

IVI's ReThink | ReDesign programme, funded in partnership with Enterprise Ireland, allowed ArcDox to gain access to expert research to solve a series of challenges around compliance, data governance and standardisation.



The organisation

Established in 2009 as the first specialist building information modelling (BIM) consultancy practice in Ireland, registered with the Royal Institute of Architects of Ireland and ISO 19650-2 certified by the NSAI, ArcDox describe themselves as Ireland's leading BIM consultants. They have been providing professionally managed services to the construction industry to enable and support the use of BIM, to help achieve productivity gains and better outcomes on a wide range of construction projects.

The challenge

The exchange of information in the architecture, engineering and construction sector, in relation to build-environment assets (buildings, infrastructure and utilities), is most often performed through files or documents of various types and format. The ISO19650 set of standards, published in 2019, requires files/documents – 'information containers' – to be stored and managed within a 'Common Data Environment' (CDE), and for these information containers to have associated metadata properties which describe the content, status, revision, and optionally classification of these files, to facilitate easy searching, querying and processing of information. However, the ISO19650 standard itself is not specific on what properties are required – this is left to individual companies operating on projects.

ArcDox defined a standard set of 140 metadata attributes for information containers, which would store and convey the origin, purpose, content, status and revision of the containers, including some 'transactional data.' ArcDox needed these properties to be mapped and defined according to Industry Foundation Classes (IFC). IFC is a standardised digital description of the built environment, including buildings and civil infrastructure. It is an open, international standard (ISO 16739-1:2018), which is vendor-

neutral or agnostic, and thus is usable across a wide range of hardware devices, software platforms, and interfaces for many different use cases.

ArcDox did not have in-house expertise in relation to this work, and needed research-based knowledge building to define the process and application to validate the properties.

The solution

Working with IVI's ReThink | ReDesign team and Digital Construction Research Cluster lead Dr. Zohreh Pouzolfaghar, this project worked to define specific properties and attributes to facilitate better business processing of information.

Step 1 involved mapping proposed properties to the existing IFC data scheme.

Step 2 established the process of creating and defining new properties to the IFC data schema.

In Step 3, a Model View Definition (MVD) was created for specifying, testing and validating data exchanges.

Step 4 comprised providing 'practical' guidance on the implementation of the MVD in ArcDox's business process, and software implementation.

The result

After mapping of the proposed properties to the existing IFC, data scheme, a process for creating and defining new properties to schema was co-created through IVI's research-led process. The MVD was created to specify, test and validate data exchanges, with guidance from IVI experts on implementation. As well as ensuring compliance with the standard, this meant that ArcDox now have easily searchable and findable metadata relating to their own needs.