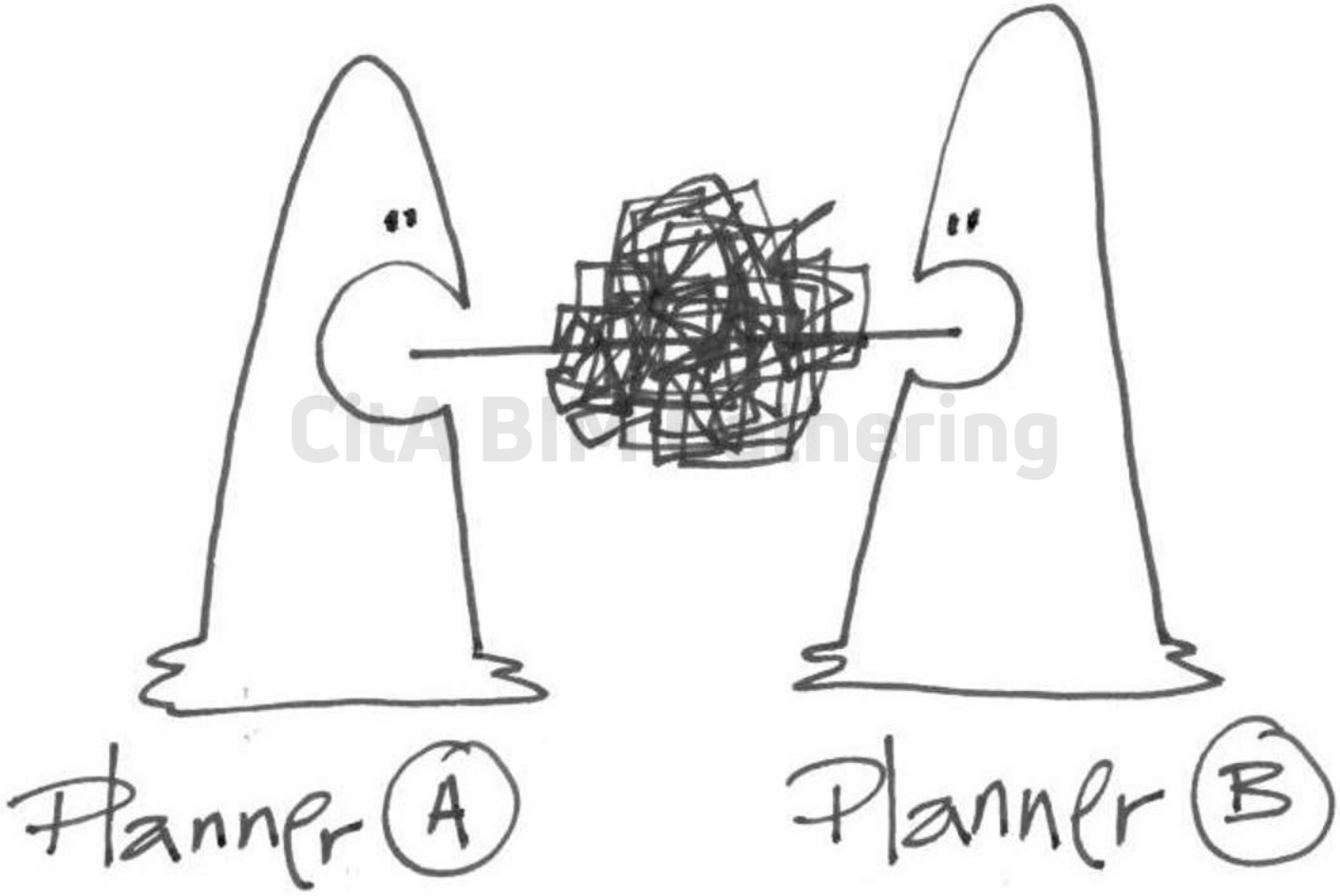
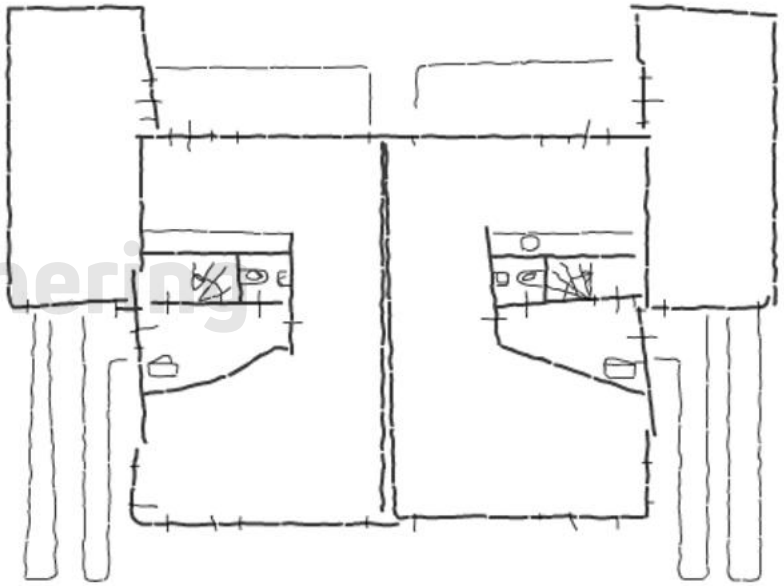
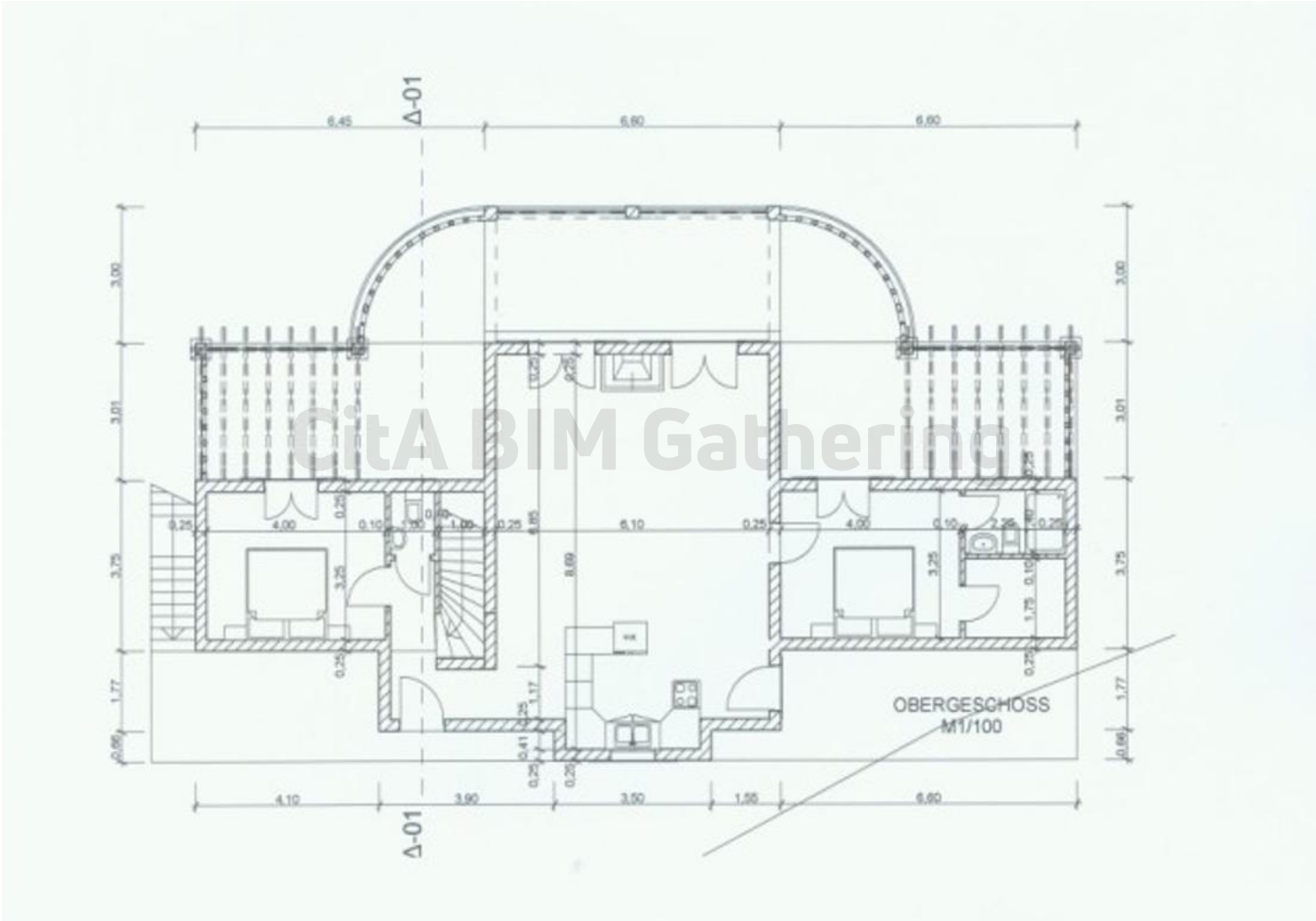
What are all these abbreviations?

