SAINT-GOBAIN

CEILINGS

BIM OCH BRANDSKYDD

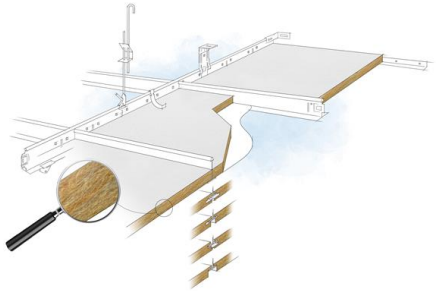
PRODUCENTPERSPEKTIVET & BIM

TORBJÖRN PERSSON
PIERRE CHIGOT

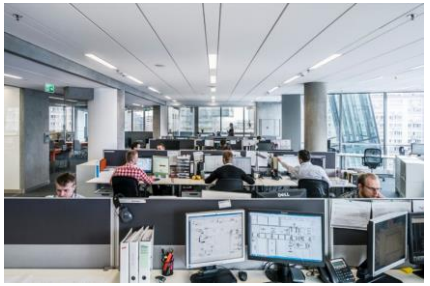
The building process

Technical data
Standards
Specifications
Building codes
Models

Components
Products
Systems



Room
Building



Safe, healthy, functional and sustainable buildings

The building code – BBR. Obvious or…

5:522 Väggar och tak i utrymningsvägar

I utrymningsvägar ska väggar och tak utformas så att en brands utveckling i lokalen inte får nämnvärt bidrag från takens och väggarnas ytskikt.

Allmänt råd

I byggnader i klass Br1 och Br2 bör takytor och väggytor i utrymningsvägar ha ytskikt av lägst brandteknisk klass B-s1,d0. Ytskiktet bör fästas på material i brandteknisk klass A2-s1,d0 eller på beklädnad i lägst brandteknisk klass $K_2$10/B-s1,d0.

I byggnader i klass Br3 bör takytor och väggytor ha ytskikt enligt följande:

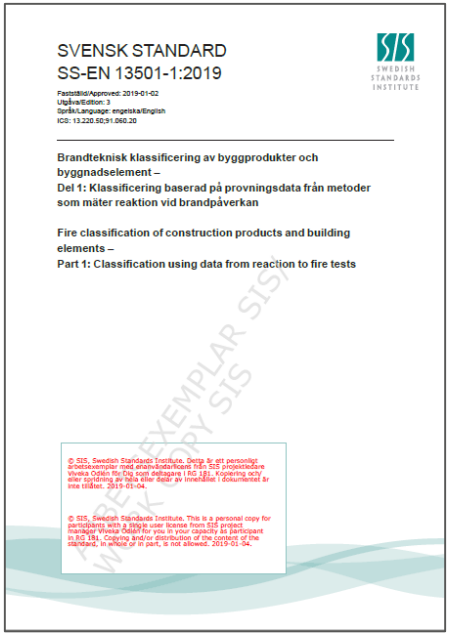
a) Utrymningsvägar i verksamhetsklass 4 och 5A bör ha ytskikt av klass B-s1,d0 på takytor och lägst klass C-s2,d0 på väggytor. Ytskikten bör fästas på material av A2-s1,d0 eller på beklädnad i klass $K_2$10/B-s1,d0.

b) Utrymningsvägar som är gemensamma för två eller flera bostads- eller kontorslägenheter bör ha ytskikt av klass B-s1,d0 på takytor och av lägst klass C-s2,d0 på väggytor.

c) Utrymningsvägar från lokaler i verksamhetsklass 6 bör ha tak- och väggytor med ytskikt av klass B-s1,d0 fäst på material av A2-s1,d0 eller på beklädnad i klass $K_2$10/B-s1,d0.

(BFS 2013:14).

What we do as a producer of construction products



SVENSK STANDARD
SS-EN 13501-1:2019

SWEDISH STANDARDS INSTITUTE

Fastställd/Approved: 2019-01-02
Utgåva/Edition: 3
Språk/Language: engelska/English
ICS: 13.220.50;91.060.20

Brandteknisk klassificering av byggprodukter och byggnadselement –
Del 1: Klassificering baserad på provningsdata från metoder som mäter reaktion vid brandpåverkan

Fire classification of construction products and building elements –
Part 1: Classification using data from reaction to fire tests

1 Scope

This document provides the reaction to fire classification procedure for all construction products, including products incorporated within building elements with the exception of power, control and communication cables which are covered by EN 13501-6.

Products are considered in relation to their end use application.

This document applies to three categories, which are treated separately in this document:

— construction products, excluding floorings and linear pipe thermal insulation products;

— floorings;

— linear pipe thermal insulation products.

The format of the reaction to fire classification for construction products excluding floorings and linear pipe thermal insulation products is:

Fire behaviour		Smoke production			Flaming droplets	
A1 *to* ***F*** *(as applicable)*	-	s	***1, 2*** *or* ***3*** *(as applicable)*	,	d	***0, 1*** *or* ***2*** *(as applicable)*

i.e. ***A1*** *to* ***F*** *(as applicable)* **– s1, 2** *or* **3** *(as applicable)*, **d0, 1** *or* **2** *(as applicable)*

What we do as a producer of construction products

B.4.3 Field of application

This classification is valid for the following product parameters (e.g. thickness, density…):

product property 1	Variation in *product property 1*
product property 2	Variation in *product property 2*
product property 3	Variation in *product property 3*
product property 4	Variation in *product property 4*
product property x etc.	Variation in *product property x etc.*

(include reference to the reference document + date used for undertaking this)

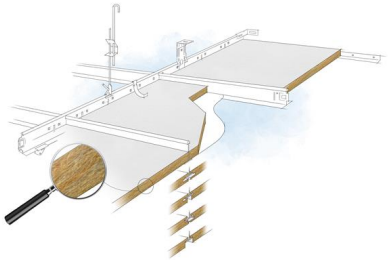
The classification is valid for the following end use applications:

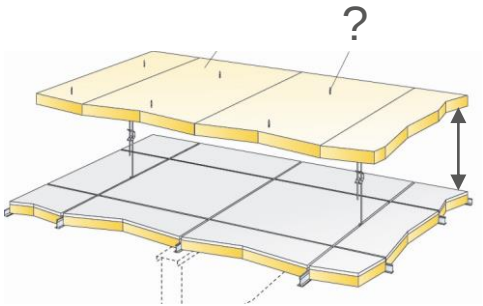
Details of substrates and/or air gaps

Details of methods and means of fixing

Details of joints

Details of other aspects of end use conditions





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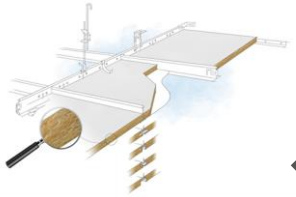
Same product / system – different classification



End use conditions

B-s2,d0

A2-s1,d0

Classification report

Field of application:

This classification is valid for the following end use conditions:

Orientation:

The classification is valid for both faces. The product may be mounted in a horizontal or vertical orientation.

Mounting:

The tiles can be loosely placed or mechanically fixed to a metal framework that is suspended from a ceiling, i.e. mounted with a void. Alternatively the tiles can be mechanically fixed or glued directly with an acoustic cement glue (0.5 l/m^2) to a substrate either in a wall or ceiling configuration.

