



Co-funded by the
Erasmus+ Programme
of the European Union



LMPI – MOLDOVA

P9_ Technical University of Moldova

P10_ Alecu Russo Balti State University

P11_ Moldova State University

P12_ Acedamy of Economic Studies of Moldova

INTERIM TECHNICAL REPORT



Co-funded by the
Erasmus+ Programme
of the European Union



lmpi
licence master professionnel
en protection informatique

Index

Quality of the project implementation	3
New/updated courses.....	10
Activites related to Teaching / Training	15
Awareness raising, dissemination, sustainability and exploitation of the project results	17



Quality of the project implementation

1. Description of the activities implemented

The following activities were implemented within the project:

1. Signing the mission letters for each partner with specifying in detail the mission of each partner.
 - WP 1.1
 - planned in application 31/10/2016
 - realized 15/03/2017
2. Analyzing regional resource and elaborating regional resource summary, analyzing the methodology used in Moldova for elaboration of study programs, exploration of universities' offer in information security field.
 - WP 1.2
 - planned in application 31/10/2016
 - realized 20/03/17 – 24/03/17
 - impact: understanding the needs of formation of renovators
3. Elaboration of the list of 20 renovators with detailed information (name, university, function, email, phone, qualification, experience and CV). The list contained 12 teachers, 5 professionals and 3 institutional staff. The list was validated by TEI and GIP FIPAG.
 - WP 1.3
 - planned in application 31/10/2016
 - realized 20.03.17 – 24.03.17
 - impact: the possibility to assess the human potential of universities in the field of information security
4. Participation at GPI n°1 in Lyon where there was discussed project, its objectives, activities and budget, the quality plan, the chronogram of activities.
 - WP 1.4
 - planned in application 30/11/2016
 - realized 20.03.17 – 24.03.17
5. Organization at GPR n°1. During the GPR 1 were organized meetings and discussions with the Rectors and the vice-rectors of the Universities: ASEM, USM, UTM, USARB. Have been presented the project partners (universities, institutions) and discussed the project activities.
 - WP 1.4
 - planned in application 30.11.16
 - realized 15.05.17 – 19.05.17
6. Designation of the external evaluator in MD present at all phases of the work. The external evaluator was designated Valeriu Cernei.
 - WP 9.1
 - planned in application
 - realized 15.05.17 – 19.05.17
 - impact: the outside vision allows to improve the activities carried out within the project, it is a good practice that can be applied in other university projects
7. Realization of study visit in Greece. The team included 9 participants from all Moldavian partners (teachers and decision-makers). Participants of study visit analyzed the strategy of the TEI and its implementation; observed the links that TEI have with the world of economics; visited different IT companies and state structures, observed of the operation of resource



centers and poles of excellence and technological platforms, didactic cyber spaces; analyzed the practices relating to double degrees or joint degrees.

- WP 2.1
 - planned in application 30-11-2016
 - realized 12.06.17 – 16.06.16
 - impact: the opportunity to collaborate with European experts, to establish partnership relations and to extend the collaboration with other joint projects
8. Elaboration of Regional Strategic Action Plan for Moldova. In Regional Strategic Action Plan were the scope, the objectives, phasing, role of each partner, the activities and the dates. Regional Strategic Action Plan was elaborated after study visit with the support of the regional leader TEI. This Plan was signed by rectors and director of all Moldavian partners.
- WP 2.2
 - planned in application 30-12-2016
 - realized 20.06.17 – 05.07.17
 - impact: the activities, the responsible partners and dates of implementation included in Regional Strategic Plan allows to manage and monitor the good realization of the project
9. Elaboration and administration of questionnaire. The questionnaire was elaborated with the support of GIP FIPAG. The questionnaire was answered by 199 professionals.
- WP 2.3
 - planned in application 30/04/2017
 - realized 25.06.17 – 15.10.17
 - impact: labor market investigation allows to determine what are the actual requirements and allows to adjust the educational offer at the request of society
10. Organization of GPR n°2. During this GPR were organized meetings and discussions with the Rectors and the vice-rectors of the Universities, visits of partners' institutions (CCCI, CTS, ME). All partners were participated at dissemination session on the project activities. The Regional Plan of Strategic Actions was discussed, coordinated and approved. There were analyzed the survey progress and the obtained results. In base of survey results were identified competencies and selected didactic modules. Has been sketched the content of the disciplines that will be introduced into the curriculum of the bachelor's and master's programs.
- WP 2.3
 - planned in application 30/04/2017
 - realized 19.09.17-22.09.17 and 23.10.17 – 27.10.17
11. Training of teachers at TEI in fundamental disciplines in the field of information security. The teacher was selected from the list of renovators. In this training the teachers deepened their scientific knowledge of the fundamental disciplines of computer security (networks, algorithmic tools, security for the embedded world, network monitoring, advanced cryptography, computer security) and collected the associated educational resources, educational sequences (objective, content, duration, pedagogical means, manuals, multimedia tools).
- WP 3.1
 - planned in application 30/04/2017
 - realized 12.11.17 – 26.11.17
 - impact: trained teachers who will bring add value to university
12. Erasmus+ training at Grenoble organized by GIP FIPAG. The lead of the region was trained in France to write a pedagogical and financial report of their agreement (real case studies, simulation of accounting documents).
- WP 10.3