buildingSMART: the openBIM workflow



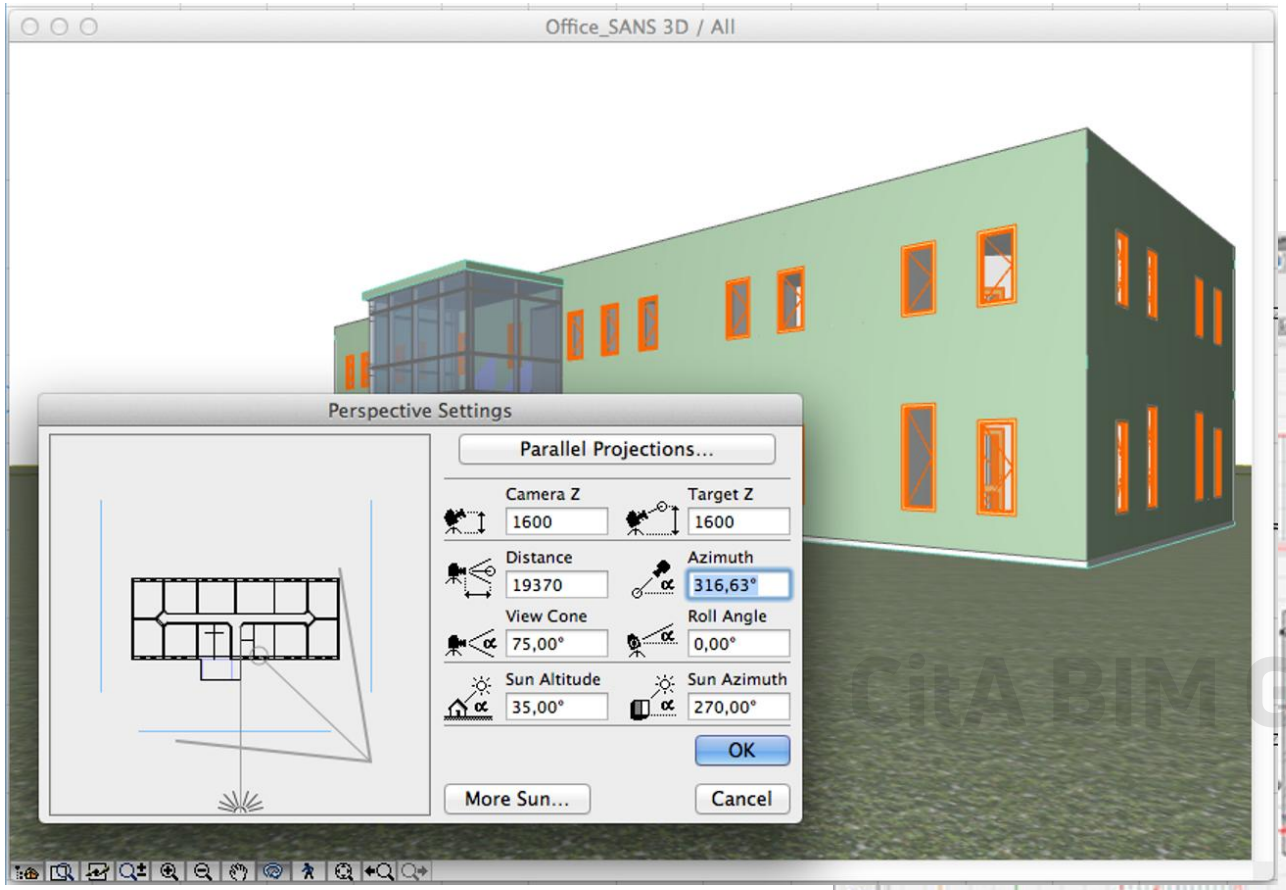


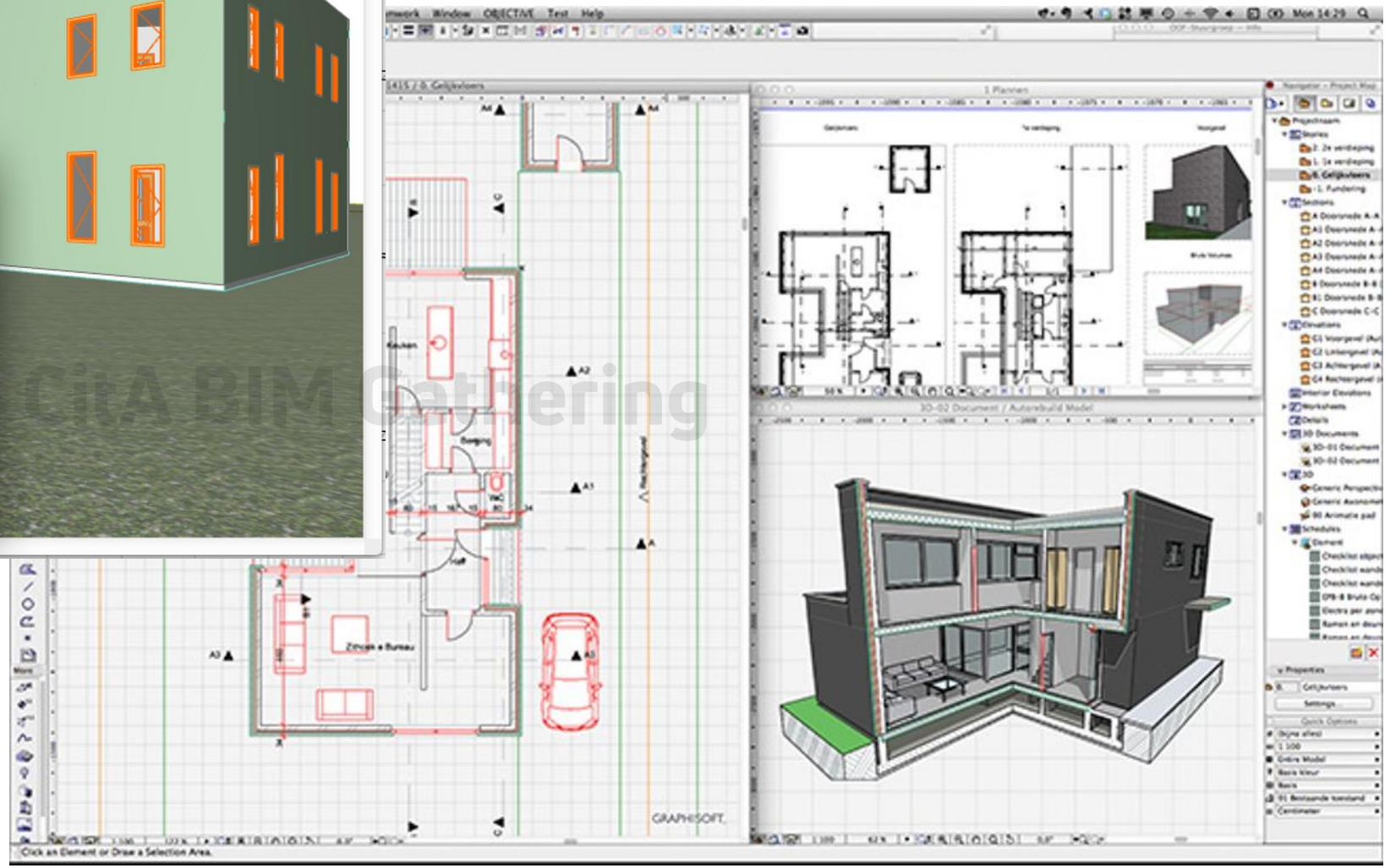
We got standards



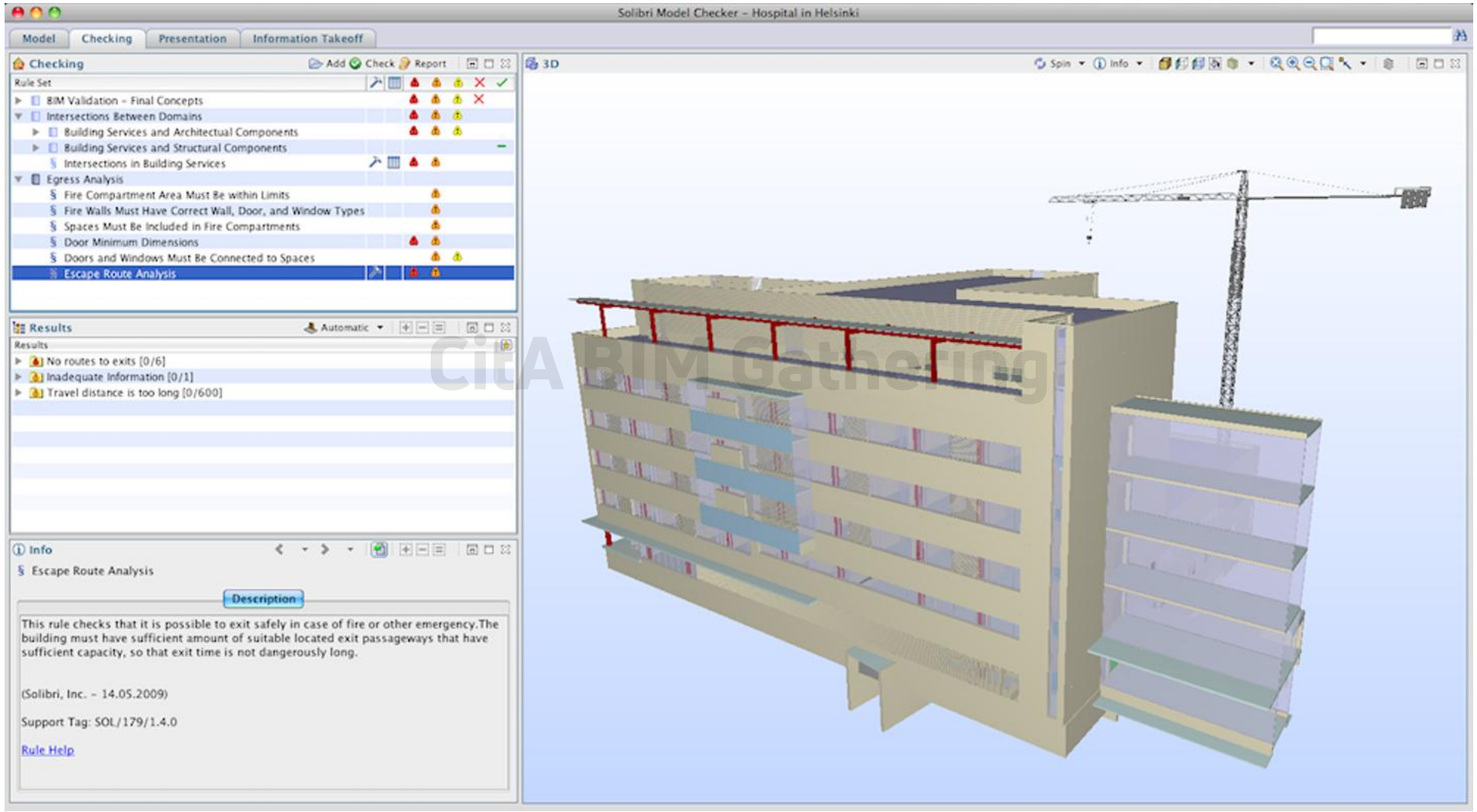
We got digital

We got smarter with digital

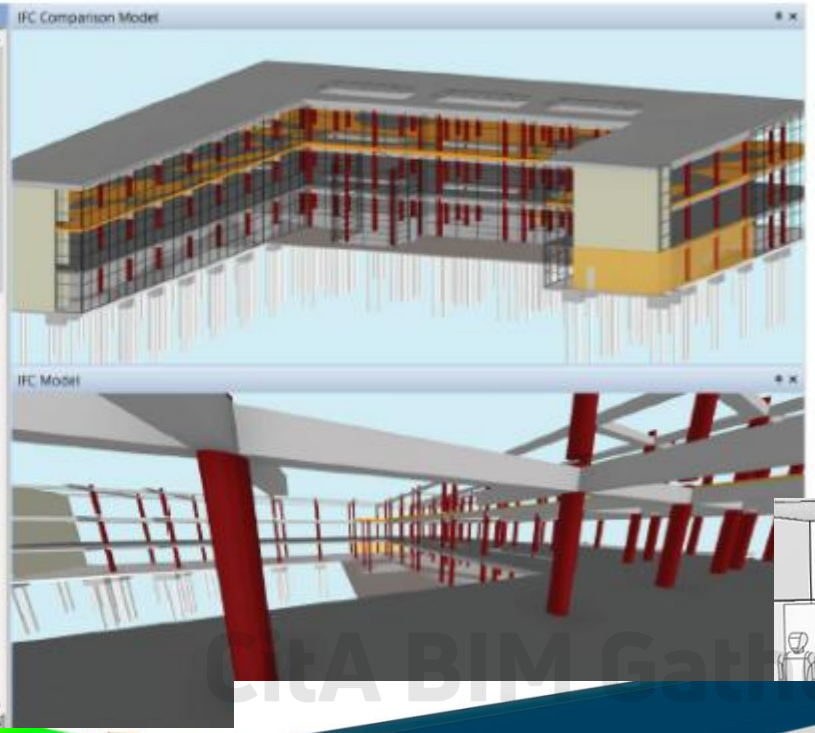


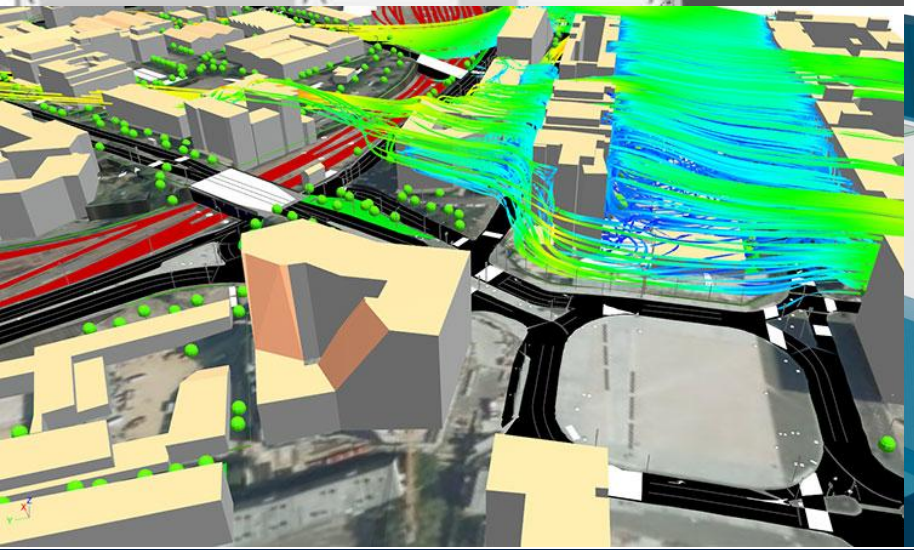


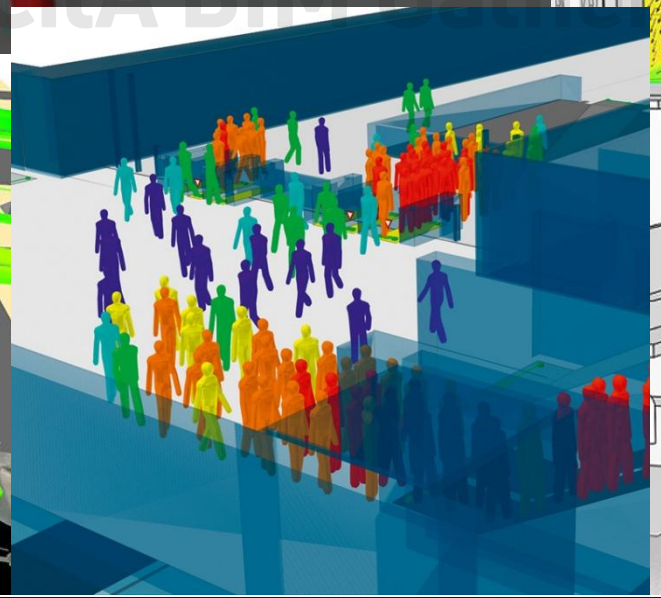
Now we can automate tasks!

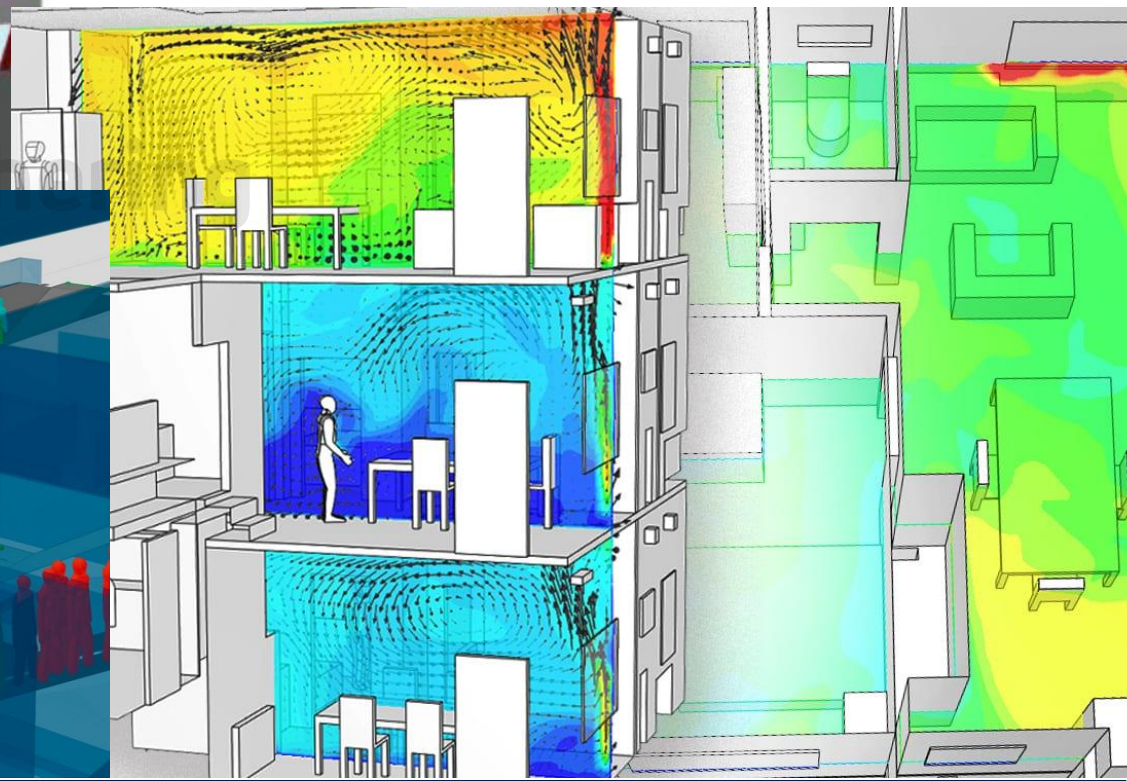


And do simulations!









