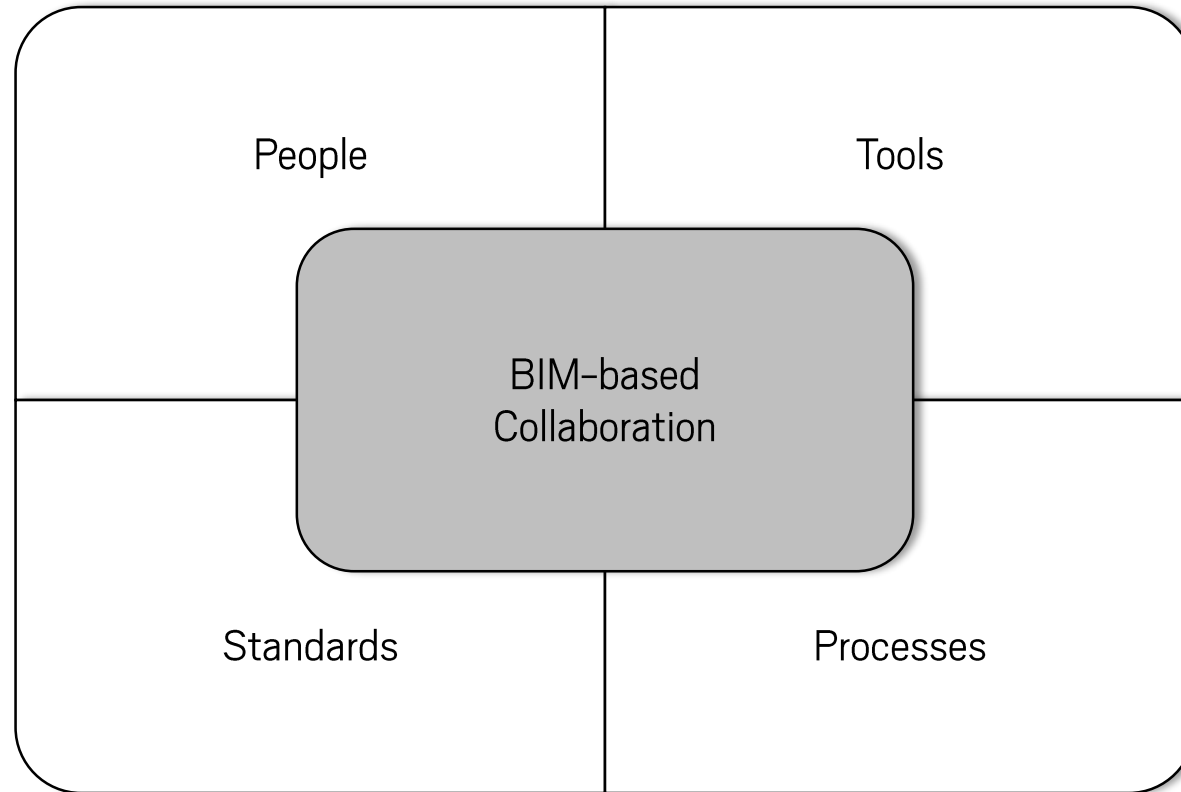


BIM Collaboration Format BCF





BIM-based collaboration

Models are the base for collaboration ...

