TEMPUS-SAFEGUARD: NATIONAL SAFETY IT-ENGINEERING NETWORK OF CENTRES OF INNOVATIVE ACADEMIA-INDUSTRY HANDSHAKING

Vyacheslav KHARCHENKO, Chris PHILLIPS,
and Artem BOYARCHUK

We present the ongoing EU-funded Tempus project "National Safety Engineering Network of Centres of Innovative Academia-Industry Handshaking" (SAFEGUARD, 2010-2013) coordinated by University of Newcastle upon Tyne, United Kingdom (and national coordinator is National Aerospace University "KhAI", Kharkiv, Ukraine). Participants of the project are 15 organizations from 5 countries:

- Five universities from Ukraine – Khmelnitskiy National University, National Aerospace University "KhAI", Odessa National Polytechnic University, Poltava National Technical University, and Sevastopol National Technical University; the Institute of Mathematical Machines and Systems, National Academy of Sciences of Ukraine, Kyiv as a research partner; and two industrial partners – Design Bureau "Polysvit," Kharkiv and Research Production Company "Radiy" from Kirovograd;
- UK: City University, London; University of Newcastle-upon-Tyne; Adelard LLP, London;
- Italy: ISTI-CNR, Pisa; University of Naples Federico II, Napoli;
- Finland: Abo Academi University, Turku;
- Sweden: KTH University, Stockholm.

The key goal of the project is to produce a new generation of engineering and research staff capable of performing a constructive development in safety engineering.[1] This outcome will contribute to satisfying the needs of enterprises and institutions of different critical domains and partner country regions. The project is based on the re-

INFORMATION & SECURITY. An International Journal, Vol.28, No. 2, 2012, 315-318.

sults of completed Tempus project "MS- and PhD-Studies on Critical Computing" (MASTAC, 2006-2009).[2] Principles of succession for MASTAC-SAFEGUARD projects were developed, namely:

- Strategy: from *critical computing* to *IT-infrastructures and critical infrastructures*;
- Study levels: from *Master & Doctoral* studies to *Master & Doctoral & In-service training* (advanced learning);
- Methodology: from *courses development* to development of *courses, technologies and instrumental tools*;
- Target domain: from *aerospace engineering* to *critical applications* as a whole (NPP, oil and gas, maritime services, etc.);
- Institutionalization: From university centre on critical computing to the national network of centres on safety engineering;
- Partnership: from universities to cooperation of universities, research institutions, industrial partners – both in Ukraine and the EU.

An international masters and doctoral programmes on Safety Engineering for Ukrainian universities are developed to reach the main objective in frameworks of SAFEGUARD project. The courses to be developed and introduced in 2011-2012 are presented on Figure 1 and include:

1. MSc courses: Safety engineering foundations; High availability systems and technologies; Co-design and testing of safety-critical embedded systems; Service-oriented business-critical systems and technologies; Distributed critical systems and infrastructures;
2. PhD courses: Formal methods-based technologies for systems and infrastructures safety; Scalable diversity-based technologies for safety-critical applications.

The MSc courses will establish the Master specialty "Safety IT-Engineering" to be taught at the target departments of Ukrainian universities starting from September 2012. In order to enhance the sustainability of the gained results and provide the financial basis for the future extension and dissemination the National Network of Consulting Centres will be established. The network comprises five consulting centres to be opened at the basis of target department of each Ukrainian academic member. The key tasks of the Centres will include the following services:

1. Training of master and doctoral students of Ukrainian universities with developed master program via e-learning model;