Why are data standards so important?

Why are data standards so important?

Same interpretation

How do you call that floor piece in a staircase? Is it part of a stair? Or a Floor? It makes a difference when budgeting!

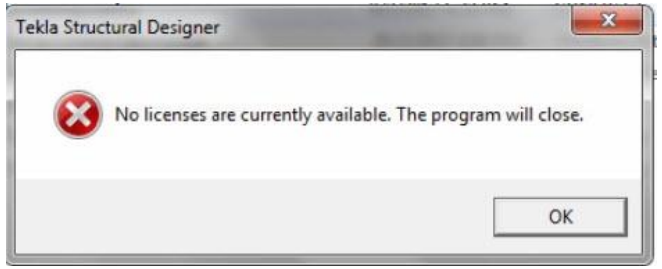
Automatic processing

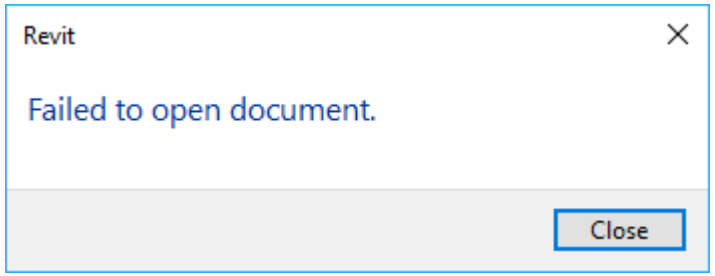
Because data agreements are standardized, computers can automatically process it. So you can get the computer to work for you. Fast.

Comparison and learning

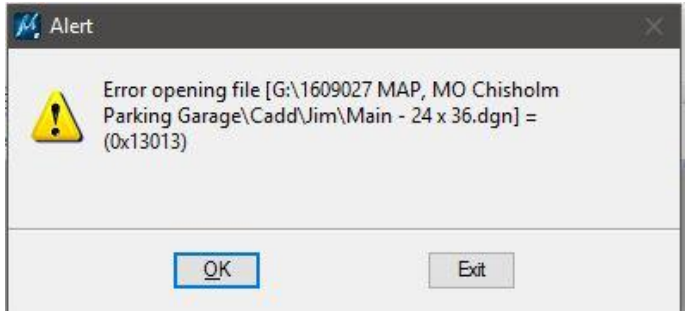
Analyze the data over multiple project to be able to learn and improve your workflows and deliverables.

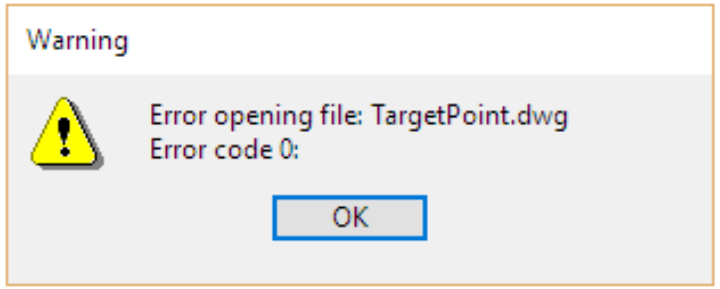
oh wait....

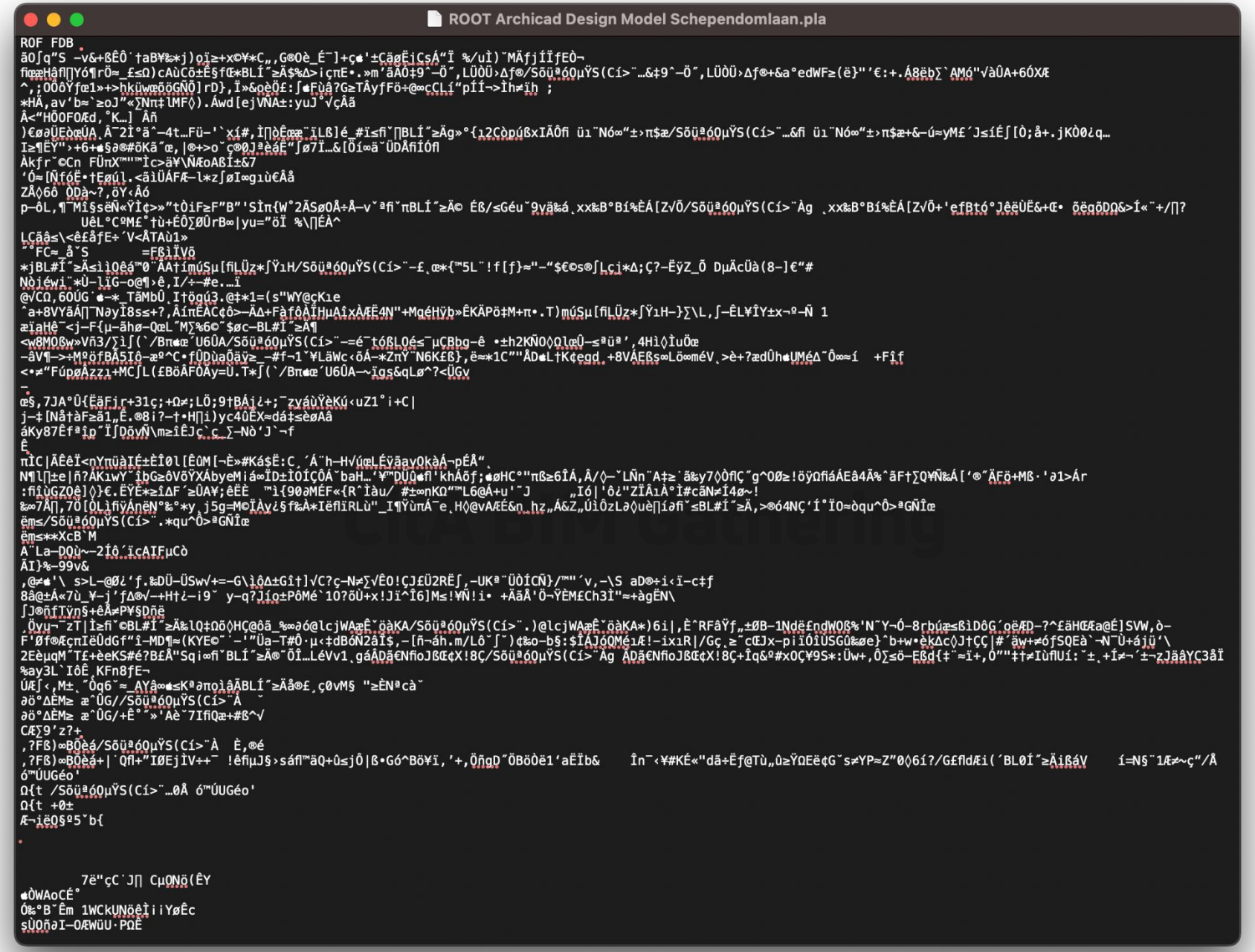




Couldn't open the document. Try again.







Why is open so important?

An open standard is a standard that is openly accessible and usable by anyone.

To open it!

An open definition of a data standard allows everyone to interpret the data. Being able to always have the guarantee to access your data makes it the only real option for archiving.

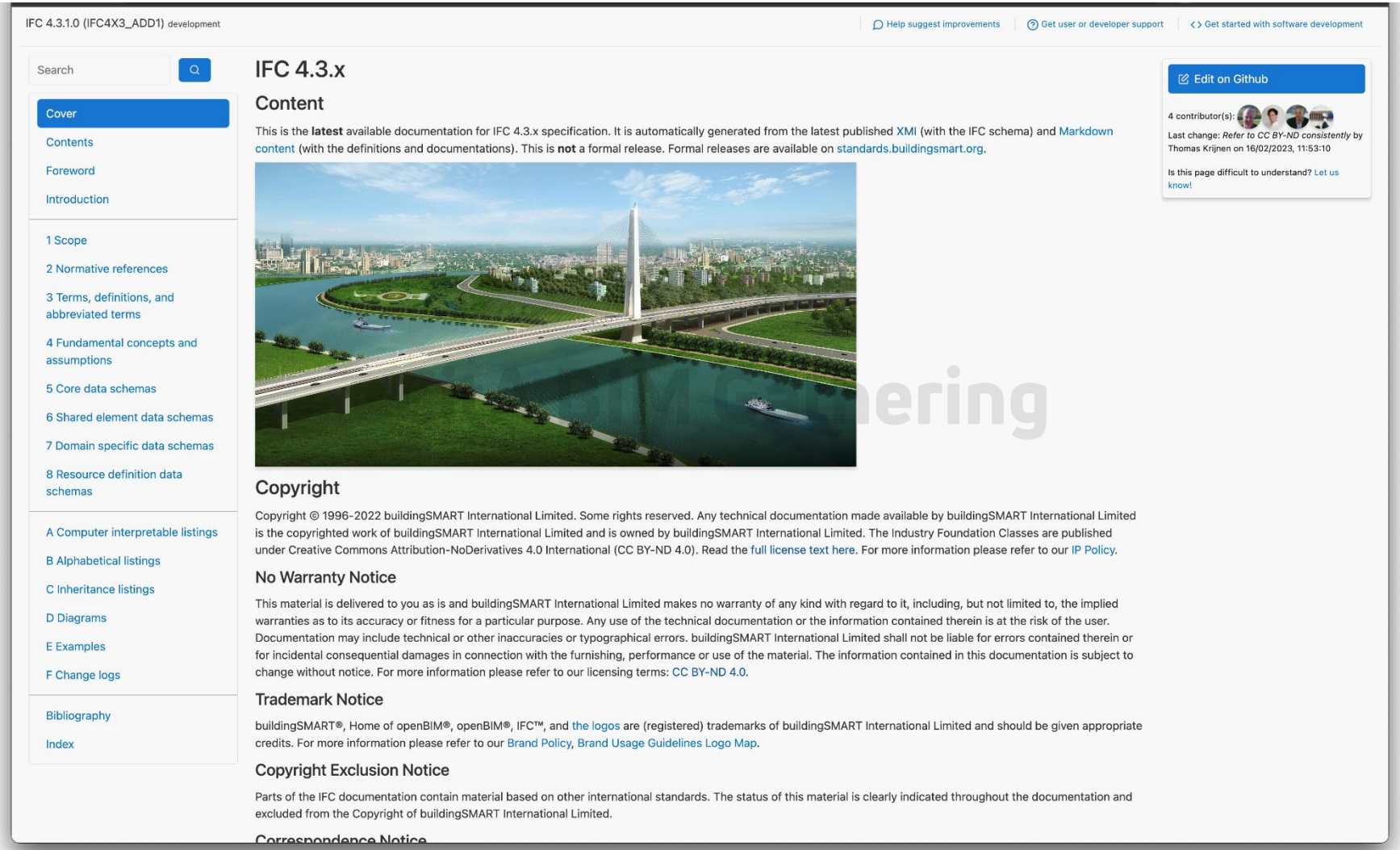
Collaboration & consensus

Not one player defines how data is exchanged; the definition is collaborative, and consensus based.

Control your digital destiny

You can swap tools at any point you like.
You won't be held hostage by a vendor.
You control your own workflows, now and in the future.

Industry Foundation Classes (IFC)



Industry Foundation Classes (IFC)

collaboration

Versioned

Transparent

Openly available (buildingSMART.org)

IfcStair

Search

6.1.3.37 IfcStair

NOTE This entity is a subtype of IfcProduct or IfcTypeProduct and hence part of every standardized schema subset and implementation level.

6.1.3.37.1 Semantic definition

A stair is a vertical passageway allowing occupants to walk (step) from one floor level to another floor level at a different elevation. It may include a landing as an intermediate floor slab.

NOTE Definition according to ISO 6707-1: Construction comprising a succession of horizontal stages (steps or landings) that make it possible to pass on foot to other levels.

The *IfcStair* shall either be represented:

- as a stair assembly entity that aggregates all parts (stair flight, landing, etc. with own representations), or
- as a single stair entity without decomposition including all representation directly at the stair entity.

NOTE In case of an *IfcStair* being the aggregate of all parts of the stair the aggregation is handled by the *IfcRelAggregates* relationship, relating an *IfcStair* with the related *IfcStairFlight* and landings, *IfcSlab* with PredefinedType=LANDING. *IfcRailing*'s belonging to the stair may also be included into the aggregation.

NOTE Model View Definitions and implementer agreements may restrict the *IfcStair* being an assembly to not have an independent shape representation, but to always require that the decomposed parts have a shape representation. In this case, at least the 'Body' geometric representations shall not be provided directly at *IfcStair* if it is an assembly. The 'Body' geometric representation of the *IfcStair* is then the sum of the 'Body' shape representation of the parts within the decomposition structure.

HISTORY New entity in IFC2.0.

IFC4-CHANGE Attribute *ShapeType* renamed to *PredefinedType*.

6.1.3.37.2 Entity inheritance

Edit on Github

2 contributor(s):

Last change: *Alt quote purge, trailing whitespace purge, and nbsp purge* by Dion Moult on 01/03/2022, 13:07:20

Is this page difficult to understand? Let us know!