Substrates:

For each of the mounting configurations mentioned above the following substrates can be used:
Wood based substrates at least 12 mm thick having a density ≥630 kg/m^3.
Substrate of spruce at least 12 mm thick having a density ≥460 kg/m^3.
Substrates of Euroclass A1 and A2 at least 6 mm thick having a density ≥630 kg/m^3.

TYVEK® FIRECURB® HOUSEWRAP

HOME | INFORMATION & RESOURCES | PRODUCTS & SOLUTIONS | Search

- CE Marking

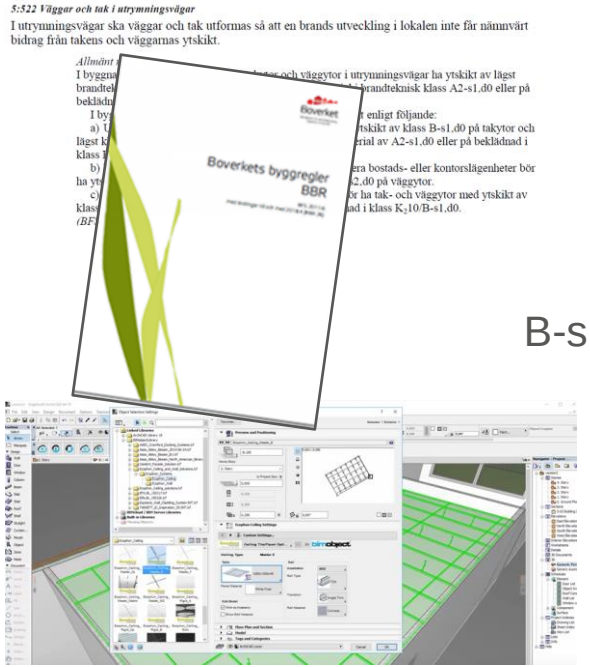
Key Properties of DuPont™ Tyvek® FireCurb® Housewrap

- **Style Name:** 2066B
- **Roll size:** 1.5 x 50m
- **Roll weight:** 5.5kg

- **Reaction to fire:** according to EN 13501-1 (on mineral wool, free-hanging or on cementitious boarding--> B-s1,d0 , if installed onto wood --> D-s2,d2)

- **Water vapour transmission (Sd):** 0.014m
- **Mass per unit area:** 68g/m2

BIM - a key to quality assurance and right decisions



B-s1,d0

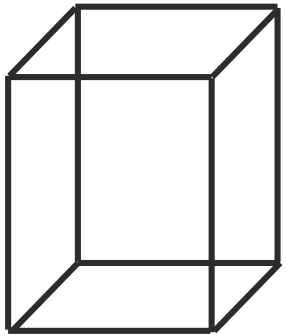
No! Cannot be done, no classification for combination with specified underlying material

Yes! Without restrictions

Yes! But ods ≥ 100 mm otherwise C-s2,d0

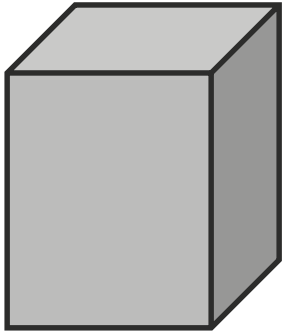

DELL

MILESTONES IN ARCHITECTURAL DESIGN SOFTWARES



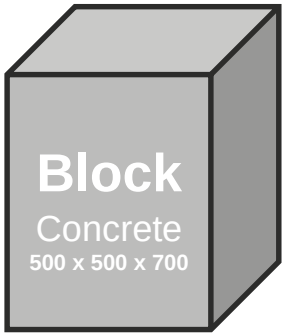
Lines
- Intersections
- Planes

- Ex: AutoCAD, 1982



Solid
- Geometric entity
- Polygones

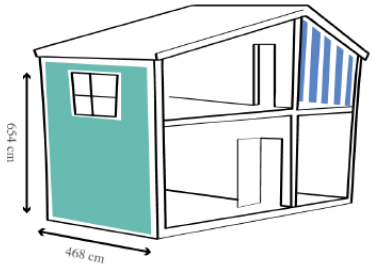
- Ex: ArchiCAD, 1986

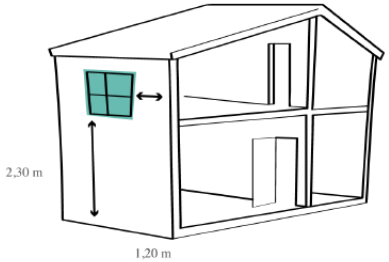


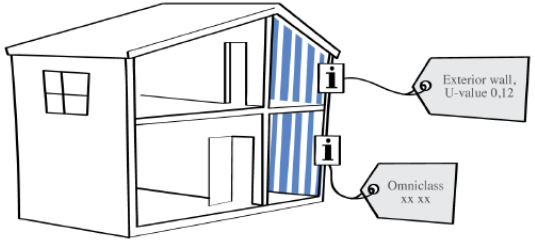
BIM object
- Building element
- Associated information
- Parametric

BIM IS GEOMETRY AND INFORMATION

Geometry **Information**







1. **Building parts dimension**

(ex. wall, window, column, cable, ceiling)

2. **Building parts location and relations**

(ex: plenum height)

3. **Building parts properties** (provided through classification or type code)

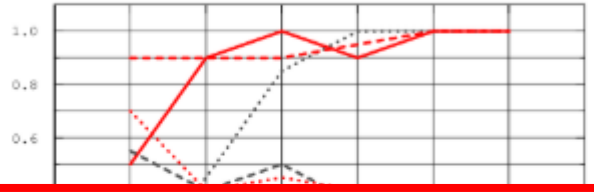
(ex: economy, time, compliances, fire class, absorption class etc)

PRODUCT INFORMATION: SOUND ABSORPTION

Sound Absorption

Test results according to EN ISO 354. Classification according to EN ISO 11654, and the single value ratings for Noice Reduction Coefficient, NRC and Sound Absorption Average, SAA according to ASTM C 423.

α_p, Practical sound absorption coefficient



	THK SEP mm	o.d.s. mm	α_p, Practical sound absorption coefficient						α_w	Sound absorption class
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
-	20	50	0.10	0.45	0.85	1.00	1.00	1.00	0.75	C
-	20	200	0.50	0.90	1.00	0.90	1.00	1.00	1.00	A

---- Focus A gamma 20 mm + Extra Bass 50 mm, 200 mm o.d.s.

o.d.s = overall depth of system

	THK SEP mm	o.d.s. mm	α_p, Practical sound absorption coefficient						α_w	Sound absorption class
			125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
-	20	50	0.10	0.45	0.85	1.00	1.00	1.00	0.75	C
-	20	200	0.50	0.90	1.00	0.90	1.00	1.00	1.00	A
+ Extra Bass,	70	200	0.90	0.90	0.90	0.95	1.00	1.00	0.95	A
gamma	20	200	0.55	0.40	0.50	0.35	0.20	0.25	0.30	D

