



TALLINNA
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First steps when implementing CoClass

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Testing before recommending it for practice

- developing the unified classification system in Estonia
- requirement to test the possible new system(s) on a real construction project
- a 1000 m² building + infra on the complex

The aim of testing in the project

- to identify the performance qualities of the classification system during the entire building lifecycle
- to pilot and analyse the properties of the classification system on selected buildings
- to adapt the initial version of the classification system for use in Estonia
 - adjust Estonian terminology
- to check the compatibility of the system with 3D software

the building selected for piloting

- address: Maleva street 18, Tallinn
- client: Tallinn City Government
 - apartment building
 - detailed design 2D/3D
 - construction process between May 2019-May 2020



BUILDING

- superstructure of the building
 - envelope walls
 - inner walls
 - roofs
 - floors
 - windows
 - doors
- ventilation

INFRASTRUCTURE


- access road
- parking lot




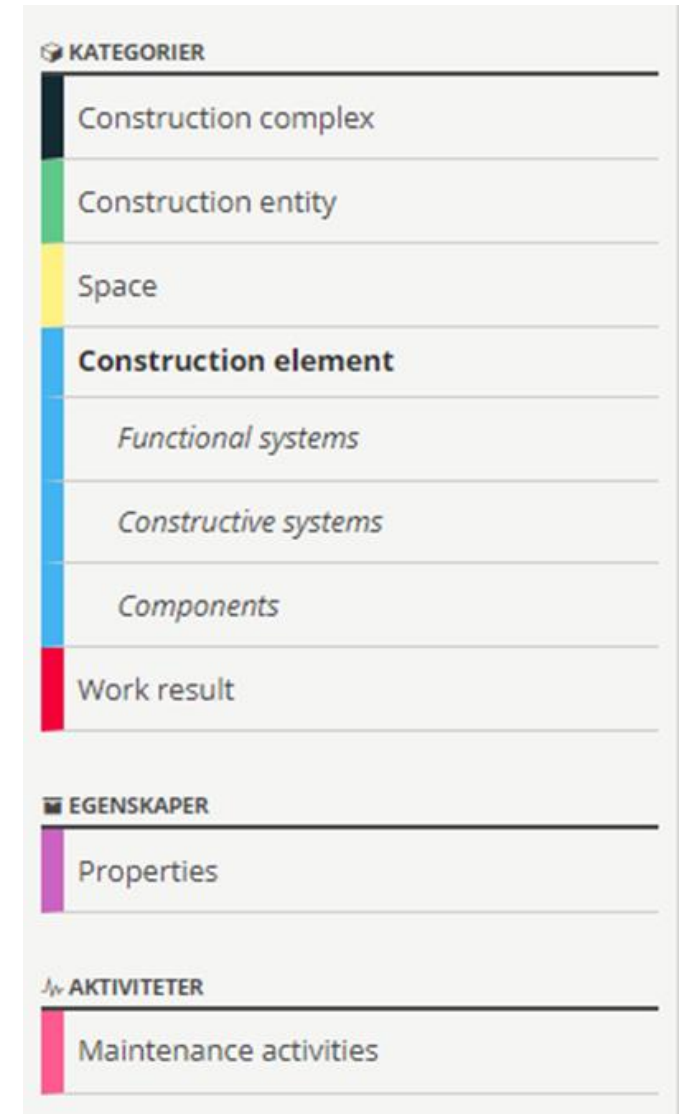
sources that we could use for piloting:

- information from the CoClass web-page
- CoClass tables in Excel
- CoClass guide-book (translated into Estonian)
- standards:
 - ISO 12006-2 (translated into Estonian)
 - other relevant ISO standards

 CoClass-Construction-Elements-20181218

 CoClass-Construction-Complexes-Entities-Spaces-20181206

 CoClass-Properties-20181129



KATEGORIER

Construction complex
Construction entity
Space
Construction element
<i>Functional systems</i>
<i>Constructive systems</i>
<i>Components</i>
Work result