- planned in application 22/10/17
 - realized 27.11.17 – 29.11.17
 - impact: correctly elaborated documents
13. Selection of the target professions and elaboration the job descriptions. Elaboration of two job descriptions (fiche métier) for bachelor and master degrees. For each job description (fiche métier) was presented the specialization of the chosen security professional, the main activities, the specific and generic competences, job profiles, the title of the license and the master.
- WP 2.4
 - planned in application 30/04/2017
 - realized 16.10.17 – 30.10.17
14. Selection of master and license and formalization of competences in the base of questionnaire. The results of the questionnaire were processed what allowed to identify the specific and generic competences.
- WP 2.4
 - planned in application 30/04/2017
 - realized 01.11.17 – 14.11.17
15. Study of the accreditation procedure and preparation of accreditation file. The accreditation files were presented in required forms with the title of the diploma, the target profession, the description of the curriculum and teaching units, the detailed content of the disciplines, the projects, the modalities of teaching and assessment and the diploma supplement. The teachers who benefited from study visit in Greece were involved in the elaboration of accreditation files.
- WP 3.3.
 - planned in application 30/06/2017
 - realized 01.02.18 – 15.02.18
16. Presenting accreditation files to Ministry of Education, Culture and Research and ANACEC (National Agency for Quality Assurance in Education and Research) for coordination and accreditation.
- WP 3.3
 - planned in application 30/06/2017
 - realized 01.09.17 – 01.03.18
 - impact: obtaining accreditation for information security specialties
17. Organization of GPR n°3. During this GPR were discussed the content of disciplines concerning information security, the correspondence of the content of this disciplines with the content of the disciplines in the reference universities, resource coverage.
- WP 3.3
 - planned in application 30.06.17
 - realized 12.02.18 – 16.02.18
18. Participation at GPI n°2 at Rome (ex Chisinau). At this meeting was discussed project progress: the results of survey, two job description, the study visit, the regional strategic action plan, the accreditation files. There were discussed the equipment and the acquisition procedure, implementation modalities and conventions relating to double degrees. There were presented and discussed the realized dissemination activities. Uninettuno has presented the new functionalities of project web site. The chronogram was updated.
- WP 3.3
 - planned in application 01/07/2017
 - realized 05.03.18 – 09.03.18



Co-funded by the
Erasmus+ Programme
of the European Union



2. Visibility

For the promotion purpose and the visibility of the project the following activities were realized:

1. Erasmus+ Projects Information Seminar, AK2 with Alecu Russo State University of Bălți participation

Description: On 24 April 2017, the USARB held the Erasmus + Project Seminar, selected for funding by the European Commission in 2016.

Corina NEGARA, institutional coordinator of LMPI, presented the activities during the visit to the GPI 1, Lyon, France, between March 20-24, 2017, for participation in the launching meeting of Project N ° 573901-EPP-1-2016-1-IT-EPPKA2-CBHE-JP LMPI in Moldova, in Kazakhstan, and in Vietnam.

