**Editorial**

Time is an important variable in most experiments. But time is also an important variable, even if often forgotten, in science management.

Timely decisions are decisive for success. Late decisions lead invariably to failures.

In science management the appropriate time unit is possibly the month. Preparing a large, multidisciplinary multi-national proposal may take up to twelve months (or more) while in simpler cases, one month might be enough.

After proposal submission comes the evaluation and here again, there are few (if any) excuses for results not being available in, at most, a couple of months.

Finally, with all available technologies, contract signature should not exceed one month. Since you may be regarding me as overly optimistic, or if even hasted, let me state my case.

Regardless of bureaucratic hurdles, science progresses at an increasingly fast pace so, as time from proposal submission to funding increases, the more likely it is that the expected results are no longer new or that the prospective PhD student or postdoc researcher is no longer available.

Delays are often attributed to excessive red tape, but they may be just the result of poor planning or mismanagement. In any case one should never forget that “delays in science lead to bad science”.

Carlos Salema
PROJECT SNAPSHOT

How confidential is the information kept in your mobile phone?

Since the last year, within the framework of several Masters projects, a group of students under the supervision of Pedro Inácio from the IT Branch at Covilhã and from University of Beira Interior (UBI) has been developing several works in the area of Information Security. One of those works addressed the analysis of Android applications susceptibility to data manipulation and exposure. The main objectives of the project were to study if one (e.g., a malicious user) could benefit from the modification of application data and also to quantify to which extent the vulnerabilities affect the universe of Android applications. The research was focused in estimating if it was possible to unlock premium features without paying for them, or if mobile games could be cheated by simply manipulating their files. Two of the phases of the project included downloading 1542 applications and games from Google Play and testing them one-by-one using a semi-automatic procedure. Testing these applications was a lengthy and somewhat exotic process, since some of the tasks of the master’s student were to play games for a while, try to modify them in a computer with Linux, and test them again in the smartphone. The tools utilized were all free and open-source. It was not necessary to modify the involved systems, nor obtain root permissions in the mobile device. In this work, the applications were transferred to the desktop computer using the native backup utility provided with Android, but those that can be installed in SD cards would be susceptible as well. The number of applications and nature of the study were two of the main differences regarding other works on this area. It was found that one in every six games and one in every five mobile applications were susceptible to data manipulation or exposure. We are dealing with the possibility of a common user to download free versions of mobile applications and unlock functionalities that should only be available after payment. In most applications, data is stored in XML files or in SQLite3 databases without encryption or integrity mechanisms protecting them. These files can be modified with.

The research was focused in estimating if it was possible to unlock premium features without paying for them, or if mobile games could be cheated by simply manipulating their files.

(continues on page 3)
IT demonstrated a field-trial of a next-generation user optical access network

Recently, IT at Aveiro and PT-Innovation have demonstrated a new paradigm for future optical access networks, where multiple commercial PON technologies coexisted with the new NG-PON2 from PT-Innovation and a new technology that is being developed at IT based on UDWDM-PON. The PT-Innovation has recently validated the new NG-PON2, which will be marketed from next year on. This technology is an evolution of the GPON, currently supporting data rates up to 2.5 Gbps shared for several costumers, and is intended to support data rates up to 40 Gbps. However, the new UDWDM-PON technology from IT at Aveiro is based on digital electrical transceivers of high flexibility and aims at achieving data rates of Tbps in the near future. The first network with all commercial PON technologies and these two new future systems was validated in real-time last September, with an installed network between IT at Aveiro and PT Inovação building (network in Fig1 and google maps in the Fig2). In this first validation an aggregate data rate of 320 Gbps has been demonstrated in real-time, with a network of 64 users using a dedicated data rate of 2.5 Gbps. This field-trial validation was recently accepted as a Postdeadline Paper in the largest European optical communications conference [R. M. Ferreira et al "Field-Trial of a Real-Time Bidirectional UDWDM-PON Coexisting with GPON, RF Video Overlay and NG-PON2 Systems," ECOC, Valencia Spain, September 2015, paper PDP.4.5], ECOC, an award that highlights the latest technology on the optical communications market.

Susana Sargento among the finalists of the EU Prize for Women Innovators 2016

Nine finalists were selected among 64 contestants by a jury for the EU Prize for Women Innovators 2016. Susana Sargento, from IT in Aveiro is one of the finalists. At some point in their careers, all contestants have benefited from EU research and innovation funding and have founded or co-founded a startup originated by their ideas. Susana Sargento is a co-founder of Veniam in Portugal, which turns vehicles into Wi-Fi hotspots and builds city-scale vehicular networks that collect terabytes of urban data. Veniam has its seed at Instituto de Telecomunicações, where the research was first developed. The winner will be announced in March this year.