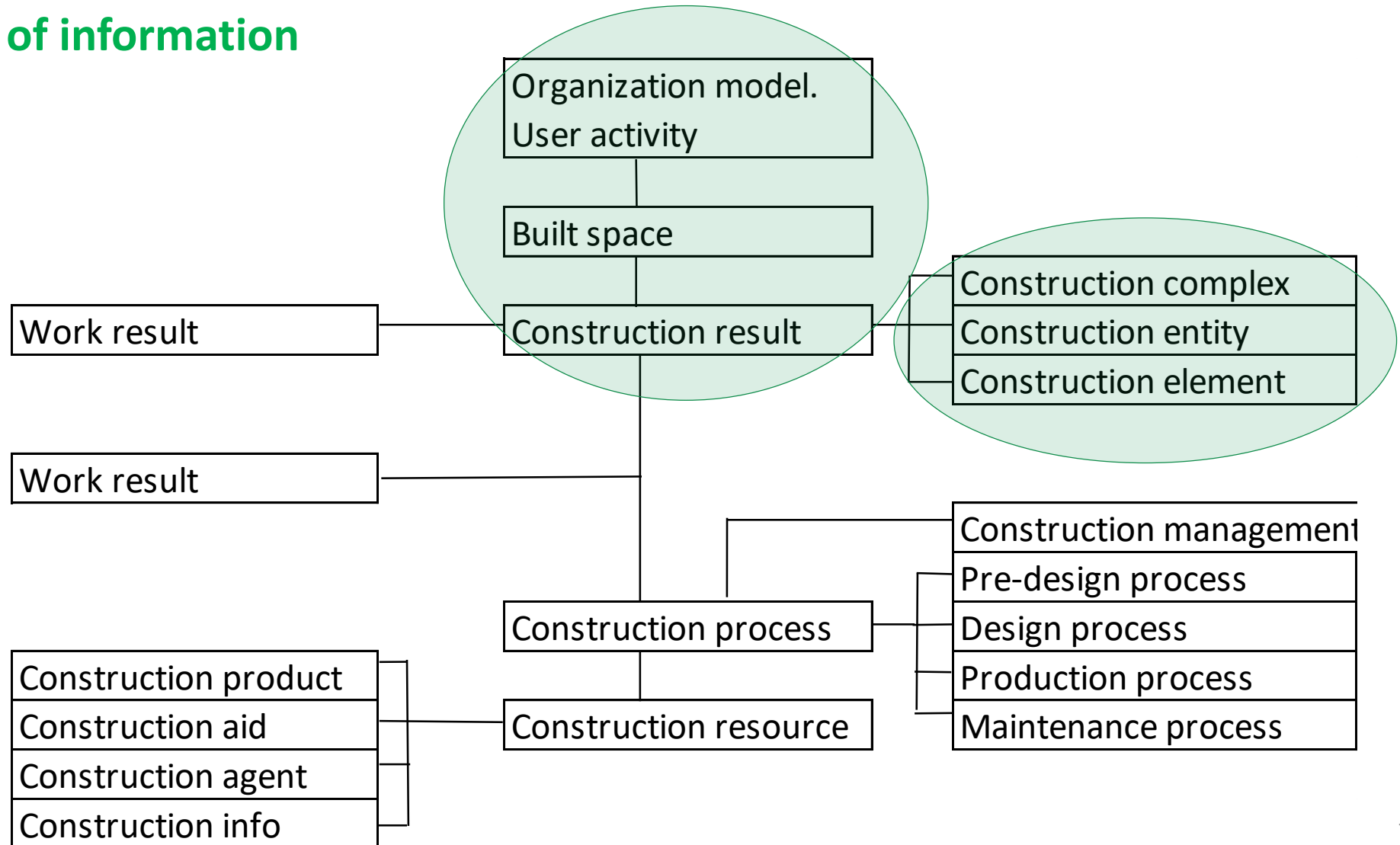
EGENSKAPER

Properties

AKTIVITETER

Maintenance activities

ISO 12006-2:2015. Framework for classification of information



Tables CoClass Studio +

CoClass Version 1.0.0

KATEGORIER

- Construction complex
- Construction entity
- Space
- Construction element**
 - Functional systems
 - Constructive systems
 - Components
- Work result