Valentina PRITCAN, noted that the Erasmus + Program is designed to support the efforts of the participating countries to make effective use of Europe's talent and capital in a lifelong learning perspective life by linking support for formal, non-formal and informal learning in the fields of education, training and youth. The program also enhances opportunities for cooperation and mobility with partner countries, especially in the fields of higher education and youth.

Date: 24.04.2017

Place: Alecu Russo State University of Bălți

28 participants.

Link: <http://www.usarb.md/evenimente/articol/proiectele-erasmus-ac2-implementate-cu-participarea-usarb/>
https://www.facebook.com/pg/universitatea.alecu.russo/photos/?tab=album&album_id=1324057157649316

2. Dissemination atelier: General presentation of ERASMUS+, LMPI PROJET and the possibilities to study Information Security in Republic of Moldova

Description: The Faculty of Mathematics and Computer Science organizes a Sunday School of Young Mathematicians and Informaticians for pupils/students of lyceums (10th-12th forms) of Republic of Moldova. It has sessions of 3 hours twice a month during the academic year. A special session of this Sunday School was organized by the institutional coordinator- Galina Rusu, and had the objective to inform pupils/students about ERASMUS+ projects methodologies, activities, about the LMPI Project and about the new opportunities open by this project to study informational security in our country.

Date: 04.02.2018

Place: Moldova State University

54 participants.

3. Erasmus + 30th in Republic of Moldova Anniversary. The fair of European Projects.

Description: The Anniversary of 30 years of ERASMUS+ in Republic of Moldova was marked by a big event, organized with and for ERASMUS + beneficiaries and partners. Students, teachers, universities, companies, ministries were invited, participated and shared their good practices. One of the guests of the event was the prime-minister: Pavel Filip. Representatives of LMPI partners: GIP FIPAG, University of Piraeus, Technical University of Moldova, Moldova State University, Academy of Economic Studies of Moldova, Alecu Russo State University of Bălți participated at the event. A poster with LMPI project was displayed during the event.

Date: 18.05.2017

Place: Palace of the Republic



Co-funded by the
Erasmus+ Programme
of the European Union



**More than 400 participants,
The newspaper *Timput* has published an article concerning the event:**

<https://www.timput.md/articol/generaia-erasmus-+la-30-de-ani-109585.html>

Link:

https://www.facebook.com/pg/universitatea.alecu.russo/photos/?tab=album&album_id=1348781385176893

4. Erasmus+ LMPI Project at TVR Moldova

Description: From Monday to Friday, at 17:00 and the next day at 9:00, presenter Sandu Scobioala invites guests to the *Common Objective*-a live talk show in the Chisinau studio, where social and cultural issues (Republic of Moldova today and tomorrow, the European perspectives, Romania's experience, community realities and cultural projects on both sides of the Prut) are discussed. Sandu Scobioala, together with TVR reporters, brings to life stories and successful histories of those who have found solutions despite the difficulties they face in society. The common goal of both TVR MOLDOVA reporters and the whole society is community development, based on fairness, civic responsibility and European values.

On March 28, 2018, the discussed subject was **Cyber Security**. The guests were Dinu Țurcanu, Head of Information and Communication Technology (TUM, P9) and Ms. Natalia Spânu, Head of the Cyber Security Department (CTS, P17), members of the LMPI project. The TV show was opened with two interviews given by the participants in the LMPI project: the TUM Rector, Mr. Viorel Bostan, Institutional Coordinator of the LMPI Project, and Mr. Victor Beșliu, National Coordinator.

A sequence of speech was: *"Today at the Common Objective we talk about cyber security Hackers do not circumvent the Republic of Moldova. Last year there were about six million attempts at cyber attacks in our country. IT security can not be ignored and targets both state and private institutions. At the same time, the number of cyber frauds targeted at the economic agents carrying out the import activities of goods and raw materials increased."*

Date: 28.03.2018

Link: <http://tvrmdoia.md/recomandari/astazi-la-obiectiv-comun-discutam-despre-securitatea-cibernetica/>

5. Erasmus + LMPI Project in local informational portals/newspapers:

a) *Buletin informativ*

Date: November 2017

Place: Moldova State University

The results of GPR2 and the visit of Jean-Noel Pachoud and Panayiotis Yannakopoulos were related.