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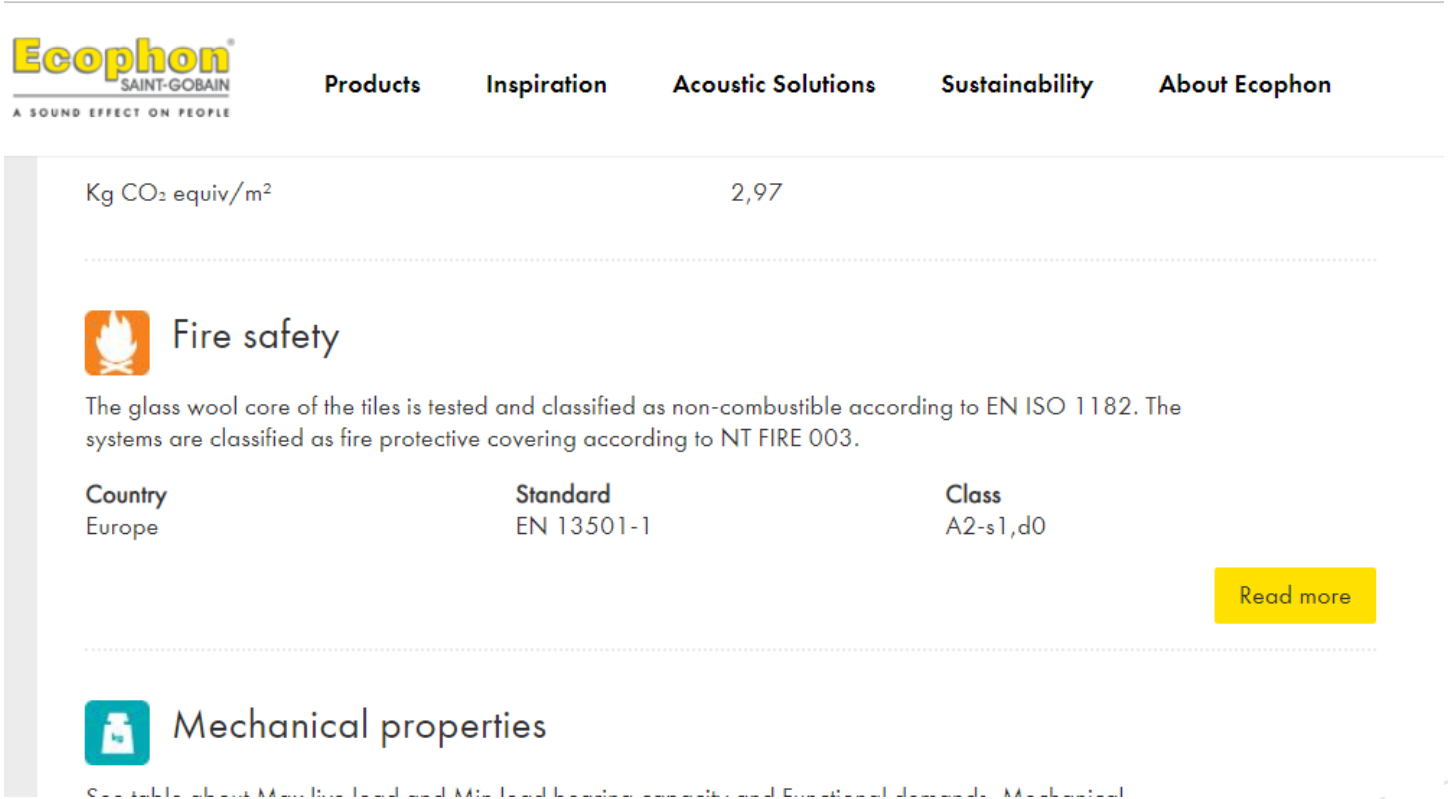
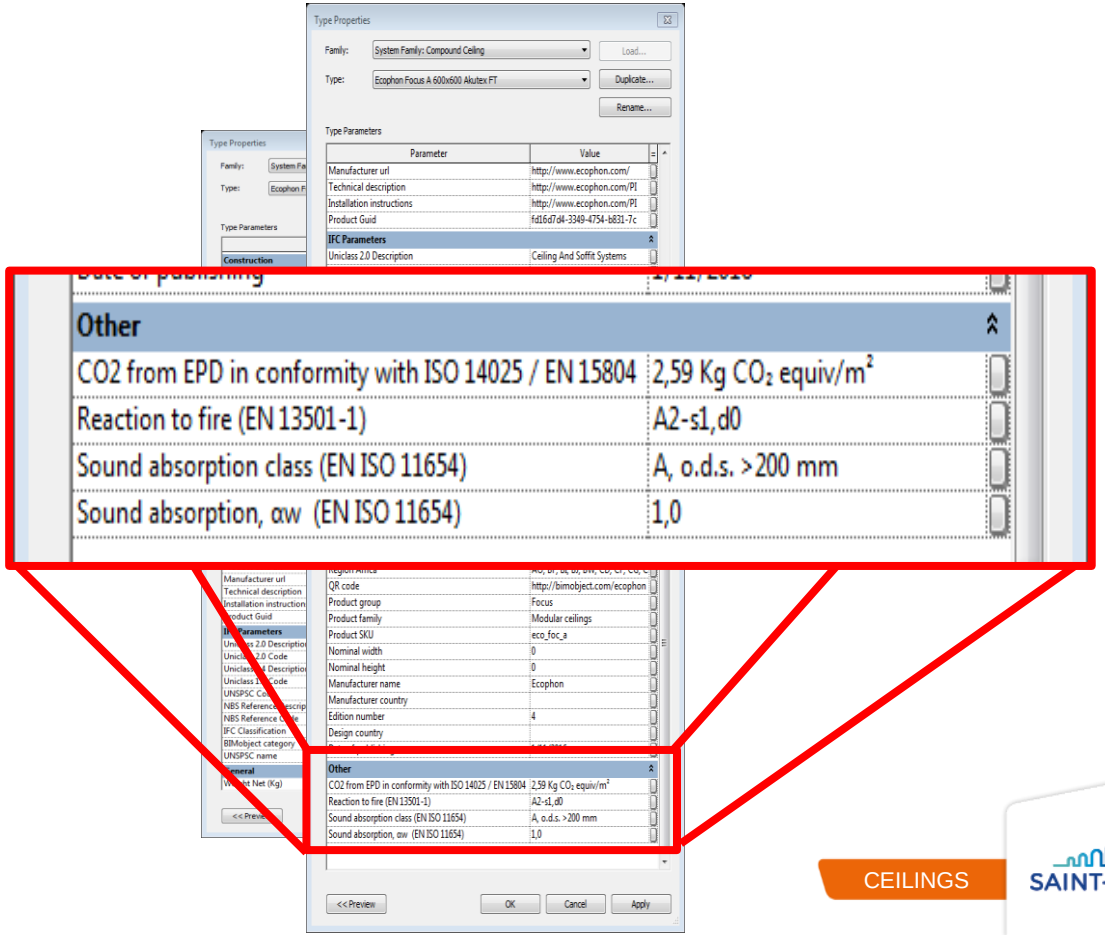
PRODUCT INFORMATION: FIRE SAFETY