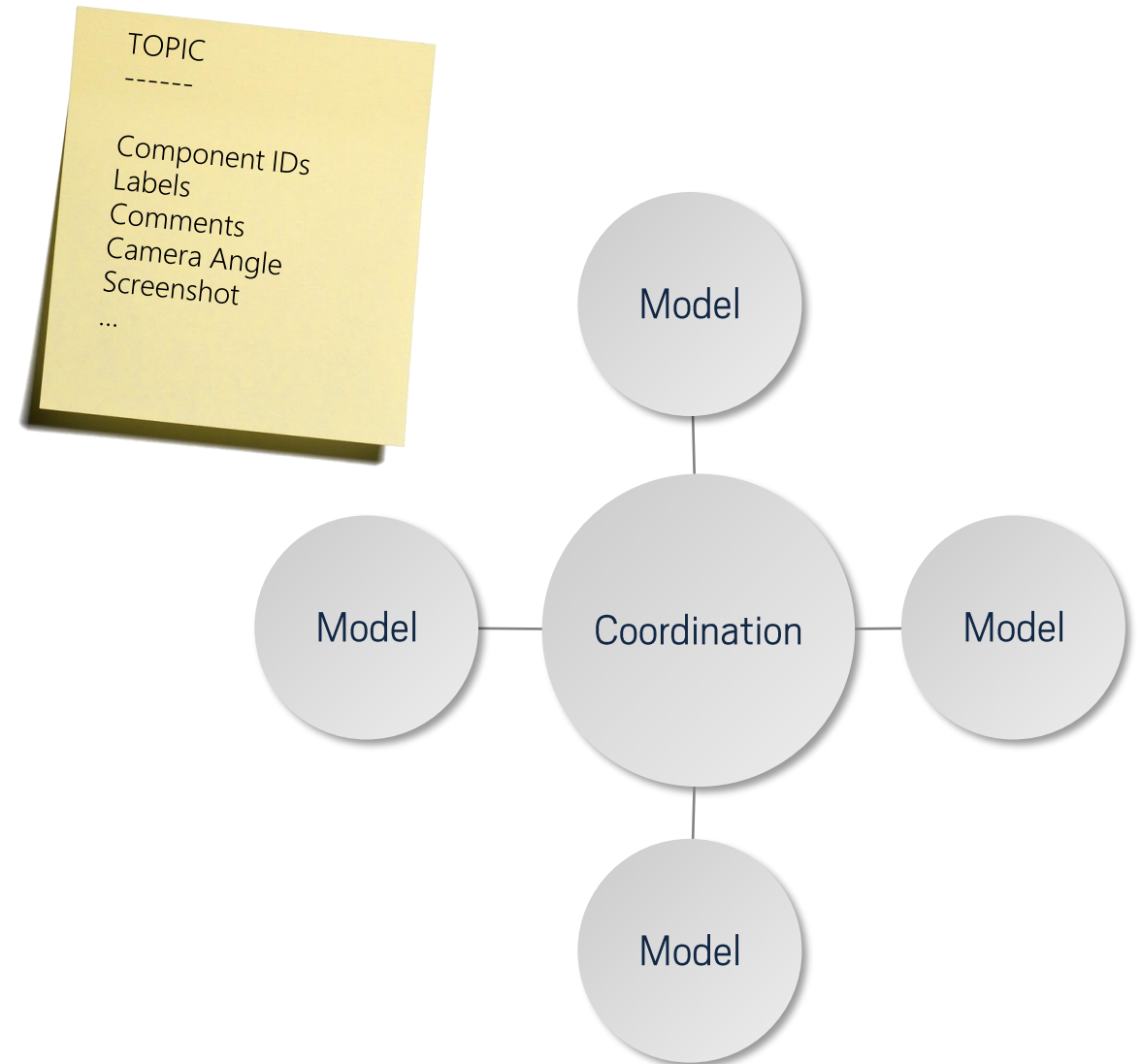
... but do not store the workflow communication in BIM processes

