

INTERNATIONAL SCIENTIFIC CONFERENCE

**SECURITY IN THE POST-CONFLICT
(WESTERN) BALKANS:
TRANSITION AND CHALLENGES
FACED BY THE REPUBLIC OF
MACEDONIA**

27-28 May 2011, Ohrid

Volume II

SKOPJE, 2011

**INTERNATIONAL SCIENTIFIC CONFERENCE
SECURITY IN THE POST-CONFLICT
(WESTERN) BALKANS: TRANSITION AND
CHALLENGES FACED BY THE REPUBLIC OF
MACEDONIA**

(Security Studies and the Science of Security)

The Faculty of Security in Skopje, Republic of Macedonia in cooperation with the Academy of Criminalistics and Police Studies (ACPS) in Belgrade, Serbia, the Police Academy "Alexandru Ioan Cuza" in Bucharest, Romania, the Faculty of Criminal Justice and Security in Ljubljana, Slovenia, the Higher Police School, Police Academy, Croatia, Academy of the Ministry of Interior, Bulgaria and the Higher School of Internal Affairs in Banja Luka, Republic Srpska, BiH organize the international scientific conference "SECURITY IN THE POST-CONFLICT (WESTERN) BALKANS: TRANSITION AND CHALLENGES FACED BY THE REPUBLIC OF MACEDONIA".

HONORARY COMMITTEE

H. E. Gjorge Ivanov, PhD, President of the Republic of Macedonia
Zlatko Žoglev, PhD, Rector of the University "St. Kliment Ohridski" in Bitola
H.E.Nikola Todorov, Minister of Education and Science of the Republic of Macedonia
H.E. Gordana Jankulovska, MA, Minister of Interior of the Republic of Macedonia
H.E. Zoran Konjanovski, Minister of Defence of the Republic of Macedonia
Jordan Spaseski, PhD, Faculty of Security – Skopje

PROGRAMME COMMITTEE

Janko Jakimov, PhD, Dean of the Faculty of Security – Skopje, Republic of Macedonia
Cane Mojanoski, PhD, Faculty of Security – Skopje, Republic of Macedonia
Goran Milošević, PhD, Dean of the Academy of Criminalistics and Police Studies (ACPS), Serbia
Luca Iamandi, PhD, Rector of the Police Academy "Alexandru Ioan Cuza", Romania
Tutu Pisleag, PhD, Dean of the Faculty of the Police "Alexandru Ioan Cuza", Romania

Gorazd Meško, PhD, Dean of the Faculty of Criminal Justice and Security, Slovenia
Zvonimir Dujmović, PhD, Higher Police School, Police Academy, MoI, Croatia
Yordan Penev, PhD, Rector of the Academy of the Ministry of Interior, Bulgaria
Zlate Dimovski, PhD, Vice Dean, Faculty of Security – Skopje, Republic of Macedonia
Rose Smileski, PhD, Dean of the Military Academy, “General Mihajlo Apostolski”, Republic of Macedonia
Ljupčo Todorovski, MA, Director, MoI, Republic of Macedonia
Dimitar Mirčev, PhD, FON, Republic of Macedonia
Trpe Stojanovski, PhD, Director, MARRI Regional Centre
Goran Amidžić, MA, Director of the Higher School of Internal Affairs, Republic Srpska, BiH
Mile Šikman, PhD, Head of the Directorate for Police Education, Ministry of Interior, Republic Srpska, BiH
Željko Nikač, PhD, Vice Dean, ACPS, Serbia
Srđan Milašinović, PhD, Vice Dean, ACPS, Serbia

SECRETARY

Stojanka Mirčeva, PhD, Faculty of Security-Skopje, Republic of Macedonia

ORGANIZING COMMITTEE

Prof. Cane Mojanoski, PhD, President
Prof. Tome Batkovski, PhD
Prof. Oliver Bačanović, PhD
Ass. Prof. Marina Mališ- Sazdovska, PhD
Ass. Prof. Frosina Taševska- Remenski, PhD
Ass. Prof. Iskra Aćimovska- Maletić, PhD
Ass. Prof. Stojanka Mirčeva, PhD
Fel. Nikola Dujovski, MA

SECRETARIAT

Ass. Prof. Saše Gerasimoski, PhD
Sen. Lect. Vesna Trajkovska, MA
Fel. Marija Milenkovska, PhD
Fel. Marjan Gjurovski, MA
Kemal Rušid

