

Focus on energy, environment, indoor climate modelling and simulation with BIM

Co-development CSTB / CYPE

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BIM software for energy simulation of buildings

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- How we met each other
- openBIM standards
- IFC, energy and acoustic building
- Energy simulation tools
- openBIM workflow
- Demonstration

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How we met each other



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openBIM standards

- **FORMAT IFC – Industry Foundation Classes**

Open and free distribution format for digital model data exchange between software solutions.

Standard IFC4 ISO (16739:2013): stability, independence and enforceability of trade.

- **FORMAT BCF – BIM Collaboration Format**

Standard, neutral file format used to exchange coordination information.

True BIM post-it

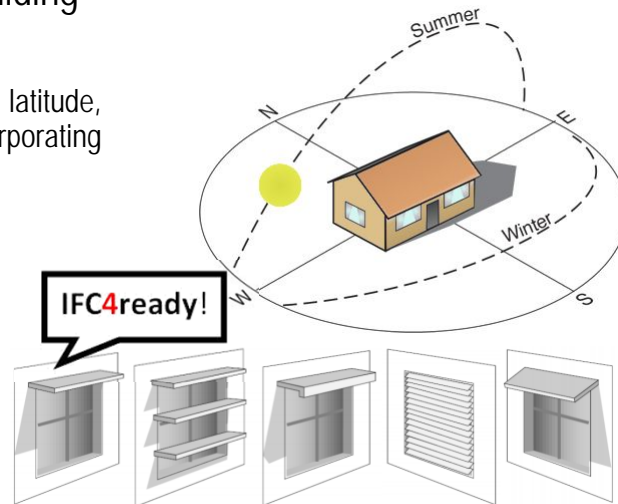
- But also: IFCXML, BsDD-PPBIM...



buildingSMART
International Alliance for Interoperability

IFC, energy and acoustic building

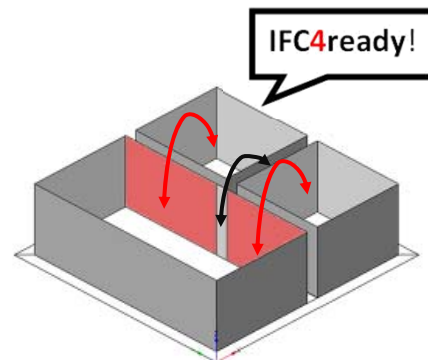
- ✓ Definition of project orientation, latitude, altitude... Possibility of incorporating shading elements,...



Source: Lawrence Berkeley Lab's

IFC, energy and acoustic building

- ✓ Detailed information on the boundaries of the spaces
- 1st level: the part is in contact with this wall
- 2nd level: through this wall, the part is in contact with another part or a constructive element



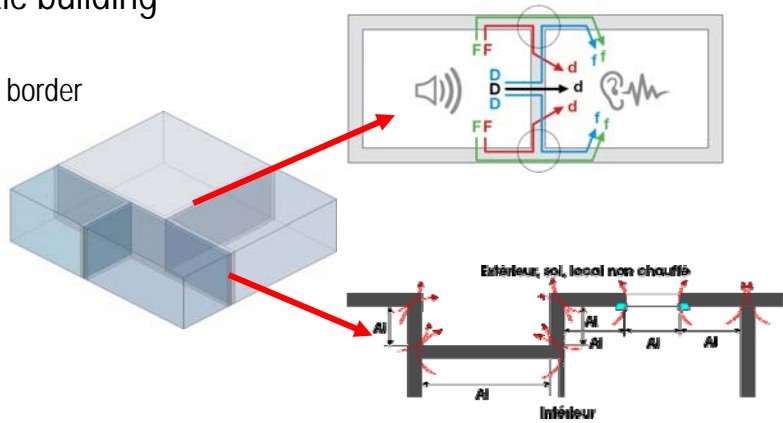
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- ✓ Edges with information on the border with other spaces



