
INFORMATION SECURITY – AN IMPORTANT PILLAR IN OUR TIME

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ABSTRACT: *This paper is a short review article that speaks about some research projects the author was involved in and also treats some aspects regarding the education in the field of information security – IS in Romania;*

KEYWORDS: *information security, education, research projects.*

General aspects

All over the world, information security is an important pillar in our time. Mankind is today in front of a dynamic evolution where information security means power. According to EU policy, security assurance is one of the European priorities. The necessity of security assurance comes from the analysis of the actual international security medium which is in a continuous transformation. The importance of the information security comes from the actual society, which is very dynamic:

- a) informational society, characterized by online transactions, virtual shops, e-commerce etc.;
- b) the evolution of the crimes;
- c) the evolution of the cyber-crime;
- d) globalization phenomenon.

In this context, it is very important to know aspects regarding:

- a) the actual technologies, systems and mechanisms used for information security assurance;
- b) the information security risks, vulnerabilities and threats of informational systems;
- c) the actual international standards and settlements regarding information security assurance;
- d) the ability to implement models for information security assurance or to use secure systems.

Research projects the author was involved in

□ In the COMPETE project – 2009 - 2012:

- *Our research scope was to stress the importance of the information security domain and to develop and validate, through case study, a model for information security assurance in organizations.*
- The general objective of the research was:
 - *GO: The growth of knowledge in the field of IS by bringing some contributions regarding information security assurance in organizations.*

The specific objectives of the research were:

- O1: The development of a model for information security assurance in organizations;*
- O2: Validation of the model through case study in an organization.*

Some contributions (selective), related to the specific objectives are:

- a) *Bibliographic study regarding the mechanisms used for information security assurance in organizations;*

- b) Comparative study regarding information security risks management methods and tools;
- c) The proposal of a model for information security assurance in organizations;
- d) A module for information security risks management – design and implementation (software application);
- e) A steganographic system, in 2 versions - design and implementation on parallel architecture Cell BE from IBM (software application).
- f) The evaluation of the organization where the case study was done regarding information security;
- g) The management of information security risks in the evaluated organization;
- h) Information security assurance in the organization by implementing measures proposed in the model;
- i) The identification of scenarios regarding information security in the organization;

□ In the InnoRESEARCH project – 2014 - present:

- The theme of the research: “Advanced research regarding the information security management system in organizations”
- The general objective of the research is:
 - GO: The growth of knowledge in the field of information security management systems in organizations.

The specific objectives of the research are:

O1: The identification of the actual situation and perspectives regarding information security management system - ISMS in organizations in order to make some proposals to improve the ISMS;

O2: The improvement of the ISMS (models, guides for the implementation and / or certification of an ISMS, common practice guides etc).