EGENSKAPER

- Properties

AKTIVITETER

- Maintenance activities

Tables CoClass Studio +

CoClass Version 1.0.0

Back Functional systems

- + 1 Space systems
- + 2 Installation systems
- + 3 Fit-out systems

Tabeller CoClass Studio +

CoClass Version 1.0.0

Back Components

- + B_ Sensing object
- + C_ Storing object
- + E_ Emitting object
- + F_ Protecting object
- + G_ Generating object
- + H_ Matter processing object
- + K_ Information processing object
- + M_ Driving object
- + N_ Covering object
- + P_ Presenting object
- + Q_ Controlling object
- + R_ Restricting object

⊖ N_ Covering object

⊖ NA_ Infilling object

- NAA Pane
- NAB Panel
- NAC Grating
- NAD Sealing joint

+ NB_ Closure object

COMPLEX	ENTITY <BV>	BUILT SPACE <UT>	FUNCTIONAL SYSTEM		CONSTRUCTIVE SYSTEM			COMPONENT			PROPERTY <PP>	DESCRIPTION	CODE
			<FS>	Type	<KS>	Type	Number	<KO>	Type	Number		ENG	
	AAB		A	10	CA	10	01					House for multiple occupants	
												Subgrade	
												Levelled subgrade	=A10.CA10_01
								UTB	01			excavation	=A10.CA10_01.UTB01
								UUB	01			Tightened existin soil	=A10.CA10_01.UUB01
								UED	01			Tightened filling	=A10.CA10_01.UED01
										MLML		Material - sand	
										MEDR		Diameter ?? mm	
										METK		Thickness 200 mm	
								UTA	01			Filling	=A10.CA10_01.UTA01
										MLML		Material - limestone gravel	
										MEDR		Diameter 32/63 mm	
										METK		Thickness 250 mm	
			A	37	CB	10	01					Parking lane	
												Flexible ground superstructure	=A37.CB10_01
								UMC	01			Asfalt, AC 16 base, 70/100	=A37.CB10_01.UMC01
										METK		Thickness 50 mm	
										MLML		Material - asphalt	
								NCA	01			Asfalt, AC 12 surf, 70/100	=A37.CB10_01.NCA01
										METK		Thickness 40 mm	
										MLML		Material - asphalt	
			A	31	CB	10	01					Road Facility	
												Flexible ground superstructure	=A31.CB10_01

Entity: AAB – house for multiple occupants

describes function

FUNCTIONAL SYSTEM	DESCRIPTION
B 10	Exterior wall system
B 20	Interior wall system
D 10	Roof system
C 20	Ceiling
A 10	Subgrade
A 37	Parking lane
A 31	Road Facility
T 18	Road marking system
J 10	General ventilation system
H 21	Heating system

Classification gets more detailed in the course of design development

CONSTRUCTIVE SYSTEM			DESCRIPTION	CODE
<KS>	Type	Number	ENG	CODE
BD	40	01	Exterior wall VS-01	=B10.BD40_01
BD	40	02	Exterior wall VS-02PM	=B10.BD40_02
BD	40	03	Exterior wall VS-02PV	=B10.BD40_03
BD	40	04	Exterior wall VS-03PV	=B10.BD40_04
BD	40	05	Exterior wall VS-04	=B10.BD40_05

describes constructive system

piloting (3)

describes constructive system component

describes property

COMPONENT	DESCRIPTION	CODE
NCB 01	Wall covering	=B10.BD40_01.NCB01
NCB 03	Wall covering	=B10.BD40_01.NCB03
NCB 02	Wall covering	=B10.BD40_02.NCB02
NCB 03	Wall covering	=B10.BD40_02.NCB03
NCB 02	Wall covering	=B10.BD40_03.NCB02
NCB 03	Wall covering	=B10.BD40_03.NCB03
NCB 02	Wall covering	=B10.BD40_04.NCB02
NCB 03	Wall covering	=B10.BD40_04.NCB03
NCB 01	Wall covering	=B10.BD40_05.NCB01