Media Sponsor: MACEDONIAN INFORMATION AGENCY

Rade Rajkovchevski, MSc;

email:raderaj@yahoo.com

Trpe Stojanovski, PhD;

email:tstojano@yahoo.com



Stojanka Mirceva, PhD,

email:stojankamirceva@hotmail.com

Katerina Krstevska, MSc

email:katerina.krstevska@gmail.com

IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY IN THE CONTEMPORARY POLICING IN THE REPUBLIC OF MACEDONIA

Abstract

In Macedonia, the processes occurring as a result of the transition and implementation of the Euro and Euro-Atlantic aspirations imposed the need for harmonization of legal standards and institutions practices to EU norms in the relevant areas. With the implementation of security sector reform, police had undergone several changes regarding the overall police functioning. The segments of the police structure regarding the information and communication technology (ICT) with some changes were covered partially, while with others they were covered in details. Moreover, the objective of this paper is to explain the progress of the introduction of information and communication technology for the period 1990-2011, through two forms of information collected: a) by means of interviews with three experienced experts from the Ministry of Internal affairs, b) by analysing information and documents related to information and communication segment of the police reforms in Macedonia.

The main source of data are interviews conducted in Macedonia within the work packages of information and communication technology of the project "Composite: Comparative Police Studies in the EU" (2010-2014), laws and acts respected by the police and governing activities related to information and communication technology as well as the experiences of the dynamics in the same area, obtained through comparative analysis of materials from other nine countries participating in the project. The paper should present the impact of international factor and the interest of police management structures for the development and implementation of ICT in the Ministry of Internal affairs of the Republic of Macedonia, needed in police work in contemporary society. By analyzing the content it should be identified several parameters: lessons learned, experiences and impact of services

on international factors and domestic experts. The identification of the above parameters should serve to determine the extent of progress in relation to: a) identification of needs related to ICT and b) the representation of information and communication technology in strategic documents, budget and priorities of the Ministry of Internal affairs.

The conclusions derived from the analysis of the implemented, on-going and planned projects in the field of informatics and communications should provide recommendations for future implementation of solutions, their characteristics and method of use within the work of the police of Republic of Macedonia.

Key words: *police, crime, technology, development and project.*

Introduction

At the end of '80s of the last century when globalization enabled a smooth transfer of information, information and communication technology (ICT) became an integral part of every modern society. In that sense, technology has found a place in the work of national executive authorities. In order to improve efficiency and speed of implementation of police tasks, also as part of the police reforms, the management structures of the police declaratively accepted the need for modernization of the organization following the European trends prompted by the development of technological solutions, social change and dynamics of crime. With the introduction of technological solutions in the police organization and with increasing the level of ICT culture, it came easier to explain the motives, means and modes of action of the perpetrators of criminal acts.

In the '90's, the Department of Informatics and Telecommunications as a main stakeholder of ICT activities within MOI, led the training and supply all requirements for ICT solutions needed for each service in MOI. Using few innovations, Department succeed to make an important step forward because it exceeds the previous concept of manually searching the databases that was based on search of queries of official documents such as bills of paper. Use of ICT solutions gave an opportunity for profound researches, sorted by perpetrators, age, prior conviction, recidivism, type of drug (perpetrators of crime associated with marijuana, heroin, etc.), the manner of performing the crime, nationality, etc.

Initiatives for the introduction of sophisticated ICT solutions in police work were product of ideas that come from the external entity - usually foreign embassies and missions in Macedonia, international police organizations or requirements from the Stabilization and Association Agreement with European Commission. In that period, MOI solved with problems because there was no one to maintain the donated systems. There was not any authorized service or sales representative in the country. In the development of ICT sector within MOI, officials took as the key criteria the

duration of training, portfolio of partner country and its experience in the field. Domestic users increased the level of English and ICT terminology.

Today's picture of ICT's involvement into Macedonian police is completely different. New generations come with good IT knowledge and in the last five years there is no problem with such situations. However, each service needs to know what he wants to get as ICT solution. Operational services know how to handle with ICT equipment but it is still difficult for them to identify what can help them in their work. Manufacturers of ICT equipment have their own solutions and they could incorporate everything that client wants to. Companies are ready to hire experts who will help them in adapting the software.