Different software tools: open BIM vs. closed BIM

Common understanding: GUIDs

BCF data object = Post-It

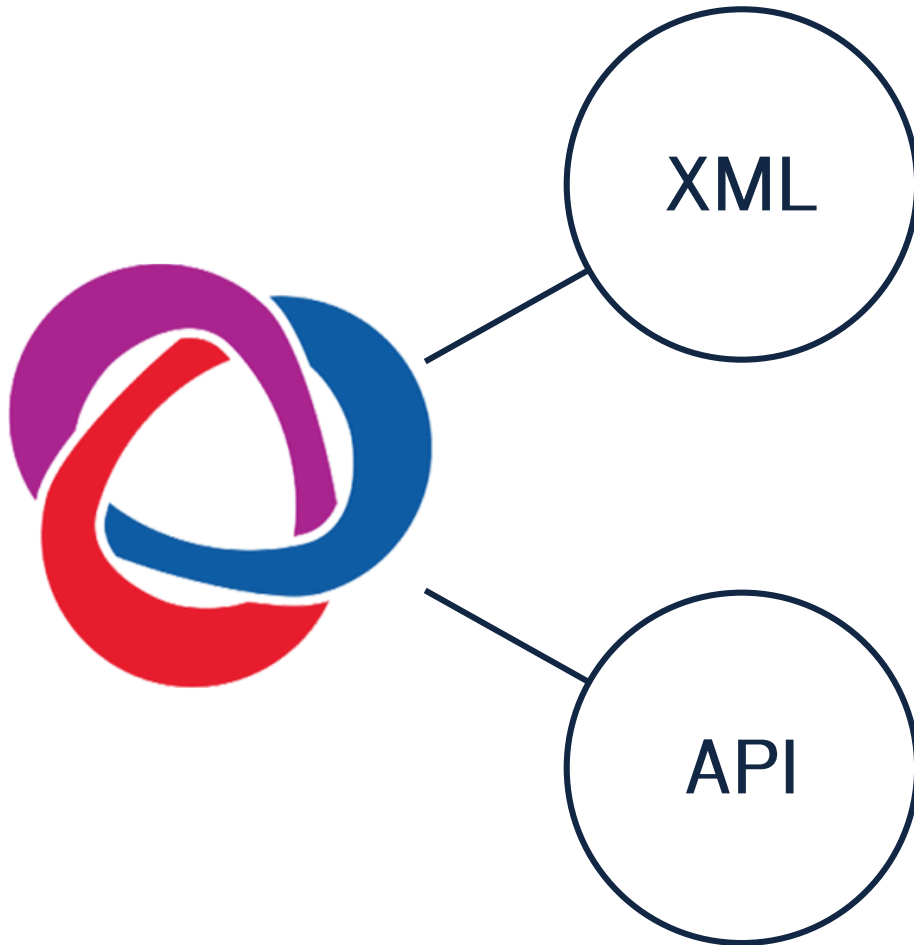
External data structure





History

- 2010 Initiative started by TEKLA & SOLIBRI
First XML schema, called "bcfXML v1"
- 2014 Introduction of the harmonized BCF-webservice "bcfAPI" by iabi
- 2017 Release of "bcfXML v2.1" and "bcfAPI v2.1" are the newest versions adopted by buildingSMART.



