Uniclass2

John Gelder
RIBA Enterprises, ICIS DA
Tallinn 2014
Context – UK BIM level 2

- PAS 1192-3:2014 Specification for information management for the operational phase of assets using building information modelling (BIM).
- Construction Industry Council (2013), Building Information Model (BIM) Protocol, CIC.
- Government Soft Landings (GSL).
- Classification (part of TSB competition – hopefully Uniclass2).
- The digital Plan of Works (part of TSB competition).
Tables and Manual

- Uniclass2 Tables at www.cpic.org.uk/uniclass2
- Uniclass2 Manual underway – 130 pages and counting.
Uniclass2 update

- Tables out for comment, still.
- Withdrawal of Work Results table as redundant.
- Government acquisition of Uniclass2 from CPI.
- TSB two-stage competition:
  - Phase 1: Small Business Innovation Research (SBRI) and Technology Strategy Board (TSB) (2014), *Functional specification*: A digital tool for building information modelling, SBRI & TSB.
## Scope

<table>
<thead>
<tr>
<th>Construction resource</th>
<th>ISO/DIS 12006-2</th>
<th>Uniclass2</th>
</tr>
</thead>
<tbody>
<tr>
<td>In: Information table</td>
<td>●</td>
<td>P</td>
</tr>
<tr>
<td>Pr: Products table</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ag: Agents table</td>
<td>●</td>
<td>P</td>
</tr>
<tr>
<td>Ai: Aids table</td>
<td>●</td>
<td>P</td>
</tr>
<tr>
<td>Construction process</td>
<td>Ma: Management table</td>
<td>●</td>
</tr>
<tr>
<td>PP: Project Phases table</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Construction result</td>
<td>Re: Regions table – by activities</td>
<td>D</td>
</tr>
<tr>
<td>Di: Districts table – by activities</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Co: Complexes table – by activities</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>En: Entities table – by activities</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>EF: Entities table – by Form</td>
<td>●</td>
<td>D</td>
</tr>
<tr>
<td>Ac: Activities table – by activities</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Sp: Spaces table – by activities</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>SE: Spaces table – by degree of Enclosure</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Ee: Elements table</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ss: Systems table</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>WR: Work Results table</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Construction property</td>
<td>PM: Properties and Materials table</td>
<td>●</td>
</tr>
<tr>
<td>Modelling</td>
<td>Mo: Modelling table</td>
<td></td>
</tr>
</tbody>
</table>
This tool is a fully searchable, online version of the following ten Uniclass2 Development Release Classification tables (to find out how to use this tool see the FAQ):

1. **Co** - Complexes
2. **En** - Entities
3. **Ac** - Activities
4. **Sp** - Spaces
5. **EF** - Entities by Form
6. **Ee** - Elements
7. **Ss** - Systems
8. **Pr** - Products
9. **Zz** - CAD
10. **PP** - Project Phases

A full PDF version of these eleven tables is available here: [2013-12-03_Uniclass2(Development Release).pdf](#)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Parent Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pr_20_29_14_50</td>
<td>Masonry Clamps</td>
<td>Pr_20_29_14</td>
</tr>
<tr>
<td>Pr_20_29_23_50</td>
<td>Masonry Dowels</td>
<td>Pr_20_29_23</td>
</tr>
<tr>
<td>Pr_20_29_56_50</td>
<td>Masonry Nails</td>
<td>Pr_20_29_56</td>
</tr>
<tr>
<td>Pr_20_29_63_50</td>
<td>Masonry Plugs</td>
<td>Pr_20_29_63</td>
</tr>
<tr>
<td>Pr_20_31_12_50</td>
<td>Masonry Cements</td>
<td>Pr_20_31_12</td>
</tr>
<tr>
<td>Pr_20_85_03_50</td>
<td>Masonry Supports</td>
<td>Pr_20_85_03</td>
</tr>
<tr>
<td>Pr_20_85_09_42</td>
<td>Individual Masonry Brackets</td>
<td>Pr_20_85_09</td>
</tr>
<tr>
<td>Pr_20_93_50</td>
<td>Masonry Capping And Coping Units</td>
<td>Pr_20_93</td>
</tr>
<tr>
<td>Pr_20_93_51</td>
<td>Masonry Flooring Units</td>
<td>Pr_20_93</td>
</tr>
<tr>
<td>Pr_20_93_52</td>
<td>Masonry Walling Units</td>
<td>Pr_20_93</td>
</tr>
</tbody>
</table>
20 ADMINISTRATIVE, COMMERCIAL AND PROTECTIVE SERVICE COMPLEXES