Link: http://usm.md/wp-content/uploads/buletin_Noiembrie_2017.pdf

b) *Mesager universitar*

Date: December 2017

Place: Technical University of Moldova

The general presentation of the LMPI project, the results of the first year of activity, the visit of Noemi De Luca were related.

Link: <http://www.utm.md/mesager/2017/mu-decembrie-2017.pdf>

6. The universities sites.

a) Alecu Russo State University of Bălți <http://www.usarb.md/lmpi/>



Co-funded by the
Erasmus+ Programme
of the European Union



- b) Moldova State University http://usm.md/?page_id=16781
- c) Technical University of Moldova <http://proiecte.utm.md/lmpi/>
- d) Academy of Economic Studies of Moldova <http://ase.md/erasmus-lmpi.html>



List of LMPI courses and renovators

Course	University	Participant	e-mail	mob.phone
L1 Cryptographic Methods of Information Protection	UTM	Dohotaru Leonid	leonid.dohotaru@mate.utm.md	
	USM	Capcelea Titu	tcapcelea@yahoo.com	069468000
	ASEM (leader)	Zgureanu Aureliu	aurelzgureanu@gmail.com	079234829
	USARB	Gorea Adela	adelagorea@mail.ru	079957878
L2 Information Systems Security	UTM	Bulai Rodica	rodica.bulai@ati.utm.md	079701187
	USM (leader)	Novac Ludmila	novacludmila@gmail.com	069791936
	ASEM	Zgureanu Aureliu	aurelzgureanu@gmail.com	079234829
	USARB	Negara Corina	corina.negara@gmail.com	069238884
L3 Administrarea și securitatea rețelelor de calculatoare	UTM	Moraru Victor	victor.moraru@calc.utm.md	060609604
	USM	Băț Ion	1i2o1n3b@gmail.com	
	ASEM (leader)	Andronatiev Victor	androvic@ase.md	068234488
	USARB	Cabac Eugeniu	eugeniu.cabac@gmail.com	079008201
L4 Technical means of information protection	UTM (leader)	Ababii Victor	victor.ababii@calc.utm.md	
	USM	Arnăut Vsevolod	arnaut_s@yahoo.com	069272057
	ASEM	Prisăcaru Adrian	prisaandrian@gmail.com	079819615
	USARB	Plohotniuc Eugeniu	eugenplohotniuc@yahoo.com	079825818
M1 Information security management	UTM (leader)	Bulai Rodica	rodica.bulai@ati.utm.md	079701187
	USM	Brăgaru Tudor	theosnume@gmail.com	062043684
	ASEM	Ohrimenco Serghei	osa@ase.md	079359405
	USARB	Negara Corina	corina.negara@gmail.com	069238884
M2 Information Security Audit	UTM	Bulai Rodica	rodica.bulai@ati.utm.md	079701187
	USM (leader)	Brăgaru Tudor	theosnume@gmail.com	062043684
	ASEM	Ohrimenco Serghei	osa@ase.md	079359405
	USARB	Petic Mircea	petic.mircea@gmail.com	079502977
M3 Enterprise Information Security	UTM	Moraru Victor	victor.moraru@calc.utm.md	060609604
	USM	Pașa Tatiana	pasa.tatiana@yahoo.com	079406452
	ASEM (leader)	Delimarschi Boris	stud2me@gmail.com	079519406
	USARB	Petic Mircea	petic.mircea@gmail.com	079502977
M4 Security of electronic transactions	UTM	Călin Rostislav	rostislav.calin@ati.utm.md	068010143
	USM	Pleșca Natalia	natalia-plesca@yandex.com	079733257
	ASEM	Prisăcaru Adrian	prisaandrian@gmail.com	079819615
	USARB (leader)	Cabac Eugeniu	eugeniu.cabac@gmail.com	079008201



New/updated courses

List of the courses intended to be developed or updated inside the LMPI project was established according to propositions made by universities from LMPI project and by industrial partners. All courses volumes are 60 hours (30 hours for courses and 30 hours for practical activities), this volume is equal to 5 ECTS.

We are developing 8 courses: four for licence level and four for master degree.

Licence level

- L1 Cryptographic Methods for Information Protection
- L2 Information Systems Security
- L3 Network administration and security
- L4 Technical means of information protection

Master level

- M1 Information security management
- M2 Information Security Audit
- M3 Enterprise Information Security
- M4 Security of electronic transactions

Each course is developed/renewed by a team including members from each partner university.