Data Schema

BCF-XML

XML specification for BIM Collaboration Format

★ 100 🍴 41 Updated on Nov 27, 2018

BCF-API

Web service specification for BIM Collaboration Format

★ 78 🍴 36 Updated on Oct 22, 2018

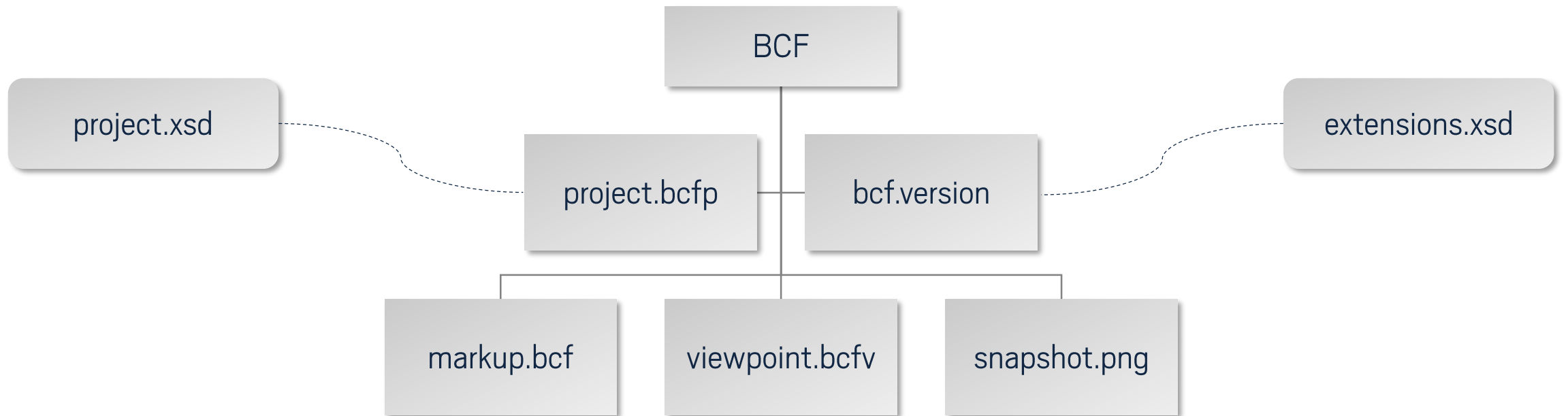
