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REGIONAL REPORT

Review and Future Trends of the Spanish Law for Electronic Access to Public Services

By Josemaría Malgosa-Sanahuja, Pilar Manzanares-López and Juan Pedro Muñoz-Gea, Universidad Politécnica de Cartagena, Spain

Since its approval in 2007, the Law for Electronic Access to Public Services has constituted a challenge for each and every one of the Spanish central, regional and local Public Administrations. The ambiguity of some of the most important aspects of the law, together with the lack of both experience and resources of the majority of the administrations (especially the local ones), initially produced a rather expected adverse reaction in its implementation. The initial pace of implementation was much slower than expected. However, the effort has not been in vain, because at least it has led Spanish administrations toward the digital era irreversibly.

To boost its rapid implementation, the Spanish Government was aware of the need to develop a set of background resources to provide the necessary support for this new digital era. These resources were split into two parts: The first one was the extension of the legal framework in order to provide new laws to deal with Security and Interoperability issues. This is the case, for example, of the Royal Decrees 3/2010 and 4/2010 which set out what has been called the National Security and Interoperability Schemes, respectively. These laws define methodologies, guidelines and requirements to guarantee, first, secure services (citizens have to be convinced that the digital services are even more secure than paper-based procedures), and then that the data can be easily interchanged among different administrations but always following the restrictions imposed by the Law of Personal Data Protection.

The second extension consisted in the creation of a set of institutions, global services and software tools to help the administrations during the process of developing their own electronic access solutions. For example, one of the most, if not the most, important institutions created was the National Cryptologic Center (CCN in Spanish), which is an institution whose main responsibility consists in providing instructions, guidelines and recommendations to Spanish administrations to reach the objectives outlined in the above-mentioned National Security Scheme. Additionally, the CNN is also in charge of articulating the response to any kind of security incidents. Moreover, the Government puts some of the most important services for electronic access (e.g., a digital signature service conforming to the European laws or the Notification service, among others) as an accessible service for all administrations through the Application Systems and Networks for Administration network (SARA network in Spanish). Finally, in the Electronic Administration Portal (PAE in Spanish), any national, regional or local administration can find more than 350 software solutions developed by the Technological Transfer Center with the objective of helping the administrations in the implementation of their own Electronic Access Services. The CCN, in order to stablish a common mark to fight against security threats, has also developed a rich set of software tools freely available for any public Spanish Administration.

Without doubt, one of the signs of the progress that successive governments have made in this field in recent years is the continuous evolution of the legal framework associated with electronic access to public services. This never-disrupted update of the legal framework can only be explained taking into account the inherent complexity of the problem the Administrations are trying to face. As everyone knows, Internet is a continuous evolving world (especially in regards to security issues). In addition, not only civil servants but also citizens need time to be familiarized with the new procedures.

Although it is true that more than once, the government has been forced to extend the law applicability deadline, honestly speaking, this cannot be attributed to a negligent attitude of neither public administrations nor governments. Actually, all national and regional Administrations have already implanted electronic access to almost all of their public services. The main problem is the local administrations, especially the smallest ones. While offering some procedures in electronic form, many of them have not yet reached an acceptable level of digitalization.

However, the scene is not so bad. Fortunately, local administrations of each Spanish province are grouped into councils. The relevance of the Spanish councils has been often questioned not only by politicians but also by society. However, their role in boosting the digitalization of local administrations has been, and is still, crucial, since as far as electronic access to public services is concern, councils have led the digital transformation on behalf of their partners. For example, according to the IRIA report (Las Tecnologías de la Información y las Comunicaciones en las Administraciones Públicas, IRIA-2018, available at Portal Administración Electrónica https://administracionelectronica.gob.es/), over 75 percent of the councils have implemented at least one virtual branch. Regarding digital services offered by councils, it is important to highlight that 69 percent of them offer an electronic notification service, 66 percent offer a citizen folder service, 56 percent offer an electronic filing system, and 28 percent offer electronic payment systems. Regarding digital services offered by local Administrations, the electronic invoice leads the ranking wit 82 percent, which is not strange because from January 15, 2015, the invoices addressed to the Public Administrations must be electronic (in accordance with Law 25/2013, of December 27). It is followed by the electronic registration and notification services with 70 percent and 60 percent, respectively.

