Comparison of OmniClass, Uniclass, Cuneco and CoClass with reference to ISO 12006-2 and ISO 81346-12

ISO 12006-2:2015	OmniClass 2006-2013 North America	Uniclass 2015 UK	Cuneco Classification System (CCS) Denmark	CoClass Sweden	ISO 81346-12
A.2 Construction information	Table 36 Information	FI – Forms of information (Beta status)	A104 Document Management (metadata)		
A.3 Construction products	Table 23 Products	Pr – Products	Components	Components	Components (Product aspect)
	Table 41 Materials				
A.4 Construction agents	Table 33 Disciplines	Agents	A104 Document Management (metadata)		
	Table 34 Organizational roles		A104 Document Management (metadata)		
A.5 Construction aids	Table 35 Tools	TE – Tools and Equipment	Equipment		
A.6 Management	Table 32 Services	PM – Project management	A104 Document Management (metadata)		
A.7 Construction process	Table 31 Phases	Project phases (draft for comment)	A104 Document Management (metadata)		
		Regions (draft)			
		Districts (draft)			
A.8 Construction complexes		Co – Complexes		Construction complex	
A.9 Construction entities	Table 11 Construction entities by function	En – Entities	Construction entity	Construction entity	
	Table 12 Construction entities by form	Entities by form (draft for comment)			
		Ac – Activities			
A.10 Built spaces	Table 13 Spaces by function	SL – Spaces/locations	Built spaces/User spaces	Space	Spaces (Location aspect)
	Table 14 Spaces by form				
A.11 Construction elements	Table 21 Elements (includes Designed elements) (UniFormat)	EF – Elements/functions	Functional systems Technical systems Components	Functional systems	Functional systems (Functional aspect)
		Ss – Systems		Constructive (Technical) systems	Technical systems (Functional aspect)
A.12 Work results	Table 22 Work results (MasterFormat)			Production results incl. maintenance activities	
A.13 Construction properties	Table 49 Properties	Properties	Classes of Properties	Properties	
		Zz – CAD			
				Landscape information	

Overview of all systems

All systems are multi-facet or multi-table classification systems aligned to ISO 12006-2. OmniClass and Uniclass followed a similar development path in that they were both assembled from pre-existing single table systems. As Uniclass has been through more development iterations than OmniClass (Uniclass 1997, Uniclass 2, Uniclass 2015), it is – as one would expect – more integrated and consistent. Cuneco Classification System (CCS) and CoClass have had a number of national predecessors – CCS was preceded by the DBK and BC/SfB systems; CoClass was preceded by the BSAB and SfB systems.

While CCS and CoClass have similar tables aligned to ISO 12006-2 as OmniClass and Uniclass, they have diverged from these systems in a fundamental way through the incorporation of principles derived from ISO/IEC 81346. Tables in traditional classification systems arrange classes of items in a hierarchical order of specialisation: types are subdivided into subtypes, and so on, in accordance with given aspects. In practice, it can be difficult to select a single aspect/principle of specialisation that can be consistently applied to all items. Classes of doors, for example can be subdivided by mode of operation (swinging, sliding), material (timber, metal), form of construction (flush panel, framed), etc. The many subtypes and permutations that need to be identified generally results in long and complex tables. For similar reasons, consistency within and between tables is also difficult to achieve.

Systems based on ISO/IEC 81346 are structured differently. They rely on a smaller group of Functional Systems, Technical Systems and Components – items corresponding roughly to the Elements, Work results/Systems and Product Tables of ISO 12006-2 based systems – and differentiate them by assigning different properties to them, e.g. A door is always designated as a door but subtypes are defined by their properties. The ISO/IEC 81346 designation or classification notation reflects this: Additional notations are appended to the initial/root notation as the item is progressively defined throughout the design and documentation process. This results in a more stable and recognisable designation over the life of a project. In comparison, it is usually necessary to completely change the notation in non-ISO/IEC 81346 systems over the life of the project as the item is classified as an Element, Work Result/System or Product for different purposes by each stakeholder. As described in more detail below, the ISO/IEC 81346 notation system is also quite different to the others in appearance and function.

