



# **LDAC2025**

## **13th Linked Data in Architecture and Construction Workshop**

Proceedings of the 13th Linked Data in  
Architecture and Construction Workshop  
(LDAC 2025)

Porto, Portugal, July 9-11, 2025

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(eds)

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## Editorial LDAC 2025

**Pieter Pauwels, María Poveda-Villalón, Walter Terkaj**

The 2025 edition of the Linked Data in Architecture and Construction Workshop took place from 9 to 11 July in Porto, Portugal. This 2025 LDAC Workshop is the 13<sup>th</sup> edition of its kind, since its initiation in 2012 in Ghent, Belgium. As a workshop, the key goal of the LDAC is, and has always been, to bring together multiple experts that are working on Linked Data in the architecture and construction industry, and actively engage in practical and technical details (the ‘work’ in ‘workshop’). The main topic of the workshop, linked data, primarily refers to the use of RDF graphs and OWL ontologies, as declared to be the core technologies used in the Semantic Web; yet, other data formats and technologies have been welcomed and covered, as they have emerged more and more over the years. The workshop is targeted both at early-career PhD researchers as well as young professionals in the Architecture, Engineering, and Construction (AEC) industry working with these technologies, and it is an open space and platform for sharing technical details, experiences and content.

In the LDAC program, there are always two special sessions or tracks, which are organized slightly differently from year to year, namely the industry track and an open research discussion track. While both took place from the very first event,

they have changed shape and colour over time, adapting to context, experiences, and need. The industry track is now a marketplace where supporting companies can pitch, present and discuss their products and work. In addition, a poster session allows early-career PhD researchers to present their ongoing preliminary works.

The open discussion track commonly takes place throughout the extended paper presentation sessions and extended Q&A discussions in those sessions. In 2025, there was also a dedicated session on “two decades of linked data in the AEC industry” – in correspondence with the keynote talk by Professor Jakob Beetz earlier on the same day. During this session, an open forum was provided to discuss in group the state of the art and the state of practice, and explore future avenues of research and innovation in this domain.

So, what is LDAC? Where did it come from? In the very first edition of the LDAC workshop, in Ghent, which had plus-minus 12 participants, on invitation only, there did not exist any IFC or ifcOWL ontology, there also were hardly any other ontologies to be found for the AEC industry or built environment. Moreover, the number of software tools and databases and libraries were scarce. People came together out of need, and simply achieving more direct communication and collaborative focus. Participants were from Ghent University, NUI Galway, Aalto University, and ARC La Salle Barcelona. The Semantic Web domain had just transitioned more towards a Linked Data focus, with more attention towards publishing data on the web (open and closed). There were no proceedings, only a workshop report. In the 2014 and 2015 editions of the LDAC, in Tekla headquarters in Helsinki and the University of Burgundy in France, the workshop focused a lot on exploring how to transpose IFC data and BIM data into OWL ontologies and RDF graphs. These were the first editions where industry participated more actively, and where the grounds were set for creating a Linked Data Working Group in BuildingSMART International and a Linked Building Data Community Group in the World Wide Web Consortium (W3C).

LDAC 2015 Eindhoven was the edition in which the transformation rules from IFC EXPRESS to IFC OWL, as well as IFC SPF to IFC RDF, were defined and agreed in group during the marathon working session of the event (3-4 hours without break). LDAC 2016 Madrid, 2017 Dijon, 2018 London, and 2019 Lisbon were working and presentation events that started often from the availability of the IFC ontology, and looked beyond that scope. In these years, the W3C Linked Building Data Community Group (LBD) was very active, and the Building

Topology Ontology (BOT) emerged, along with several more ontologies (DOT, PROD, PROPS, OPM) that formed the LBD cloud of ontologies. During these years, the LDAC workshop has been collocated with the EG-ICE Workshop (Eindhoven), and there was also an American version of LDAC, in 2019 Gainesville, Florida. After these years, an established community was present, on the verge of publishing several of the created OWL ontologies as standard ontologies and vocabularies under the W3C flag and buildingSMART International. In 2019, the IFC ontology was published by buildingSMART International, 4 years after its final agreement and finalization in LDAC 2015.

