acquis of the European Union, which relate to the protection of personal data, eCall, roaming, appropriate processing of calls to the number 112, equal access, caller identification and information data in one single legal text, with reference to the relevant sectoral legislation of Serbia (Act on Protection of Personal Data, etc.). Furthermore, the Law should also contain norms, harmonized with the legal acquis of the European Union, which refer to promotional activities that should be carried out to strengthen public awareness of the 112 system. This obligation is based on legally binding acts of the European Union. In addition, this Law would adequately respond to the wider local context, in which it is advisable to regulate sensitive and complex issues of great importance by Law.

### **Conclusion**

Based on the conducted theoretical research, it can be concluded that over the years there has been identified a need to increase the efficiency of emergency services (192, 193 and 194). A change in the work procedure of the emergency services and their mutual synergy after the reported incident is necessary. The only way to increase the efficiency of the system and make significant use of existing resources is the introduction of the 112 system, the main task of which is a faster response, a faster arrival on the incident scene of all necessary services to respond and provide assistance to endangered persons. An increased number of steps to be taken by emergency services in their work reduces the possibility of a timely response to the reported incident. We should consider reducing the number of stages in the procedures in which problems are detected and forwarded to the next level of command and decision-making.

The introduction of the 112 emergency service system is both a necessity and a benefit for Serbia, especially considering that such systems operate in certain countries of the European Union, as well as the 911 service in the United States of America. It is expected to have a comprehensive and efficient service provided from one system, with one unique number. This means that calling the emergency services is free of charge, regardless of whether the calls are made from landlines or mobile phones, by simply dialing 112. A call to the number 112 must be responded to, the call must be processed, and the location of the caller must be determined, regardless of whether the call was received via fixed or mobile telephony, which is a benefit for analytical organizational units that can process and analyze the results of such reports, and present a comprehensive assessment of the state of public security.

Through the conducted empirical research, it was learned about important facts and characteristics of the necessary organizational structure as a prerequisite for the efficient and effective establishment of the 112 emergency call system in Serbia. To a certain extent, this work adds to the theory and contributes to the development and improvement of its practical activity, but at the same time leaves room for new research. Further scientific research should

be focused on best practice research (Benchmarking), especially in the areas of organizational solutions, coordination, management, information management and training.

### References

1. Vratonjić, M. (2012). "Service 112 - improved comprehensive response in emergency and critical situations", Telecommunications, the professional and scientific journal of the Republic of Telecommunications Agency (RATEL), Belgrade, p. 22-30.
2. ENNA Operations Document. (2011). 112 Service Chain Description.
3. Law on Emergency Situations ("Official Gazette of RS", no. 111/09, 92/11 and 93/12).
4. Law on Electronic Communications ("Official Gazette of the RS", no. 44/10, 60/13 - decision US and 62/14).
5. Lipovac, M., Cvetković, V. (2015). "Integrated system of protection and rescue in emergencies - system number 112 for emergency calls", European Legislation, Institute for International Politics and Economy, Belgrade, p. 300-305.
6. National strategy for protection and rescue in emergencies ("Official Gazette of RS", no. 86/11).
7. Milenković, M., Kekić, D., Glavaš, D. (2018). "Implementation of the single European emergency number 112 in the Republic of Serbia - advantages and disadvantages", Sinteza, Singidimum University, Belgrade, p. 110-115.

# ORGANIZACIONI PREDUSLOVI I ANALITIČKI ZNAČAJ ZA USPOSTAVLJANJE E-SISTEMA ZA HITNE POZIVE 112 U REPUBLICI SRBIJI

*Ilija Racić<sup>9</sup>, Maja Anđelković<sup>10</sup>*

## Apstrakt

*Cilj istraživanja, čiji su rezultati predstavljeni u ovom radu, bio je da se identifikuju, naučno opišu, klasifikuju i delimično objasne organizacione promene koje su neophodne za uspostavljanje sistema hitnih poziva 112, i da se ukaže na analitički značaj izveštavanja i informisanja u vanrednim situacijama u Republici Srbiji. S obzirom na činjenicu da sistem hitnih poziva 112 nije ozbiljno analiziran u domaćoj naučnoj i stručnoj literaturi, u radu su predstavljeni rezultati istraživanja, koje je imalo za cilj pronalaženje odgovora na pitanje: „Da li se funkcionisanje policijske organizacije, vatrogasno-spasilačkih organizacija i službi hitne medicinske pomoći u Republici Srbiji (i na koji način) može poboljšati njenim organizacionim prilagođavanjem na osnovu dosledne primene sistema hitnih poziva 112“. Rezultati ovako usmerenog teorijsko-empirijskog istraživanja, predstavljeni u ovom radu, potvrdili su stanovište prema kojem odgovarajuće prilagođavanje funkcija, strukturnih elemenata, kao i blagovremeno i relevantno analitičko izveštavanje i informacije, stvaraju neophodan preduslov za efikasno i delotvorno uspostavljanje i primenu sistema poziva u hitnim slučajevima u Republici Srbiji. Naučno opravdanje istraživanja proizilazi iz njegovih očekivanih rezultata, koji mogu: 1) doprineti produbljivanju i proširivanju naučno verifikovanih znanja u oblasti kriminalističko-policijskih, bezbednosnih i organizacionih naučnih disciplina, 2) ukazati na pravce, oblasti i teme budućih naučnih istraživanja i 3) obogatiti metodološku praksu naučnog istraživanja organizacije i proaktivnog funkcionisanja policije, vatrogasno-spasilačkih jedinica i službi hitne medicinske pomoći u savremenim uslovima.*

**Ključne reči:** *Sistem službi hitne pomoći 112, analitika, organizacioni preduslovi.*

---

9 Ilija Racić, dr, docent, Fakultet za poslovne studije i pravo, Univerzitet „Union Nikola Tesla“ u Beogradu, Srbija, E-mail: [ilija.racic@fpp.edu.rs](mailto:ilija.racic@fpp.edu.rs).

10 Maja Anđelković, dr, Fakultet za poslovne studije i pravo, Univerzitet „Union Nikola Tesla“ u Beogradu, Srbija, E-mail: [maja.andjelkovic@fpp.edu.rs](mailto:maja.andjelkovic@fpp.edu.rs)