Courses outlines for developed courses are presented below.

Cryptographic Methods for Information Protection

- Introduction to Cryptography
- Classical ciphers
- Modern stream ciphers
- Modern block ciphers
- Hash Functions
- Message Authentication Codes
- Basic public key encryption algorithms
- Signature schemes
- Security issues of encryption algorithms
- Steganographic methods for information protection

Information Systems Security

- Introduction to Information Systems Security;
- Legal aspects of information security;
- Access control to computer systems.
- Forms of hazard manifestation in information systems (threats, attacks, malicious software);
- Information protection in information systems;
- Basic software security of information system;
- Insecurity in Software;
- Detecting and preventing intrusions in information systems;
- Security Policy of the Information System;
- Ensuring the confidentiality, integrity and availability of the information system.



Network administration and security

- Computer networks security: specific issues, treats and vulnerabilities, attacks, security solutions and strategies, security policies;
- Network management as a security technique for computer networks. Local networks: protocols, structure, network equipment, virtual networks.
- Vulnerabilities in local networks and security techniques; Basic security in an IP network. Network addressing and IP protocol. Network structure and routing as a method of enhancing network security;
- Network perimeter security. Secure Network Design. Firewalls: principles, functionalities, strategies, types, configuration.
- Cryptographic methods for information protection in computer networks. Elements of cryptography: symmetrical and asymmetric cryptography. Encryption algorithms RSA, DES, IDEA, RC4, AES.
- Confidentiality of communication sessions, session key concept and Diffie-Hellman protocol.
- Data integrity control protocols: public key cryptography, digital signature;
- Authentication methods. Single Sign On (SSO) authentication, RADIUS, TACACS, KERBEROS and LDAP protocols;
- Public Key Infrastructure (PKI): services, actors, operation. X.509 certificate;
- Pretty Good Privacy (PGP) encryption system. OpenPGP standard and its GNU Privacy Guard (GPG) software implementation.
- E-mail securing; Network layer securing, IPSec protocol: principles, services, working modes, authentication, header format;
- Transport layer securing, SSL and TLS/SSL protocols. Web security with HTTPS protocol. SSH protocol;
- Virtual private networks (VPNs): architectures and technologies. IPSec, PPTP, TLS/SSL tunnels.

Technical means of information protection

- Introduction to technical means of information protection. Structure of information protection technical means.
- Methods and techniques for detecting and correcting errors.
- Information protection provided by processor / computer architecture.
- Information protection provided by the technical means of data storage. Technical means of data management.
- Addressing techniques in computer systems and computer networks and information protection methods. Pre- and post-identification of intrusions.
- Information protection techniques in communication channels.
- Technical means for the protection of information carriers.
- Numerical accelerators for information protection.
- Methods and techniques for controlling access to information.
- Methods and techniques for destroying the information.



Information security management

- The information security management framework. Basic concepts and concepts. International standards about ISM: ISO 27000 family of standards, NIST, PCI DSS. The relationship between standards and their applicability.
- The information security management system (ISMS). Components and mechanisms of an ISMS. Stages of the ISMS implementation process according to ISO 27001. Establishment of objectives and definitions of the ISMS. Declaration of applicability.
- Analysis and assessment of the security risks. General concepts on information security risk management. Inventory of assets. Threats and vulnerabilities. Stages of the risk analysis and assessment process according to ISO 27005 standard. Quantitative and qualitative assessment.
- Methodologies and tools for the informational risk analysis. Microsoft methodology. CRAMM methodology. METHARI methodology. Ebios methodology. Octave methodology. IT methodology - Grundschatz. Ebios, GSTool, Grif, RiskWatch, Cramm.
- The current legal framework. Information security management at the state level: general principles. Information risk management methodologies used by local infrastructure.
- Policies, models, and security programs. Multilevel and multilateral security models. Security policy models. Examples of security policies. Practical aspects of the security policy.