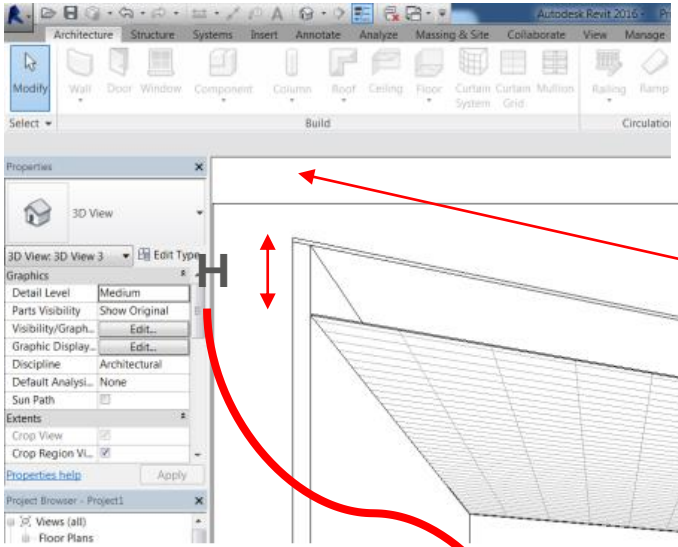


BIM: INHERENT VS CONTEXTUAL INFORMATION

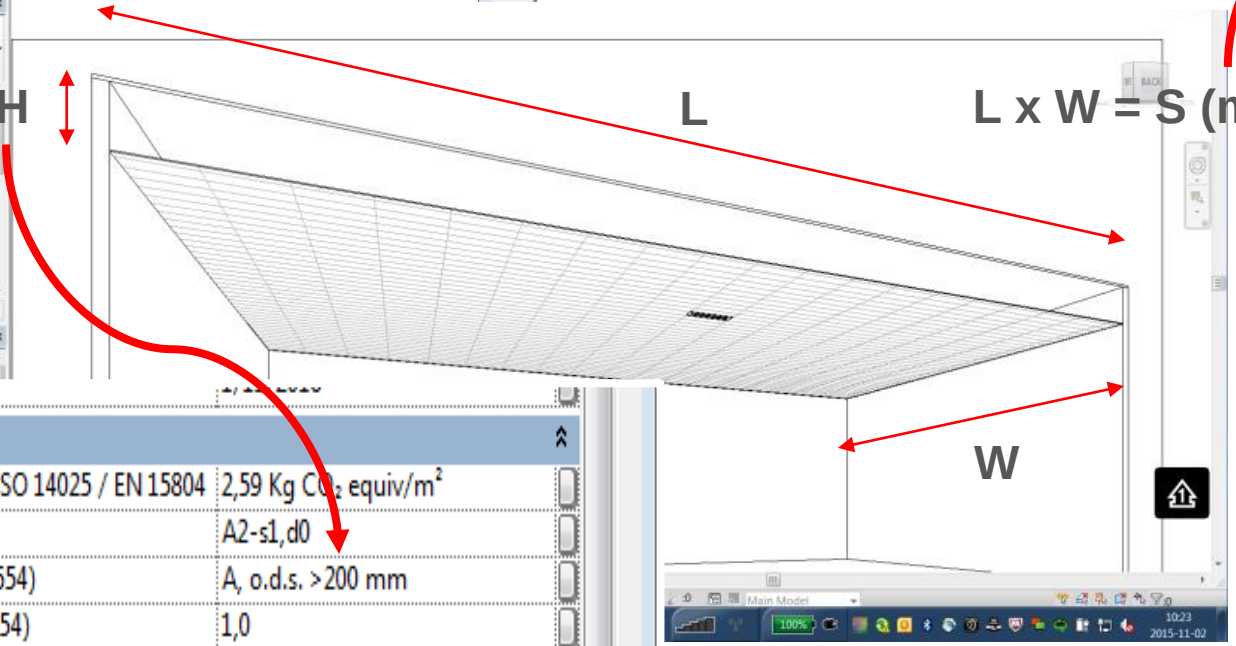
Ex: Ecophon Focus A 600 x 600



CONTEXTUAL / PROJECT DEF



Other	
CO2 from EPD in conformity with ISO 14025 / EN 15804	2,59 Kg CO_2 equiv/m^2
Reaction to fire (EN 13501-1)	A2-s1,d0
Sound absorption class (EN ISO 11654)	A, o.d.s. >200 mm
Sound absorption, αw (EN ISO 11654)	1,0



Other	
CO2 from EPD in conformity with ISO 14025 / EN 15804	2,59 Kg CO_2 equiv/m^2
Reaction to fire (EN 13501-1)	A2-s1,d0
Sound absorption class (EN ISO 11654)	A, o.d.s. >200 mm
Sound absorption, αw (EN ISO 11654)	1,0

MODERN BIM SOFTWARES / BIM WORKFLOWS

Parametric Components
- Families
- Parametric object without any programming

Simplified handling of special requests

Material Takeoff
- Schedules, filtering, extractions
- Calculation of objects & materials

Specification, Price calculation, BOM

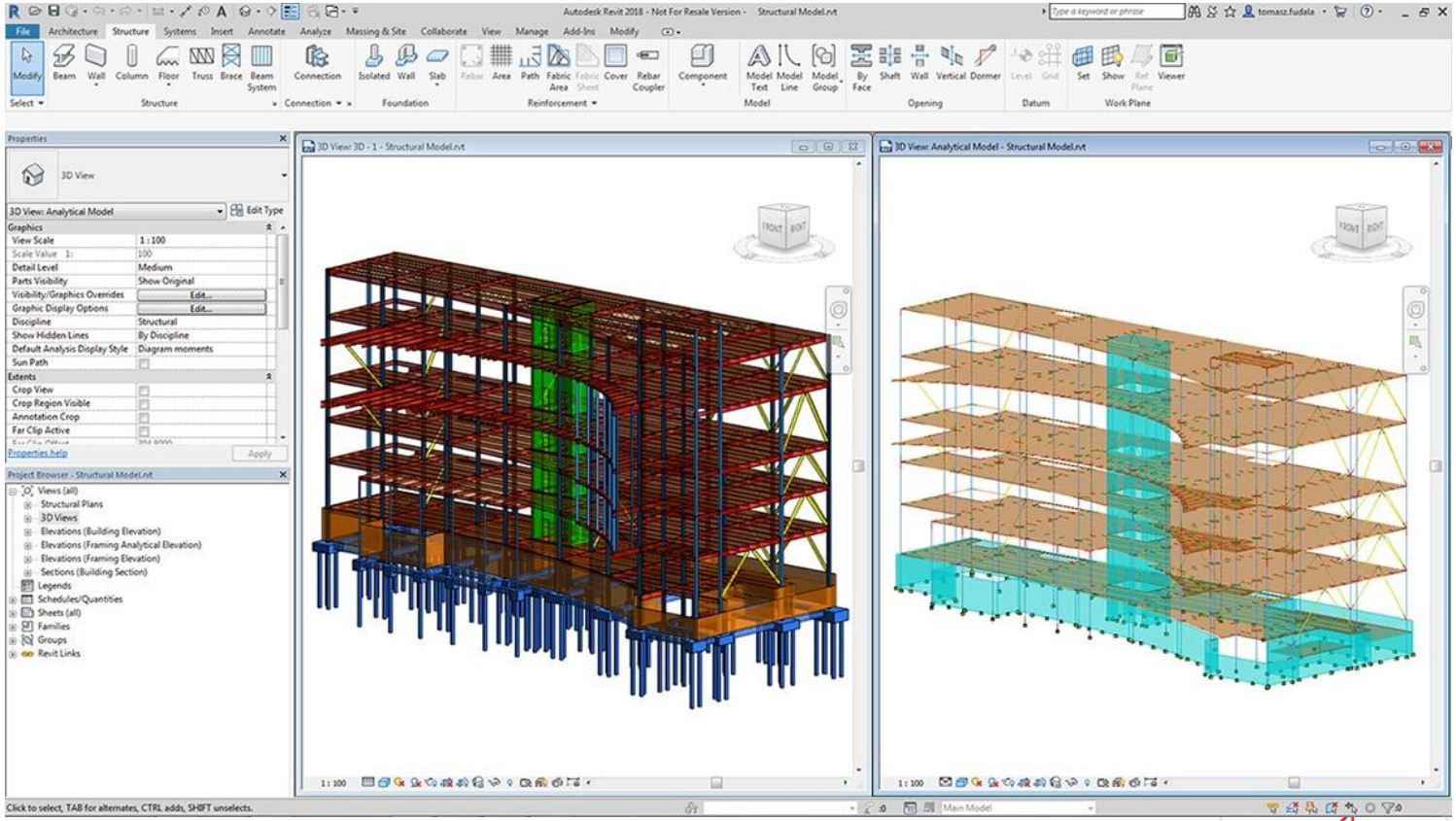
Generality of law
- One change anywhere is a change everywhere
- All information are stored in the model