Wall covering	=B10.BD40_01.NCB01	
MLML	Material concret	=B10.BD40_01.NCB01.MLML
EVCL	Environmental class XC4+XF1	=B10.BD40_01.NCB01.EVCL
METK	Thickness 100 mm	=B10.BD40_01.NCB01.METK
BLPR	Impregnated	=B10.BD40_01.NCB01.BLPR
SFPT	Paint type - Penosil Premium Watersil	=B10.BD40_01.NCB01.SFPT
SFCO	Paint tone - natural	=B10.BD40_01.NCB01.SFCO

describes materials with the same property

PROPERTY <PI>	DESCRIPTION	CODE
EVCL	Environmental class XC4+XF1	=B10.BD40_01.NCB01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_01.NCB01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_02.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_02.UFC02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_03.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_03.UFC02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_04.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_04.UFC01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_05.NCB01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_05.UFC02.EVCL

systematic explanation of codes

PROPERTY <PI>	DESCRIPTION	CODE
EVCL	Environmental class XC4+XF1	=B10.BD40_01.NCB01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_01.NCB01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_02.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_02.UFC02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_03.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_03.UFC02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_04.NCB02.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_04.UFC01.EVCL
EVCL	Environmental class XC4+XF1	=B10.BD40_05.NCB01.EVCL
EVCL	Environment	

=B10.BD40_02.UFC02.EVCL

Functional system

Constructive system

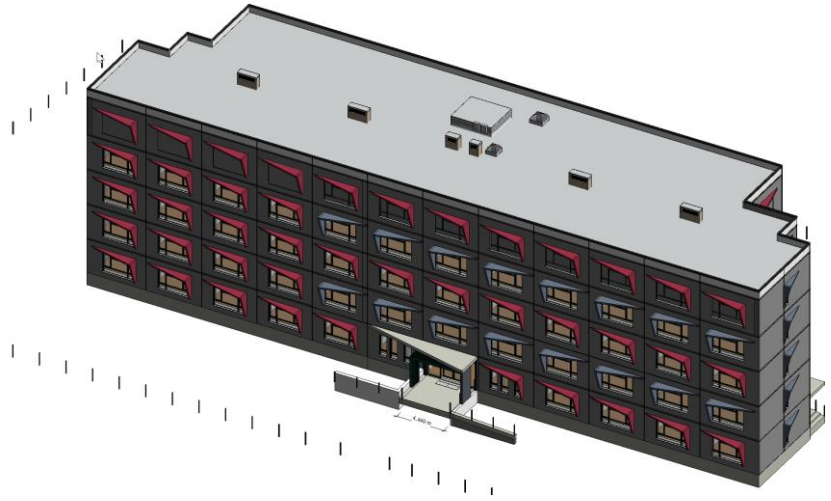
Type

Number

Component

Property

SAMPLE MODELS FOR COCLASS PILOT – BUILDING & INFRA



Sub-models used:

- Architectural (wall, floor, roof etc.)
- Structural (wall, beam, column etc.)
- Systems (sample ventilation subsystem etc.)

Software:

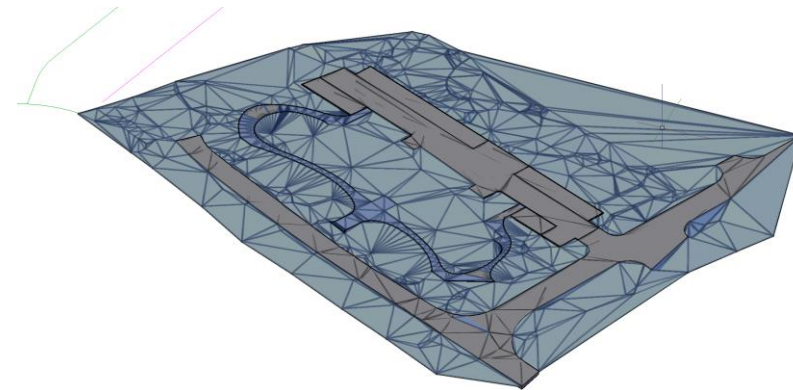
- Autodesk Revit
- Classification Manager for Revit (plugin)