Information Security Audit

- Definition, purpose, destination, types and location of ISA ;
- International reference normative framework. International Standard of Auditing ISO 27001. COBIT. ITIL. ISACA.
- Audit legislation of the Republic of Moldova. Internal regulations and instructions.
- Methods and tools for an information security audit.
- Security audit procedures for equipment, data carriers, data, IT applications, internal networks/communications, web security and external Internet attacks
- Audit/assessment of the compliance with the requirements of the national legislation on the security of personal data.
- Analysis of organization, information security management and human factor.
- Security auditing of companies operating systems and database management systems
- Audit of technical and technological infrastructure in company information systems and IT-based confidential information.
- Analysis of scan reports and suggestions for capitalizing on the findings
- Evaluating security controls for the Information Security Management System (ISMS).
- Structure of the audit report. Elaboration of the audit report and proposals for capitalizing the recorded findings. Revision of security system audit
- Computer Assisted Audit Techniques (CAATs)
- Professional Auditor Requirements. Code of Ethics of the Auditor. CISA, CISM Certification (ISACA)
- Future and perspectives of ISA



Enterprise Information Security

- Modern Enterprise Foundations of
- Legal framework of the microeconomic information environment
- Enterprise Information System threats
- Enterprise information resources risk assessment principles and methods
- Enterprise security policies design
- Personal data management and administration in the enterprise information system
- Enterprise information system protection methods
- Enterprise information security system design and implementation
- Enterprise information security system management and audit particularities
- Crisis (malicious attack) management in the enterprise information security
- Best practices in enterprise information security ensuring

Security of electronic transactions

- E-Commerce. Four E-Commerce Business Models. Digital e-commerce cycle.
- E-Commerce Applications. Classification of e-commerce systems
- Payment systems in Internet. Stages of development of payment systems on the Internet
- Classification and characterization of existing payment systems on the Internet
- Means of protection of electronic messages. Use GPG to encrypt and sign messages.
- Activation and deactivation of keys. Key Certification.
- CRM system.
- Types and sources of threats to e-commerce security.
- E-commerce security tools.
- Communication channel. Protecting communication channel.
- Ensuring transaction integrity.
- Security for client computers. Protecting the web server.

Dispositif modulaire LMPI pour la FTLV

Compte tenu des résultats de l'enquête d'identification des métiers cibles et des besoins de formation dans le champ de la sécurité informatique en Moldavie nous proposons les modules suivants:

- Bases de la sécurité d'information
- Mécanismes cryptographiques et applications
- Logiciels malveillants et virus informatiques : pratiques de détection et de protection
- Administration des réseaux et des services informatiques
- Sécurité des réseaux et des services
- Organisation et méthodes de la sécurité
- Développement sécurisé
- Structures de sécurité et certification
- Sécurité d'information d'entreprise
- Gestion et audit de la sécurité d'informations

Selon la même enquête, la formation doit mettre un accent important sur la partie pratique, sa partie doit constituer 50% du volume horaire du module. Notre proposition est de faire des modules de 40 heures: 20 heures des cours théoriques et 20 heures des travaux pratiques.

Some of developed/renewed courses will be fully implemented in the new curricular offer of partner universities, some of them will be used inside an existing training offers as shown in the table below as well as the level of achievement of each course.



Course	Full implementation in curricular offer	Partial implementation in existing courses	Level of achievement
L1 Cryptographic Methods of Information Protection	UTM ASEM	USM USARB	75%
L2 Information Systems Security	UTM, USM ASEM, USARB		75%
L3 Network administration and security	UTM USM ASEM	USARB	50%
L4 Technical means of information protection	UTM USM ASEM	USARB	25%
M1 Information security management	UTM ASEM	USM USARB	<u>50%</u>
M2 Information Security Audit	UTM USM ASEM	USARB	<u>75%</u>
M3 Enterprise Information Security	UTM USM ASEM	USARB	75%
M4 Security of electronic transactions	UTM USM ASEM	USARB	25%



Activities related to Teaching / Training

Study visit in Europe

Date: 12-18.06.2017

Place: Athens, Greece

Participants:

Panayotis Yannakopoulos	UE regional referent	Piraeus University of Applied Sciences
Andronic Serghei	Vice-rector for Didactic Activities	Technical University of Moldova
Victor Besliu	National Coordinator	Technical University of Moldova
Natalia Gasitoi	Vice-rector for Didactic Activities	Alecu Russo State University of Bălți
Angela Niculită	Vice-rector for International Relations	Moldova State University
Galina Rusu	Dean of the Faculty of Mathematics and Computer Science	Moldova State University
Ion Bolun	Chief of Department Cybernetic and Economic Informatics	Academy of Economic Studies of Moldova
Vasile Marina	Vice-minister	The Ministry of Education, Science and Research
Dmitri Meico	Chief of Department	The Centre of special telecommunications
Alexandru Putere	Chief of Department	The Centre of fighting with the Cyber Criminality

Selection criteria:

The participants to the Strategic study visit were selected to represent all the Moldovan partners of the LMPI project: Ministry of Education, companies, universities. At the institutional level were selected the most appropriate to the subject of the project representatives of administration - the persons who would guide the activities in the project into a better direction.

The main objectives:

- Analysis of the strategies of European universities and their implementation;
- Observation of links between European universities and the economic world;
- Study of Bachelor and Master courses related to information security;
- Observation of the functioning of resource centers and technological platforms, didactic cybernetic spaces;
- Analysis of double diploma or joint degree practices.

The activities during the Strategic study visit:

- Meeting with the representatives of the University of Piraeus
- Meeting with the representative of the NOC (Network Operating Center)



- Meeting with representatives of GR-NET (Greek National Research & Technology Network) - University of Athens
- Visit to the Oracle
- Visit to the Lamda Hellix Data Center
- Visit to Piraeus University of Applied Sciences
- Meeting with the representative of Greek Police and Armees
- Visit to CISCO
- Visit to OTE Cosmotel.

Professional stage in Europe

Date: 12-26.11.2017

Place: Athens, Greece

Participants:

Tatiana Pasa, Moldova State University
Victor Moraru, Technical University of Moldova
Mircea Petic, Alecu Russo State University of Bălți
Victor Andronatiev, Academy of Economic Studies of Moldova
Ludmila Novac, Moldova State University
Aurelin Zgureanu, Academy of Economic Studies of Moldova
Rodica Bulai, Technical University of Moldova
Eugeniu Cabac, Alecu Russo State University of Bălți

Objectives:

- Professionalization of the teachers on the specific topics in view of the implementation of new programs;
- Deepening scientific knowledge of the renovators of the cursus concerning the Cyber Security;
- Participation in seminars and conferences on sensitive topics concerning the safety of systems and networks, proposed by the partners of the Piraeus University of Applied Sciences (Internet of Things security, Networks, Web application security, The politics of community safety, etc.);
- Collection of associated educational resources, educational sequences (objective, content, duration, teaching methods, etc.);
- Establishment of contacts with educational teams and department professors involved in the project;
- Knowledge of the organization of the teaching and research process in the Piraeus University of Applied Sciences, visits to the operational center of the network academic laboratories, meetings and discussions with the participation of professors.

Selection criteria:

The course renovators, including those who benefited of the Professional Stage in Europe, were selected based on the following criteria:

- The scientific interests in Cyber Security and related topics;
- The interest in studying a new direction and developing a new course;
- The competences in the related to the LMPI project topics;
- The strategies of department, including the age, gender and qualification balance;
- The inter-partners/universities balance;
- The inter-groups/new courses balance.



Awareness raising, dissemination, sustainability and exploitation of the project results

The survey conducted in July-October 2017 with the support of the National Regulatory Agency for Electronic Communications and Information Technology (<https://drive.google.com/drive/folders/1wqXJltmosu5LjyzXCxeLUATEbjv6qABg>) showed that both the public administration and the economic agents are aware of the acuity of the bachelor and master degree cyber security specialists training in the Republic of Moldova. At the same time, no Moldovan higher education institution is still training master degree cyber security specialists. Thus, the ERASMUS + LMPI project has boosted the activities in the field at master training level, but also at bachelor training level.

Enhancing the attractiveness of the IT security field for study applicants depends, to a large extent, on the visibility of the ERASMUS+ LMPI project. In this direction, certain project activities have been carried out at various levels by project participants (see also section 2. Visibility).