Design optimization (until late)

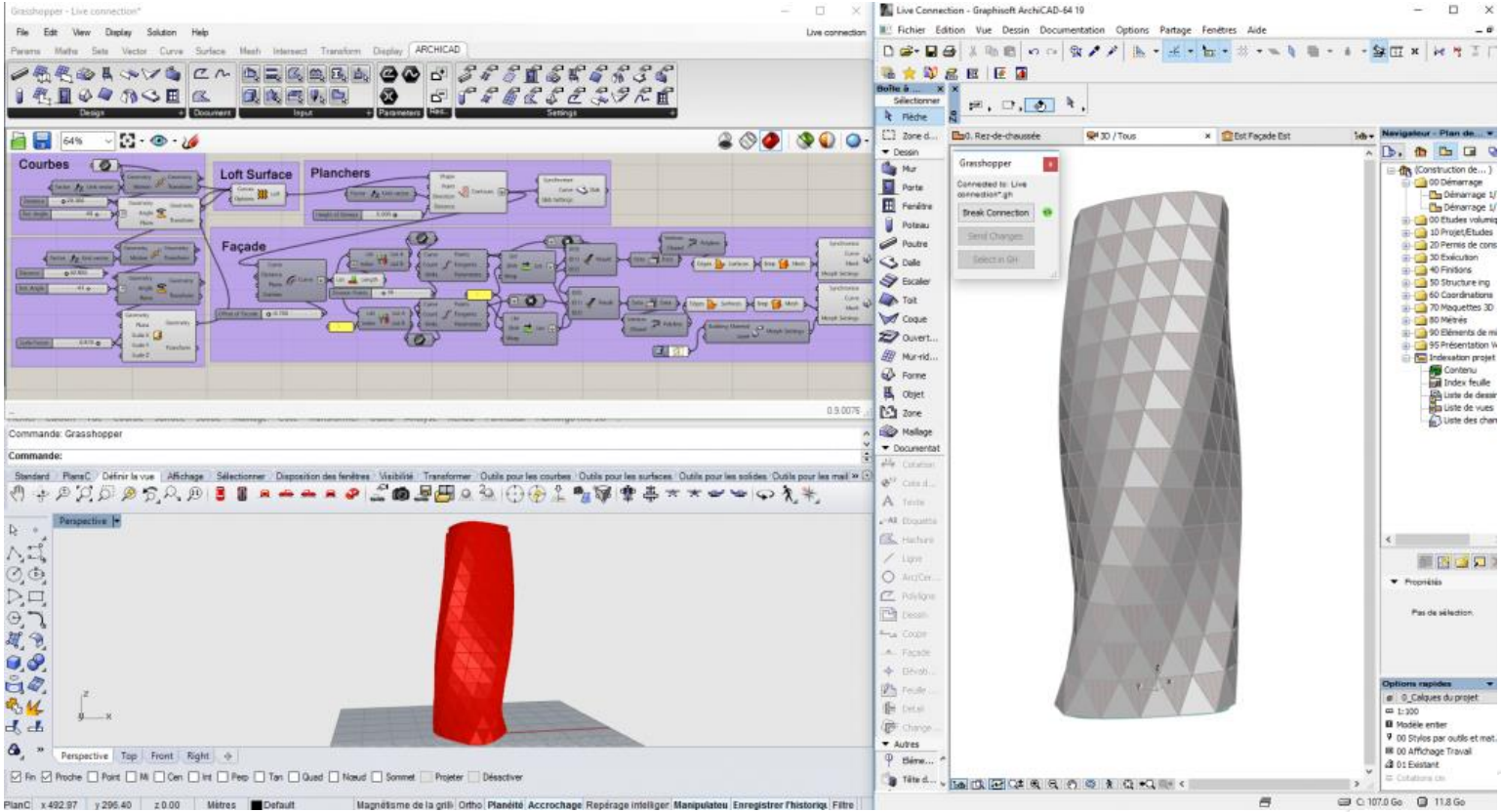
Specific visualization
- Photo realistic renderings (architect)
- Flowchart diagram (planner)
- Gant chart (site manager)

Specification, design validation, installation planning

STRUCTURE (EX: AUTODESK ROBOT STRUCTURAL ANALYSIS)



ENVELOPE OPTIMIZATION (EX: ARCHICAD + RHINO-GRASSHOPPER)



