



Aalto University
School of Engineering

RAK-C3003 - Tietoyhdennetty rakentaminen
(Vishal Singh, Sunil Suwal)

Aalto BIM exercise

Trimble connect, Solibri Model Checker



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BIM coordination and quality assurance

Good to know



Yleiset tietomallivaatimukset YTV2012

Osa 1 Yleinen osuus

Osa 2 Lähtötilanteen mallinnus

Osa 3 Arkkitehtisuunnittelu

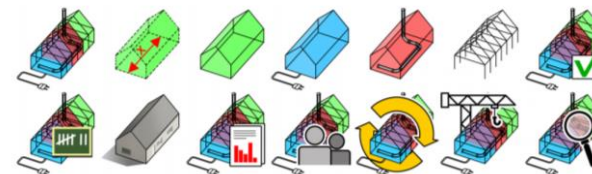
Osa 4 Talotekninen suunnitte

Osa 5 Rakennesuunnittelu

Osa 6 Laadunvarmistus

Osa 7 Määrälaskenta

Osa 8 Havainnollistaminen



COBIM

Common BIM Requirements
2012

Osa 9 Mallien käyttö talotekniikan analyyseissä

Osa 10 Energia-analyysit

Osa 11 Tietomallipohjaisen projektin johtaminen

Osa 12 Tietomallien hyödyntäminen rakennuksen käytön ja ylläpidon aikana

Osa 13 Tietomallien hyödyntäminen rakentamisessa

Osa 14 Tietomallien hyödyntäminen rakennusvalvonnassa

Tools – coordination and quality checking



simplebim.[®]



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Solibri demo

Get to know ifc models

Rule based checking – Ruleset manager

Information takeoff (ITO)

Classification basics

Solibri tasks

Solibri Task 1: Done together (Extract information for the openings (doors and windows))

File in use: Single family house model (SFH_2017.IFC – this is available in mycourses)

Solibri task 2: Extract information for the wall types along with their quantities (area; volume)

- Extra: Calculate the cost for the elements.

Solibri task 3: Clash detection / BIM validation

Eg: Architectural BIM validation checking

- *Report at least five clashes.*

Submit one excel file (yourname_ solibri.xls) with three sheets for three tasks

1. DW schedule

2. Wall schedule

3. Clashes

Solibri

website:

<https://www.solibri.com/>

Solibri journal (magazine)