Thus, **at the department level** of the four universities in Moldova participating in the project (P9-P12), have been met such activities as:

- 1) Information to didactic staff on the mission, objectives and tasks of the project. Subsequently, the working groups (teams) of universities P9-P12 were formed to carry out the project work;
- 2) Trainers, who attended special studies at the TEI Piraeus University in Greece in November 2017, communicated the information concerned to the departments' didactic staff of universities P9-P12;
- 3) Discussing and validating the new Bachelor and Master study programs (curricula), which also contain the IT security disciplines, defined by the project participants of P9-P12 universities;
- 4) Discussing and validating the provisional accreditation files for the new master programs in IT Security at UTM (P9) and ASEM (P12).

At the faculty level (faculty/master school council):

- 1) Discussion and validation the new Bachelor and Master study programs (curricula), which also contain the IT security disciplines, defined by the project participants of P9-P12 universities;
- 2) Discussing and validating the provisional accreditation dossiers for the new master programs in IT Security at UTM (P9) and ASEM (P12).

At the university level:

- 1) Free access information on the ERASMUS + LMPI project was placed on the website of each university (<http://utm.md/cooperari-internationale/proiecte-in-derulare-la-utm/erasmus/>; <https://utm.md/blog/2017/04/14/prima-sedinta-a-grupului-de-lucru-al-proiectului-erasmus-lmpi/>; <http://www.usarb.md/lmpi/>; http://usm.md/?page_id=16781; <http://ase.md/erasmus-lmpi.html>);
- 2) Discussion and approval by the Senate of the new Bachelor and Master study programs (curricula), which also contain the IT security disciplines, defined by the project participants of P9-P12 universities (January 2018);
- 3) Discussion and approval by the Senate of the provisional accreditation dossiers for the new master programs in IT security at UTM (P9) and ASEM (P12) (February 2018).

At the national (Republic of Moldova) level:

- 1) Retrieval of the Bachelor study program "Information security" in the Nomenclature of vocational training fields and specialties in higher education, approved by the Government Decision of the Republic of Moldova no. 482 of 28.06.2017;



2) Presentation of the project (poster) within the national forum “The 30th Anniversary of the ERASMUS project in Moldova”, 18 May 2017 (see p. 3 in Section 2 Visibility);

3) The survey on the identification of target professions and IT training needs in Moldova, carried out in July-October 2017. In the survey, 711 companies from Moldova were informed on the mission, objectives and tasks of the project in question (<https://drive.google.com/drive/folders/1wqXJltmosu5LjyzXCxeLUATEbjv6qABg>);

4) "Common Objective" TVR Moldova Broadcast on 28 March 2018 - issues related to cyber security, including the ERASMUS+ LMPI project (see p. 4 in Section 2 Visibility);

5) Erasmus+ LMPI Project in local newspapers “Buletin informativ” and “Mesager universitar” (see p. 5 in Section 2 Visibility) and so on.

As far as **guaranteeing the sustainability of the project results** beyond the duration of the project, at current phase may be mentioned:

1) The survey on the identification of target professions and IT training needs in Moldova, carried out in July-October 2017, pointed out that the business environment needed IT security specialists (<https://drive.google.com/drive/folders/1wqXJltmosu5LjyzXCxeLUATEbjv6qABg>);

2) Retrieval of the Bachelor study program "Information security" in the Nomenclature of vocational training fields and specialties in higher education, approved by the Government Decision of the Republic of Moldova no. 482 of 28.06.2017, guarantees, to a certain extent, the provision of state budget scholarships to this program;

3) Coordination by the Ministry of Education, Culture and Research of the Republic of Moldova of the Education Plan for the new master's degree program "Security of Information Systems", registration Nr. JSM-01-18333 of March 5, 2018;

4) Possible annual offering of state budget scholarships for the study programs in IT security. Such scholarships are offered by governmental decision. For each year, the ruling in question is taken between May and July. For academic year 2017/2018, 35 state budget scholarships (<http://lex.justice.md/md/371050/>) were offered to the study program "Information Security" (Cycle I - Bachelor). It can be expected that in academic year 2018/2019 it will be offered 35-50 state budget scholarships to the study program "Information Security" (Cycle I - Bachelor) and approx. 15-25 state budget scholarships in IT security study programs at Cycle II - Master. At the same time, candidates for studies may also be enrolled on a pay-as-you-go basis.