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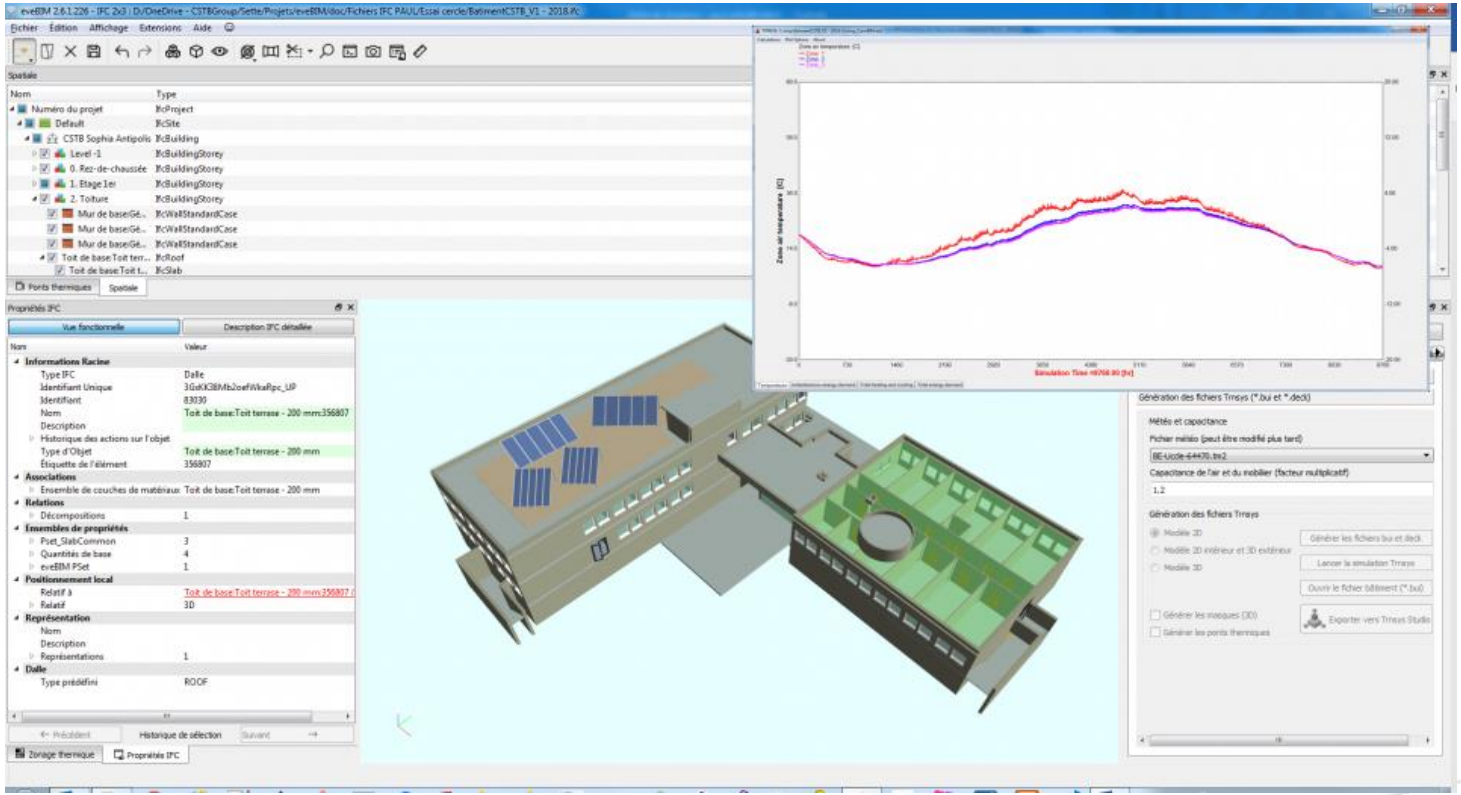
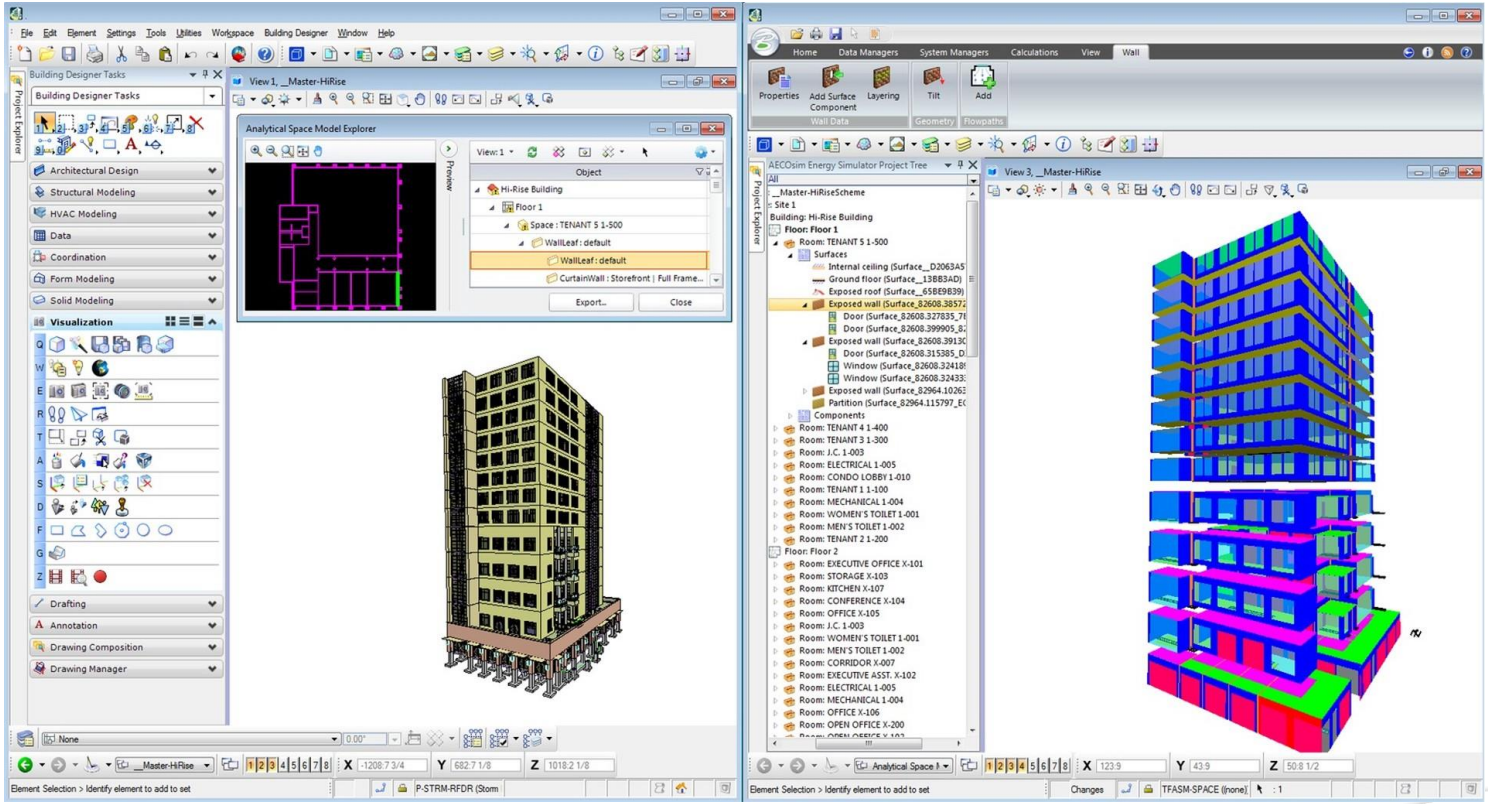
SOLAR PERFORMANCE (EX: INES, FR)



ENERGY PERFORMANCE (EX: BENTLEY)