Protocol



BCF XML

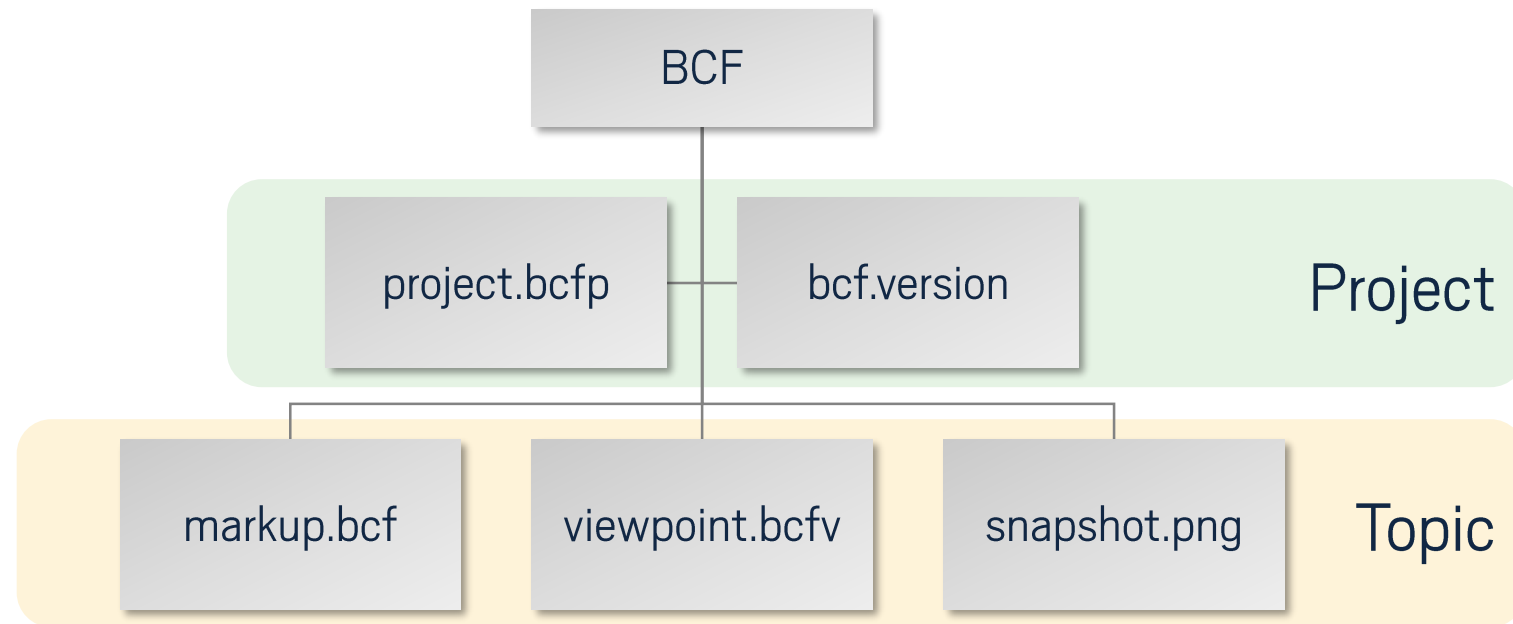


Structure



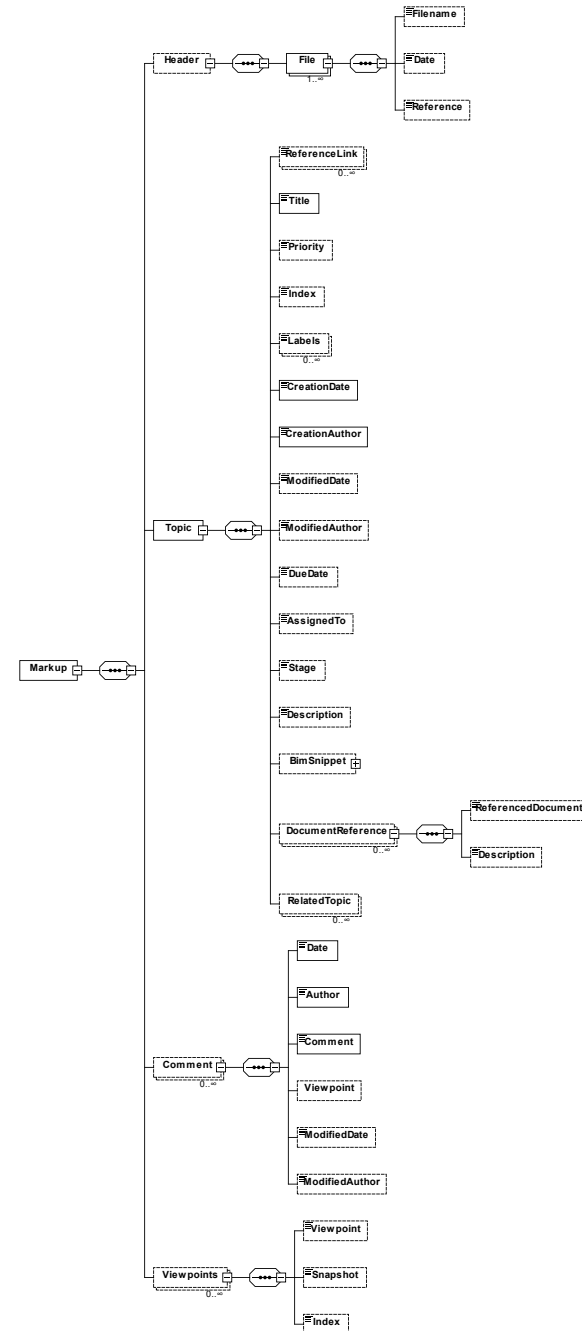


Structure

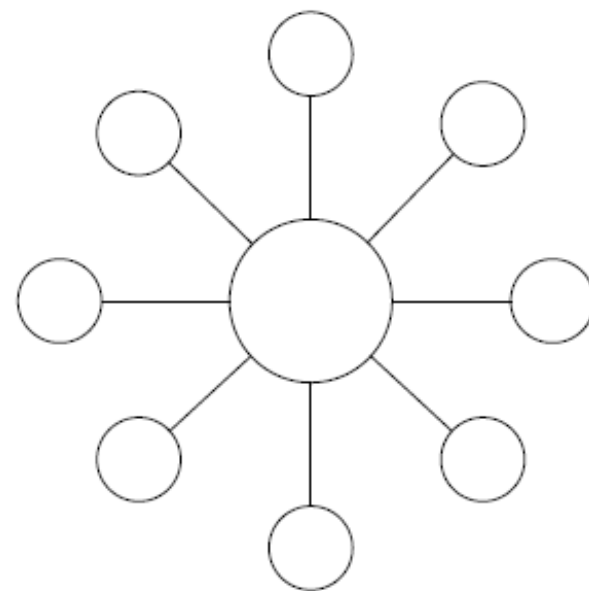
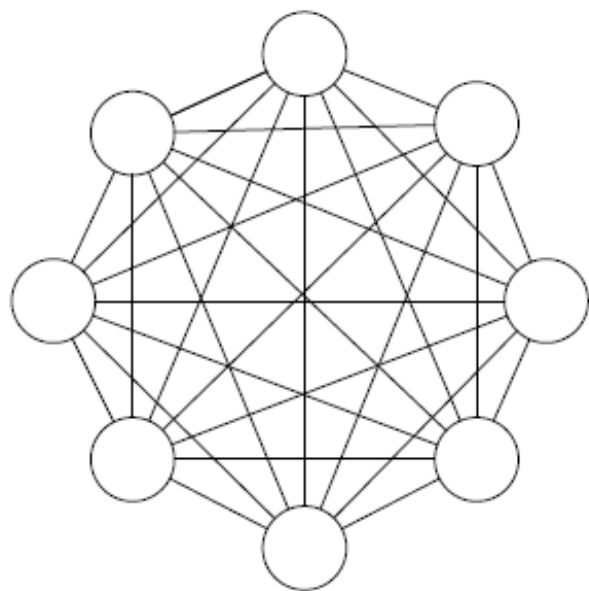