Jump to section

6.1.3.37.9 Changelog

6.1.3.37.9.1 IFC4

- where rule, CorrectPredefinedType
- where rule, CorrectTypeAssigned
- where rule, WR1
- attribute ShapeType name, Changed from "ShapeType" to "PredefinedType"
- attribute ShapeType optional, Changed from "False" to "True"

6.1.3.37.9.2 IFC4.3_DEV_703a485

- supertype, Changed from "IfcBuildingElement" to "IfcBuiltElement"

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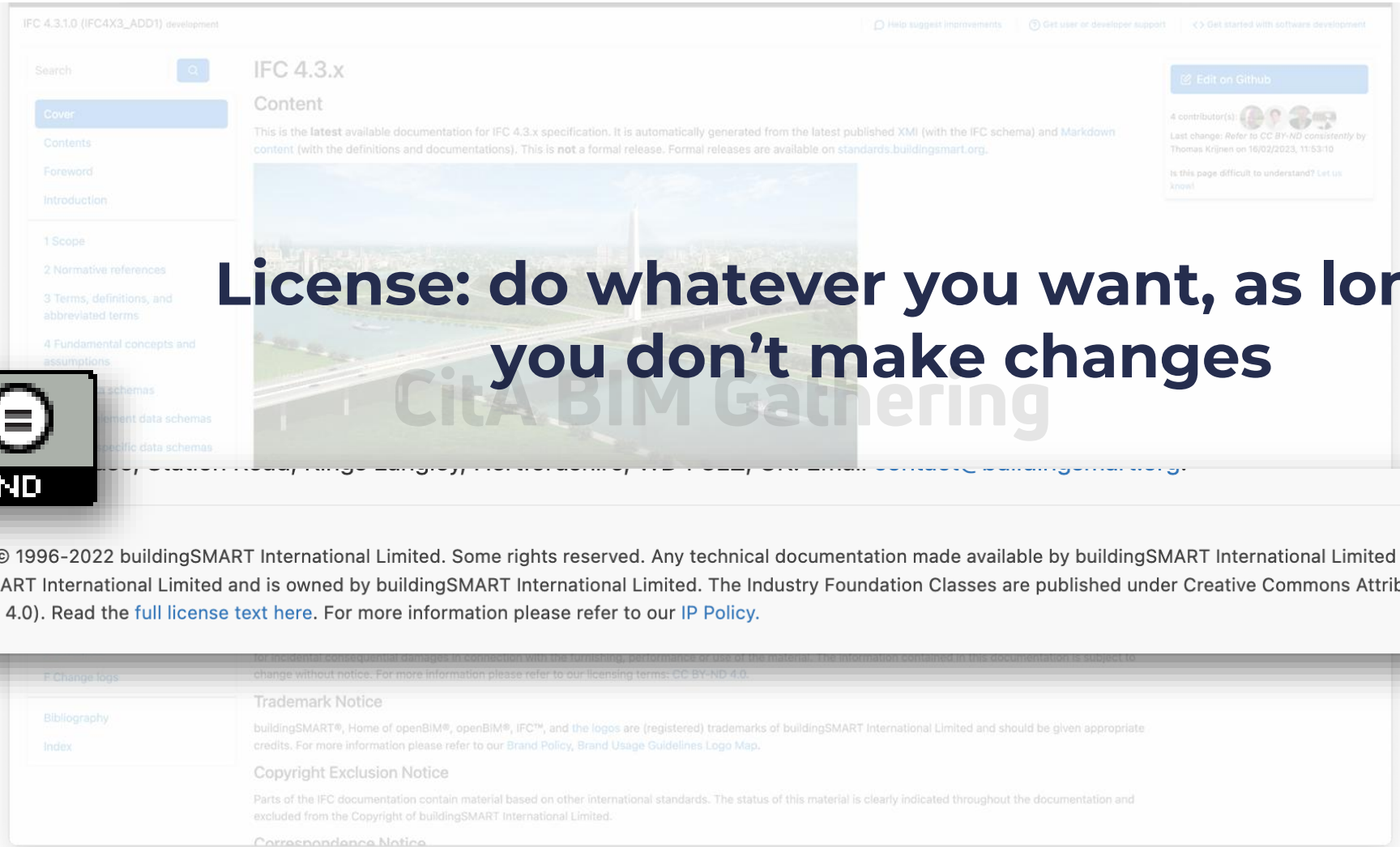
Industry Foundation Classes (IFC)



License: do whatever you want, as long as you don't make changes

About buildingSMART

buildingSMART is a global community of chapters, members, partners and sponsors led by the parent body, buildingSMART International. The buildingSMART community is committed to creating and developing open digital ways of working for built asset environment. buildingSMART standards help asset owners and the entire supply chain work more efficiently and collaboratively through the entire project and asset lifecycle.

buildingSMART is the worldwide authority driving the digital transformation of the built asset environment, through creation and adoption of open, international standards for infrastructure and buildings. buildingSMART provides the perfect opportunity to help industry visionaries transform the design, delivery and operation of tomorrow's built assets. buildingSMART Is committed to driving change through the use of standards and the adoption of digital workflows.

International open digital data-sharing standards are critical to this transformation, helping businesses – owners, architects, engineers, contractors and operators – become global industry leaders, while also mitigating risks, saving time, and reducing costs. buildingSMART is an open, neutral and international not-for-profit organisation.

Chapters

Member Directory

Strategic Members

ARUP
AUTODESK
CCCC China Communications Construction Company
铁路BIM联盟 China Railway BIM Alliance
NEMETSCHEK GROUP
ORACLE Construction and Engineering
Schneider Electric
SIEMENS Ingenuity for life
Trimble

Principal Members

AASHTO
SBB CFF FFS

Multinational Members

ACCA SOFTWARE
Bentley
BEXEL
Bricsys
Catenda the open way
cobuilder
DASSAULT SYSTEMES
esri THE SCIENCE OF WHERE
GRAPHISOFT
鹿島 KAJIMA CORPORATION
OBAYASHI
Royal HaskoningDHV Enhancing Society Together
SHIMIZU CORPORATION SHMZ
STRABAG
thinkproject
VECTORWORKS

Standard Members

How big is IFC?

± 900 – Entities

± 400 – Types

± 2500 – Normalized properties

± 1500 – Psets, Functions, Enums, etc..

± 300 – Concept templates

Search

Search

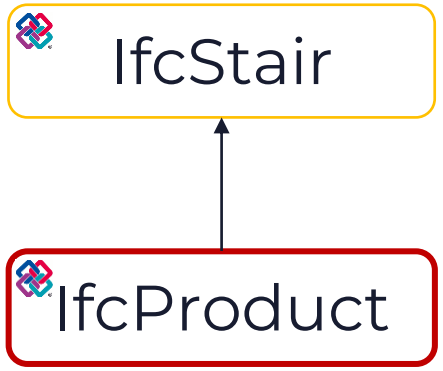
irish

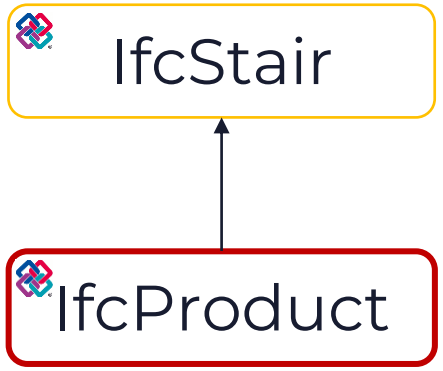
Search

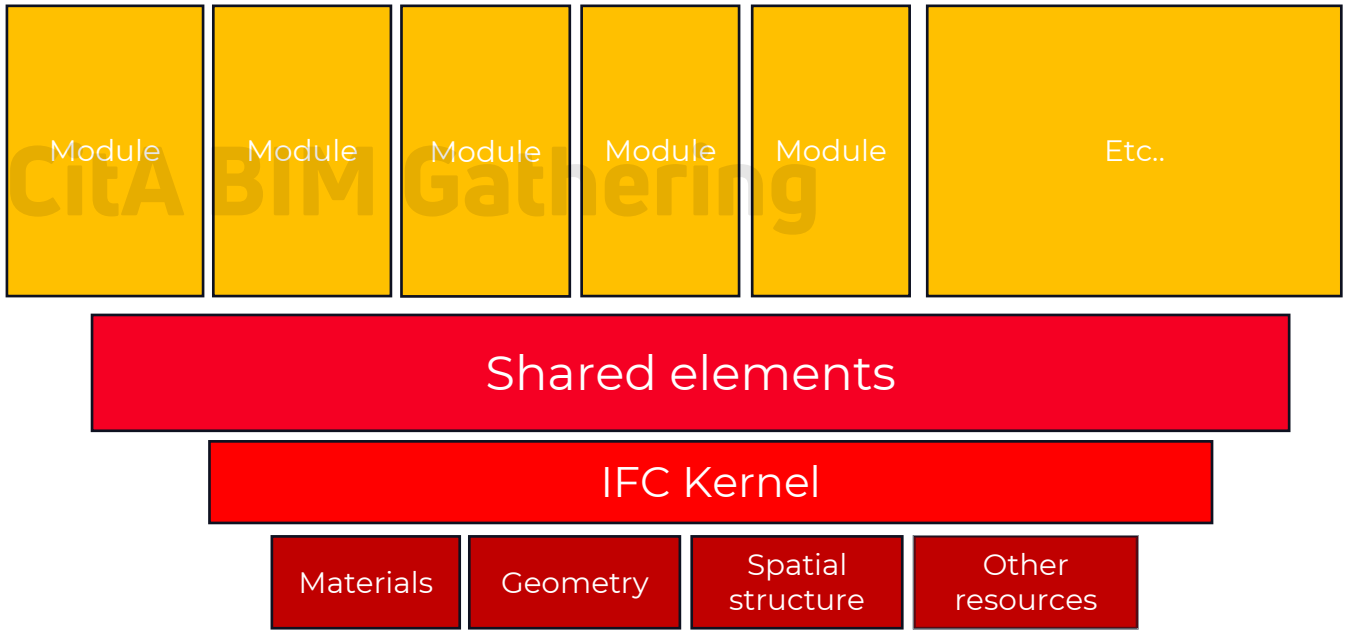
- No results match your query

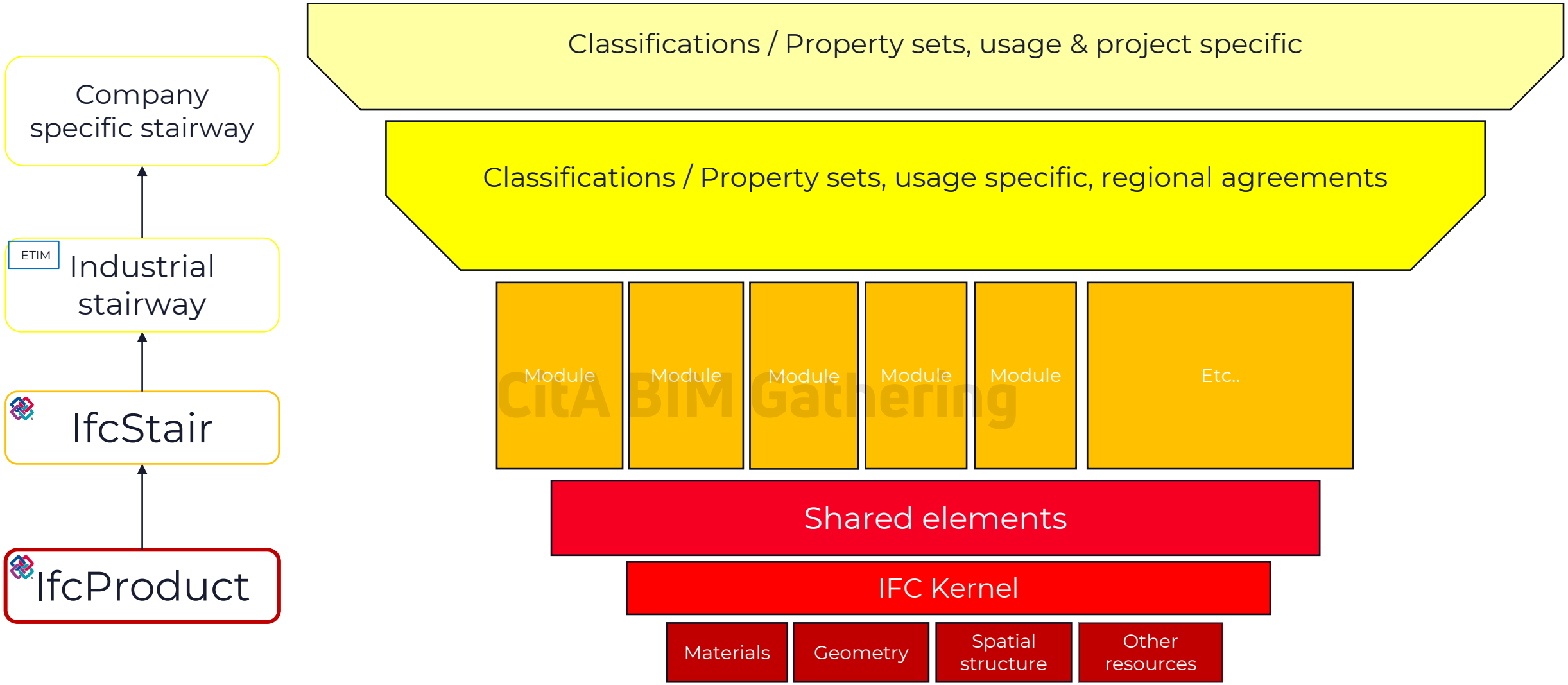
Is it big enough?