BATIMAT
IDÉOBAIN
le mondial
du bâtiment
INTERCLIMA/ELEC

Innovation
cype

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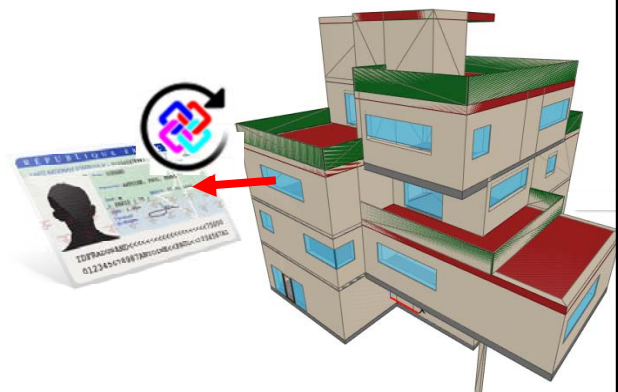
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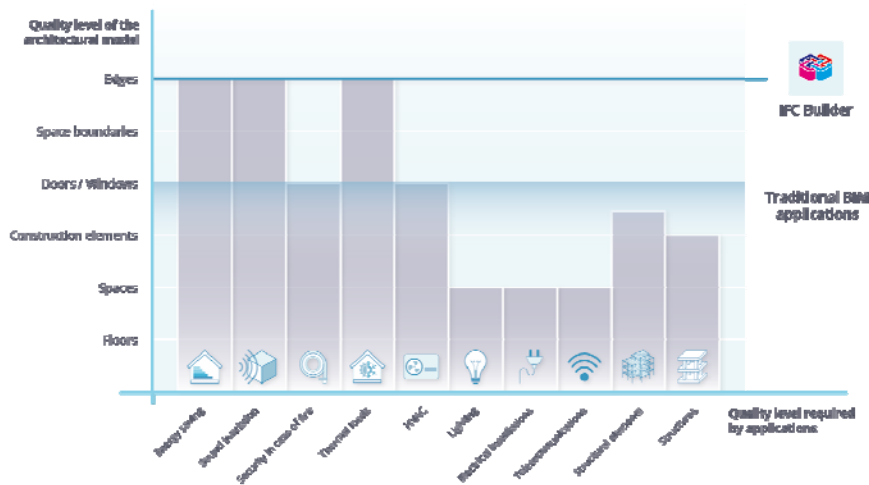
- ✓ Allows synchronization between simulation models and the digital architectural model in case of geometrical modifications



IFC, energy and acoustic building

Which modeler?