Sub-models used:

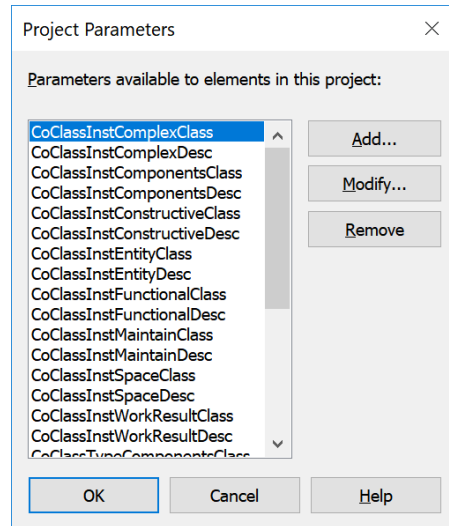
- Existing surface
- Road (construction surfaces/layers)
- Parking lot
- Road components (curb etc.)
- City furniture (lighting pole etc.)

Software:

- Autodesk Civil 3D



BUILDING & INFRA – CLASSIFICATION SYSTEM SETUP



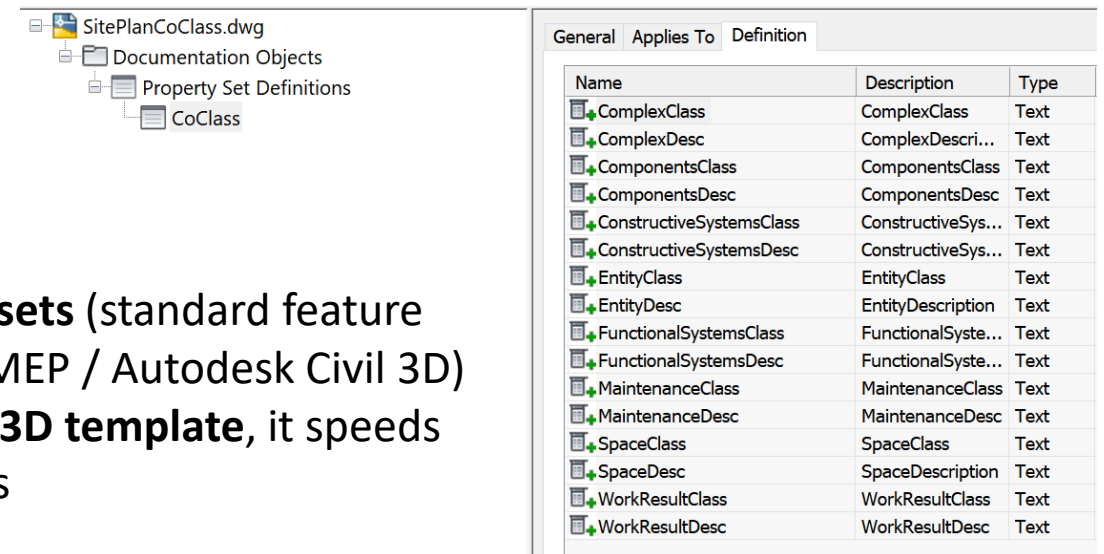
Autodesk Revit

CoClass structure is created for Classification Manager for Revit:

- Helps to add specific class through filters
- Classification through Revit parameters

Classification can be added to Revit families:

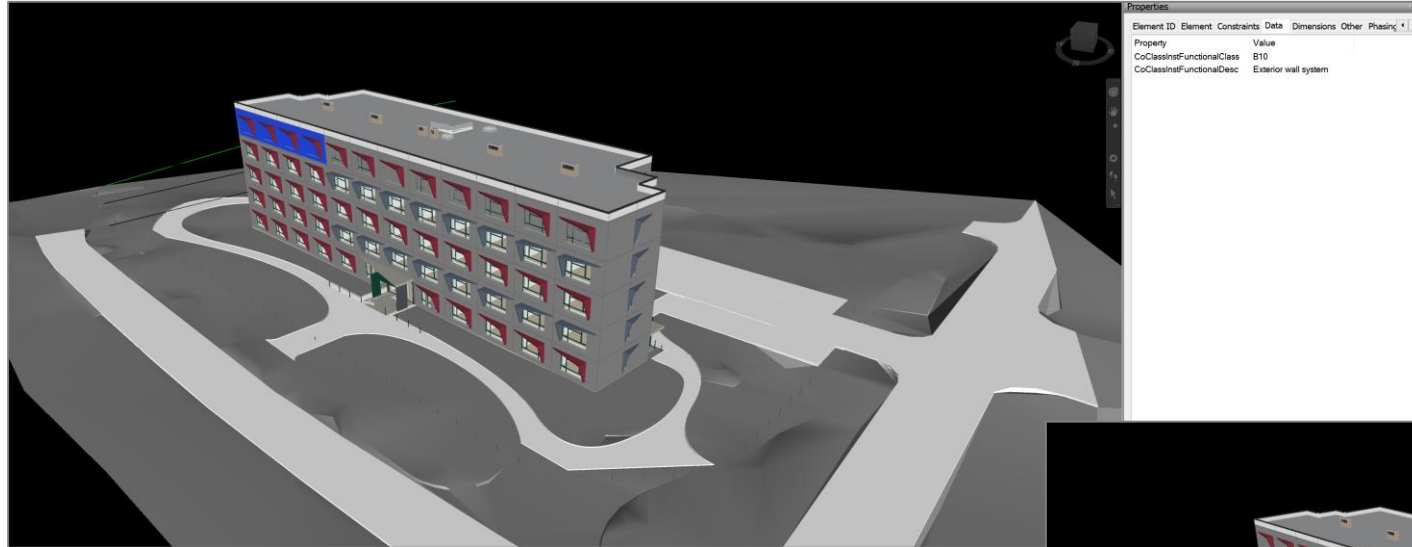
- Standard Revit workflow (speeds up if a specific family will be reused in future projects)