Education in the field of IS

□ **Sectors keen on the information security field:**

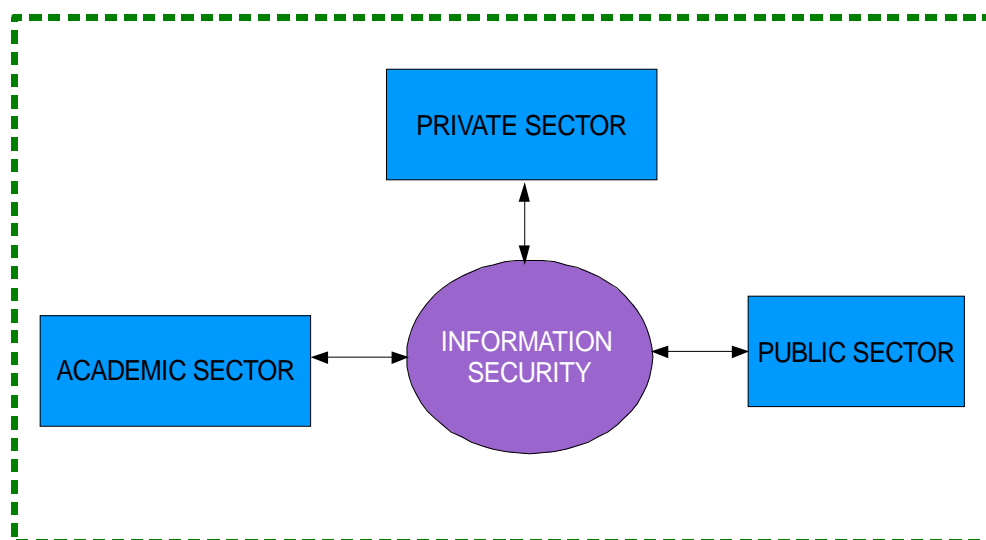


Figure 1. Sectors keen on the information security field

- ❑ Public sector has the goal to protect information which Romanian institutions work with. It is the main sector keen on information security.
- ❑ The private sector has also interests in this domain. There are a lot of companies which are working with classified information or simply want to protect their information.
- ❑ The *academic sector* is involved in research projects on information security field. But, unfortunately, there is still an institutional barrier regarding the cooperation with academic sector on some research projects.
- ❑ All these three sectors interact, but they should cooperate because they have an unique objective: information security.
- ❑ Some of the most important stakeholders from the academic sector in Romania are:
 - ❑ Alexandru Ioan Cuza Police Academy;
 - ❑ Military Technical Academy;
 - ❑ Nicolae Balcescu Land Forces Academy;
 - ❑ Mircea cel Batran Naval Academy;
 - ❑ Mihai Viteazul National Intelligence Academy;
 - ❑ Politehnica University of Bucharest;
 - ❑ Bucharest University of Academic Studies;
 - ❑ University of Bucharest;
 - ❑ Henri Coanda Air Force Academy;
 - ❑ National Institute for Research and Development in Informatics (ICI)

ICI is keen on development of the scientific and technological support in IT&C.

Other organizations from Romania in the field of information security:

- ❑ Romanian Standards Association (ASRO) is a private association with a focus point on the development of security technology and standards policy. It cooperates with public institutions in the field of standards development and certification. It is *recognized* as a national standards body by the Government Decision 985/2004.
- ❑ Another important body in the field of IS is CERT-RO (Computer Security Incident Response Team) [5]
 - ❑ CERT-RO is a specialized organization responsible for preventing, analyzing, identifying and reacting to cybernetic incidents;
 - ❑ CERT-RO is the national contact point for similar structures;
 - ❑ CERT-RO is responsible for elaborating and distributing public politics for prevention and counteracting the incidents that occur within cyber infrastructures;
 - ❑ CERT-RO analyzes technical and procedural problems within cyber infrastructures.
 - ❑ CERT-RO is managed by a general director and a deputy director, both supported by the Coordination Committee:
 - a) Ministry of Communication and Informational Society;
 - b) Ministry of National Defense;
 - c) Ministry of Administration and Interior;
 - d) Romanian Intelligence Service (SRI);
 - e) Foreign Intelligence Service (SIE);
 - f) Special Telecommunications Service (STS);
 - g) Guard and Protection Service (SPP);

- h) National Registry Office for Classified Information;
- i) National Authority for Management and Regulation in Communications.

In order to fulfill the attributions of CERT-RO, the general director is responsible for decision making and instructions.

All sectors involved in IS must cooperate in order to sustain education in the field of IS; a simple reason is the dynamic evolution of the computer crime;

In the next section some statistics on computer crime are presented.

- ❖ According to Bitdefender report (Q1 in 2012), the classification regarding threats in Romania is presented in the figure [1].