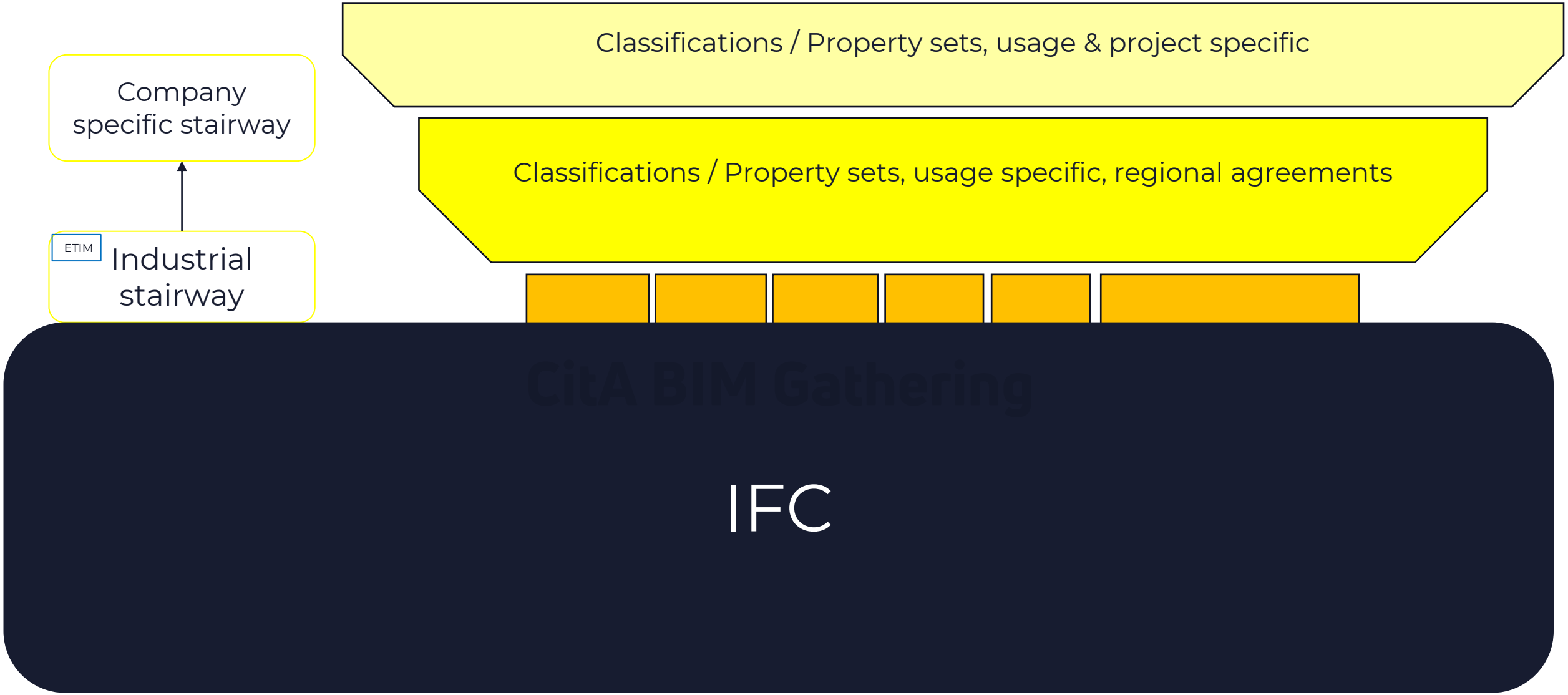
How big should it be?











Works together with IFC

CitA BIM Gathering

IFC

All of it:

Published and linked in buildingSMART Data Dictionary (bSDD)

bSDD
a service by buildingSMART International

stair

All | Classifications | Properties

Domains

- IFC 4.3
- CCI Construction 1.0
- ETIM 8.0
- ETIM 9.0
- NL-SfB 2005 2.2
- Uniclass 2015 1
- UniversalTypes 1.0

Classification IFC > ... > IfcBuiltElement

IfcStair A stair is a vertical passageway allowing occupants to walk (step) from one floor level to another floor level at a different elev...

Classification IFC > ... > IfcStair

IfcStair.CURVED_RUN_STAIR A stair extending from one level to another without turns or winders. The stair is consisting of one curved flight.

Classification IFC > ... > IfcStair

IfcStair.DOUBLE_RETURN_STAIR A stair having one straight flight to a wide quarterspace landing, and two side flights from that landing into opposite directions...

Classification IFC > ... > IfcStair

IfcStair.HALF_TURN_STAIR A stair making a 180° turn, consisting of two straight flights connectedby a halfspace landing. The orientation of the turn is det...

Classification IFC > ... > IfcStair

IfcStair.HALF_WINDING_STAIR A stair consisting of one flight with one half winder, which makes a 180° turn. The orientation of the turn is determined by the w...

Classification IFC > ... > IfcStair

IfcStair.LADDER a piece of equipment consisting of a series of bars or steps between two upright elements used for climbing up or down something

Classification IFC > ... > IfcStair

IfcStair.NOTDEFINED https://github.com/buildingSMART/IFC4.3.x-development/edit/master/docs/schemas/shared/IfcSharedBldgElements/Types/IfcStairTypeEnum...

Classification IFC > ... > IfcStair

IfcStair.QUARTER_TURN_STAIR A stair making a 90° turn, consisting of two straight flights connected by a quarterspace landing. The direction of the turn is de...

Classification IFC > ... > IfcStair

IfcStair.QUARTER_WINDING_STAIR A stair consisting of one flight with a quarter winder, which is making a 90° turn. The direction of the turn is determined by the...

Classification IFC > ... > IfcStair

IfcStair.SPIRAL_STAIR A stair constructed with winders around a circular newel often without landings. Depending on outer boundary it can be either a ci...

Classification IFC > ... > IfcStair

IfcStair.STRAIGHT_RUN_STAIR A stair extending from one level to another without turns or winders. The stair consists of one straight flight.

buildingSMART International

bSDD
a service by buildingSMART International

Classification

Flight of stairs

English

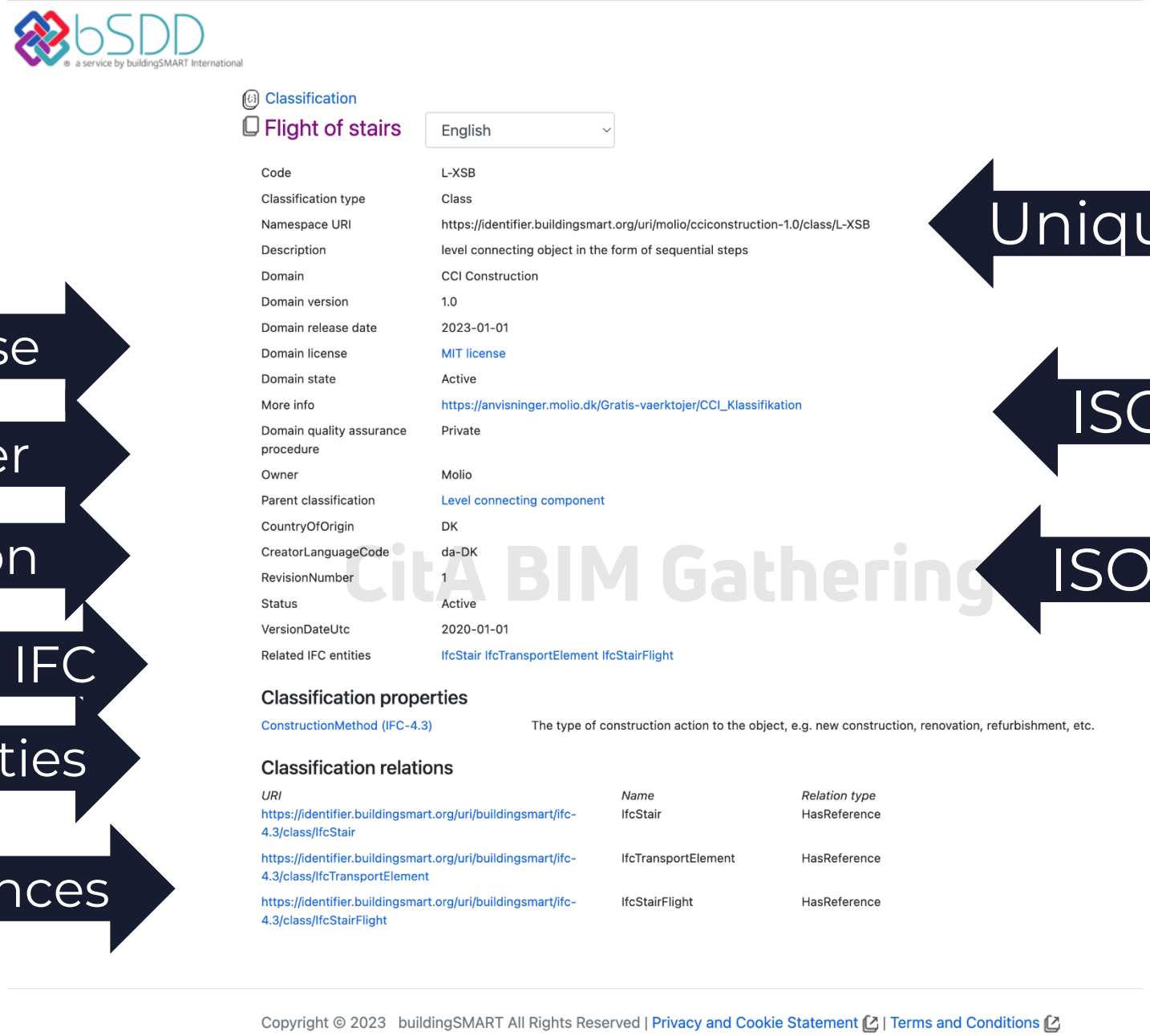
Code	L-XSB
Classification type	Class
Namespace URI	https://identifier.buildingsmart.org/uri/molio/cciconstruction-1.0/class/L-XSB
Description	level connecting object in the form of sequential steps
Domain	CCI Construction
Domain version	1.0
Domain release date	2023-01-01
Domain license	MIT license
Domain state	Active
More info	https://anvisninger.molio.dk/Gratis-vaerktojer/CCI_Klassifikation
Domain quality assurance procedure	Private
Owner	Molio
Parent classification	Level connecting component
CountryOfOrigin	DK
CreatorLanguageCode	da-DK
RevisionNumber	1
Status	Active
VersionDateUtc	2020-01-01
Related IFC entities	IfcStair IfcTransportElement IfcStairFlight

Classification properties

ConstructionMethod (IFC-4.3)	The type of construction action to the object, e.g. new construction, renovation, refurbishment, etc.

Classification relations

URI	*Name*	*Relation type*
https://identifier.buildingsmart.org/uri/buildingsmart/ifc-4.3/class/IfcStair	IfcStair	HasReference
https://identifier.buildingsmart.org/uri/buildingsmart/ifc-4.3/class/IfcTransportElement	IfcTransportElement	HasReference
https://identifier.buildingsmart.org/uri/buildingsmart/ifc-4.3/class/IfcStairFlight	IfcStairFlight	HasReference



Unique URI as ID

License

Owner

Version

Link to IFC

Properties

References

ISO 12006 features

ISO 23386 features

buildingSMART International

buildingSMART Data Dictionary

bSDD
a service by buildingSMART International

What is bSDD?

The buildingSMART Data Dictionary (bSDD) is an online service hosting classes (terms) and properties, allowed values, units, translations, relations between those and more. It provides a standardised workflow to guarantee data quality, information consistency and interoperability.

BIM modellers use the bSDD for easy and efficient access to all kinds of standards to enrich their models. BIM Managers use the bSDD to reference Information Delivery Specifications (IDS) and check BIM data for validity. Content creators benefit from having one entry point to various BIM tools and platforms.

Besides national and international classification systems (e.g. Uniclass, CCI) and domain-specific standards (e.g. ETIM, IfcAirport), company-specific standards can be stored in bSDD as well.

The bSDD implements the ideas from ISO 12006-3, ISO 23386 and Linked Data standards.

Access the bSDD

At the heart of bSDD is a database with all dictionaries. The content of dictionaries can be related to each other, creating a connected graph. The main way to access the bSDD is through its APIs (Application Programming Interfaces). This is how most BIM software and other apps can use the data stored in the bSDD. Apart from that, there is the bSDD Search page, where people can look up the content. Authors can publish content to bSDD through the API or the Management Portal

Search the BSDD Site

For bSDD Users

The primary entry point to bSDD is the software and platforms that integrate with it. See the list of software integrated with bSDD. Ask your software vendor for more information.

You can also preview the public bSDD content using the search page of bSDD.

Watch how buildingSMART Technical Director Léon van Berlo explains how to use bSDD to extend IFC for your needs.

For Content Creators

Whether you want to publish a classification system, materials list, sets of properties or taxonomy, bSDD lets you connect to the world in a unique way. Publishing in bSDD is free, except for content with restricted access. To start, just register your organisation using this form:

Register Organisation

We will review your request and set up the account. After that, you can publish dictionaries in the bSDD yourself or with the help of expert

