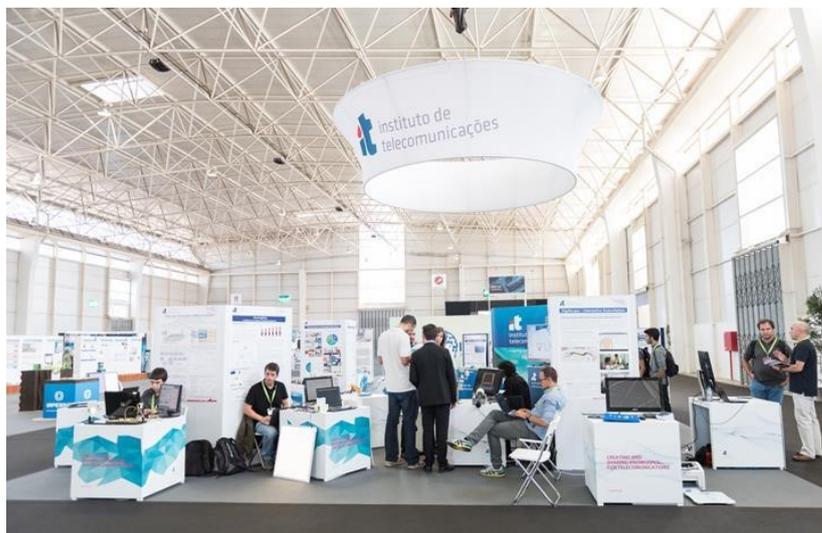


IT on the largest national technology showcase



Between September 15 and 17, the city of Aveiro hosted the 2nd edition of Techdays. This forum, that underlines the importance of technology as an innovation accelerator for economic development and improved quality of life, joined research centres, communication and electronics companies, entrepreneurs, researchers, creatives and general public. Techdays Aveiro 2016 took place at the Parque de Feiras e Exposições and it was focused on TICE and its growing impact and relevance in three different thematic areas – Materials & Habitat, Energy and Sea & Estuary. IT was very well represented with 13 demonstrators within a 64 m² area where visitors could get in touch with some of the best research and technology developed in the institute. The demonstrators presented a variety of work, such as wireless power transmission systems, telemedicine and technology for health, immersive virtual reality and physical reality technology, IoT and Network Solutions implemented in urban vehicles, technology developed for monitoring the wine process, visible light communications, energy harvesting systems, security systems for wireless networks using RaspberryPI technology, and aquatic drone swarms. During the event, SIC, a Tv channel with a nationwide audience, did a news coverage of the Techdays Aveiro 2016 event, with a great focus on some of the technology developed at IT. On the second day of the event, IT promoted a workshop on the Emerging Technologies for the Society of the Future, joining experts from different

fields to discuss the impact of emerging technologies in different economic and societal spheres.

Techdays was organized by the city of Aveiro in partnership with the University of Aveiro, IT in Aveiro, Associação Empresarial INOVARIA, Polo de Competitividade TICE and Centro Habitat, with Altice Labs being the event main sponsor. According to the organization more than 5000 visitors were present at the event, among business representatives, researchers, media professionals and the public in general. The 9000 m² exhibition area offered plenty to see, with about 100 exhibitors being displayed. Also, there were 50 speakers and more than 10 conference presentations and workshops during the three days of the event. These numbers are a proof that, within just two editions, Techdays has already proven to have a winning model for showcasing the national technology, where the world of business and the academic world are progressively speaking to the general public in just one voice.

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IT is a private non-profit association of Universities (UA, UC, IST, UBI, UP, ISCTE-IUL), Polytechnic of Leiria, Altice Labs and Nokia, with a mission to create and disseminate scientific knowledge in telecommunications. IT hosts and tutors graduate and postgraduate students.

Send your news and contributions for this newsletter to: news@it.pt

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What do cows, emotions, fashion and fetal cardiology have in common?

The answer is, they're all benefiting from technology. It is so built into our everyday lives that most of the times we don't really even notice technology's advances, nor do we remember its main purpose. Regarding technology and the future, Philippe Kahn, the inventor of the first camera phone and one of the most prolific inventors in the high-tech industry, replied "I build things that I think are exciting from a technology standpoint and will make life easier, simpler and better for people". So, keeping in mind the technology's role as a tool for making our future easier, simpler and better, on the second day of Techdays, IT organized the workshop "Emerging Technologies for the Society of the Future". The moderator Hugo Séneca (Exame Informática), reminding that "technologies achieve their end by being a means", introduced the audience to a panel of experts, invited to talk about how their non-technological fields are benefiting from the use of technology.

