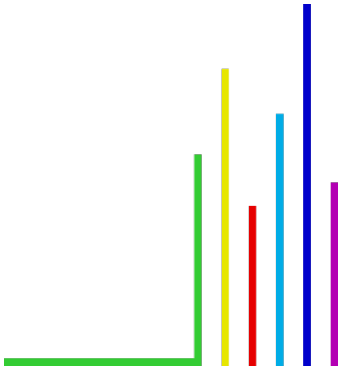

LDAC2020
8th Linked Data in Architecture and Construction Workshop

Proceedings of the 8th Linked Data in Architecture and Construction Workshop (LDAC 2020)

Dublin, June 17th – 19th 2020

María Poveda-Villalón, Ana Roxin, Kris McGlinn, Pieter Pauwels (eds)

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The LDAC workshop series provides a focused overview on technical and applied research regarding the usage of semantic web, linked data and web of data technologies for architecture and construction (design, engineering, construction, operation, etc.). The workshop aims at gathering researchers, industry stakeholders, and standardization bodies of the broader Linked Building Data (LBD) community. The aim of the workshop is to present current developments, coordinate efforts, gather stakeholders, and elaborate use cases.

We are pleased to collect in this volume the papers that were submitted and presented during the 8th Linked Data in Architecture and Construction Workshop. The workshop took place online, hosted from Trinity College Dublin, from the 17th until the 19th of June 2020. During these days, the workshop attendees attended the presentations of eleven peer reviewed paper submissions in the proceedings. Furthermore, the workshop included a number of break-out sessions, which replaced the technical session. A short PhD session took place on 19th of June, as well as 10 industry presentations.

Finally, the workshop also included three inspiring invited keynotes:

- "*The Socio-technical Phenomena of Data Integration and Knowledge Graphs*" by **Juan Sequeda** (data.world): Data Integration has been an active area of computer science research for over two decades. A modern manifestation is as Knowledge Graphs which integrates not just data but also knowledge at scale. Tasks such as schema and ontology matching, data virtualization, etc., are fundamental in the data integration process. Research focus has been on studying this phenomena from a technical point of view (algorithms and systems) with the ultimate goal of automating the task of integrating data. In the process of applying scientific results to real world enterprise data integration scenarios to design and build Knowledge Graphs from enterprise databases, we have experienced numerous obstacles. In this talk, I will share insights about these obstacles. I will argue that we need to think outside of a technical box and further study the phenomena of data integration with a human-centric lens: from a socio-technical point of view.

- "*The Smart Appliances REference Ontology (SAREF), its development and its application*" by **Laura Daniele** (TNO): In

this talk I will take you into a journey that started in 2014, when the European Commission launched the first initiative to build a common ontology in close collaboration with the smart appliances industry, which resulted into the creation of the Smart Appliances REFerence ontology (SAREF). Six years later, SAREF is a series of technical specifications published by the European Telecommunication Standardization Institute (ETSI), consisting of a modular framework that comprises a generic core ontology for IoT and 10 domain-specific extensions, including SAREF for Energy, Buildings and Cities, which are of particular interest for the LDAC community. The SAREF framework is maintained and evolved by experts from several European organizations that successfully collaborate with each other and can count on the continuous support of ETSI and the European Commission. One of the latest supported initiatives is the development of an open portal for the SAREF community and industry stakeholders, so that they can contribute directly to the SAREF evolution. On the practical side, the recently started H2020 Interconnect Large Scale Pilot uses SAREF and its extensions as basis to enable interoperable solutions connecting smart homes, buildings and grids in various pilots located in seven different countries in Europe. During the talk I will share with you the lessons learned during this journey and the challenges ahead, addressing questions and curiosities, like what makes SAREF a successful story, how to keep an ontology relevant to the industry and its community of users, how to consistently maintain and evolve extensions in various domains, but also more specific topics for the LDAC community, such as how to model buildings and different domains related to buildings, how to link SAREF to other domains, and what are the challenges when concretely using the ontology to develop large scale real applications, especially when going across-domain like the Interconnect project aims to do when combining the different domains of smart homes, buildings and grids.

- "*History of the Semantic Web, and some words about the future of AI*" by **Ali Intizar** (Insight Centre): Due to the rapid advancements in the sensor technologies and IoT, we are witnessing a rapid growth in the use of sensors and relevant IoT applications. A very large number of sensors and IoT devices are in place in our surroundings which keep sensing dynamic contextual information. A true potential of the wide-spread of IoT devices can only be realized by designing and deploying a

large number of smart IoT applications which can provide insights on the data collected from IoT devices and support decision making by converting raw sensor data into actionable knowledge. However, the process of getting value from sensor data streams and converting these raw sensor values into actionable knowledge requires extensive efforts from IoT application developers and domain experts. In this talk/tutorial, we will discuss various approaches for designing intelligent IoT applications and building real-time data analytics pipeline. We will present a common framework to design and build data analytics based IoT applications. We will discuss different challenges at each of the data processing layer of IoT data analytics pipeline and how a combination of modern technologies such as data analytics (machine/deep learning algorithms), semantic Web, Linked Data and AI can help address these challenges. A few example use-cases from smart cities, Industry 4.0 and construction domains with emphasis on digital twins will be presented in detail to demonstrate the utilisation of real-time IoT data analytics pipeline for building intelligent IoT applications.

Acknowledgments

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