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University of Maribor

Faculty of Electrical Engineering
and Computer Science

Enhancement of cyber educational system of Montenegro

EXP. Project Sustainability

SUSTAINABLE STRATEGY v2.0

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1. Introduction

Sustainability Strategy v1 (established during 1st project year) defined key mission and vision principles at national level in Montenegro. Specified goals were used as hard objectives to be achieved at national level, all aimed on raising the awareness of cyber security threats, attacks response, and possibilities for protection among various stakeholders in Montenegro. This document provides review of achieved results cross matched with defined goals, on which bases new updated goals are defined for the period of project duration. After the project duration, new updated Strategy v3 will be published defining new goals and objectives needed to be achieved for sustainable actions at national level.

However, the document is organised as follows: Section 2 provides comprehensive analyses of results achieved after 2nd project year, followed by careful cross-matching with defined goals in the Strategy v1. Section 3 defined new goals to be achieved during the project, while Section v4 identifies key instruments for its realisation.

2. Sustainability Strategy v1: Analysis of achieved results

Table 1 presents goals defined in the Strategy v1 with proposed implementation measures; while the states listed below summarizes indicators for realisation of each defined goal.

Table 1. ECESM Sustainability Strategy v1.0: Goals and Implementation plan

| GOALS | IMPLEMENTATION PLAN |
|---|--|
| 1. Continuously inform all educational institutions (from elementary and secondary schools, universities to lifelong education providers) about necessity of continual education in cyber security field | 1a. Organize workshops and promotions for authorities 1b. Organize roundtables aimed on integrating forces at national level in the field of cyber security |
| 2. Define courses and training curricula with teaching methods appropriate for different kinds of learners | 2a. Identify groups of learners at national level (make a systematic review of existing approaches at EU level and establish a comprehensive categorization in respect to ME standards and ICT literacy) 2b. Establish a list of recommended training and teaching courses for all groups of learners 2c. Make a selection of existing teaching materials at EU level in accordance with established list of courses and curricula, in |

| | |
|---|---|
| <p>3. Define guidelines and recommendations for realization of proposed courses and training curricula</p> | <p>order to provide a recommended list of teaching materials</p> |
| <p>3. Define guidelines and recommendations for realization of proposed courses and training curricula</p> | <p>3. Define guidelines and recommendations for realization of proposed courses and training curricula</p> |
| <p>4. Establish a national center for cyber education</p> | <p>4a. Establish a national center for cyber education 4b. Make a promotion of established center as a central non-formal educational provider in cyber security 4c. Establish connections of the center with educational institutions aimed on providing sustainable support in modern cyber education</p> |
| <p>5. Develop open learning platform as a standard at national level for providing education in cyber security, fully supported by Government and labor market</p> | <p>5a. Develop e-learning platform (e.g. Moodle) with open learning materials 5b. Continue with promoting the platform materials at national level</p> |
| <p>6. Organize a conference about cyber security</p> | <p>6. Organize annual conference about cyber security titled 'Cyber security in the knowledge society: threats, risks and achievements'</p> |
| <p>7. Establish online journal to support research in the field of cyber security</p> | <p>7. Establish online journal 'Cyber instructions for all' to support both, researchers and citizens interested in cyber security trends</p> |

Goal 1. Continuously inform all educational institutions (from elementary and secondary schools, universities to lifelong education providers) **about necessity of continual education in cyber security field.**

Implementation Indicators.

1.1. Organized promotions at HEIs: partner universities, UDG and UNIM, Faculty for Business and Tourism, Budva.

Status. Still in progress- needs to be completed

Goal 2. Define courses and training curricula with teaching methods appropriate for different kinds of learners.

Implementation Indicators.

2.1. Training curricula defined for HEI students and training programs for children

2.2. Training curricula defined for teachers and professors at elementary and secondary schools

2.3. Training curricula defined for professionals and workers



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Status. Completed. Can be updated in accordance with recent trends in education and cyber security topics

Goal 3. Define **guidelines and recommendations** for realization of proposed courses and training curricula

Implementation Indicators.