For Software Developers

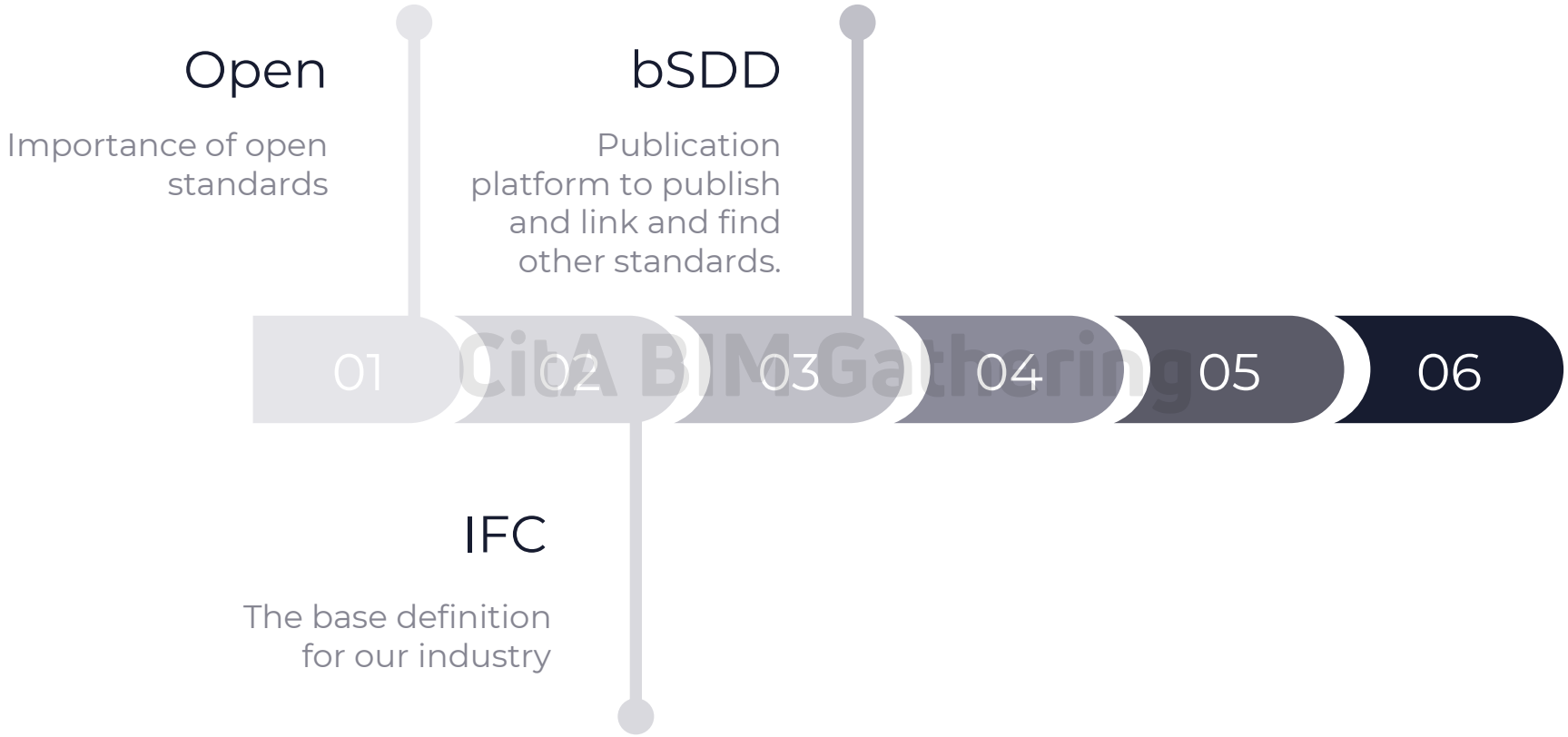
At the heart of bSDD is a database, where all dictionaries can be related to each other. The main way to access the bSDD is through its APIs. Read the interactive API documentation on Swagger. We provide documentation and useful guidelines for software developers on bSDD's GitHub. There you can also post technical issues or suggest improvements.

Documentation

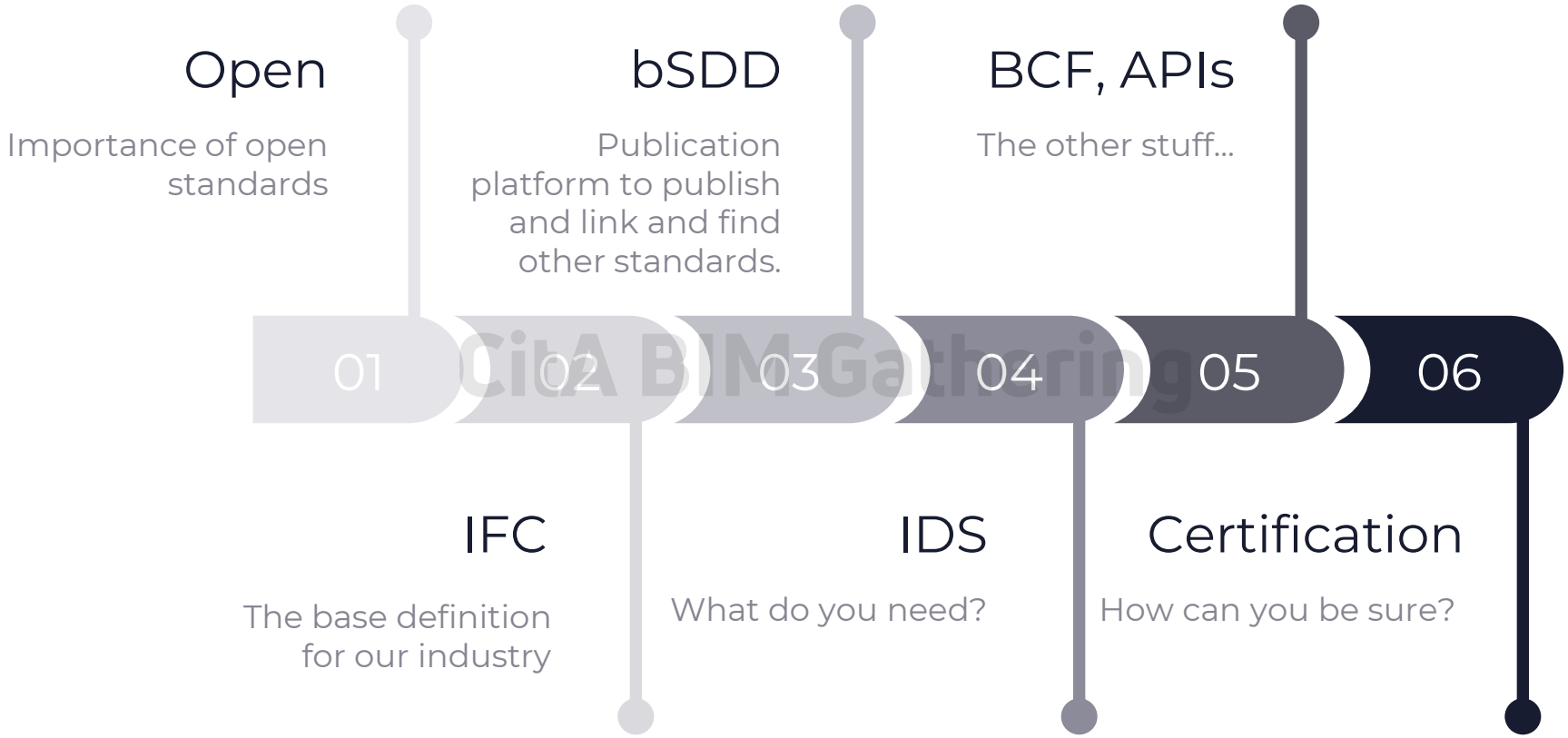
Make sure to turn on notifications on that topic

http://bsdd.buildingsmart.org/

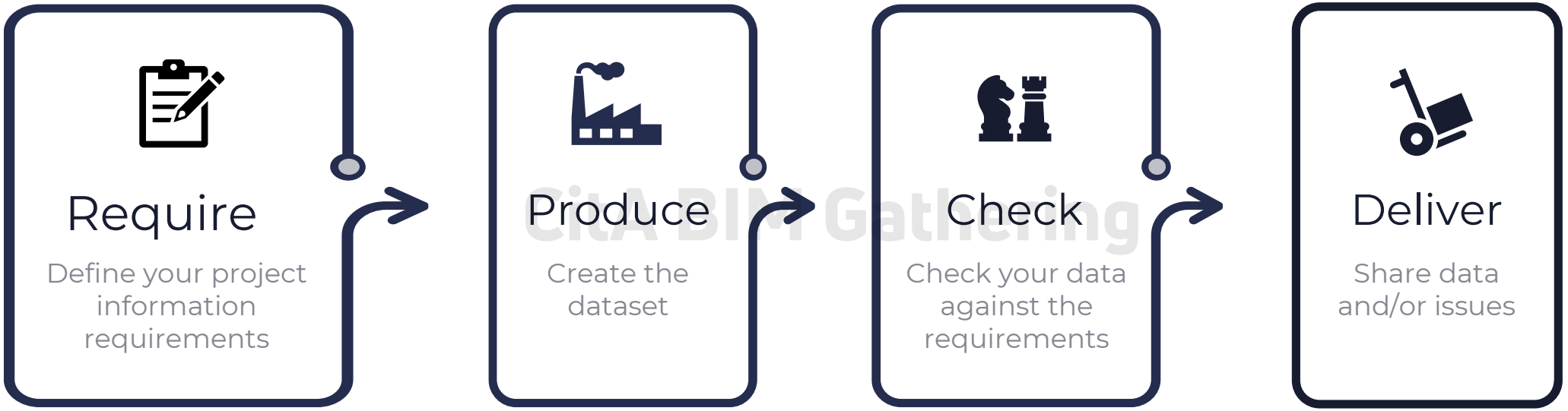
What did we cover so far?



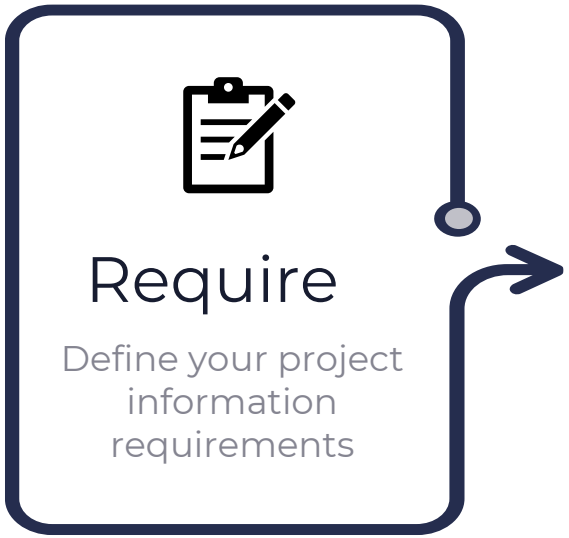
What is still to come?



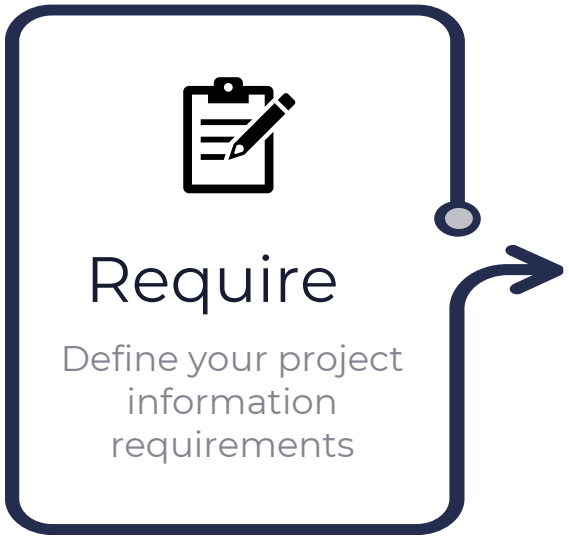
Simplified process



BIM Requirements

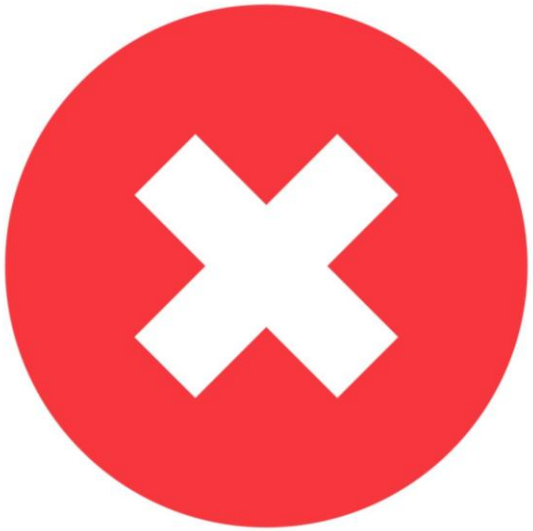


CitA BIM Gathering



BAD examples:

- “LOD 350"
- ”I want IFC"
- “I need the stairs”



BIM Requirements

For example:

There should be at least on stair; and

every Stair must have a property NumberOfRiser and that value needs to be >1

BIM Requirements

Require

Define your project information requirements

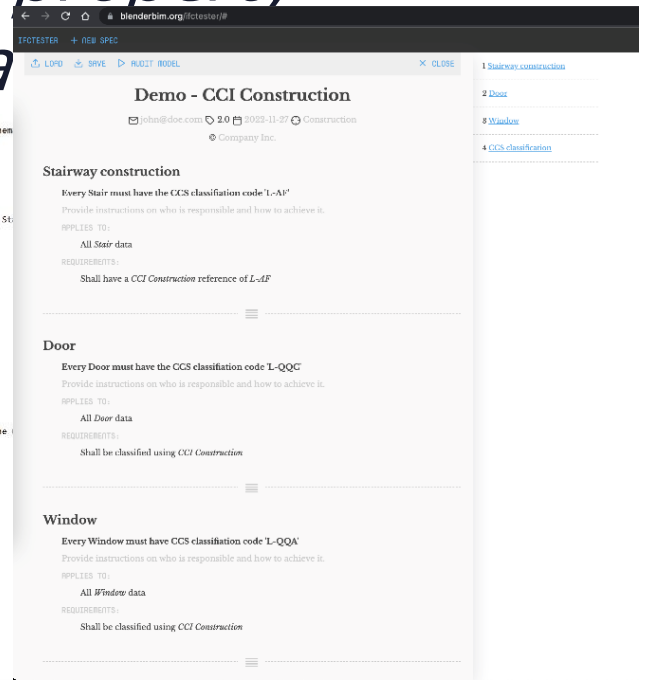
For example:

There should be at least on stair; and

every Stair must have a property NumberOfRiser and tha

>1

IDS™



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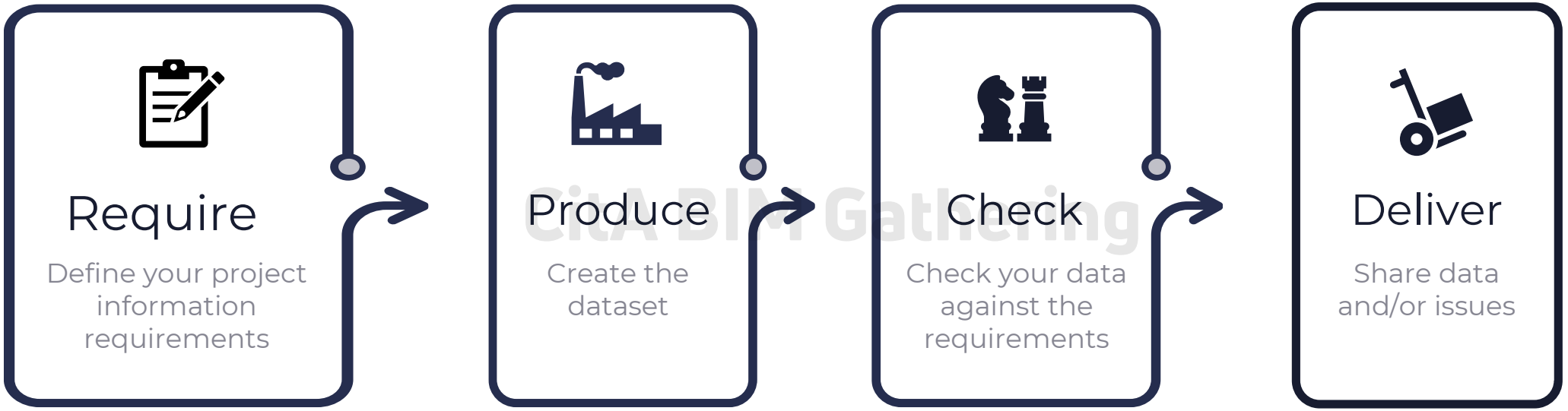
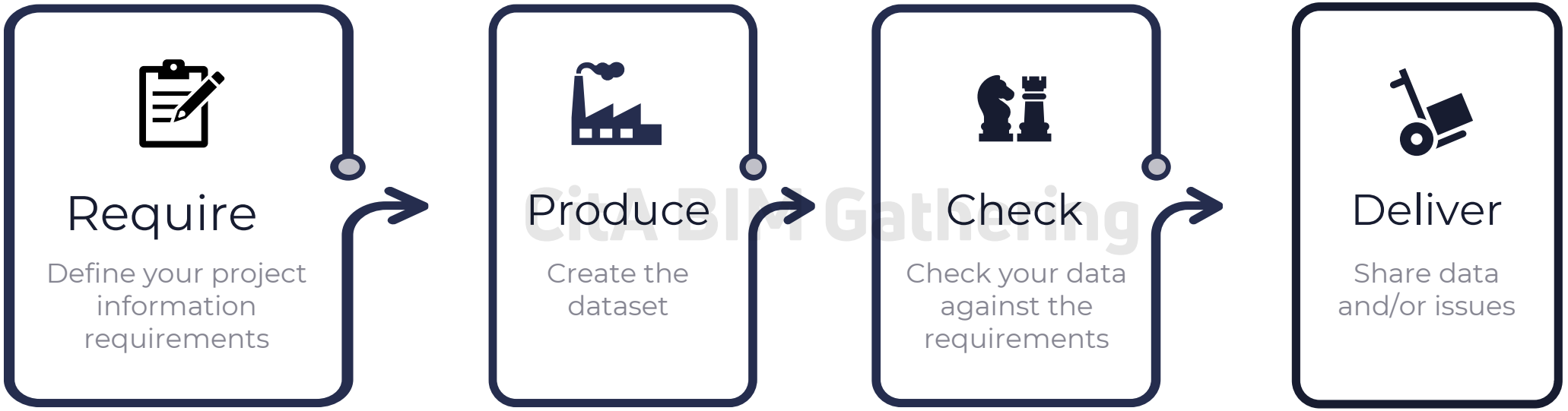
Simplified process

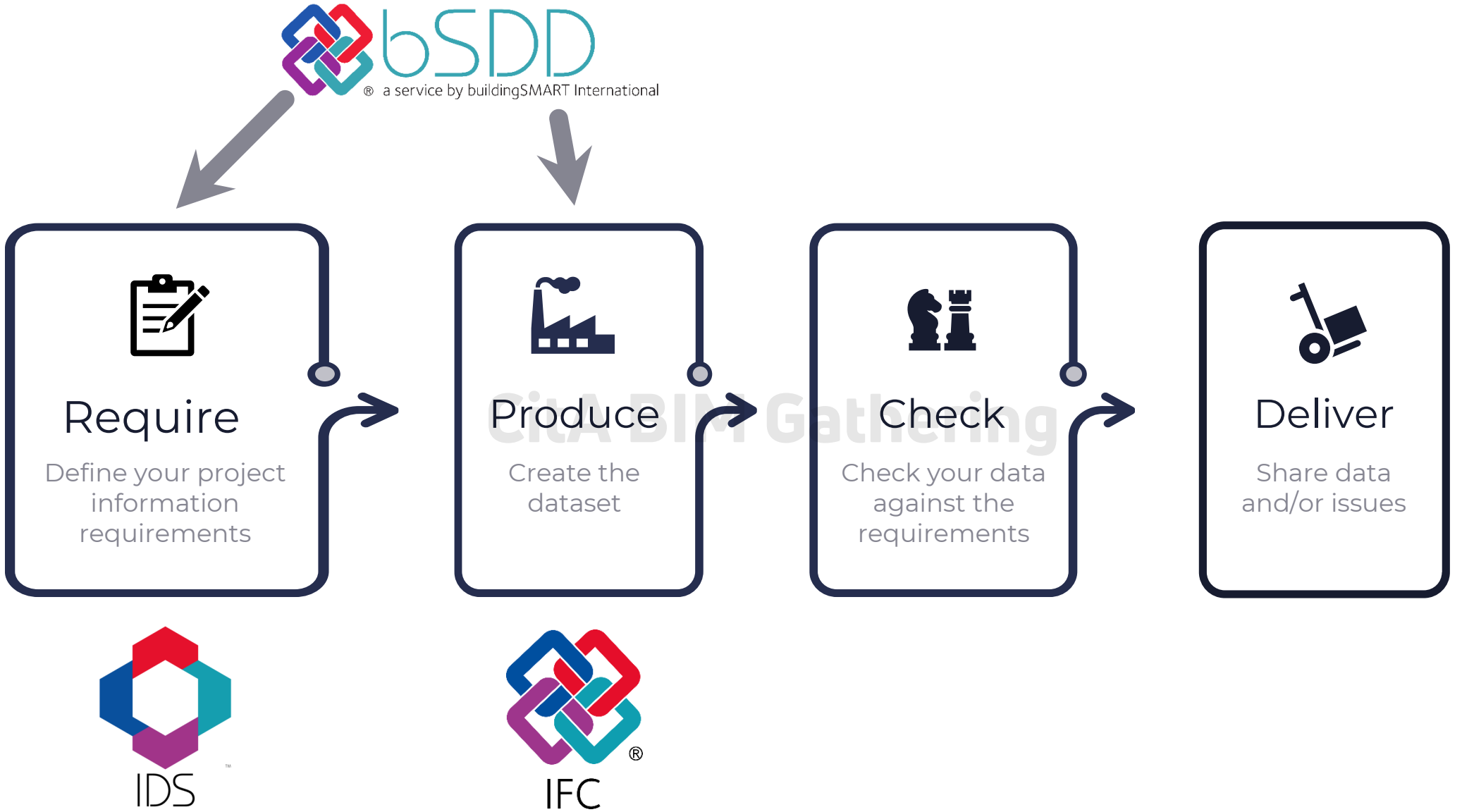


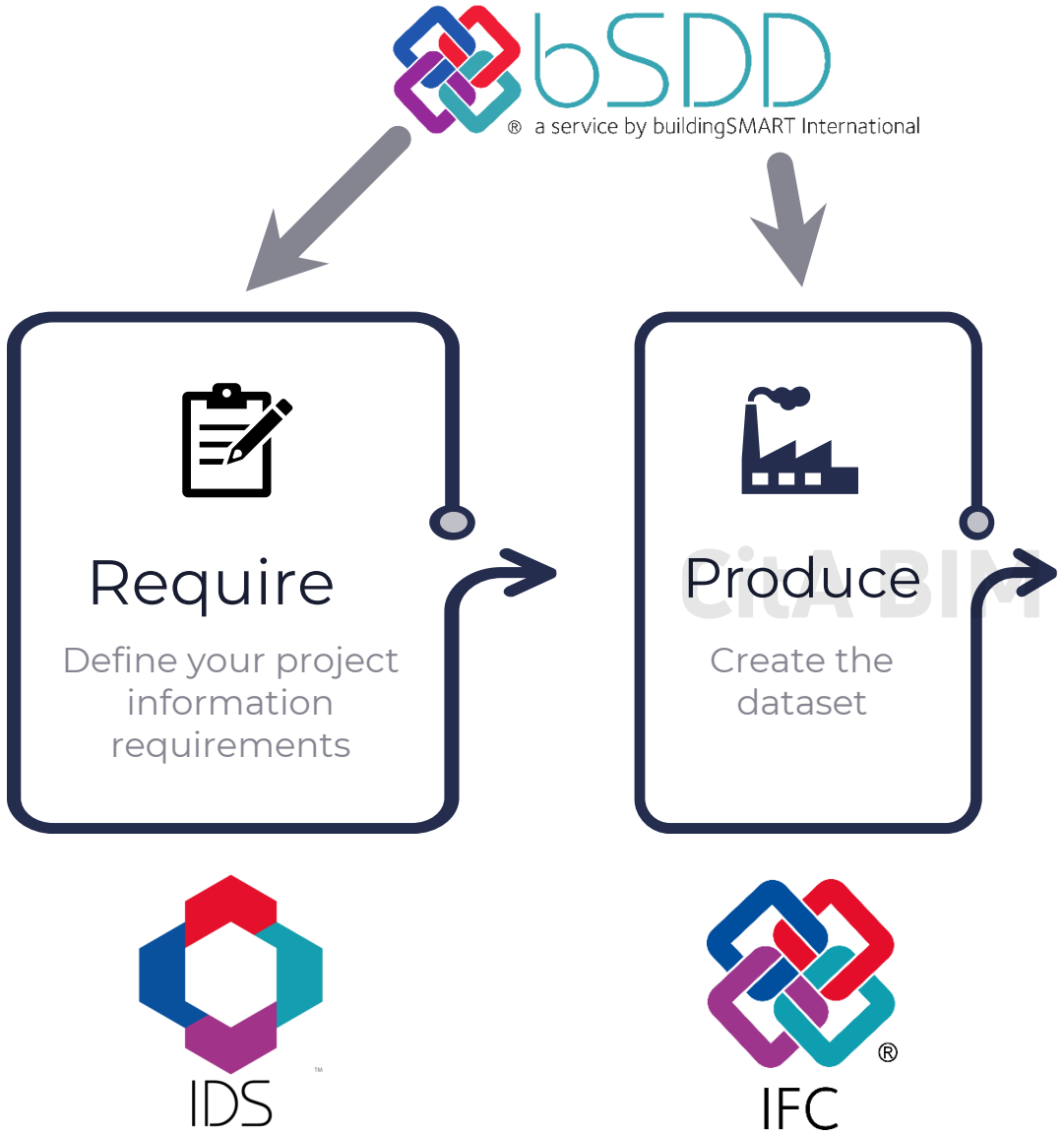
Simplified process



IDS

IFC



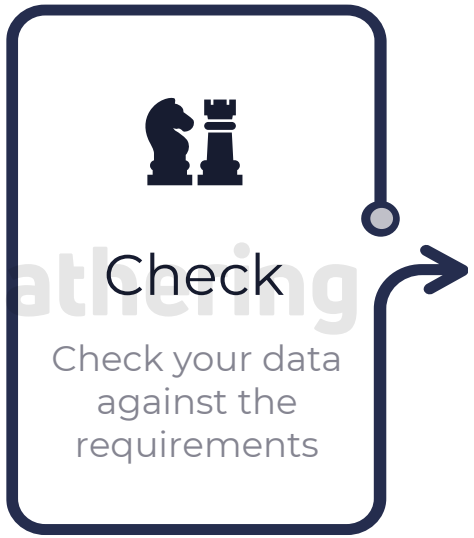


If you remember one thing from this presentation…

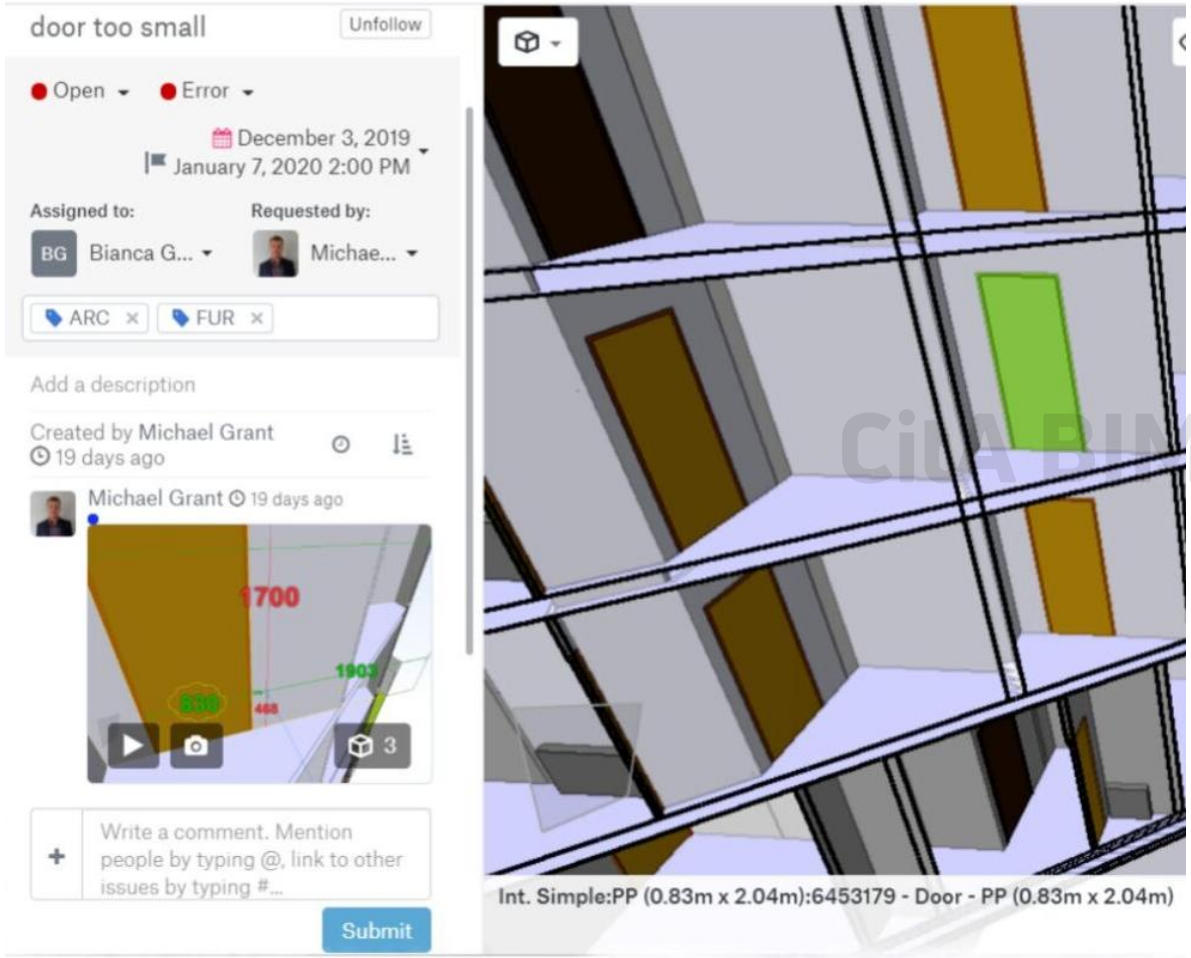
Please let it be this!