From 2019 onwards, the workshop further matured and was regularly combined with a Summer School: the Summer School of LDAC (SSoLDAC). The first SSoLDAC took place in Lisbon, Portugal, where about 40 participants took part in tutorials, hackathons, and technical presentations. In 2021, the LDAC workshop was lucky to find a gap during the corona period, in which the workshop managed to take place physically in Luxembourg, together with the CIB w78 conference. After that year, the LDAC workshop travelled to Hersonissos, Crete, in 2022, where it collocated with the ESWC conference. The SSoLDAC Summer School had its second edition in Cercedilla, Spain, in the same year. Around that time, the workshop had an active community of 50-60 rotating participants, and a whole range of ontologies had been made available and being used at that point, leading to a very mature and active area of research and community of innovation in this domain.

After this event, linked data (RDF graphs and OWL ontologies) had become much more common ground and well-established among researchers, leading to publications in relevant conferences and journals, as well as comfortable commercial tools made available and used in the AEC industry. After this date, also, a lot more different data types came to be included, including 2D and 3D geometry, point clouds, IoT data streams, images, and so forth. As such, the focus of the workshop shifted from ontology engineering more towards the usage of RDF graph data (LBD data) with other data sets – while keeping true to the real idea of “linking data across different organisations and systems over the web”. This is the current state of the art, culminating in the 2023 LDAC workshop and 2023 SSoLDAC Summer School in Matera, Italy, as well as the 2024 LDAC workshop and Summer School in Bochum. They hosted 80 to 110 participants, respectively, and had a whole series of Python Jupyter notebooks for the SSoLDAC, as well as a fully attended poster-industry session covering a very

wide and mature use of linked data in the AEC industry, and including very strong industry participation.

LDAC 2025 Porto continued on the same idea and spirit, and hosted 50-60 participants, aiming still to bring researchers as well as industry together that work on this very specific topic, including again the industry track as well as the workshop discussion track. After the 2024 LDAC keynote that focused on the use of Artificial Intelligence (AI) and the European AI Act, the 2025 event again hosted a tangentially related and forward-looking topic, namely ‘Data Trust Flows’, by Dr. Beatriz Gonçalves C. Esteves. Both keynotes are in line with emerging technologies, such as Artificial Intelligence and Data Spaces.

Furthermore, the 2025 LDAC Workshop was collocated with the 2025 European Conference on Computing in Construction (EC3) and the 2025 CIB w78 International Conference on IT in Construction. Both conferences, jointly organized, include several sessions that include data integration, linked data, and several related topics. As such, it is clear that the field of Linked Data in Architecture and Construction has matured significantly over the last 10-15 years, and this community can be very proud of the achievements made globally. This was also the topic of the second 2025 LDAC keynote by Prof. Dr. Jakob Beetz, which looked back on “20 years of Linked Building Data”. The scope widens, and implemented tooling and research is maturing fast and now readily available.

Hence, as of the future, the LDAC will take a different shape. It is not expected or planned that a future standalone version of the LDAC Workshop will take place in the future. The concept is well established and present in more broadly organized conferences and events, where integration with other technologies and communities, as already ongoing, can be sought and achieved. There may be similar workshops in the future, hosted as part of other conferences. There may be education and teaching and summer schools, focused on explaining and teaching the basics of this field. There may be an explicit merger into a bigger conference. There may be the establishment of one or more entirely new workshops, for example on AI in the built environment, or webified building data. There may be a re-establishment of a community or even standardization group as part of standardization bodies, e.g. W3C, BuildingSMART, ETSI. There may be mere standardization and implementation in practice. And there may even be all or none of the above combined.

In the meanwhile, everyone reading this document and editorial is encouraged to move forward and read the articles published as part of this LDAC Proceedings volume. Furthermore, anyone interested in the topic is referred to the 10+ years database of proceedings volumes, presentations, recordings, and Python notebooks that has been made available over all these years at <https://linkedbuildingdata.net/ldac/>.

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