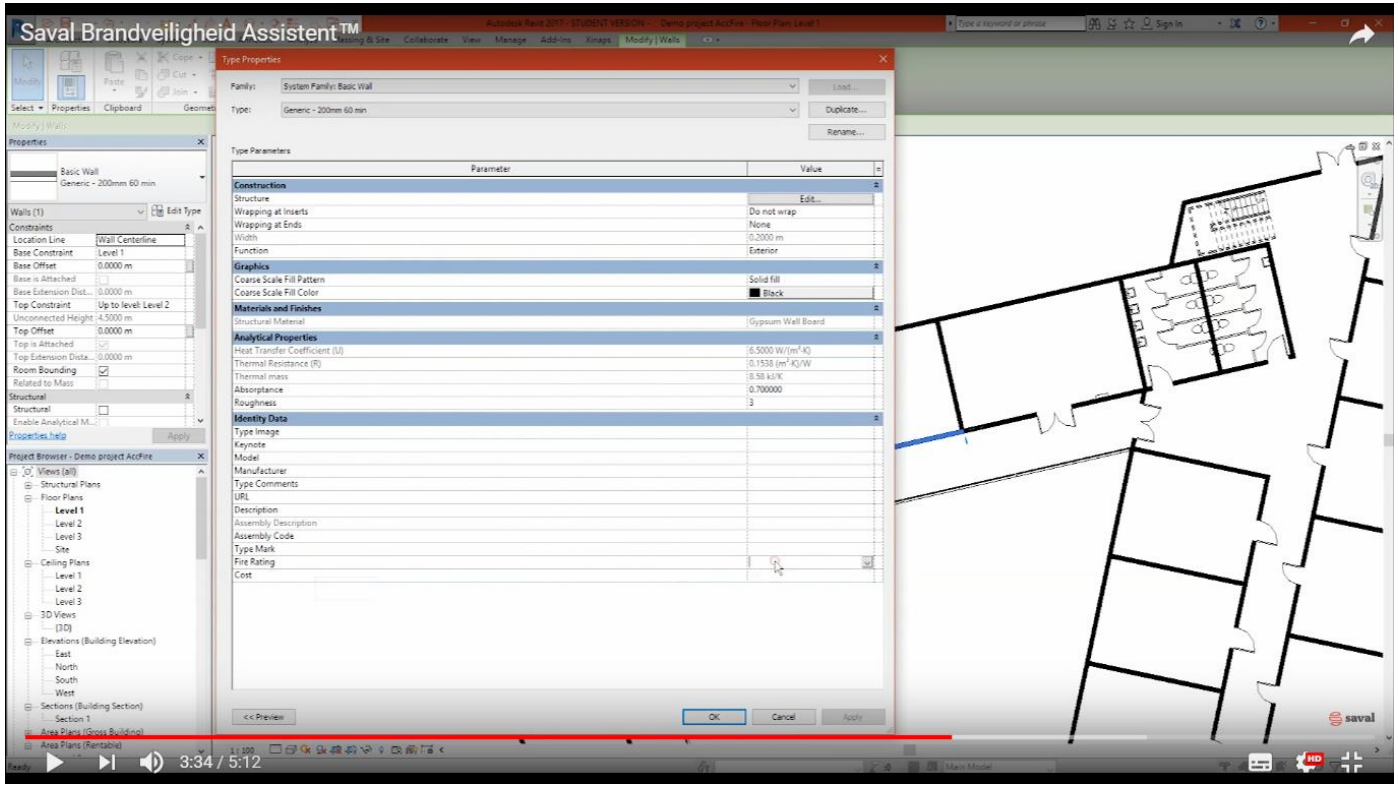


SAINT-GOBAIN

INFORMATION IS KEY!

	A	B	C	D	E
1					
2		**Property**	**Value**	**Unit**	**Contextual rule (dependency)**
3					
4		Absorption Factor	A		> 200 m
5		Fire Class	A2, S1, d0		
6		...			
7					

FIRE SAFETY (SAVAL, NL)