<https://issuu.com/solibri>

Solibri youtube channel

https://www.youtube.com/channel/UCHd0eG_RXtzDJQjotq4ZGUA

Solibri Options

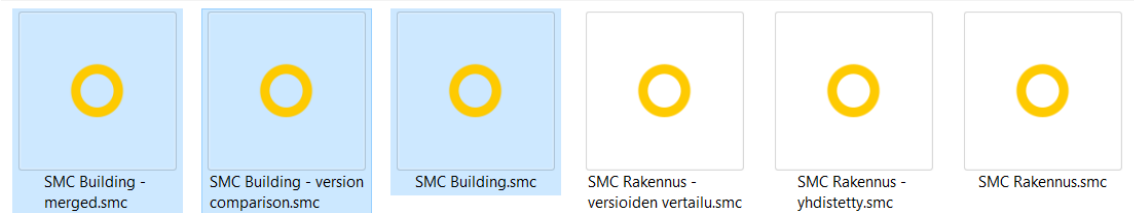
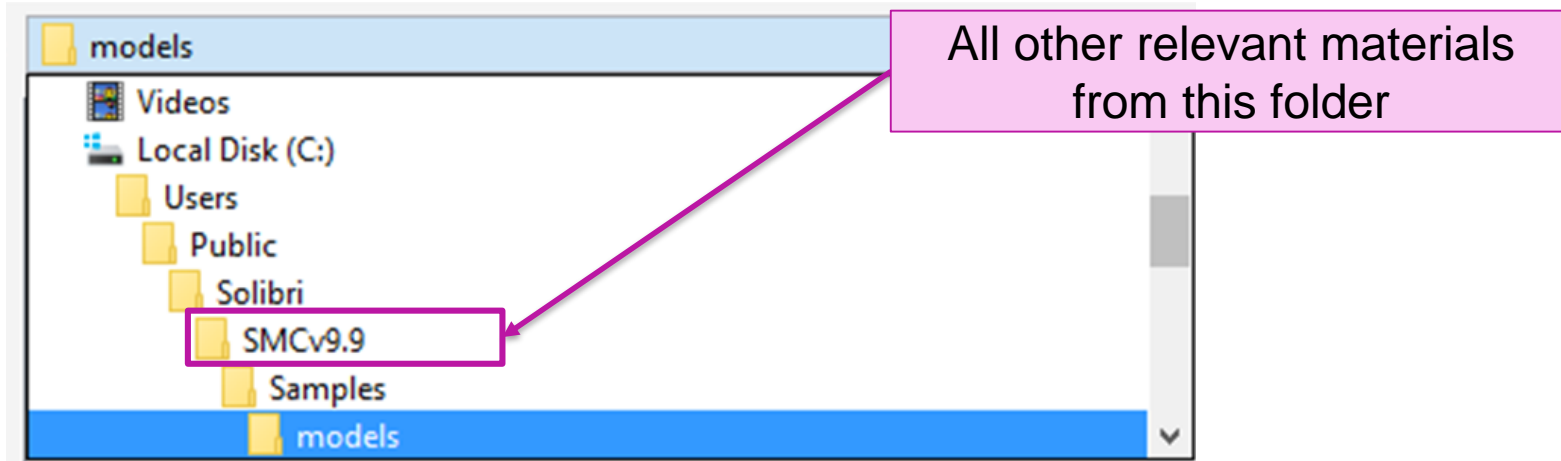
Solibri Model Checker (SMC – 14 day trial); Solibri Model Viewer (SMV - Free)
(Solibri Model Viewer Pro – SMV Pro – monthly license)



Solibri exercises

Get to know solibri features from demo files

- Solibri demo files are available in *models



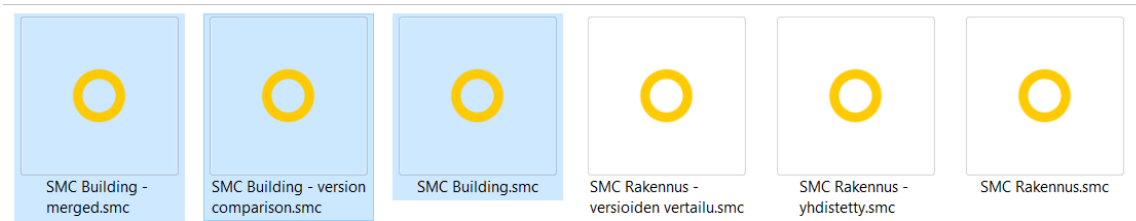


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Clash detection

Solibri workflow through SMC files

- : Open Solibri files (smc file type- SMC building.smc)
- : We will go through these files to check the solibri workflow



Open your IFC file from Archicad CW2 exercise and check it with relevant rules.

To change language

The screenshot shows the Solibri Model Checker application interface. The left sidebar contains a menu with 'Ohje' highlighted by a red box and labeled '1'. The main menu has 'Raportointiasetus' highlighted by a red box and labeled '2'. A red arrow points from 'Raportointiasetus' to a 'Yleistä' dialog box. In this dialog box, the 'Käyttökieli' dropdown is set to 'Suomi', and 'Englanti' is selected in the list below, labeled '3'. The 'Muista minut' checkbox is checked. The application title bar shows 'Solibri Model Checker' and the menu bar includes 'Tiedosto', 'Malli', 'Tarkastus', 'Kommunikointi', 'Informaation talteenotto', 'SIS Area Calculation', 'Pinta-alat ja tilavuudet', and 'COBie'.