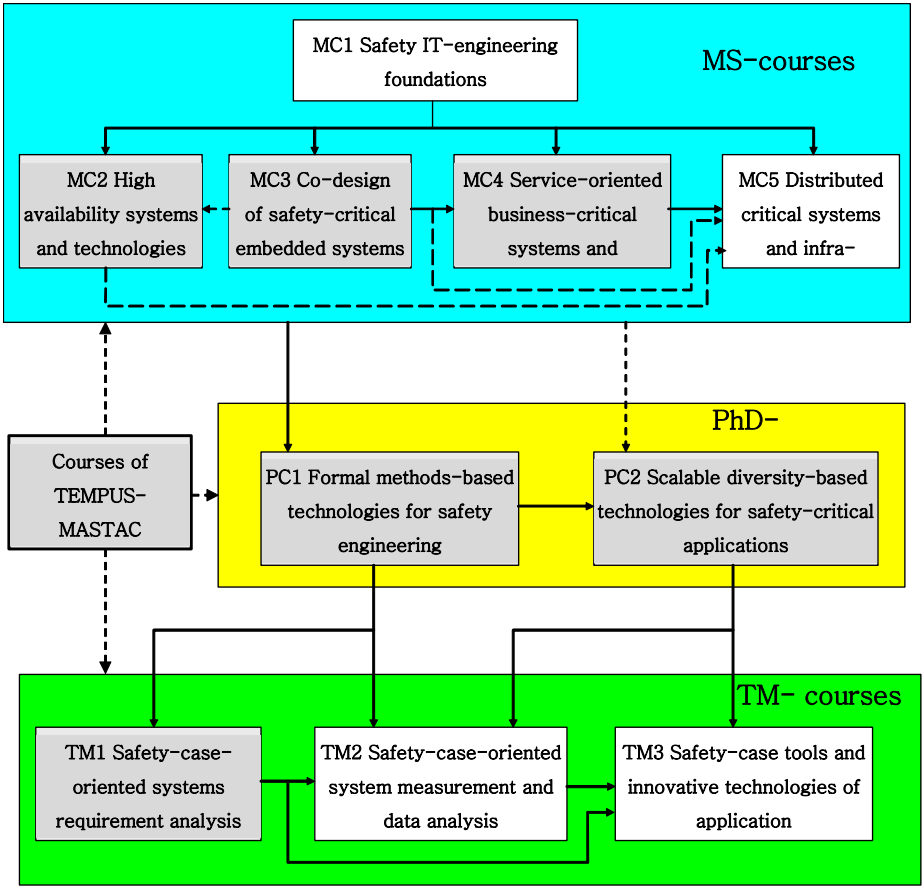

Figure 1: Scheme of SAFEGUARD project courses.

2. Providing in-service training sessions and workshops “on demand” by developed three in-service training modules:
   - TM1. Safety-case-oriented systems requirement analysis;
   - TM2. Safety-case-oriented system measurement and data analysis;
   - TM3. Safety-case tools and innovative technologies of application.
3. Providing consulting activities for the companies and individuals in the area of safeware engineering and risk assessment by means of offering the fol-

lowing services. More detailed information is presented on www.safeguard.org.ua.

Notes:

[1] John McDermid, Martyn Thomas, and Felix Redmill, "Professional Issues in System Safety Engineering," in Chris Dale and Tom Anderson, eds., *Safety-Critical Systems: Problems, Process and Practice* (London: Springer, 2009), 135-145.

[2] Vyacheslav Kharchenko, Chris Phillips, Popov Peter, et al., "MASTAC: New Curriculum for Master and Doctoral Studies in Critical Software and Computing," *Proceedings of the International Conference on Software Engineering*, SEESE Workshop, Leipzig, 13 May 2008, ACM, 1-7.

VYACHESLAV KHARCHENKO is Head of the Department of Computer Systems and Networks, National Aerospace University "KhAI." *E-mail*: v.kharchenko@khai.edu.

CHRIS PHILLIPS is with the Faculty of Science, Agriculture and Engineering, University of Newcastle upon Tyne, UK. *E-mail*: chris.phillips@ncl.ac.uk.

ARTEM BOYARCHUK is with the Distance Learning Center, National Aerospace University "KhAI", Ukraine. *E-mail*: tempus@khai.edu.