CEILINGS

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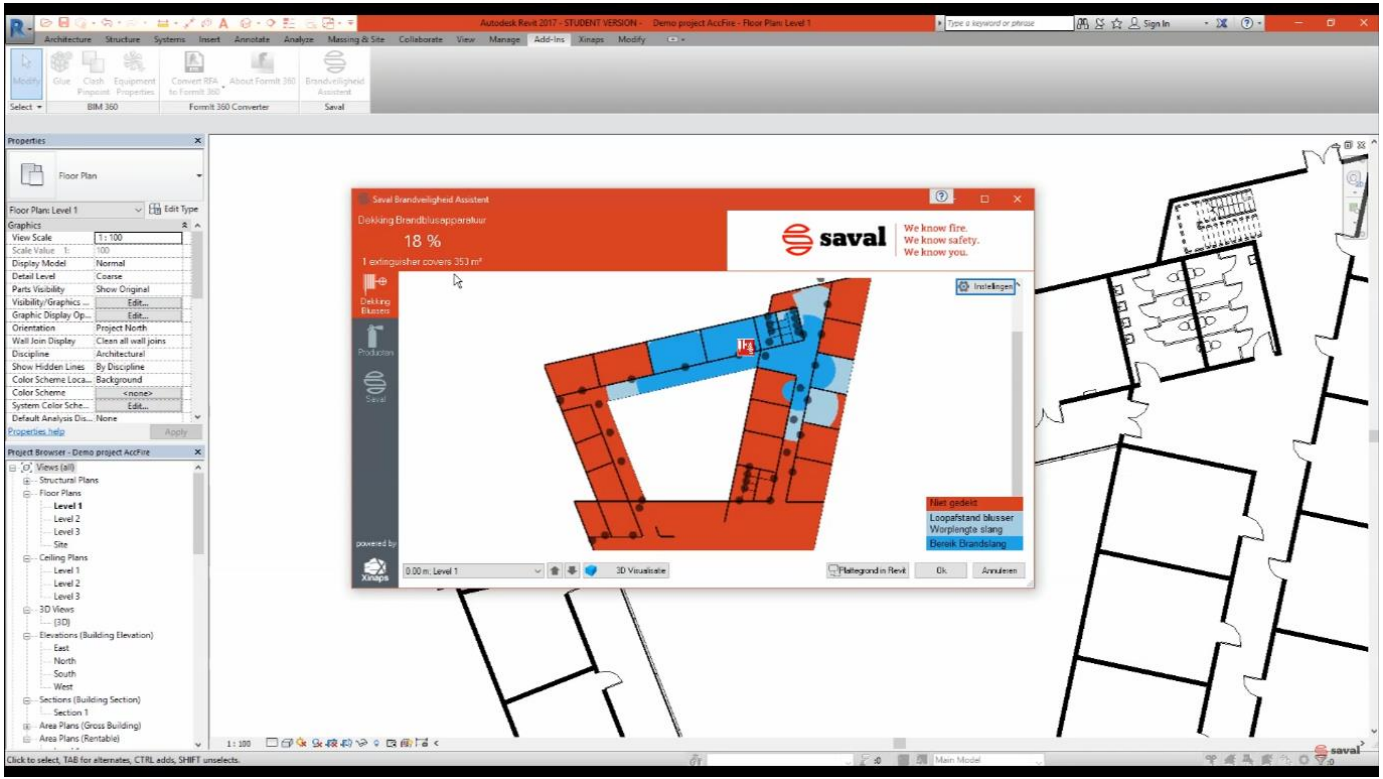
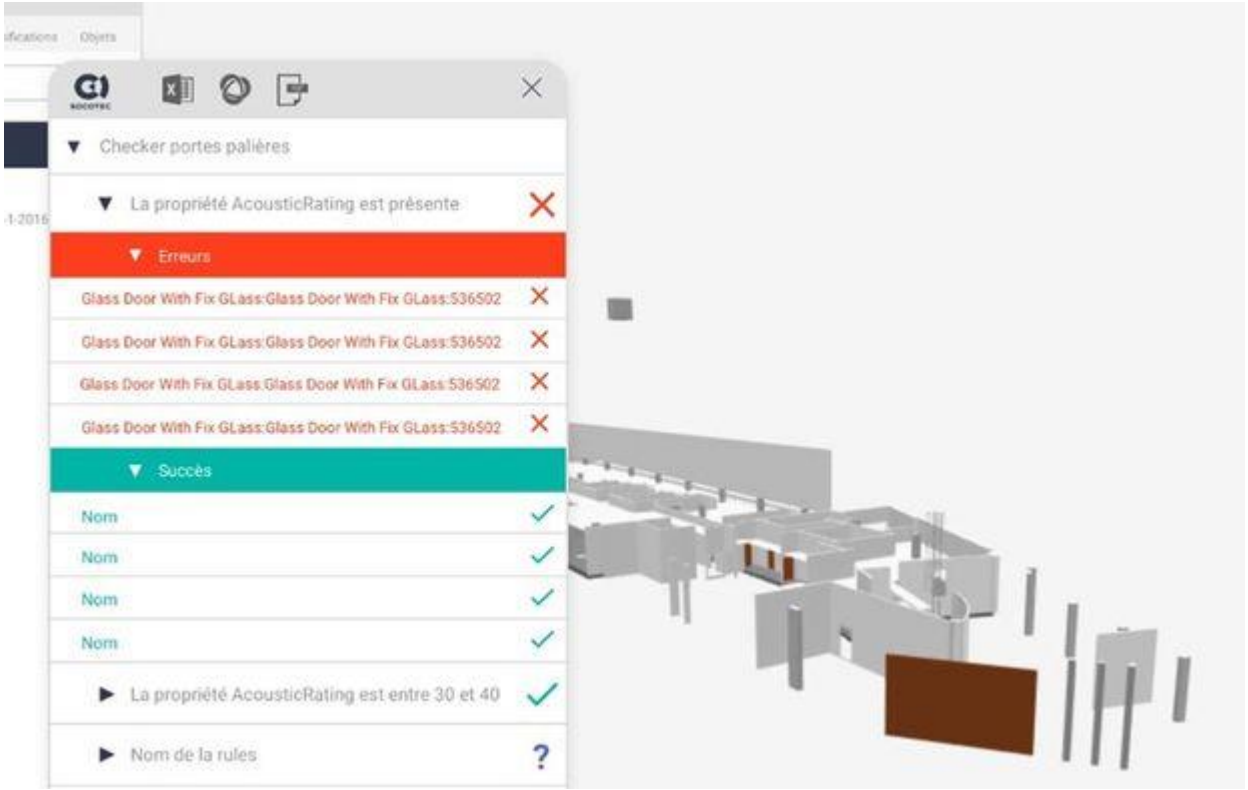
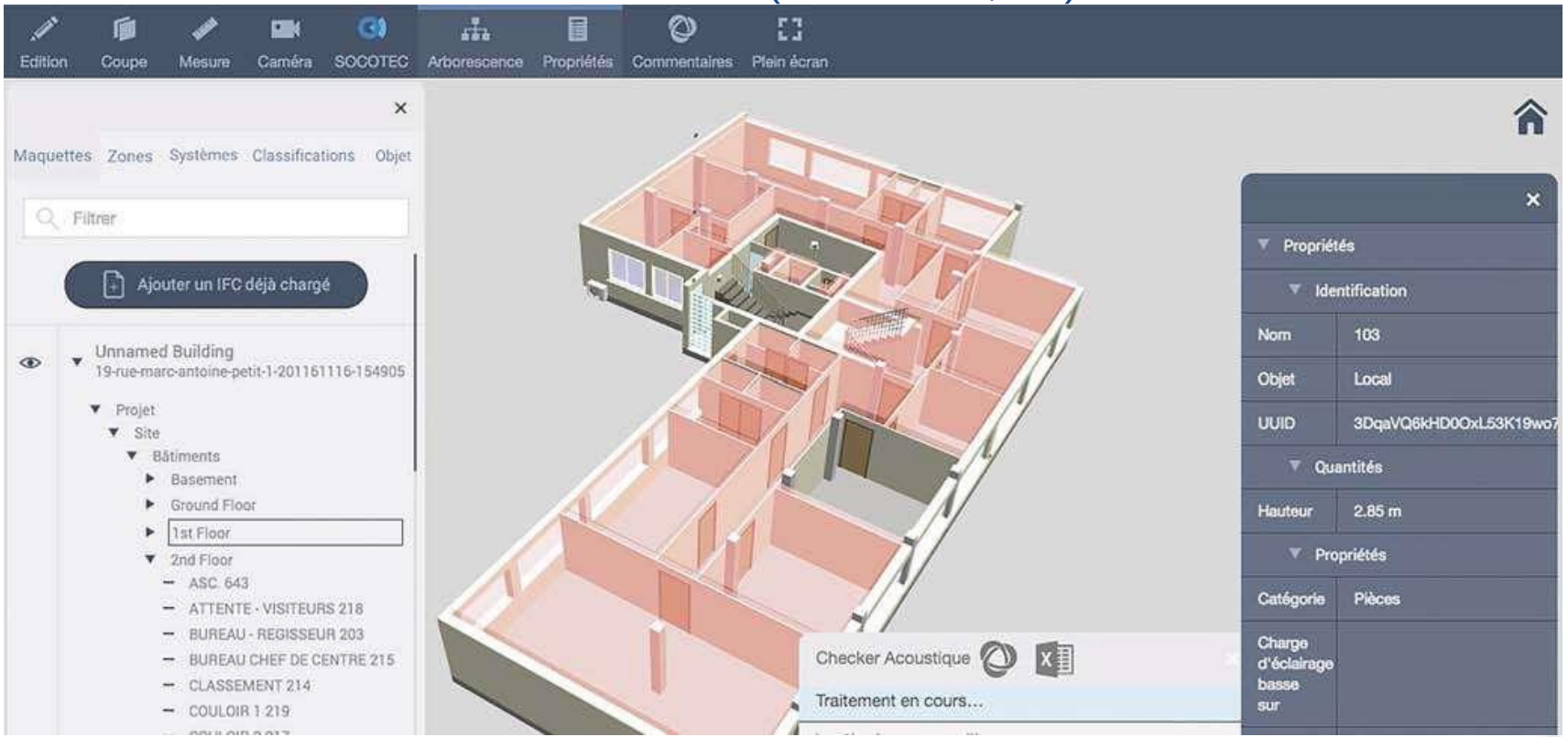
FIRE SAFETY (SAVAL, NL)



TECHNICAL CONTROL - FIRE (SOCOTEC, FR)



TECHNICAL CONTROL – ACOUSTICS (SOCOTEC, FR)



TAKE AWAYS

- BIM is geometry AND information, both inherent and contextual
- BIM allows inherent information to be completed with contextual information
- Prerequisite: make information accessible (inherent information + contextual rules)
- Secure extraction and workability of contextual information (formula)
- Beyond design, innovative implementation of technical control solved in BIM workflows
- BIM opens new opportunities for fire safety!