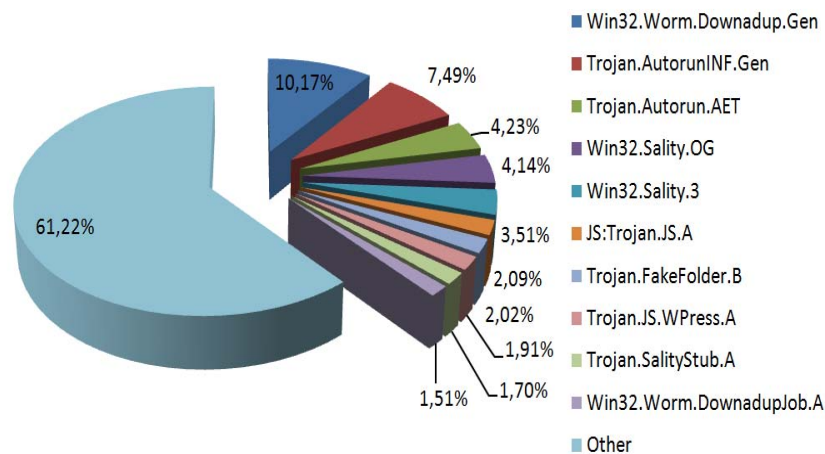


Figure 2. Threats in Romania in Q1, 2012

- ❖ According to statistics from Bitdefender Mobile Security, Android apps registered a significant growth of malware infections (mostly were threats regarding identity and data theft) in Q1, 2012. The most exploits are voluntary used by victims, but there are some other threats used in order to take control of the gadget. According to Bitdefender report Q1, 2012 (see Fig. 3), the most cases are in China, Russia and France. Romania is on 6th place in this classification. [1]

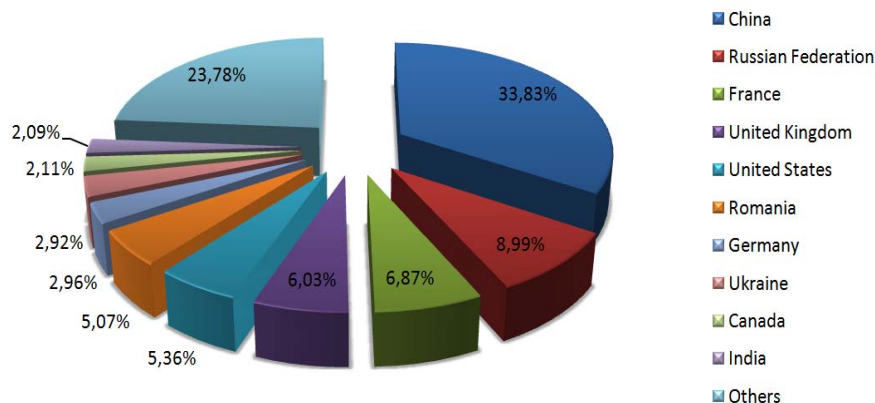


Figure 3. Countries affected by identity and data theft on gadgets in Q1, 2012

Final aspects

Information means power and must be protected (information is perishable on time and total protection is not possible). What is important is to assure security of the information a period of time so that, after that period, if the information becomes known, the impact is minimum. The need of information security comes from the power mechanism: information is an important pillar in our time and in taking decisions. On the other hand, there is a continuous need for complete and credible information.

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REFERENCES

1. **Bogdan Țigănoaia**, “Computer crime evolution and trends – an exploratory study”, The 6th International Conference of Management and Industrial Engineering – ICMIE 2013, under evaluation to be indexed in the “ISI Web of Knowledge” ISI Proceedings Database, <http://apps.webofknowledge.com> // <http://icmie.ro/>, Bucharest, România, ISSN-L 2344-0937, ISSN 2344-0937, pages 181-189, 31 of October - 2 of November, 2013.
2. **Anca-Alexandra Purcărea, Bogdan Țigănoaia**, “Considerations on information security in Romania”, The Journal of the Romanian Managers and Economical Engineers Association - Review of Management and Economic Engineering, Vol. 9, Nr. 1, ISSN 1583-624X, indexing: ULRICH’S Periodicals Directory, EBSCO Business Source(r) Complete database, Index Copernicus, <http://www.rmee.org/>, 2010.
3. **Anca-Alexandra Purcărea, Bogdan Țigănoaia, Octavian Ion Negoită, Elena Fleacă**, “Connecting higher education to the workforce market requirements based on the actual understanding of the information security competences”, The 6th International Seminar “Quality Management in Higher Education”, indexed in the “ISI Web of Knowledge” ISI Proceedings Database, <http://apps.webofknowledge.com>, Tulcea, România, ISBN 978-973-662-567-1, 8th - 9th July, 2010.
4. **Bogdan Țigănoaia**, *Information security assurance in organizations*, Institutul European Publishing House, Iași, www.euroinst.ro, ISBN: 978-973-611-997-2, 228 pages, 2013.
5. **URL:** <http://cert-ro.ro/despre.php?lang=en>