ICT projects within MOI are focused on: development of civil, criminal and forensic database, integrated database for foreigners, including data from the field of asylum, migration and visas; permanent developing a national database and establishing a network for cooperation between borders polices from the region; integrated border management and development of regional and cross border initiatives; regional cooperation in Criminal Justice, i.e. strengthening the capacities in the fight against cybercrime; development and further support for the implementation of a digital police radio communication system TETRA, upgrading and development of IC technology of other entities within Integrated Border Management and other law enforcement institutions.

The application of ICT has created standards in operational policing. It enables cooperation of national police services with police in the region and states within Interpol and other international organizations and initiatives which are involved in the activities of police cooperation. In the implementation of ICT and cooperation between governments institutions should be mentioned the case of 2005 when Macedonia for first time installed equipment and video conference link from the Primary Court in Tetovo.¹

On journalist question to Minister of Interior "Does the number of issued ID cards and biometric passports, in the state with two millions population, MOI responds adequately to the needs whereas that certain terms

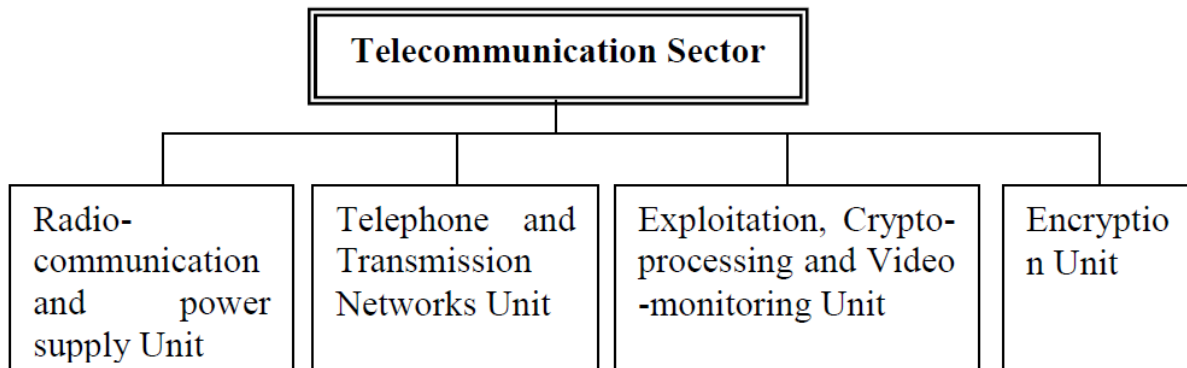
¹ 23-year-old Moldovan woman Lyudmila Diakonu is the first witness who testified in the Macedonian courts through video conferencing link. On April 28, 2005 that as a victim of trafficking from Moldova directly gave his testimony in a court case against Jovica Pejkovski, Ali Gajur, Zulhani Rexha and Hasami Iseni. Direct video link Moldova-Tetovo was provided by FBI and the SECI Center was involved in the process. Thus, the first time in Macedonia were applied the special measures during the questioning of a witness. This reduces costs, but the threats and opportunities for the victims of regional prostitution, is a position of experts in the Ministry of Interior. By then the victims of trafficking were often expelled and then it was difficult to find and bring as witnesses in trials.

are scheduled for next year and citizens wait for the documents that are already prepared for several days?" Minister Interior explained that at the beginning of April 2010, the Ministry of Interior issued more than 1.61 million biometric documents, which certainly is a good figure, but obviously it does not fully meet the demands of citizens.¹ Earlier it was impossible to reach this number because of manual search and difficult access to information. Through the digital collection of the civil data, police achieves greater efficiency in their work. Through the connection of the border crossings with the Forensics Department provides better overview on the records of the movement and sojourn of domestic and foreign citizens. Now, database includes all citizens in the state, not just those who were subject to police investigation. Database could be very useful in many cases. For example, when we make the new ID document, it confirms the person's identity of the people who previously have taken out any kind of biometric documents, at the same time when they registers the biometric entry. However, this is more useful for civil collection of data, which is significantly different from the crime data collection.

Main stakeholders of ICT solutions within MOI

Functioning of ICT into police means completed process of education, functional setting of the system and work engagement of personnel (active input of files, information and getting the first analytical results). Computer engineers have the tasks to administer the software solution (it first began to use Oracle, SQL Server and others), and the rest as analysts were trained to use it. This has raised the knowledge of the use of informatics tools from MS Office such as Excel, Access and others.