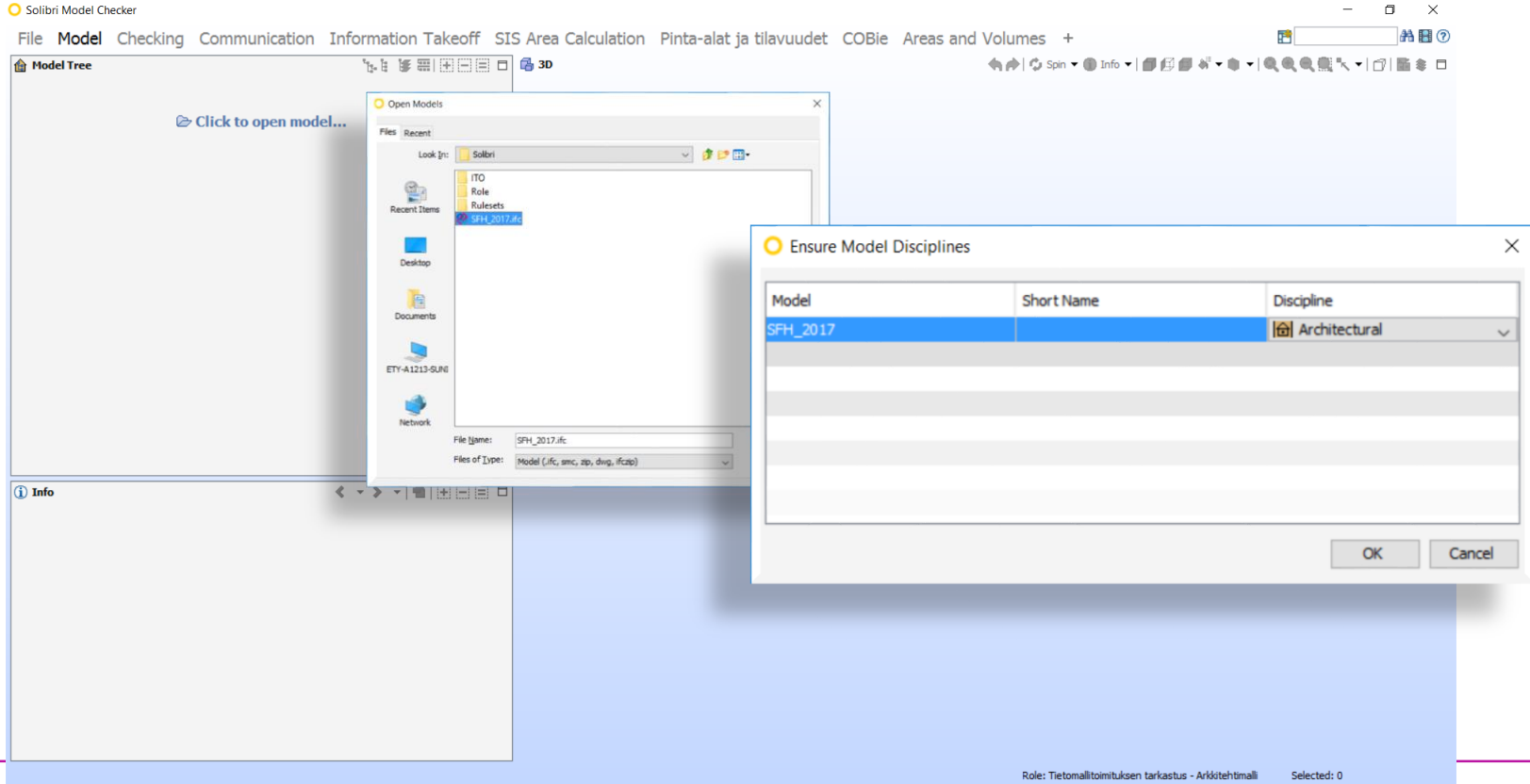
Restart the application after changing the language



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Classification

Open your archicad file exercise IFC model and ensure model discipline as "architectural" . The one used here SFH_2017 is same as CW2.ifc available in mycourses.



Add Building elements – unformat classification

The screenshot shows the Solibri Model Checker interface with the following components and actions:

- Model Tree:** Shows the project structure for SFH_2017.
- Classification List:** Lists various classifications such as 'Rakennusosat', 'Space Grouping', and 'Talo2000'. A red box labeled '1' highlights the 'Add' icon (a plus sign in a square) next to the 'Classification' header.
- Add Recommended Classifications Dialog:** A dialog box titled 'Add Recommended Classifications' is open, showing a list of classifications. A red arrow labeled '2' points to the 'Add Classifications...' button at the bottom of this dialog.
- Open File Dialog:** A dialog box titled 'Open File' is open, showing a list of files in the 'Classifications' folder. A red box labeled '3' highlights the file 'Building Elements - Unformat.classification'.