In most cases, what has really caused a serious delay in the development of electronic access to public services has been related to a lack of an appropriate budget. This fact, which is always stalking over European countries, gives a major merit to those who have struggled to make electronic access a reality even under these adverse economic conditions. Of course, there are still many things to do. The convergence toward digital services is actually a never ending task. But in summary, it is unquestionable that Spanish Administrations have made a huge effort to reach the European council targets.

CONFERENCE REPORT

ICIN 2019: Innovation in Clouds, Internet and Networks

By Rogier Noldus, Ericsson Telecommunicatie, Nederland, and Noël Crespi, Institut-Mines Télécom, Télécom SudParis Evry, France

ICIN 2019, the 22nd edition of the ICIN conference series, took place on 19-21 February, in Paris, France. It was technically co-sponsored by IEEE ComSoc and IFIP, and held in cooperation with ACM Sigmobile, with Huawei, Orange, Nokia, Gandi.net, Coliopen and Sorbonne Université being patrons. The conference was attended by 148 delegates from around the globe, representing academia, research institutes, standardization organizations, network operators and equipment vendors. As with all previous editions of ICIN, from the first edition in 1989 onwards, ICIN 2019 provided presentations on the latest research and development projects in the field of (mobile) communications, AI and Cloud computing.

The main theme of ICIN 2019 was "Network AI and Zero-Touch Communication Systems," topics that many operators, academia and research institutes and equipment vendors in the area of telecommunications, are working on. The overall organization of the conference was in the capable hands of the general co-chairs, Alex Galis (UCL, UK) and Fabrice Guillemin (Orange, France). The TPC was formed by Rogier Noldus (Ericsson, Netherlands) and Stefano Secci (CNAM, France). Noël Crespi (Institut Mines Telecom, France) was the overall steering committee chair.

The conference was preceded (on the day of the opening) by two tutorials. The first tutorial, titled "Intent-based Network Programmability" and presented by Franco Callegati, Walter Cerroni, and Chiara Contoli of the University of Bologna, Italy, explained how the concept of SDN can be taken to the next level. Programming a network should be based on the intent of the network, i.e., what we are aiming to accomplish, as opposed to being based on how to achieve this (the intended network characteristics shall be leading). The second tutorial, provided by Vanessa Little (VMware, Canada), introduced the audience to ETSI Open Source MANO (OSM). In particular, the network slicing and service orchestration aspects of OSM showed a strong link with the 5G network architecture. The tutorial session was chaired by Prosper Chemouil (Orange Labs (retired), France).

Three co-located workshops were held the day before the conference: the 3rd International Workshop on Quality of Experience (QoE) Management, the 6th International Workshop on the Recursive InterNetwork Architecture (RINA 2019), and the 1st International Workshop on Artificial Intelligence and Machine Learning Techniques for Enhanced Network Management (AIMLEM 2019). No less than 27 papers and two keynotes were presented. In addition, a panel session was held.

Rogier Noldus (Ericsson, The Netherlands), TPC co-chair.

JP Vasseur (CISCO, France), keynote speaker.

Panel session. From left to right: Rogier Noldus (Ericsson, The Netherlands), Paul J. Kuehn (Universität Stuttgart, Germany), Stuart Clayman (UCL, UK), Adam Drobot (IEEE IoT initiative, USA), Christian Destré (Orange, France).

The conference included four keynote sessions: Machine Learning/AI for Networking (JP Vasseur, Cisco, France); Wireless AI (Merouane Debbah, Huawei, France); Vertical Markets in IoT (Adam Drobot, IEEE IoT initiative, USA); and Digital Twins (Roberto Saracco, EIT ICT Labs, Italy).