Three IT researchers elected by IEEE Portugal MTT-AP-ED Societies Joint Chapter

Rafael Cadeirinha, Pedro Cruz and António Topa were elected Chair, Vice-Chair and Secretary/Treasurer, respectively, of IEEE Portugal MTT-AP-ED Societies Joint Chapter. The election was approved unanimously and the positions are to be taken for the years of 2016 and 2017.

IT is sponsoring “Conversas do Éter”

The event organized by Núcleo Radioamadores aettua, is taking place on March 5th, at the University of Aveiro. IT is one of the sponsoring of the event. The IT researchers José C. Pedro and Arnaldo Oliveira, from Aveiro, will participate as speakers.
Latest concluded PhDs hosted by IT

Maria da Graça Brotas

New Materials for Organic Solar Concentrators and Photovoltaic Cells
PhD in Materials Engineering, by IST, University of Lisbon, June 2015, supervised by Jorge Morgado and Ana Charas. The thesis focuses on the synthesis and application of newly designed semiconducting polymers and small molecules for Organic Electronic devices. The work was carried out in the laboratory of Organic electronics at Instituto de Telecomunicações. Currently, Graça is head of R&D at a frozen pastry factory (Europastry Portugal), investigating new solutions for improved raw materials and processes.

João Soares

Integration of the Cloud Computing paradigm with the Network Operator’s Infrastructure
PhD in Electrical Engineering by University of Aveiro, January 2015, supervised by Susana Sargento. The thesis targets key-challenges for the effective integration of cloud and network operator domains. There are three main technical chapters in which contributions in different aspects are discussed: integrated management of cloud and network domains; virtual infrastructure resource management; network service functions virtualization. João is currently a researcher in Ericsson, Stockholm.

Bruno Miguel Silva

Performance Evaluation of Cooperation Mechanisms for Mobile Health Applications
PhD in Informatics Engineering by University of Beira Interior, supervised by Joel Rodrigues. This Thesis proposes a novel cooperation strategy for m-Health services and applications. This reputation-based scheme uses a Web-service to handle all the nodes reputation and networking permissions. Its main goal is to provide Internet services to mobile devices without network connectivity through cooperation with neighbour devices. Bruno is currently a Post. Doc. researcher at IT - Covilhã Delegation, Next Generation and Applications (NetGNA) Lab.

Ana de Abreu

Optimized Coding Strategies for Interactive Multiview Video
PhD in Electrical Engineering by Ecole Polytechnique Fédérale de Lausanne and Instituto Superior Técnico, November 2015, supervised by Pascal Frossard and Fernando Pereira. The thesis addresses important issues for coding multiview video in the design of efficient interactive multiview video systems under resource constraints and proposes different solutions such as optimized multiview video prediction structures for interactive multiview video streaming (IMVS) or an optimal layered representation for adaptive multiview video streaming. Ana is currently finishing her last work at EPFL.

Where are you now?

Luíz Borges

I initiated my researcher career at IT in 2007, continuing the studies of my final graduation project on Wireless Sensor and Actuator Networks by pursuing a PhD on Medium Access Protocols in 2008. With the PhD I gained and learned different methodologies regarding mathematical modelling and simulator development. In addition, the involvement in projects (OPPORTUNISTIC-CR, PROENERGY-WSN, Smart-Clothing and INSYSM) allowed for developing WSN hardware and embedding programs and mathematical models that were developed during the PhD. I owe my deepest gratitude to my supervisor Professor Fernando J. Velez and my co-supervisor Professor António Sérgio Lebres for encouraging me to pursue this PhD, as well as for helping me on changing my view over research work. I concluded successfully my PhD in 2013 and was a Pos-Doc researcher in CREaTION (Cognitive Radio Transceiver Design for Energy Efficient Data Transmission) project responsible by developing hardware that harvests energy from radio frequency waves within the mobile networks. Wit this project I began to be more interested in the area of Mobile networks, and this led to the decision of finding a job within the industry. In the end of 2014 I joined Multivision company as a RAN engineer in Ericsson within the Vodafone PT SRAN modernization project. I am responsible for the integration and optimization of the new equipment in mobile networks towers, as well as ensuring the fulfilment of certain thresholds in the performance indicators demanded by the network operator. Recently, I am also responsible for the development of scripts and programs that allow for a quicker deployment and optimization of new equipment in mobile networks towers. I am very grateful to Instituto de Telecomunicações, since it allowed me to grow not only scientifically but also personally.