Comparison of OmniClass and Uniclass 2015

Content and scope

OmniClass covers some sectors in great detail but not others. Uniclass does not match OmniClass detail in some sectors but covers buildings, civil and landscape works, transport and utilities infrastructure and process engineering more evenly and consistently within tables. Plenty of spare locations are available to add more entries.

Structure of tables

The internal structure of Uniclass tables is more consistent regarding the application of single aspect of specialisation. The hierarchical organisation of items from more general to specific, as expressed by the notation system, is also more consistent in Uniclass.

Alignment of tables

Uniclass tables follow a more consistent pattern of organisation, particularly at the highest, most general level than OmniClass'. This consistency makes similar concepts more readily recognisable by the system's users. Consistent patterns in the notations used in each Uniclass table facilitate the multifaceted classification of items.

Availability and access

Excel files of tables for both systems can be readily downloaded online. OmniClass tables are also available as PDF files. As a newer system, Uniclass is updated more frequently. Uniclass users also appear to have more power to request changes and extensions to the system than OmniClass users.

Comparison of OmniClass/Uniclass and CCS/CoClass

For this comparison OmniClass is grouped with Uniclass, and CCS is grouped with CoClass because each pair represents two distinct approaches to classification. Because CCS and CoClass have been developed in parallel and incorporate principles from ISO/IEC 81346, the differences between them is much less than those between OmniClass and Uniclass 2015. For this reason, they have not been compared in this document.

As OmniClass and Uniclass represent a more established approach to classification, they will be more recognisable to most industry stakeholders. However, in some regards, CCS and CoClass systems – when implemented – are easier to grasp. To illustrate: instead of listing multiple types of doors across a number of tables, with different notations in each table, as found in OmniClass/Uniclass, CCS/CoClass lists a single type – door – and differentiates subtypes of doors by the properties assigned to them, e.g. swinging, sliding, timber, metal, interior, exterior, fire-rated or not. The advantage of this arrangement is that the initial, or root, notation for door remains unchanged throughout a project. Details of the door are progressively defined during the design, documentation, procurement and operational phases of a project simply by adding or amending relevant properties. This approach is well suited to BIM processes.

For many people the most salient feature of a classification system is the notation or coding used to identify and order individual items within it. In this regard, OmniClass'/Uniclass' largely numerical notations reflect the hierarchical ordering of items familiar to regular users of classification systems. CCS/CoClass notations are based on the three-part Reference Designation System (RDS) described in ISO/IEC 81346 which is both human and machine readable. When implemented in a basic way these notations consist of relatively simple one, two or three letter codes. More sophisticated implementations providing more advanced functionalities such as making it possible to identify an individual item and its precise location/relationship to other items within a project, however, result in notations which, for many, will not be readily interpretable at first sight, e.g. -D1.AE1.BE1.ULE3.

The complexity of the notation system may not represent the sort of disadvantage it once would have. When classification systems were only available in printed form, their usefulness relied heavily on their users becoming reasonably familiar with their structure and notations. The increasing scale and granularity of classification systems means that a fewer potential users are likely to become as intimately familiar with them as past systems. The reality is that nowadays for classifications systems to be widely adopted and used, they have to be incorporated in digital tools used by industry stakeholders. When ISO/IEC 81346 based systems are well integrated, their advantages become more obvious and their complexity becomes less of an issue.

References

ISO 12006-2:2015 *Building construction -- Organization of information about construction works -- Part 2: Framework for classification*

IEC 81346-1:2009 *Industrial systems, installations and equipment and industrial products -- Structuring principles and reference designations -- Part 1: Basic rules*

IEC 81346-2:2009 *Industrial systems, installations and equipment and industrial products -- Structuring principles and reference designations -- Part 2: Classification of objects and codes for classes*

ISO 81346-12:2018 *Industrial systems, installations and equipment and industrial products -- Structuring principles and reference designations -- Part 12: Construction works and building services*