20-10 Legislative complexes

- 20-10-10 International legislative complexes
  - 20-10-10-xx Council of the European Union
  - 20-10-10-xx European Commission
  - 20-10-10-xx European Parliament
  - 20-10-10-xx United Nations General Assembly
  - 20-10-10-xx United Nations Security Council
- 20-10-30 National legislative complexes
  - 20-10-30-xx National assemblies
  - 20-10-30-xx National capitols
  - 20-10-30-xx National parliaments
- 20-10-50 Regional legislative complexes
  - 20-10-50-xx Provincial parliaments
  - 20-10-50-xx State parliaments
- 20-10-70 Local legislative complexes
  - 20-10-70-xx County council chambers
  - 20-10-70-xx City council chambers
  - 20-10-70-xx Town council chambers
- 20-10-95 Temporary legislative complexes

20-20 Secular administrative complexes

- 20-20-10 International official administrative complexes
  - 20-20-10-xx European Union agencies
  - 20-20-10-xx United Nations agencies
- 20-20-30 National official administrative complexes
  - 20-20-30-xx National governmental agencies
  - 20-20-30-xx National ministries
- 20-20-50 Regional official administrative complexes
  - 20-20-50-xx Regional (e.g. state) governmental agencies
  - 20-20-50-xx Regional (e.g. state) ministries
- 20-20-70 Local official administrative complexes
  - 20-20-70-xx County council offices
  - 20-20-70-xx City council offices
  - 20-20-70-xx Town council offices
  - 20-20-70-xx Municipal council offices
- 20-20-95 Temporary secular administrative complexes
Uniclass2 Manual