- a) Most of activities regarding to implementation of ICT within police are seconded to **Department of Telecommunication and Informatics**



¹ Mirjana Spasovska, "Interview with Minister of Interior", Radio Free Europe (program on Macedonian language), April 11, 2010, <http://www.makdenes.org/content/article/2008351.html>

The sector's tasks are:

- Following the latest developments of telecommunication technology
- Education of technical staff
- Preparing new projects
- Participation in the tenders for purchase of telecommunication equipment
- Implementation of new projects
- Installation of new telecommunication equipment
- Maintenance of existing telecommunication equipment in the Ministry of Interior
- Providing telecommunication services to other Government Institutions
- Responsibility of encryption and security of the telecommunication networks in the Ministry of Interior
- Providing Internet in the Ministry of Interior and taking care of the protection from the internet attacks

b) **Border security system** basically has a need for purchasing the following necessary equipment: lap top computers, database and software, computers for crime intelligence, printers, scanners etc. Recently, within **Border security system** of the MoI was established the Risk Analysis Model. Model increased the needs for the appropriate databases which should contain all important information that are the basic preconditions to conduct risk analysis. The equipment used by border police officers is in accordance with the contemporary EU/Schengen standards of border surveillance. Sensitivity of borders should be overlapped with providing of long range vision cameras for night monitoring, as well as equipment for detection of illegal crossings. Purchasing of adequate equipment requires previous expert's analysis.

c) **Department of organized crime**, in term to be operative for activities related to National Intelligence Database, possess general equipment such as: hardware, software, start-up services, development tools etc. Out of standard equipment, in direction to obtain maximum administrative, physical and IT security of the classified information should be fitted with: security cameras, security bullet-proof doors, and metal cases with number codes, anti-burglary system (alarm-system), entry-exit cards, movement sensors, and window bars.

ICT solutions used into Macedonian Police Criminalistics database

The main goal of criminalistics database is to standardize the operational and analytical procedures of use of the criminal analytical basis for faster and more effective dealing with crime, especially in the fight

against drug trafficking, corruption and the forms of organized crime on national, regional and international level. Database is compatible with the software solutions of Interpol and other international police organizations, UNDCP, regional initiatives etc. In order to constantly expand the database's capacity, it was upgraded several times. It actually contains the information, crime reports, data of the arms' originated crimes, and judicial conviction related to drugs and arms. Database clearly shows which are the routes and hotspots of drug, where the drug consumers are gathering in every city and municipality, what are the most critical border crossings etc. It facilitates the communication between operational employees and analysts in the database centre in term that they could receive message very quickly about their findings and expectations of subjects involved in the case. If any of the operational employees acted previously with persons who are a subject to investigation, then it could be suppressed to avoid contact with the person. This is especially important after 2005 when the special investigative measures began to apply.

Success in creating a criminalistics intelligence database showed that knowledge is not a private property (refer to the applications, associates etc.), but it belongs to the entire institution. Information is available for all employees and all of them can contribute to greater efficiency. It broke the myth that a police officer may decide for the case. That stopped the manner in which people went into retirement and did not share their knowledge. Also, the path of movement of information has changed. That opened the opportunity to build the instruments for measuring the quality of the work of inspectors related to quality and the source of information.

The database that the police had until the '90s was relatively closed (intended only to users of MOI). After the '90s, it started to connect with other governmental systems. Through the standardization of collection, compatible entering and change of criminal data and analysis of criminal data, police and other state institutions achieves greater efficiency in their work. Thus, it saves time, people, and resources and reduces the number of administrative procedures in communication. The database manages commission with representatives from the Ministry of Interior, the Ministries of Justice and Defence and from the Public Revenue, the Financial Police, and the Public Prosecution. With the new protection can be an insight into the use and can restrict the users' access to data. Before any police officer could enter in the database, but now with every access it records the time, person, causes of access etc. The database will not include all citizens of Macedonia, but only individuals who are suspected of committing a crime, as perpetrators and victims of crimes.

Macedonian police developed a regional project together with Bulgaria and Romania. The idea was to import the data into English.

Romanians inserted the information on Romanian. The logic was that it is easier available for operational employees if they entered in their native language. Macedonians submitted data on English until 2006, then on Macedonian but Latin letters. Bulgarians introduced into English, thus enabling the implementation and planning of joint police operations between Bulgarian and Macedonian police services.