Ricardo Bexiga (Faculty of Veterinary Medicine of the University of Lisbon) talked about how livestock producers are using technology in their daily activities, like detecting diseased animals to isolate them from the stock or helping them to give birth and making sure the cow's birth rate increases. Other automated services that measure how much milk is produced by each animal and read the milk's electrical conductivity (allowing to detect infections on the mammary gland) bring a huge positive impact to a national livestock market that has more than 3.5 million animals. From cows to the human brains, Sandra Soares (Education and Psychology Department of the University of Aveiro) said the last decades have shown us an increasingly close relation between mental health and technology, with very promising results, both in a preventive and curative perspective. Sandra Soares brought us a very hot-topic on the mental health field as the base of human behaviour, our emotions. According to Sandra Soares, a growing number of non-intrusive devices are making it possible to monitor and access emotions in real-time in a natural environment. In this way, by helping to reduce the levels of subjectivity, Sandra Soares believes that technology is greatly contributing to the advances in the mental health field. Still about technology's impact on health, Eduardo Castela (Director of the Pediatric Cardiology Service of the University of Coimbra Hospital Center and member of the Portuguese Association of Telemedicine), presented a 20-year telemedicine project that gathers all the hospitals of the Continental Portugal Centre Region, plus the Vila-Real Hospital. Using Telecommunications technology, this model, later replicated in some member countries of the Organization of African Countries Whose Official Language is Portuguese, made possible the remote diagnosis and treatment of patients, as well as knowledge exchange between professionals of pediatric and fetal cardiology. Finally, Rita Salvado (University of Beira-Interior) talked about Smart textiles and the emerging market of Wearable technology. On her presentation Rita Salvado explained how fashion and the textile business can use technology to promote healthy and sustainable practices. One great example is Tommy Hilfiger, one of the world's most recognizable fashion brands, that has designed and sold jackets with incorporated solar panels. But it is particularly the industry related to health and well-being that has taken the most advantage from wearable technology, with companies like Lifeshirt producing clothes with wearable technology that allows monitoring physiological indicators like the respiratory and heart frequency.



Ricardo Bexiga (UL) presenting "Cows and Technology"

Sandra Soares (UA) and Hugo Séneca (Exame Informática)

Eduardo Castela (Pediatric Cardiology Service of the UC Hospital Center)



IT demonstrators in Techdays Aveiro 2016

Digiscope is an interactive auscultation screening tool that is already being used in one of the biggest hospitals in Brazil. For the fourth time on the Caravana do Coração initiative, researchers from the Digiscope team, led by Miguel Coimbra (IT in Porto) have trained health professionals in 13 cities of the State of Paraíba, enabling the cardiac screening of potentially more than 40 thousand babies per year with this auscultation technology.

Also illustrating the growing relation between technology and health, the Health Kiosk project, led by Pedro Brandão from IT in Porto, wishes to empower the common citizen with the tools to become more responsible with his own health. In Health Kiosk, a PC (All-in-one) guides the user through three basic self-exams (weight, blood pressure, and oximetry).



Eduardo Soares (IT in Porto) showing us how the Health Kiosk works



With the city of Aveiro as the host of Techdays, naturally our researchers from IT in Aveiro had a strong presence at the IT stand. Nuno Borges de Carvalho was present with his work on wireless power transmission, a technology that allows providing energy without using batteries and cables. According to the IT researcher, there is already a company that wants to apply this concept on railways to provide wireless energy. One other demonstrator was showcasing the SWAT project, where a team led by Rogério Nogueira (IT in Aveiro) has developed a network of low cost sensors that monitor the water quality. After developing this solution that allows water distribution companies to monitor remotely the flow and water quality, the Watgrid company,

co-founded by Rogério Nogueira and Lúcia Bilro, both researchers of IT-Aveiro, has taken a lot of the same technology and applied it to wine. The product, called Winegrid, includes sensors that are placed inside wine barrels and can relay information about several wine parameters directly to a tablet or smartphone.

Representing a solution towards smarter and safer cities, Nuno Santos (IT in Porto) explained us how the UrbanSense platform interacts with the BusNet Vehicular Network to collect key environmental data. Several sensors scattered along Porto city collect this data, sending it to a server with the aid of the city vehicles that function has wifi hotspots. This project is led by Susana Sargento (IT in Aveiro). Also from IT in Aveiro, Luis Duarte and Luis Rodrigues, were demonstrating the work developed at project VLC Lighting, which exploits the concept of Visible Light Communication on public lighting systems.



In project HANCAD, a team led by Anders Christensen (IT in ISCTE-IUL), has designed, implemented and evaluated an architecture network for aquatic drones. One other goal was to demonstrate how a collective of these low-cost aquatic drones can accomplish various maritime tasks such as monitoring an area, navigate in a pack, aggregation and dispersion. This network follows a decentralized logic in order to maintain connectivity and maintain its robustness even when an individual unit fails.

Ozan Cetinaslan (IT in Porto) talked to us about a technology that may well revolutionize the gaming and entertainment industries. Project VERE, led by Verónica Orvalho (IT in Porto), has developed a technology that, by doing a scan of ones face, or just by taking a selfie, allows to create an avatar.



This project aims to dissolve the boundary between the human body and surrogate representations in immersive virtual reality and physical reality.

There is a growing number of smartphones in the market which are already equipped with barometric sensors. This feature enables their use as barometric altimeters. Sérgio Crisóstomo (IT in Porto) and João Azevedo (University of Porto) have developed an Android Altimeter application, with very positive preliminary results that confirm the potential of the methods proposed for accuracy of smartphone-based barometric altimeters.



João Sequeira, a masters student under the coordination of Pedro Inácio, from IT in Covilhã, presented a portable system for quick network security assessments. This system, that is built using a Raspberry Pi 2, is powered from a battery bank, making it deployable in almost any situation. Also from IT in Covilhã, Emanuel Sequeira and Fardin Derogarian showed us a multi-band radio frequency energy-harvesting system, that can be used in health monitoring applications