How do you communicate ‘issues’?

The door is too small.
You know… the second one from the left on the third floor.
The red one.



How do you communicate ‘issues’?



Check

Check your data against the requirements

BCF


```
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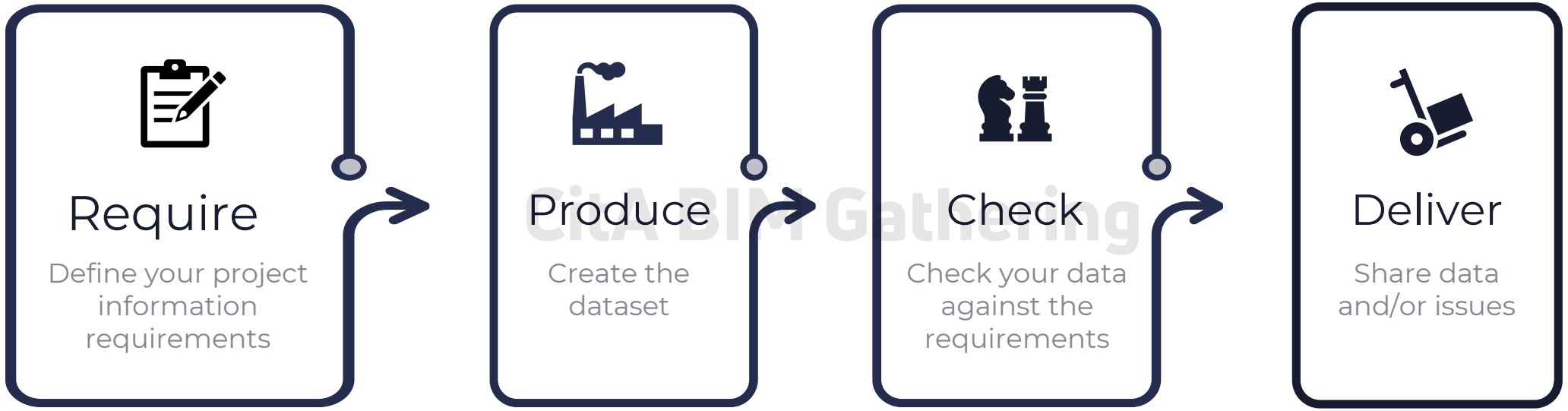
Simplified process

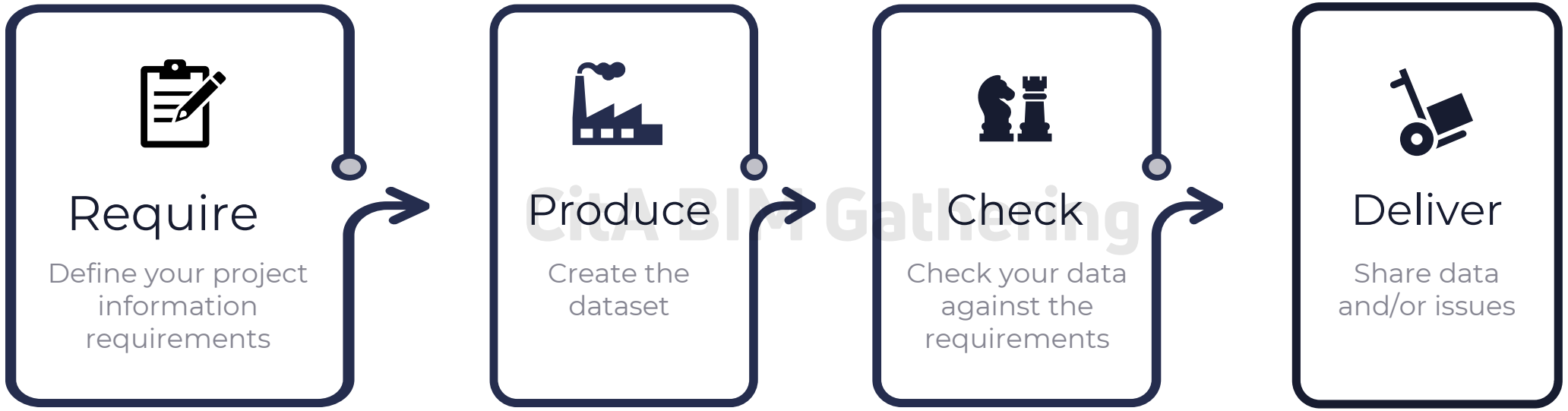


IDS

IFC

BCF

Simplified process



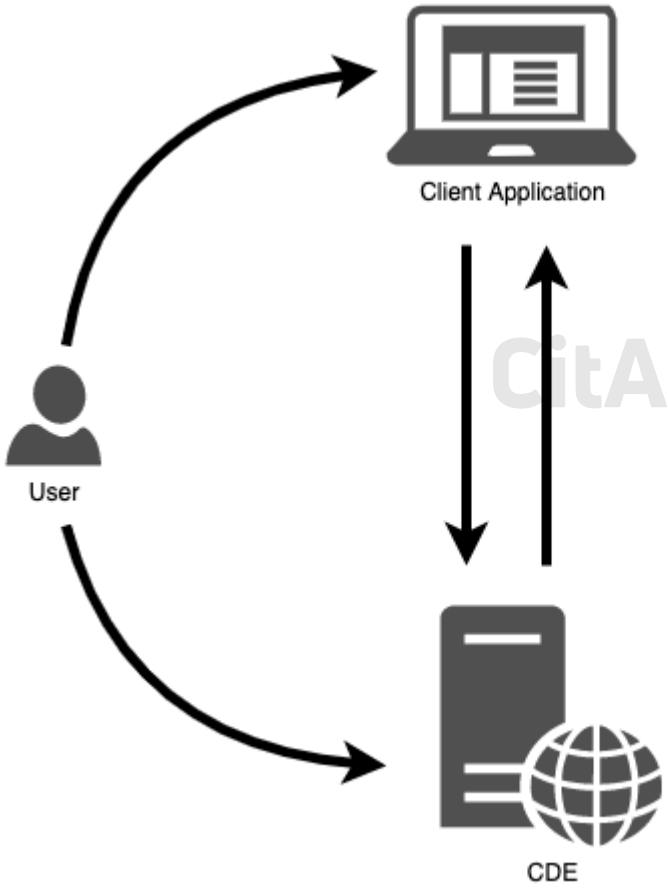
IDS

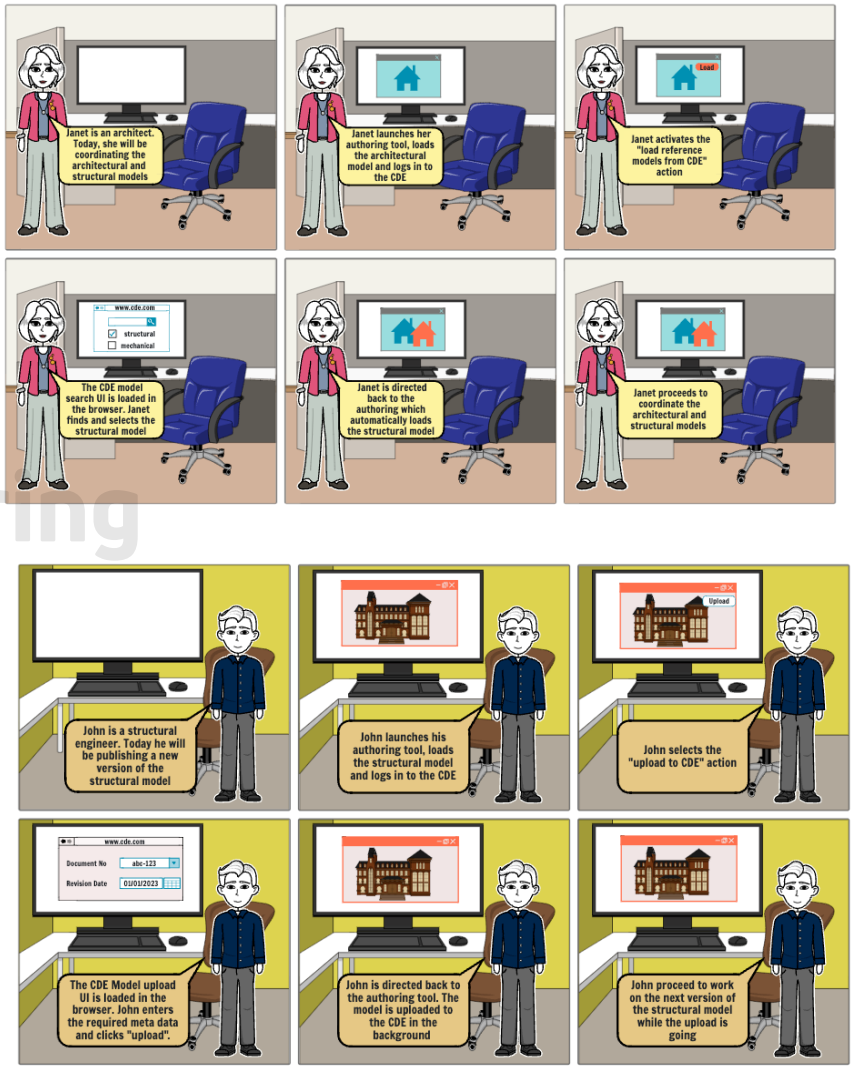
IFC

BCF

openCDE

Basics of openCDE initiative: automate interfaces





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And there is more….

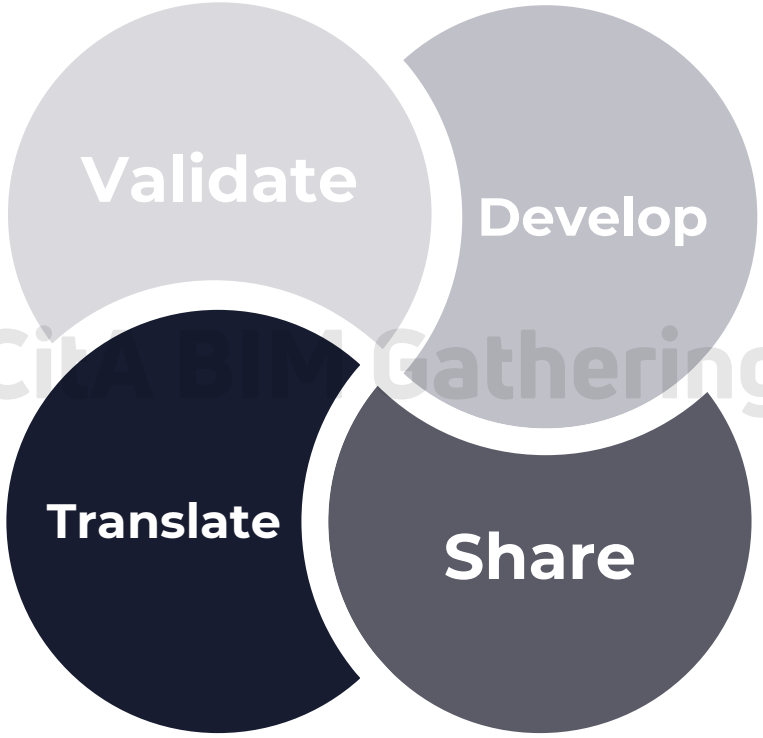
Validation service

The validation service checks your IFC data for compliance to the IFC standard.
Try the beta version on validate.buildingSMART.org

Validation
® a service by buildingSMART International

Translations

Help translate the IFC definitions and descriptions into your local language.
Translations.buildingSMART.org



IFC management system

Contribute to IFC developments. Create examples, help clarify definitions, etc.
Github.com/buildingSMART

Share best practices

Share your use-cases and best practices on our Use-case Management tool. Try for free at ucm.buildingSMART.org

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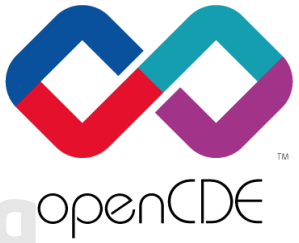

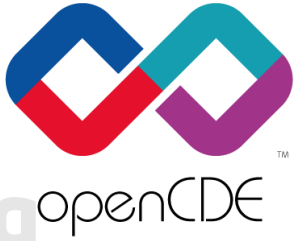

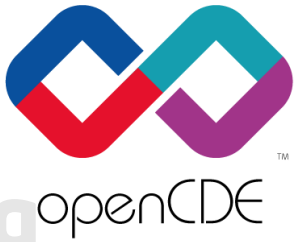

Questions?

CitA BIM Gathering

leon.vanberlo@buildingsmart.org

Feel free to ask!

CitA BIM Gathering