Criminal Forensic database

The technology, used for forensic proposes, facilitates the work of police officers and contributes to shortening the time in performing forensic tasks, reducing the people on the ground and simplifying procedures. In airplane accidents, for example, with permission from the investigating judge or prosecutor, in term to identify and implement police procedures, police requests and immediately receives information about individuals in electronic form. For example, if a mobile phone records the fingerprint and transport it in the Department of forensics, they could get shortly detailed information about the person.

Forensic database is very useful for the **Border police**, even if they have a base for original passports, they should have a database of forged documents and partially they must have forensic knowledge. **Department for organized crime** processes additional types of data such as plates of vehicles, identification of persons under the parameters and therefore they should have appropriate training procedures for maintenance of the computers, software and other ICT equipment within department. Each law enforcement institution should find a correlation with other state institutions. Each institution has its own database and runs on its methodology and needs. **Customs** has its base, but requires information of the Forensics Department of the MOI on the purity of the drug and its features because MOI has better technology and equipment. Forensic technologies support **judiciary system** in the cases where police and judiciary tasks are interconnected, such as activities for efficient fight against organised crime and corruption, enhancing the legal security and the protection of human rights.

Macedonia has such an opportunity because the bases as AFIS, IBIS and other software solutions are excellent. MOI started thinking on use of mobile forensic labs, which are not so expensive solutions. Type of labs depends on the frequency of crime forms. The laboratories should be able to search in the central database, so the police officers can easily and quickly solve the case.

Tetra (terrestrial trunked radio)

The existing radio equipment of the Ministry of Interior is partly analogue. The various police forces use a number of different types of radio-communication equipment/systems from the same manufacturer, some of them over twenty years old. New ICT solutions offer technical base for exchange of information in real time not only within the territory of the Republic of Macedonia, but also allows exchange of information with neighbouring countries' border services, using compatible radio communication services based on the TETRA (terrestrial trunked radio) standards. The National strategy for Integrated Border Management - IBM (2003) stipulates that the personnel working in the field, especially the Border police must have communication with their base. They should also be trained on the procedures for radio reporting, in order to provide a transfer of the right information in the right way. Thus, the action plan, which derives from the National Strategy for IBM (2005), foresees activity for "Purchasing of equipment for the TETRA radio system" also as by the requirements for EU accession and introduction of the Schengen Border Code.

TETRA communication system includes base stations; fixed, mobile and portable terminals; switches and dispatcher centers equipped with appropriate hardware and software packages. With system's implementation, Ministry of Interior started transition from analogue to digital mobile radio communication system and to establish the standards of the European Institute of Telecommunication Standardisation. Due to set of digital microwave radio-communications system, Ministry of Interior is linked with twenty international border crossing points.

The TETRA system as ICT solution enables a joint action of police forces from the countries in South-eastern Europe and wider. Macedonia with Bulgaria and Albania has installed a mixed border crossing points (derived from the Vienna Convention) for better coordination. Some Balkan countries have already developed a form of border crossings (between Bulgaria-Romania and Albania-Montenegro). The police officers from both countries together control the travel documents from same point because they have access to compatible collections data. Some of the tasks that use ICT device are part of ILECU's (International Law Enforcement Coordination Units¹) and the Police Cooperation Convention for Southeast Europe. ILECU's aims at setting up 24/7 centres in Europe, which connect the countries and can solve any security problem.

¹ EU project started in 2008. More information available on: <http://www.secicenter.org/p391/28+January+2008> and <http://ec.europa.eu/europeaid/tender/data/d70/AOF80770.doc>

Implementation of the TETRA standards increased: radio signal coverage to approximately 95% of the country's territory, number of registered cases of unauthorized access to the system and information leakage, number of staff members trained and number of successful joint actions. Trained technical staff from Ministry of Interior has capacities to manage the communication system, to deal with any failure and train the end users of the system. Every year, the Ministry of Interior budget plans sufficient financial means for maintenance of the telecommunication network. Now the TETRA team from the Telecommunication Sector is more experienced. Expectations are that the number of staff of the sector will further increase.

In future, this telecommunication system will enable the implementation of data transfer with higher capacity, serving the different services, such as fast and reliable identification of persons, transfer of pictures, and fast access to the central data base of the Ministry of Interior.