Example: markup.bcf

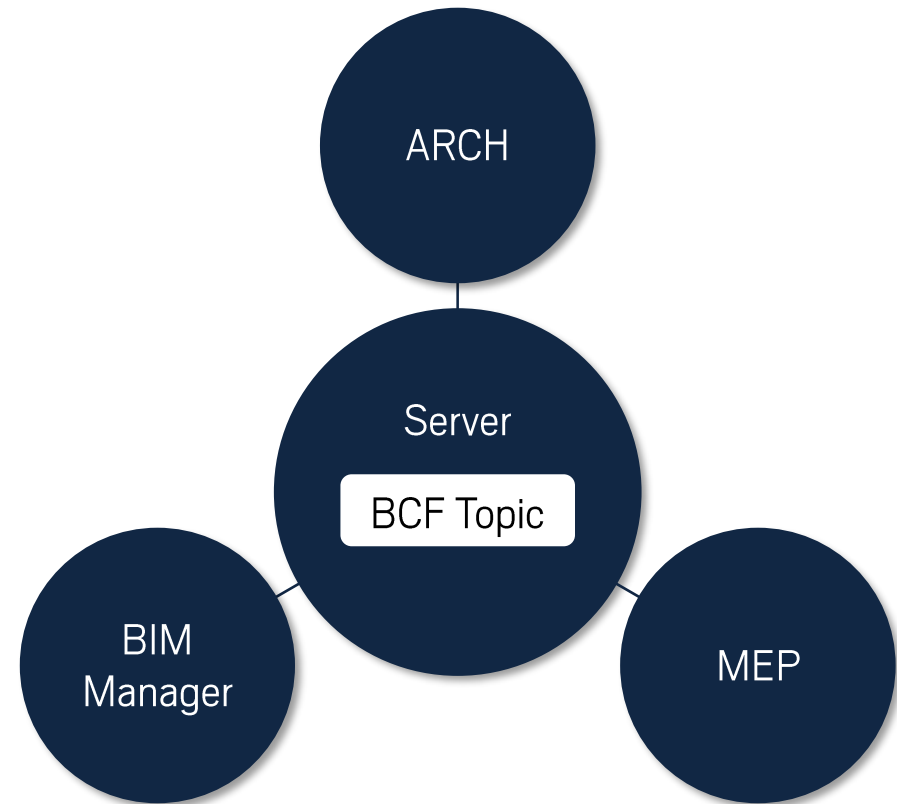
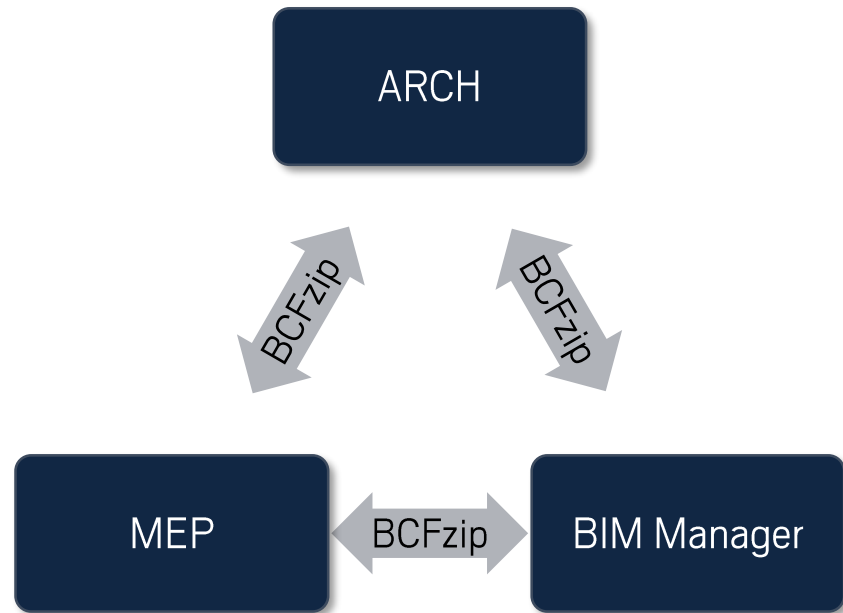