Alignment
Ambiguity
Annotation
Applications
Assembly
Attributes
Barcodes
Benchmarking
BuildingSMART Data Dictionary (bSDD)
Built-environment Information Modelling (BIM)
Chain links
Chains (linear modelling)
Classes, types and instances
COBie
Coding
Completeness
Congruence at Group level
Congruence below Group level
Connotation and denotation
Consistency
Cost of Uniclass2
Definitions
Depth
Disciplines
Dynamic
Ease of use
Environmental assessment
Extension
Facilities
Geometry
Granularity
iCIM and IMPACT
IFCs (Industry Foundation Classes)
Implementation
Instance schedules
Integral and on-integral
International
Interpretation
ISO/DIS 12006-2
Keywords in NBS Create
Levels
Library objects
LOI (Level of Information)
Maintenance
Manufacturers
Mapping
Mapping: Barcodes
Mapping: CESMM4 2012
Mapping: CI/SfB 1976
Mapping: Create 2012
Mapping: NRM 1 2012
Mapping: NRM 2 2012
Mapping: OmniClass 2014
Mapping: RFID tags
Mapping: Standards
Mapping: Uniclass 1997
Methods of measurement
Mixed-use
Modelling (compositional)
Modelling (performance)
Multiple classifications
Multiple parents
Naming
Networks (reticulated objects)
Numbering
Object class schema
Objects
Occupancy phase
Old and new construction
Other
Overseas
Plan of Work
Pre-configured objects
Procurement
Properties
Proprietary objects
Recoding NBS Create
Redundant classes
Reports from Uniclass2
RFID tags
Scale
Schedules
Schema
Scope
Search and allocation
Sectors and silos
Semantic web
Sequence
Single children
Soft FM
Source classification systems
Spaces table – by degree of enclosure
Specification
Synonyms
Syntax
Taxonomy
Terminology
Timeline (life cycle)
Title (heading) sequences
Trades
TSB (Technology Strategy Board)
Type-of and Part-of
Versioning
Work results table
Work to existing
<table>
<thead>
<tr>
<th>Code</th>
<th>Region</th>
<th>Districts</th>
<th>Complexes</th>
<th>Entities</th>
<th>Activities</th>
<th>Spaces</th>
<th>Elements</th>
<th>Systems</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>Not used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Not used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Preparatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Administrative, commercial and protective service</td>
<td>Whole-entity structural</td>
<td>Structure and general</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Cultural, educational, scientific and information</td>
<td>Wall and barrier</td>
<td>Skin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Industrial</td>
<td>Roof, floor and paving</td>
<td>Opening</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Medical, health and welfare</td>
<td>Fixed access, tunnel, shaft, vessel and tower</td>
<td>Covering and finish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Recreational</td>
<td>Signage and fittings, furnishings and equipment (FF&amp;E)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Residential</td>
<td>Flora and fauna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Disposal</td>
<td>Fabric accessory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Piped supply</td>
<td>Not used</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Heating, cooling and refrigeration</td>
<td>Services source</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Ventilation and air conditioning</td>
<td>Services distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Electrical</td>
<td>Services outlet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Communications, security, safety and protection</td>
<td>Services control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Rail</td>
<td>Transport</td>
<td>Services accessory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>Marine and water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>Tram and cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Aerospace</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>Process engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>Not used</td>
<td>Soft facility management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Uniclass2 schema
<table>
<thead>
<tr>
<th></th>
<th>Pre-project</th>
<th>Feasibility</th>
<th>Briefing</th>
<th>Concept design</th>
<th>Design development</th>
<th>Technical design</th>
<th>Construction documentation</th>
<th>Construction</th>
<th>Contractor O&amp;M</th>
<th>Owner O&amp;M</th>
<th>Closure</th>
<th>Post-project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Districts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complexes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spaces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Proprietary objects

<table>
<thead>
<tr>
<th>Uniclass2 object</th>
<th>Ex-catalogue</th>
<th>Custom-made <em>ex situ</em></th>
<th>Custom-made <em>in situ</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regions</strong></td>
<td>Never</td>
<td>Never</td>
<td>Universal</td>
</tr>
<tr>
<td><strong>Districts</strong></td>
<td>Never</td>
<td>Never</td>
<td>Universal</td>
</tr>
<tr>
<td><strong>Complexes</strong></td>
<td>Rare</td>
<td>Rare</td>
<td>Very common</td>
</tr>
<tr>
<td><strong>Entities</strong></td>
<td>Uncommon</td>
<td>Rare</td>
<td>Very common</td>
</tr>
<tr>
<td><strong>Activities</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Spaces</strong></td>
<td>Uncommon</td>
<td>Uncommon</td>
<td>Very common</td>
</tr>
<tr>
<td><strong>Elements</strong></td>
<td>Uncommon</td>
<td>Uncommon</td>
<td>Common</td>
</tr>
<tr>
<td><strong>Systems</strong></td>
<td>Common</td>
<td>Uncommon</td>
<td>Common</td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td>Very common</td>
<td>Common</td>
<td>Uncommon</td>
</tr>
</tbody>
</table>
## Ss-25-30-20 Door, shutter and hatch systems schedule

