Dear Readers,

Welcome to the first newsletter of FP7 SECURE-R2I, a major new EU project aimed at reinforcing security related technology-transfer between European and Eastern Partnership Countries. The three year project is being implemented by a consortium of twelve partners from across Europe and the former Soviet Union (Armenia, Belarus, Georgia and Ukraine).

The SECURE-R2I project is expected to lay the groundwork for further security related R&D collaborations within the forthcoming Horizon 2020 programme.

Happy Reading!

News in our first newsletter ....

- SECURE-R2I: project overview
- Four SECURE-R2I pilot projects in brief
- Pilot project in Armenia: fostering links with the UK
- IPR NAS publishes a paper in “Laser Physics”
- Belarusian scientists observe e-voting for the European elections in Estonia
- Pilot project Ukraine – Moldova: first results
- First tech-transfer summer school in Estonia
The overall aim of the SECURE-R2I project is to reinforce cooperation with Eastern Partnership Countries (EPC) on bridging the gap between research and innovation for Horizon 2020 Societal Challenge 7 “Secure Societies”. The research domains encompassed by “Secure Societies” are broad and include ICT; Security; Nanosciences, Nanotechnologies, Materials (NMP); and Social Sciences and Humanities (SSH). These research domains also form the basis of important economic sectors in the EPC, with many potential benefits for the EU, but which also need European support to increase their exploitation. Addressing this issue, the SECURE-R2I project will assist R&D and innovation (RDI) organisations in EPC via a range of knowledge and technology transfer activities with the support of European specialists. The activities include:

- Network EPC and EU organisations involved in research and innovation for “Secure Societies”;
- Analyse technology transfer opportunities and bottlenecks for EPC organisations;
- Summer schools on technology transfer;
- Implement research-to-innovation pilot projects involving EPC and EU partners;
- Provide innovation support services to high potential EPC organisations.
SECURE-R2I: Pilot Projects

Under the umbrella of SECURE-R2I are four pilot technology-transfer projects between Europe and the Eastern Partnership Region:

Ukraine – Moldova

Belarus – Estonia
Innovative e-voting system for private businesses and NGOs involving Cybernetica and the United Institute of Informatics Problems of the National Academy of Sciences of Belarus.

Georgia – Greece
Smart sensory networks for nuclear radiation monitoring involving the Technological Education Institute of Piraeus and Georgian Technical University.

Armenia - UK
Towards secure quantum communication technologies involving Redinet and the Institute for Physical Research of National Academy of Sciences of Armenia.

Pilot Project in Armenia

Armenian experts foster links with Rinicom Ltd and Lancaster University

To initiate the pilot project in Armenia, quantum information experts from the Institute for Physical Research of NAS of Armenia (IPR NAS) held a training workshop in late 2013, where they introduced Redinet to the basic principles of quantum communication. Furthermore, both sets of experts discussed the industrial needs and requirements regarding the security of control systems and related standardization.

In turn, this led to IPR NAS and Redinet establishing contact with Rinicom Ltd and Lancaster University in the United Kingdom, who also have a keen interest in this new form of cryptography.

As a result, the four organisations scheduled a series of exchange visits. In April 2014, Prof. Garik Markarian (CEO, Rinicom) visited IPR-NAS and Redinet for initial discussions. And, in early July 2014, IPR NAS and Redinet experts made reciprocal visits to Lancaster University and Rinicom Ltd.

The three Armenian experts visited the University’s Physics Dept and held a joint seminar dedicated to quantum cryptography. In particular, Dr. Anahit Gogyan’s presentation, about a quantum repeater protocol based on the deterministic storage of a single photon, attracted great interest from Lancaster's Dr Robert Young and his PhD students.
Belarusian Scientists visit Estonia

Within the framework of the SECURE-R2I project researcher Dr. M. Kalosha and engineer Y. Asadchy from United Institute of Informatics Problems (UIIP), Belarus, visited the Estonian company Cybernetica AS in May 2014. The experts went in order to exchange best practices in designing and developing platforms for electronic voting. During the stay, they were familiarized with the operation of the i-voting system developed by Cybernetica and were able to observe the 2014 European Parliament elections in Estonia. Dr. Kalosha and Mr. Asadchy observed important pre-election procedures – installing operating systems, configuring servers and generation of the encryption keys for European Parliament elections. Later the role of organizational security for governmental voting and the need for similar measures for smaller-scale elections were discussed between the visitors and the developers from Cybernetica.

Despite an unexpected and unseasonable snow shower for late May, the visitors enjoyed a very warm welcome from their Estonian hosts!