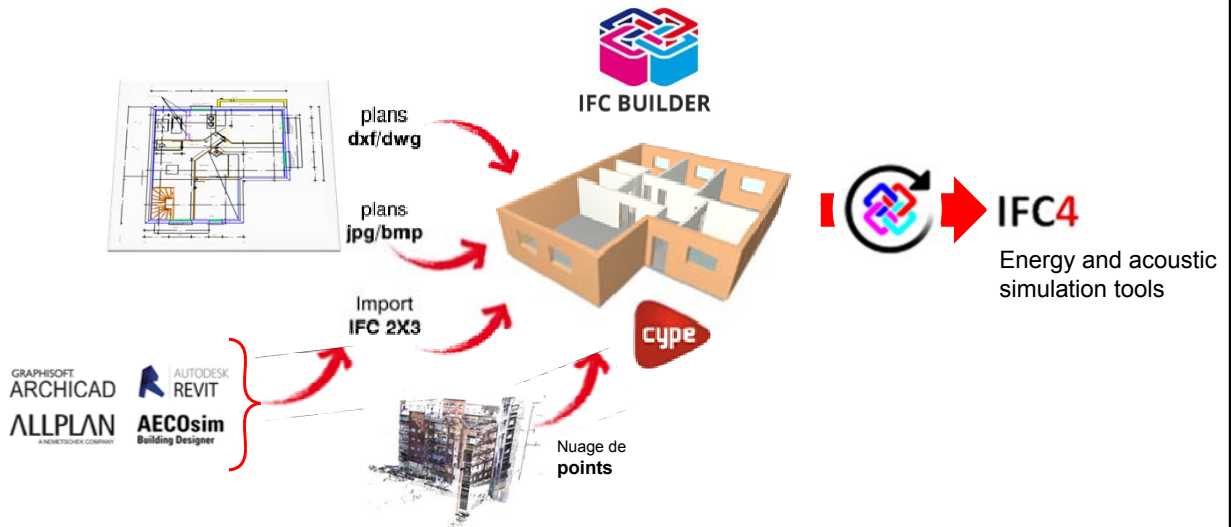
IFC, energy and acoustic building



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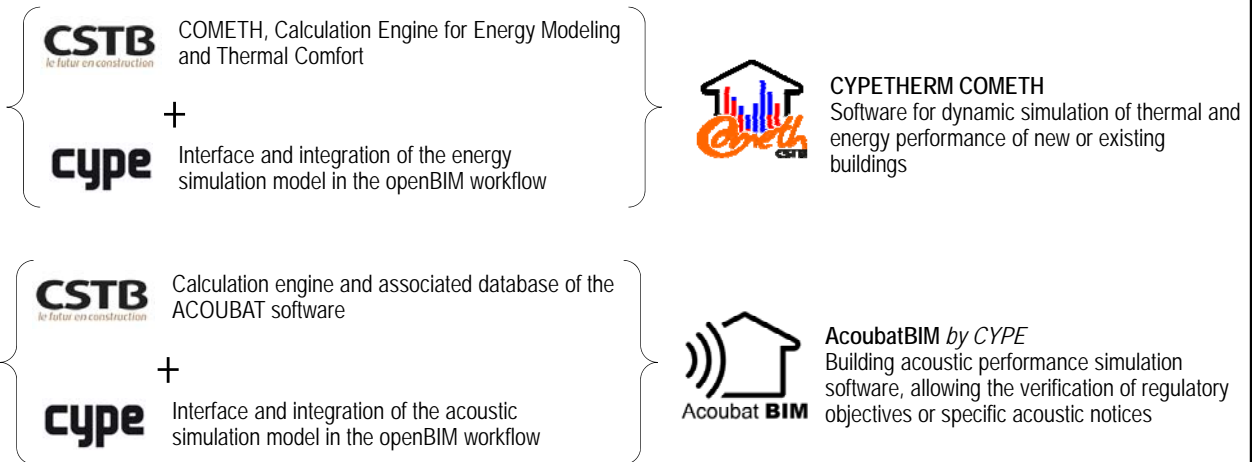
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Energy and acoustic simulation tools



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Energy simulation tools

- ✓ Thermal loads
- ✓ HVAC sizing
- ✓ Lighting
- ✓ Improvements
- ✓ Thermal bridges
- ✓ Hygro

And more

- ✓ Urbanism
- ✓ Fire
- ✓ Accessibility
- ✓ Structural
- ✓ Electrical
- ✓ Plumbing
- ✓ Gas
- ✓ ...

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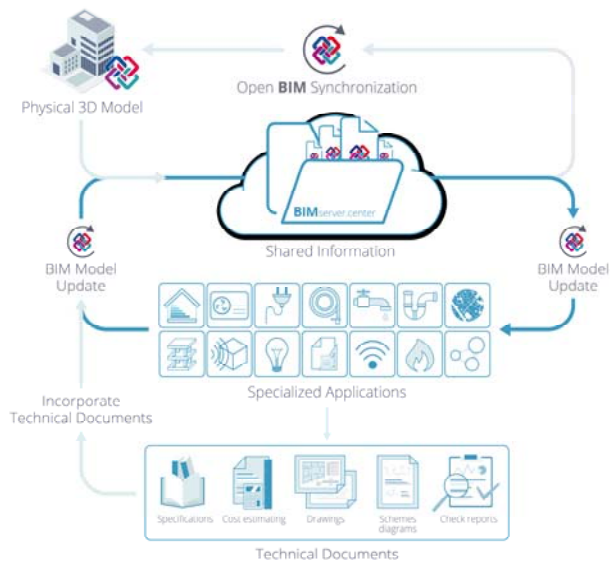
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openBIM workflow