Trends in ICT implementation within Police

Experiences from analysis of Composite partners

Analysis of ICT within the police from other nine countries included in the project is based on a cross-country and cross-organizational analysis. The following themes describe major trends in ICT for European policing:

a) Integration of Integration of intelligence data systems - in the partner countries is established or is pending establishment of a database (information system), web based toolsets that allows to police officers to share information from different sources across the organization, introduction of ICT solutions into police cars (digital map of area and other geo-referenced systems), development of solutions for qualitative analysis of texts content, audio and video released to media, support current investigations by visualizing information related to different types of crimes etc. It is useful not only to police departments, but for all other law enforcement agencies. Services are network-connected or connection is in progress, despite the obstacles that are influenced by the position of decentralized police in some countries or the existence of two or more police services. For burglary for example, already some of the countries exchanges data via email attachments (that are automatically parsed and stored in a central database) in term of international police cooperation.

b) Adoption of mobile computing – several programs from this area are already present in the countries, such as: computing in cars, use of mobile and handheld PCs, digital radios, and special equipment. In some of the countries police cars should become mobile contact and coordination centres that will in the case of emergency provide the public with basic information

such as police stations or call centres. The other have digital labs and command post within police buses; computing system in vehicles that can be controlled by voice commands or via a touch screen; access to internal police databases, automatic number plate recognition and video surveillance systems and in special situations also connected to systems of the tax authorities etc. Mobile and handheld PCs are used as a fingerprint scanner, reader for digital documents and a printer. Due to image performance, smart phones are used for searching wanted or missing people.

c) Use of video surveillance technologies – the use of these devices comprises: observation, automatic recognition, border control and lawful interception. In-car system consist cameras mounted on the vehicle and portable cameras that transmit video signals wirelessly, recording system with monitors and video encoders and decoders. In this category are the solutions as centres for the management of road safety, display video surveillance footage from shops, automatic plate recognition from police cars, infrared-based video analysis system to automate border surveillance etc. All countries have a great progress in this area.

d) Application of digital biometrics – The system of digital fingerprint technology is especially used to check drivers who were previously identified by the plate recognition system; handheld devices allow police officers to take digital fingerprints while they are patrolling in trains and airports and to verify the digital identity documents.

e) Crosscutting issue of user acceptance – Users have problems with technical malfunctions and limitations, frequent problems in hardware or software put the usefulness of new systems into doubt, centrally managed systems confront users with interfaces that are different from the interaction learned with standard operating systems etc. e-learning platform provides a means of training officers in the use of new technologies and updated procedures.

f) Emerging challenge of social media applications – As a part of police-public relations and public relations strategies of police service, police makes interactions with media, citizens and other public factors. Connections is established trough making active use of social media, using a social Media as a publication channel, and trough defining the role of police in social networks. Part of activities of police services, as a sign of transparency, are present on social networks such as Facebook, Twitter, blogs, SMS, YouTube etc. Police services are interested to obtain higher level of openness which contributes for better cooperation and building a trust in police-public relations. In the same time, police uses media performances to promote activities and to achieve the aims of prevention programs and other campaigns.

Other experiences

The use of geographic information systems (GIS) by crime analysts in law enforcement is growing. In England and Wales, large majority of crime analysts surveyed used GIS in their analysis. Analysis used in crime reduction and community safety can extend beyond crime data alone. Analysts make use of a large number of multiagency datasets in order to better understand crime problems and more effectively target interventions.¹ Use of GIS in crime mapping (burglary and other types) clusters in space and time.² Network analysis might be applied by using shortest-path algorithms to identify associations in criminal networks. Effective and efficient link analysis techniques are needed to help law enforcement and intelligence agencies fight organized crimes such as narcotics violation, terrorism, and kidnapping.³

A strategic move that makes prevention, detection, and repression of organized crime more effective has to do with strengthening the technological capabilities of the police force. When Italian police launched their recent anti-Mafia strategies, funding was provided for information and communication technology in terms of an integrated system of satellite telecommunication, modern sensors located in the area and operative interconnected control rooms:⁴