Ukraine – Moldova: First Results

The first visit within the framework of the Ukrainian-Moldovian pilot project took place in March 2014. Mr. O. Paiuk from the Institute of Semiconductor Physics, NAS Ukraine, visited the Institute of Applied Physics in Chisinau, Moldova. In return, Dr. V. Abashkin and Dr. S. Robu (the Moldovan team members) visited the ISP in Kyiv. The first exchange visits aimed at obtaining recording media from chalcogenides nanomultilayers, synthesising azo-doped polymers, and studying their optical and recording properties for diffractive optical elements.

The reports on scientific results obtained during the twinning visits will be presented at two conferences:

- The 6th International Scientific and Technical Conference “Sensor Electronics and Microsystem Technologies (SEMST-6)” with the exhibition of sensor developments and industrial samples (Odessa, Ukraine, 29 Sept – 03 Oct 2014);
- The 7th International Conference on Materials Science and Condensed Matter Physics (Chisinau, Moldova, 16–19 Sept 2014).

Furthermore, Dr. Elena Achimova, from the Institute of Applied Physics, took part in the TV programme “Science and Innovation” on National Channel TV MOLDOVA 1 (January 2014), where she mentioned that the pilot project is being supported by the EU funded SECURE-R2I project.
Recently our partners from the Institute for Physical Research in Ashtarak (Armenia), A. Gogyan, N. Sisakyan, R. Akhmedzhanov and Yu. Malakyan, have submitted to the journal Laser Physics a paper entitled "Heralded generation of single photons entangled in multiple temporal modes with controllable waveforms". Single-photon pulses are ideal carriers of quantum information, since they travel fast (at the speed of light) and over long distances without losses. A basic requirement for many quantum optics applications - including quantum computing with linear optics, secure quantum communication, and quantum cryptography - is to have single photons entangled in multiple temporal modes. The scientists have proposed a heralded source of tunable narrowband single photons entangled in well-separated multiple temporal modes (time bins) with controllable amplitudes. The source is based on the heralded creation of one atomic spin excitation followed by deterministic conversion of the latter into single anti-Stokes photon delocalized in multi-time-bins. With experimentally verified heralded creation of a single atomic spin excitation, the source clearly provides high purity of single-photon states. The waveforms of anti-Stokes temporal modes are controlled by the shape of read laser pulses, while the phase coherence across all time bins can be experimentally verified by the suggested mechanism. Such controlled scheme can be used first of all for implementation of quantum repeaters based on time-bin entangled single-photon states.

Pilot Project in Georgia

One of the objectives of the pilot project in Georgia is the elaboration of a new type of neutron nanosensory element with high resolution and sensitive capacity on the basis of semiconductor Si nanostructures doped by the B10 and B11 isotopes.

Currently, researchers from the Georgian Technical University (GTU) are working with their partners at the Technological Education Institute of Piraeus (TEI Piraeus) on the development of models of the nanosensory elements and sensor systems with effective construction and physical parameters.

In the next semester, the partners plan to investigate the dependence of the sensory elements’ resolution capacity in space and time, as well as the efficiency of registration of ionized radiation from their structural and physical characteristics.
SECURE-R2I: First Tech-Transfer Summer School

At the beginning of June 2014 the first Summer School on Technology Transfer (TT) was organised in Tallinn, Estonia, within the framework of the FP7 SECURE-R2I project. The five day training course took place on the premises of Tallinn University of Technology, in the Mektory Innovation and Business Centre.

The Summer School targeted primarily young researchers and other staff working for the SECURE-R2I consortium partner organisations based in the eastern partnership countries (Armenia, Belarus, Georgia and Ukraine).

The training course consisted of several modules: commercialisation of research results; contractual issues in the TT process between publicly funded research and private industry; negotiation of TT and the art of reaching agreement; making the business case for technology opportunities (practical bridge-building between science and business), and evaluating the real potential of a business idea.

In parallel to the training modules, some of the attendees visited a number of organizations and research institutes in the Tallinn area which excel in research exploitation and academic entrepreneurship.

The first Summer School was organised by Technology Innovation International, a Luxembourg-based association which is also a member of the SECURE-R2I consortium, in collaboration with other project partners.

Over the course of the project, the SECURE-R2I team is planning to organise two more summer schools on technology transfer.

If you would like to be informed about our future summer schools, please follow updates on our project website or subscribe to our project newsletter (please send an email request to tatiana.retunskaja <at> intelligentsia-consultants.com).
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