Concurrent multi-user design process with



Collaborative platform for building design, execution and maintenance



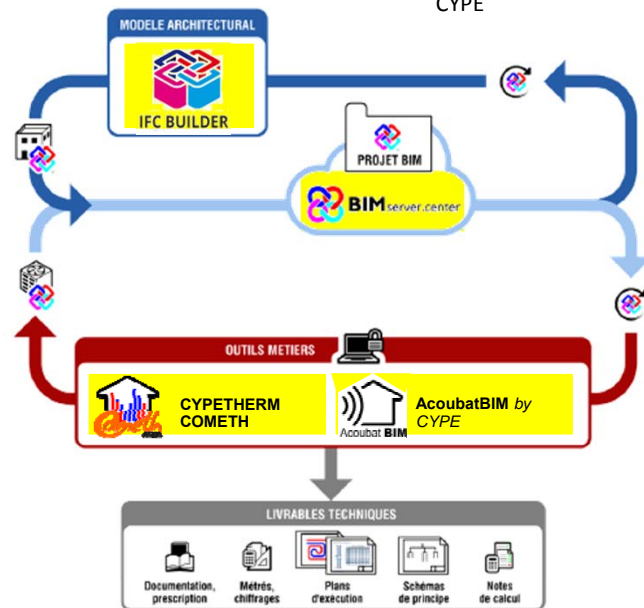
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Demo

Used software :

- ✓ IFC Builder
- ✓ BIMserver.center
- ✓ CYPETHERM COMETH



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What is Cometh?

- COMETH is dynamic energy simulation model developed by the CSTB.
- COMETH and ISO standards are deeply linked
- Compliance between last European Product standards and model inputs *

www.cometh-cstb.fr

* COMETH is under development to ensure compliance with recent European Product Standards evolutions

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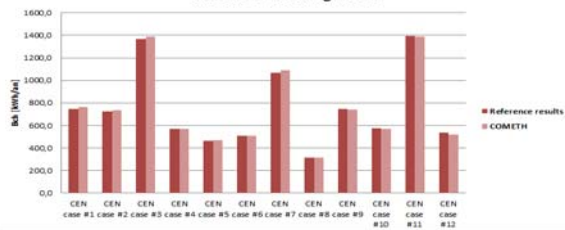
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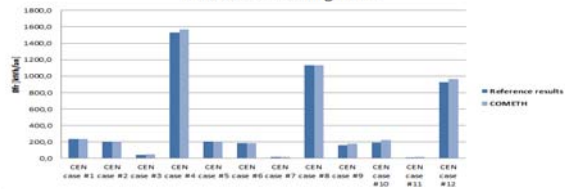
COMETH Benchmark

NF EN 15265 - OFFICE BUILDING

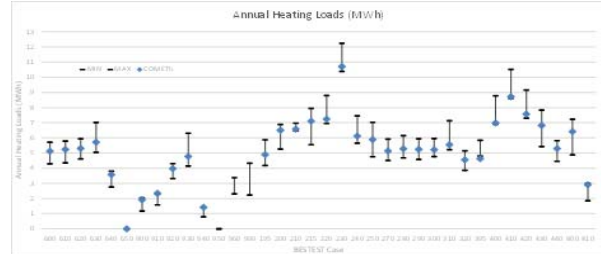
CEN cases- Heating needs



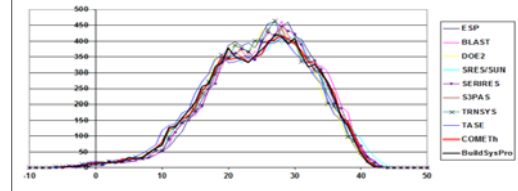
CEN cases - Cooling needs



CAS BESTEST (IEA) - CAS DE MI



HOURLY ANNUAL ZONE TEMPERATURE BIN DATA (HOURS) - Case 906FF



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Thank you

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