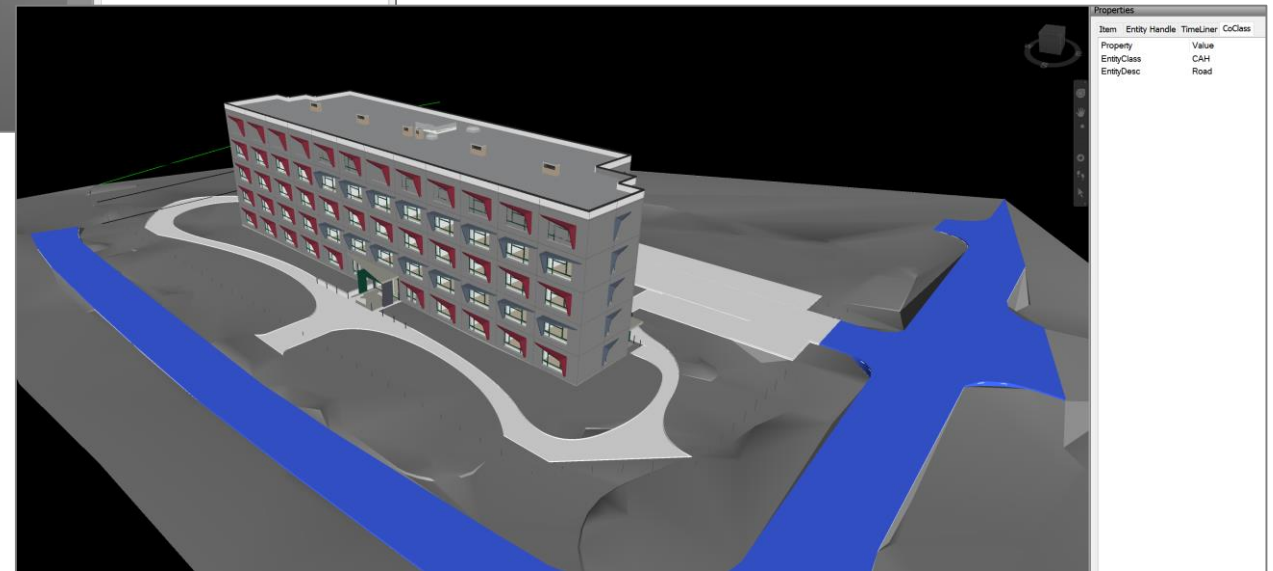
Autodesk Civil 3D

- **No specific plugin available**
- Classification made through **property sets** (standard feature for AutoCAD Architecture / AutoCAD MEP / Autodesk Civil 3D)
- If property sets are included into **Civil 3D template**, it speeds up the classification for future projects

CLASSIFIED COMPONENTS IN COLLABORATION MODELS (NAVISWORKS)

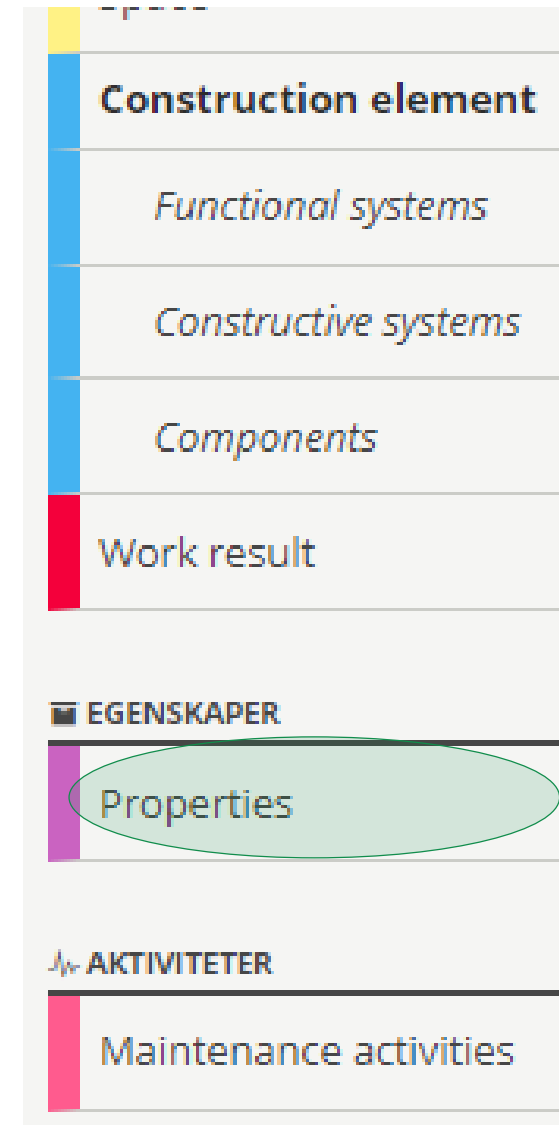


- Filtering through a classification parameter
- Making quantity take-offs easier to set-up and more universal for bidding



- **coding is computer-readable**
 - manual usage is possible, but time consuming
- **the difference compared to other classification systems**
 - properties
 - properties enable to describe the entire lifecycle/lifespan/lifetime of a building

results (1)