A targeted and effective use of new technologies can be devastating to Mafia activities. "Men of honour" usually speak very little, but they cannot avoid a certain amount of crucial communication, both between themselves as well as with their victims. In the past (and often still today) the Mafia moved without anybody seeing or hearing anything, but if phone calls and conversations can be tapped and acts can be filmed, there is no need for witnesses anymore, and the work of Mafia men becomes much more difficult. As is well-known, Bernardo Provenzano—the boss of all bosses in Cosa Nostra—used an archaic medium (small slips of paper, so-called pizzini), to avoid interception. But even small sheets need "postmen" to deliver them and postmen can be detected. Provenzano was caught in April 2006, after having

¹ Ruth Weir and Mark Bangs, "The use of Geographic Information Systems by crime analysts in England and Wales" (Online Report 03/07, Home Office, UK, 2007), <http://www.homeoffice.gov.uk>

² Shane D Johnson et al., "Prospective crime mapping in operational context," (Online Report 19/07, Home Office, UK, 2007), <http://www.homeoffice.gov.uk>

³ Jennifer J. Xu and Hsinchun Chen, "Fighting organized crimes: using shortest-path algorithms to identify associations in criminal networks," *Decision Support Systems* 38 (2004), 473–487.

⁴ Antonio La Spina, "Recent Anti-mafia Strategies: the Italian Experience," in *Organized Crime: Culture, Markets and Policies*, eds. Dina Siegel and Hans Nelen (New York: Springer, 2008), 195–206.

spent more than 40 years on the run, because the police were able to monitor his relatives and the people who brought him clean underwear.

In the USA (Shelby, North Carolina), Police Department has built a GIS-based system that is helping to lower crime rates and better share information. Map-based tools help the agency see exactly where crimes have been reported and effectively respond to events in a dynamic fashion. The department implemented ESRI software-based Crime Analysis Tools (CAT), an ArcGIS extension that analyses crime patterns and calls for service. Viewing and analysing incidents by crime type and on a weekly, monthly, and annual basis helps commanders comb through volumes of data stored in record management systems. They use GIS to look at district breakdowns of reported incidents, repeat calls, and areas where particular crimes have spiked above average. These analyses help district managers compare and contrast what is happening in other districts. Spatial analysis is used for all types of crimes including homicide, sexual assault, robbery, larceny, and car theft. The query results, once visualized on a map, are then shared agency-wide.

Conclusion

ICT does not create conditions, but to apply ICT conditions should be made available. Generally speaking, Macedonian Police accepts the dynamics of modernization of ICT sector. Use of Intranet by police officers gives optimal effects – shortened time of transmission of data and information and many other benefits. The numerous projects in this area speak about it. Today, most of the project budgets are supported by the IPA funds and domestic funds of the Government and the Ministry of Interior. The effects of initiatives for developing the ICT contributed to recognition of ICT solutions' needs and expectations which exist in the police organizations worldwide. From learned lessons, experiences and progress could be assumed that domestic experts recognize the needs and future strategic directions related to budget and introduction of new IC technologies within the MOI. Since the police reforms begun, the Ministry of Interior started predicting funds for buying and maintenance of ICT.

The impact of human factor will stay crucial. No matter how skilled the unit is, the vision and the quality of the good staff, still the Head of the unit that uses ICT solutions should know what he wants to get from the results. He needs to know the subject, jurisdiction, and what parameters to enter. Even the police officers had seen the need for ICT equipment and it became part of their routine work, they need to increase their IT culture in terms of handling data and request, precisely and timely. If the pressure of

expectations from superiors will be reduced, it will be much easier to all police officers to recognize the needs and to change their attitudes about needs of ICT.

Commercial software used worldwide is comprised of solutions derived from scientific knowledge and experience. Due to international involvement and interest of Macedonian police authorities, Macedonia got the complex database software adapted according to its specifics while the market is offering solutions that are made according to the experiences of several countries.

Apart from supporting the system of values within the frames of the profession and making the values and results measurable, information technology sharpens the conflicts between the old concept and the needs of the 21st century, i.e. about what is and what should be the police. It reduces the operating time and leaves more space and time to dedicate to other priorities.

Bibliography:

Denef, Sebastian (ed.), Nico Kaptein, Petra S. Bayerl, Kamal Birdi, Fabio Bisogni, Damien Cassan, Jochen Christe-Zeyse, Pietro Costanzo, Mila Gascó, Kate Horton, Gabriele Jacobs, Theo Jochoms, Katerina Krstevska, Stojanka Mirceva, Ad van den Oord, Catalina Otoia, Rade Rajkovchevski, Zdenko Reguli, Trpe Stojanovski, and Gabriel Vonas, *Analysis of Technology Trends for Policing*, Report of COMPOSITE – Comparative Police Studies in the EU, 2011.