<table>
<thead>
<tr>
<th>Extended Uniclass2 code</th>
<th>Instance</th>
<th>Dimension type</th>
<th>Door, shutter and hatch system</th>
<th>Door, shutter and hatch type</th>
<th>Instance variants, e.g. colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ss-25-30-20-30-A-G01</td>
<td>DG01</td>
<td>A</td>
<td>Frame and door leaf system</td>
<td>A</td>
<td>Blue</td>
</tr>
<tr>
<td>Ss-25-30-20-30-A-G02</td>
<td>DG02</td>
<td>B</td>
<td>Frame and door leaf system</td>
<td>A</td>
<td>Green</td>
</tr>
<tr>
<td>Ss-25-30-20-30-B-G03</td>
<td>DG03</td>
<td>B</td>
<td>Frame and door leaf system</td>
<td>B</td>
<td>Green</td>
</tr>
<tr>
<td>Ss-25-30-20-30-C-G04</td>
<td>DG04</td>
<td>C</td>
<td>Frame and door leaf system</td>
<td>C</td>
<td>Pink</td>
</tr>
<tr>
<td>Ss-25-30-20-62-A-G05</td>
<td>DG05</td>
<td>D</td>
<td>Pivot doorset system</td>
<td>A</td>
<td>Blue</td>
</tr>
<tr>
<td>Ss-25-30-20-30-B-G06</td>
<td>DG06</td>
<td>A</td>
<td>Frame and door leaf system</td>
<td>B</td>
<td>Cerise</td>
</tr>
<tr>
<td>Ss-25-30-20-93-A-G07</td>
<td>DG07</td>
<td>E</td>
<td>Up-and-over doorset system</td>
<td>A</td>
<td>Beige</td>
</tr>
</tbody>
</table>

**Source of information:**
- Geometry
- Specification
- Schedule
Project Phases & Management

Project Phases (*commissions*)
- 05 Pre-project
- 10 Feasibility
- 15 Briefing
- 20 Concept design
- 30 Design development
- 40 Technical design
- 50 Documentation
- 60 Construction
- 70 Contractor O&M
- 75 Owner O&M
- 90 Closure
- 95 Post-project

Sub-phases & Management
- Contracts
- Procurement
- Mobilization
- Execution
- Verification
- Payment
- Completion
Mappings underway

• CESMM4 to/from Uniclass2 Systems
• CI/SfB Elements to/from Uniclass2 Elements
• NBS Create Systems to Uniclass2 Systems
• NRM 1 to Uniclass2
• NRM 2 Work Sections to Uniclass2 Systems
• OmniClass Elements to/from Uniclass2 Elements
• Uniclass 1997 Work Sections to Uniclass2 Systems
ISO 12006-2

- 16 March: Comments closed on DIS.
- 9 June: Review of comments (web).
- 1 July: FDIS published (not necessary?).
- 26-27 October: ISO TC59/SC13/WG02 meeting, Toronto.
<table>
<thead>
<tr>
<th>U2 Modelling table / NBS Create section substructure</th>
<th>ISO 12006-2 Pre-design</th>
<th>ISO 12006-2 Design</th>
<th>ISO 12006-2 Production</th>
<th>ISO 12006-2 Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region / District / Complex / Entity / Activity / Space / Element / System</td>
<td>Performance</td>
<td>Design resources</td>
<td>Design processes</td>
<td>Maintenance results</td>
</tr>
<tr>
<td><strong>Outline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td>Products</td>
<td>Design results</td>
<td>Production resources</td>
<td>Maintenance resources</td>
</tr>
<tr>
<td></td>
<td>Custom-made products</td>
<td></td>
<td>Production processes</td>
<td></td>
</tr>
<tr>
<td>Region / District / Complex / Entity / Space / Element / System</td>
<td>Execution</td>
<td>Production results</td>
<td>Maintenance processes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completion</td>
<td></td>
<td>Maintenance results</td>
<td></td>
</tr>
<tr>
<td><strong>Operation and maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Critiques

• Uniclass 1997
  – Gelder ‘Unifying Uniclass’ (November 2011)
  – Gelder ‘Reclassification’ (May 2006)

• OmniClass
  – Gelder ‘OmniClass™: a critique’ (May 2013)
  – Gelder ‘OmniClass™ Work Results: a critique’ (May 2013)

• NRM 1 classification
  – Gelder ‘NRM1 classification: a critique’ (May 2014)
BIM and classification

• ICIS Project 3 *BIM and classification* underway.
  – More later ...