Unclassified elements

Components might be classified automatically based on the classification settings.

Unclassified components may be manually classified (if needed)

The screenshot shows the Solibri Model Checker interface. The 'Classification' panel on the left lists various building elements, with 'Unclassified' selected. A red arrow labeled '1' points to the 'Unclassified' folder. The 'Classification Settings (Building Elements)' dialog box is open, showing the 'Unclassified Components' tab. A red arrow labeled '2' points to the 'Unclassified Components' tab. The dialog box contains a table of unclassified components.

Component	Type	Layer	Name	Classification Name
Air Terminal.0.1	Kupu 20	AR_1331_KIINTO	Oobjekt-005	D3090 Other HVAC Systems &
Light Fixture.0.1	Kohdevalaisin upotettu 20	AR23_SÄHKÖOSA	Lamppu-004	D5020 Lighting and Branch Wiring
Light Fixture.0.10	Loisteputkilamppu 20	AR23_SÄHKÖOSA	Lamppu-005	D5020 Lighting and Branch Wiring
Light Fixture.0.11				
Light Fixture.0.12				
Light Fixture.0.13				



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Information takeoff

Building element quantities.ito

Information takeoff

The screenshot shows the Solibri Model Checker interface with the 'Open File' dialog box open. The dialog box is set to the 'Information Takeoff' folder and lists various files, including 'Building Element Quantities.ito'. A red arrow points from the 'Add Information Takeoff Definitions...' button in the bottom toolbar to the 'Building Element Quantities.ito' file in the dialog box. Another red arrow points from the 'Building Element Quantities.ito' file to the 'Add Information Takeoff Definitions...' button. A yellow box with the number '2' is placed near the 'Add Information Takeoff Definitions...' button, and a yellow box with the number '1' is placed near the 'Building Element Quantities.ito' file.

2

1

File Name: Building Element Quantities.ito
Files of Type: Information Takeoff Definition (.ito)

Reference	Name	Source	Count
B1010	Floor Construction	From Classification Rules	12

ea Calculation Pinta-alat ja tilavuudet COBie Areas and Volumes + To-Do (2/7)

3D Spin Info [Icons]

Information Takeoff Takeoff All Building Element Quant... Report

Building Element Type	Type	Net Area	Length	Volume	Count	Color
mns	Puu - rakenteellinen 15...		15.41 m	3431	6	Yellow
trical System	Alakaappi APK integroit...			921	1	Cyan
trical System	Pesukone 20			3251	1	Magenta
d Furnishings	Ala-L-kulmakaappi 20			2441	1	Blue
d Furnishings	Alakaappi laatikosto 20			2861	3	Orange
d Furnishings	Alakaappi liesitaso+huun...			981	1	Pink
d Furnishings	Betoni (2)			6.63 m3	1	Light Blue
d Furnishings	Jääkaappiakastin 20			4731	1	Light Green
d Furnishings	Mikroaaltouuni 01 20			371	1	Orange
d Furnishings	Parveke lattia			3671	2	Purple
d Furnishings	Seinäkaappi kaksoisove...			901	1	Brown
d Furnishings	Seinäkaappi kolmoisove...			2081	2	Green
d Furnishings	Seinäkaappi kulma viest...			1141	2	Light Green
d Furnishings	Suorakulmainen ruokap...			1541	1	Light Blue
d Furnishings	Vaatekaapin lisäosa 20			3241	1	Dark Blue
r Slabs	AP	95.75 m2		24.42 m3	1	Purple
r Slabs	Betoniharkko - rakente...	0.81 m2		2431	1	Light Green
r Slabs	Lattialaatta 5	7.59 m2		381	1	Yellow
r Slabs	Levy alakatko 20	35.31 m2		7061	1	Light Green
r Slabs	Parveke lattia 150	12.30 m2		1.84 m3	1	Light Green

Role: Tietomallitoimituksen tarkastus - Arkkitehtimalli Selected: 138

0. -> to create new ITO definition

1 -> Information take off based on selected ITO

2-> modification of the ITO if needed

3-> reporting the ITO data (excel)