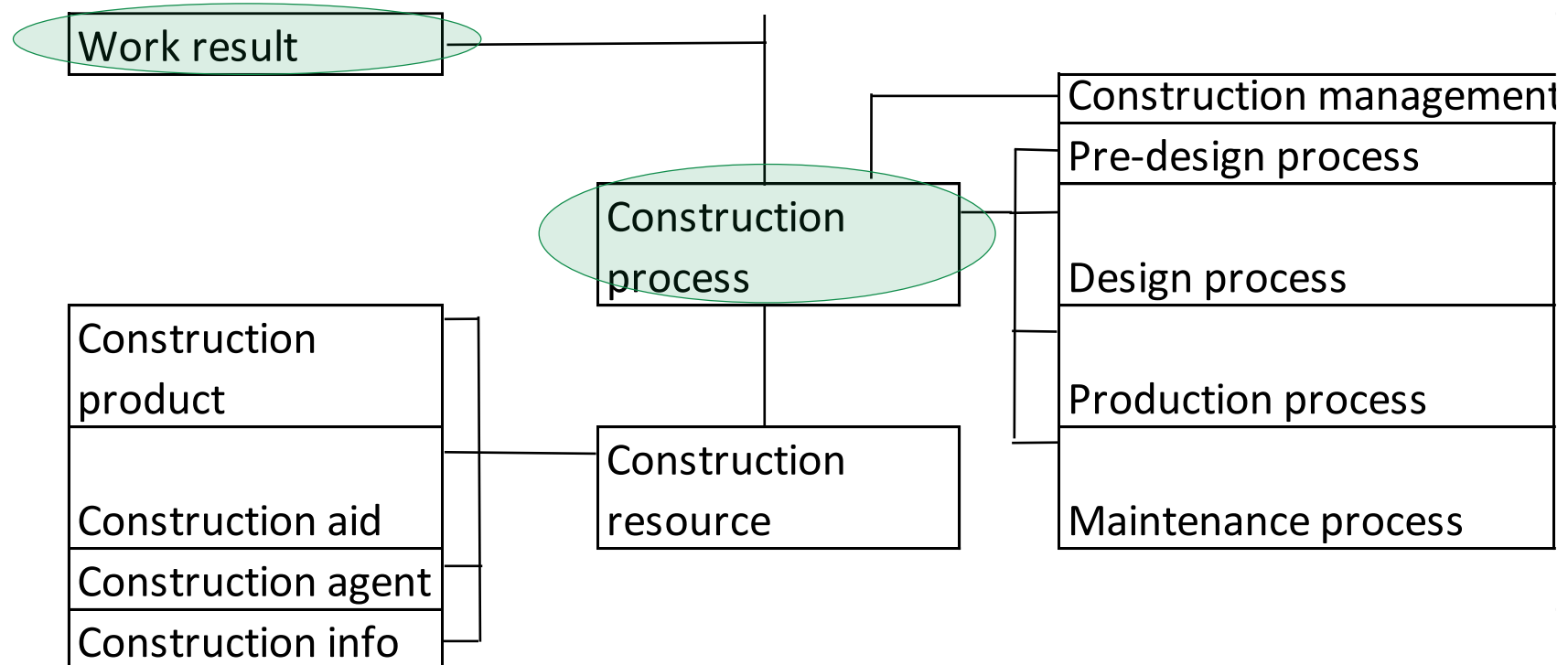


- **CoClass system is not 100% fixed-framed**
 - user can develop specific detailed coding rules
 - national guidelines for coding have to be prepared
 - but also project based flexibility can be considered
- **can be more or less detailed**
 - a complex/neighbourhood and for a single site
 - up to the smallest detail
- **it is possible to classify the client's requirements and subcontractors' work items simultaneously**

- brief for design should **include already the requirement** for using the system
- it means **extra time** (finances) for **planning phase**
- **win of time/less mistakes**
 - cost estimation phase
 - construction phase
 - operation and maintenance phase
- **user manual to be updated**
- agreements on the use of **terminology**

- to be used in practice, **software templates and component libraries** should be **updated**
 - to include additional parameters
 - speed up the classification procedure
- **collaboration** with software vendors is suggested to enhance available plugins that simplify the classification procedure
- **original file formats** should be used
- **level of details** in design models should enable to add **classifier code**

- piloting has to be continued
- testing other parts of the classification system
- using original design data
- test with classification plugin





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Thank You!

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TECH