The keynotes from JP Vasseur and Merouane Debbah took the audience through the latest development of AI and Machine Learning and how all mobile/wireless communication networks can benefit from it. The keynote from Adam Drobot presented ideas about how IoT and network technologies are complementing each other. Roberto Saracco inspired the audience with the concept of "digital twins" in communication networks.

From a total of 67 submissions, 21 full papers and six short papers were selected for presentation during conference sessions. The conference comprised the following seven full-track technical sessions:

- Mobile Edge Computing (chair: Franco Callegati, Univ. di Bologna, Italy), presenting how edge computing can increase throughput and device density, while enabling advanced service like AR and VR.
- Blockchain Technologies and Security (chair: Stefano Secci, Cnam, France), presenting novel techniques for improving performance of blockchains, usage of blockchains in 5G networks and security of blockchains.
- Cloud Networks and Security (chair: Fabrice Guillemin, Orange Labs, France), in which multi-path TCP and cloud network protection were presented.

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DISTINGUISHED LECTURER TOUR

Machine Learning in Digital Medicine: IEEE Distinguished Lecturer tour in Norway and Finland by Giorgio Quer

By Giorgio Quer, IEEE ComSoc Distinguished Lecturer, AI–Scripps Research Translational Institute, CA, USA

Digitalize human beings using biosensors to track our complex physiologic system, process this large amount of data with artificial intelligence (AI), and change clinical practice toward individualized medicine: these are the goals of digital medicine!

In this Distinguished Lecturer Tour in November 2018 I had the opportunity of presenting this exciting topic at four universities and research institutions in two countries: the University of Königsberg, Norway; Simula Research Lab, Oslo, Norway; Aalto University, Helsinki, Finland; and the University of Oulu, Finland.

University of Kongsberg, Norway.

Summary of Talks

Machine Learning in Digital Medicine.

At Scripps Research, we are a team of computer scientists, engineers, and clinical researchers, in partnership with health industries, and we propose new solutions to analyze large longitudinal data using statistical learning and deep convolutional neural networks to address different cardiovascular health issues.

One of the greatest contributors to premature mortality worldwide is hypertension. Lowering blood pressure (BP) by just a few mmHg can bring substantial clinical benefits, but it is hard to assess the "true" BP for an individual, since it fluctuates significantly. With a dataset of 16 million BP measurements, we unveil the BP patterns and provide insights on the clinical relevance of these changes.

Another prevalent health issue is atrial fibrillation (AF), the most common sustained cardiac arrhythmia, associated with stroke, heart failure and coronary artery disease. AF detection from single-lead electrocardiography (ECG) recordings is still an open problem, as AF events may be episodic and the signal noisy. We conduct a thoughtful analysis of recent convolutional neural network architectures developed in the computer vision field, redesigned to be suitable for a one-dimensional signal, and we evaluate their performance in the detection of AF using 200 thousand seconds of ECG, highlighting the potential and pitfalls of this technology.

Looking to the future, we investigate new applications for wearable devices and advanced processing in the All of Us

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CONFERENCE REPORT

IoT Asia 2019 at Singapore EXPO

By Ewell Tan, IEEE Asia-Pacific Limited, Singapore

The rapid changes and advancement of Internet of Things (IoT) is going to change our lives and could be the next industrial revolution that reshapes the connected economy.

With these technology trends, the 6th edition of IoT Asia, an award winning event, was held on 27–28 March 2019 at the Singapore EXPO, with topics focused on smart cities, industrial IoT, artificial intelligence, blockchain, data analytics and enablers.

IEEE Asia-Pacific Ltd. is proud to be one of the knowledge partners for IoT Asia this year. This event brought together technology solution providers, technology heads, design/ solution architects, engineers, academic institutions, investors and starts-ups for an enriching learning and sharing experience.

Mr. Jiten Hanwat from IEEE Singapore Blockchain community group giving his talk at IoT Asia.