NEW ITO - DW

1

2

3

4

5

Information Takeoff Definition

Name: DW

Description: Edit

Enter the description here

Enable Grouping

One Component per Row

Limits the Information Takeoff definition to these components

Components: State Component Property

Include Any

List of tasks needed to be completed to ensure reliable results

Tasks: Task

Select Component Type

Any

Architectural

Beam

Building Element

Column

Covering

Curtain Wall

Discrete Accessory

Door

Furniture

Light Fixture

Object

Opening

Railing

Ramp

Roof

Slab

Space

Stair

Suspended Ceiling

Information Takeoff Definition

Name: DW

Description: Edit

Enter the description here

Enable Grouping

One Component per Row

Limits the Information Takeoff definition to these components

Components: State Component Property

Include Door

Include Window

List of tasks needed to be completed to ensure reliable results

Tasks: Task

OK Cancel

Area Calculation Pinta-alat ja tilavuudet COBie Areas and Volumes + To-Do (2/7)

3D

1. KERROS

Information Takeoff

Component	Type	Count	Color
Door	Laakapariovi - Tasajako	1	Yellow
Door	Ovi sivuosa sivulla 1 20	1	Cyan
Door	Ovi sivuosa sivulla 2 20	1	Magenta
Door	UO1	1	Blue
Door	UO2	1	Red
Door	VO1	3	Green
Door	VO2	1	Orange
Window	Ikkuna 20	5	Light Green
Window	Ikkuna kaksiosainen 20	2	Brown

Role: Tietomallitoimituksen tarkastus - Arkkitehtimalli Selected: 138

To add new lines

Example for headings of schedule

Informaation talteenotto									
Komponenttityyppi	Pinta-ala	Leveys	Korkeus	Alin korkeusasema	Ylin korkeusasema	Komponentin nimi	Tyyppi	Lukumäärä	Väri
Ovi	1,88 m ²	880 mm	2,14 m	0 mm	2,14 m	Ovi.0.8	VO2	1	
Ovi	2,14 m ²	1,00 m	2,14 m	0 mm	2,14 m	Ovi.0.2	VO1	1	
Ovi	2,14 m ²	1,00 m	2,14 m	0 mm	2,14 m	Ovi.0.3	VO1	1	
Ovi	2,14 m ²	1,00 m	2,14 m	0 mm	2,14 m	Ovi.0.4	UO1	1	
Ovi	2,14 m ²	1,00 m	2,14 m	0 mm	2,14 m	Ovi.0.6	VO1	1	
Ovi	2,14 m ²	1,00 m	2,14 m	0 mm	2,14 m	Ovi.0.7	UO2	1	
Ovi	3,21 m ²	1,50 m	2,14 m	0 mm	2,14 m	Ovi.0.1	Laakapariovi - Tas...	1	
Ovi	3,53 m ²	1,65 m	2,14 m	0 mm	2,14 m	Ovi.0.9	Ovi sivuosa sivulla...	1	
Ovi	4,27 m ²	2,00 m	2,14 m	0 mm	2,14 m	Ovi.0.5	Ovi sivuosa sivulla...	1	
Ikkuna	0,30 m ²	500 mm	600 mm	1,50 m	2,10 m	Ikkuna.0.2	Ikkuna 20	1	
Ikkuna	0,30 m ²	500 mm	600 mm	1,50 m	2,10 m	Ikkuna.0.4	Ikkuna 20	1	
Ikkuna	0,30 m ²	500 mm	600 mm	1,50 m	2,10 m	Ikkuna.0.5	Ikkuna 20	1	
Ikkuna	1,40 m ²	1,00 m	1,40 m	700 mm	2,10 m	Ikkuna.0.1	Ikkuna 20	1	
Ikkuna	1,96 m ²	1,40 m	1,40 m	700 mm	2,10 m	Ikkuna.0.3	Ikkuna 20	1	
Ikkuna	4,16 m ²	2,60 m	1,60 m	500 mm	2,10 m	Ikkuna.0.6	Ikkuna kaksiosain...	1	
Ikkuna	4,16 m ²	2,60 m	1,60 m	500 mm	2,10 m	Ikkuna.0.7	Ikkuna kaksiosain...	1	

Thank you