3.1. International partners shared their experience and contents to be used for curricula implementation

3.2. **Guidelines and recommendations** are defined and shall be implemented for organisation of trainings during 3rd project year.

Status. Completed. Can be updated in accordance with achievements of trainings planned for the 3rd project year.

Goal 4. Establish a national center for cyber education.

Implementation Indicators.

4a. National Board established MCEC on 1st May 2015.

4b. Set of trainings for teachers (August-October 2015; 10 trainings; 128 participants) organised

Status. Completed. Activities should be focused on ensuring MCEC sustainability and increasing national and international visibility.

Goal 5. Develop open learning platform as a standard at national level for providing education in cyber security, fully supported by Government and labor market.

Implementation Indicators.

5a. Moodle platform launched on 15th May 2015

5b. Participants at all trainings have Moodle access accounts allowing access to all materials and contents.

Status. Completed. Activities should be focused on further promotion and active use of the platform.

Goal 6. Organize a conference about cyber security

Implementation Indicators.



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6.1. Established Conference Organisational Board at ECESM level

6.2. Organised 1st and 2nd ECESM Conference as a part of Regional well-known Festival of Information Technology Achievements- INFOFEST

Status. Completed. Activities should be focused on further promotion at regional and international level.

Goal 7. Establish online journal to support research in the field of cyber security

Implementation Indicators.

7.1. Established Editorial Board of the ECESM Newsletter

7.2. Up to date, 2 issues of the Newsletter are already published.

Status. Completed. Activities should be focused on further promotion at national and regional level.

CONCLUSION. All goals defined in Strategy v1 are achieved successfully. Having in mind importance and necessity for continual actions aimed on raising awareness at national level, **GOALS 1-2** shall be included in all further strategies, while in order to achieve visible impacts, **GOALS 4, 6-7** shall continue with implementation.

3. Sustainability Strategy v2: Goals

The main goals of ECESM Sustainability Strategy – version 2.0 are:

Goal 1. Raise awareness about the necessity of continual education in cyber security field and promote new cyber security educational programs (including both, formal and informal)

Goal 2. Continually organize annual conference about cyber security at national level

Goal 3. Continually publish online journal to support research in the field of cyber security

Goal 4. Promote and strengthen activities of the newly established Montenegrin Cyber Educational Center by positioning it as a leader of national cyber society in Montenegro

Goal 5. Ensure sustainability of the Montenegrin Cyber Educational Center (operational; financial; social)

Goal 6. Ensure multiplicity of all ECESM training activities at national level



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4. Sustainability Strategy v2: Implementation Plan

1a. Intensify promotional activities among different target groups at national level

1b. Organise National Cyber Security Forum as well promoted national cyber security event (with well known speakers; representatives from governmental, local and educational sectors; etc.)

1c. Implement specific promotional activities of newly established Master programs in Cyber Security (at University Donja Gorica and Mediterranean University)

1d. Implement specific promotional activities of programs led by newly established Montenegrin Cyber Educational Center (linked to actions 4x, 5x)

2a. Continue with organisation of the annual conference “Cyber security in the knowledge society: threats, risks and achievements”

2b. Intensify activities of extending audience at regional and international level

3a. Continue with publishing online journal “Cyber instructions for all”

3b. Use different channels to distribute the online journal and invite international authors to contribute acting as journal authors/editors

4a. Intensify promotion of the newly established Montenegrin Cyber Educational Center among different target groups at national level

4b. Develop new programs at open learning platform (with different level of specialisation, from general courses to highly specialized in different aspects of cyber security)

5a. Ensure FINANCIAL sustainability of the Montenegrin Cyber Educational Center (through new funding schemes and sources)

5a. Ensure OPERATIONAL sustainability of the Montenegrin Cyber Educational Center (through established cooperation with relevant ministries, key stakeholders at national level, etc.)

5a. Ensure SOCIAL sustainability of the Montenegrin Cyber Educational Center (through organisation of new actions and recognisable position at national level – linked with actions 4x)

6a. Intensify promotions of ECESM training activities at national level and invite more participants (linked with 1a)

6b. Intensify activities on inviting interested parties (from different sectors) to organise more similar trainings for their employees or other interested groups