IEEE Staff at at IoT Asia (from left to right): Leo Hwa Chiang, Director of Singapore Office; Prof. Takako Hashimoto, IEEE R10 Secretary; Ewell Tan, Project Manager; Min Bia Gunawan, Office Administrator.

Dr. Vivian Balakrishnan, Singapore's Minister for Foreign Affairs and Minister-in-Charge of the Smart Nation Initiative, graced the event at the IoT Asia opening ceremony. In his speech, Dr. Balakrishnan underscored the importance of revising legislation in light of developing big technology trends.

In addition, at one of the workshops of IoT Asia, Prof. Takako Hashimoto, Vice President of Chiba University of Commerce, Japan and a dedicated volunteer from IEEE Region 10, was invited to give a talk on sustainable development goals toward a distributed energy society through the RE100 university initiative. As part of the Region 10 Industry Forum initiative, R10 Industry Relations Committee Chair, Dr. Chris Gwo Giun Lee, also joined us in this event.

IEEE Asia-Pacific also invited Prof. Simon Chestermon and Adjunct Prof. Yu Chien Siang from the National University of

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ICIN 2019/*Continued from page 2*

- Machine Learning and Network Intelligence (chair: Stefano Secci, Cnam, France), presenting research on next-cell prediction and resource usage, based on machine learning.
- Network and Service Orchestration (chair: Amina Boubendir, Orange Labs, France), in which papers were presented on service chaining and service orchestration, and SDN topology.
- Software Defined Networking (chair: Alex Galis, UCL, UK), comprising presentations on novel techniques for deploying SDN for various service requirements.
- Enablers for Network Management (chair: Diogo Mattos, Universidade Federal Fluminense, Brazil), in which the presenters presented research on techniques for dynamically allocating resources in information centric networks.

During the conference, seven demo presentations were held, which showed practical and innovative deployments of IoT, 5G, LoRA, AI, network slicing and Platform-as-a-Service (PaaS).

The conference concluded with a panel session, chaired by Roberto Minerva (Telecom SudParis, France), in which five representatives from academia, research and industry shared their views on Intelligence in the evolved communication network.

Once again, ICIN was a successful event, bringing professionals from around the globe together to share their research and experience in the field of (tele)communications and network infrastructure. ICIN remains unique in its field.

The organizing committee is fully committed to ICIN 2020, for which arrangements have started already. ICIN 2020 will be held in Paris in February. The call for papers will be sent shortly (https://www.icin-conference.org/)

IoT ASIA 2019/*Continued from page 3*

Singapore (NUS), and Mr. Jiten Hanwat from the IEEE Singapore Blockchain Initiative group as speakers at the event.

This event attracted over 6,000 delegates and over 180 exhibitors. At the IEEE exhibit booth, staff from IEEE Asia-Pacific helped to promote IEEE membership, products and services to the trade visitors and conference delegates.

Distinguished Lecturer Tour/*Continued from page 3*

Research Program, an unprecedented research effort to gather data from one million people in the USA to accelerate the advent of precision medicine.

At the University of Oulu, Finland, I presented also a second talk: Cellular and Device-to-Device Networks Coexistence. In this talk, we discussed the coexistence of device-to-device (D2D) and cellular communications in the same band, a promising solution to the dramatic increase of wireless network traffic load. In this scenario, we propose a robust optimization framework to derive a proactive caching policy that exploits all these communication opportunities and reduces congestion on the backhaul link. The adoption of D2D technologies may save precious resources like spectrum and energy for future 5G networks by exploiting physical proximity between terminals, helping to counteract the increasing traffic demand in cellular networks.

Feedback

The DL was enthusiastically received in all four institutions. Both talks in Norway (Konigsberg and Oslo) were characterized by a great attendance and attracted visitors from different parts of Norway, including Tromsø. A peculiar characteristic of both talks in Finland was the presence of researchers from industry, bringing a different point of view to the final discussion.

Acknowledgements

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