Gottschalk, Petter. *Knowledge Management in Policing: Enforcing Law on Criminal Business Enterprises*. New York: Hindawi Publishing Corporation, 2008.

Johnson, Shane D, Daniel J Birks, Lindsay McLaughlin, Kate J Bowers, and Ken Pease. “Prospective crime mapping in operational context.” Online Report 19/07, Home Office, UK, 2007. <http://www.homeoffice.gov.uk> (accessed April 9, 2011)

La Spina, Antonio. “Recent Anti-mafia Strategies: the Italian Experience.” In *Organized Crime: Culture, Markets and Policies*, edited by Dina Siegel and Hans Nelen, 195–206. New York: Springer, 2008.

Spasovska, Mirjana. “Interview with Minister of Interior”, Radio Free Europe (program on Macedonian language), April 11, 2010, <http://www.makdenes.org/content/article/2008351.html> (accessed April 9, 2011)

Weir, Ruth and Mark Bangs. “The use of Geographic Information Systems by crime analysts in England and Wales.” Online Report 03/07, Home Office, UK, 2007. <http://www.homeoffice.gov.uk> (accessed April 9, 2011)

Xu, Jennifer J. and Hsinchun Chen. "Fighting organized crimes: using shortest-path algorithms to identify associations in criminal networks." *Decision Support Systems* 38 (2004), 473–487.

ВЛИЈАНИЕТО НА ИНФОРМАТИЧКО-КОМУНИКАЦИСКАТА ТЕХНОЛОГИЈА ВО СОВРЕМЕНОТО ПОЛИЦИСКО РАБОТЕЊЕ ВО РЕПУБЛИКА МАКЕДОНИЈА

Резиме

Во Македонија, процесите кои се јавија како причина на транзицијата и реализацијата на евро и евроатлантските аспирации, наметнаа потреба од усогласување на законските стандарди и праксата на институциите со нормите на ЕУ во соодветните области. Со спроведувањето на реформата на безбедносниот сектор, полицијата претрпе неколку промени кои се однесуваа на целокупното полициско работење. Сегментите од структурата на полицијата кои се однесуваат на информатичката и комуникациската технологија (ИСТ) со некои промени беа опфатени делумно, а со другите подетално. Притоа, цел на трудот е да се објасни напредокот од воведувањето на информатичката и комуникациската технологија за периодот од 1990-2011 година, преку две форми на собрани информации: а) по пат на интервју со тројца искусни експерти од МВР; б) со анализа на информации и документи кои се однесуваат за информатичко комуникацискиот сегмент од реформата на полицијата во Македонија.

Главен извор на податоци претставуваат интервјуата спроведени во Македонија во рамки на работниот пакет за информатичката и комуникациската технологија на проектот „Композит: Компаративни студии за полицијата во ЕУ“ (2010-2014), законите и актите по кои постапува полицијата, а со кои се уредуваат дејностите поврзани со информатичко-комуникациската технологија и искуствата за динамиката во истата област добиени преку компаративна анализа на материјалите од останатите девет земји кои учествуваат во проектот. Трудот треба да го покаже влијанието на меѓународниот фактор и интересот на полициските раководни структури за развој и имплементација на информатичко-комуникациската технологија во Министерството за внатрешни работи на Република Македонија, како нужност во работата на полицијата во современото општество. Со анализа на содржина треба да се препознаат неколку параметри: научените лекции, искуствата и ефектот од услугите на меѓународните фактори и домашните експерти. Идентификацијата на споменатите параметри треба да служи за одредување на степенот на постигнатиот напредок во однос на: а) препознавањето на потребите поврзани со информатичко-комуникациската технологија и б) застапеноста на информатичко-комуникациската технологија во стратешките документи, буџетот и приоритетите на Министерството за внатрешни работи.

Заклучоците од анализата на досега реализираните, тековните и планираните проекти во областа на информатиката и комуникациите треба да дадат препораки за воведување на идни решенија, нивните карактеристики и начинот на употреба во рамки на полицијата на Република Македонија.

Клучни зборови: полиција, криминал, технологија, развој и проект.