BCF API



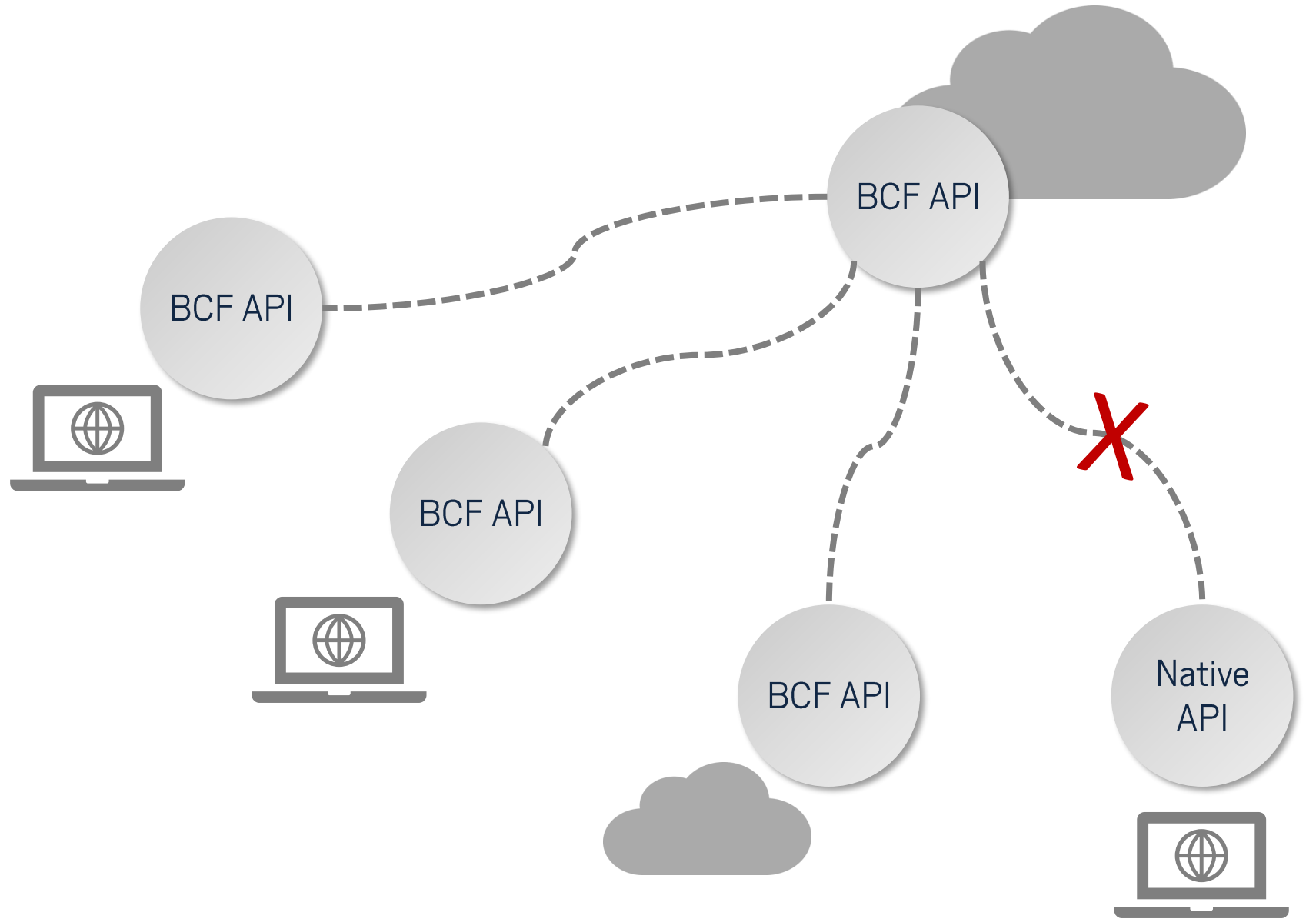


Local vs. Central



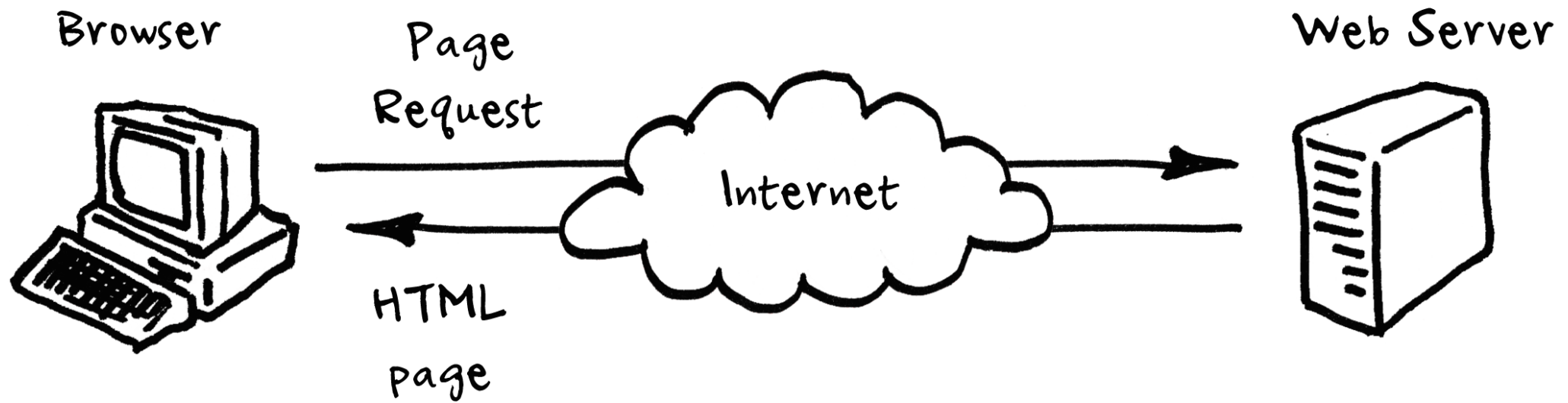


Single Source





RESTful API



Crunchify.com



RESTful API

Application program interface using HTTP request to

GET

PUT

POST and

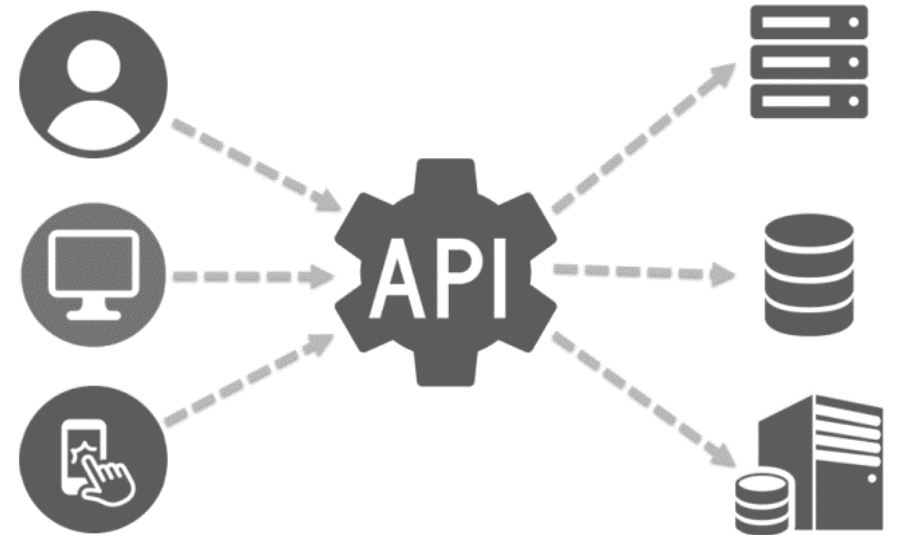
DELETE

HTTP Basic Authentication over HTTPS

Standard HTTP-Return Codes

JSON lightweight data-interchange format

Automated documentation: <http://apiary.io>





buildingSMART / BCF-API

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Code Issues 14 Pull requests 2 Projects 0 Wiki Insights

Web service specification for BIM Collaboration Format

456 commits 49 branches 3 releases 9 contributors

Branch: release_2_1 New pull request

Create new file Upload files Find file Clone or download


klacol Added badges to repository Latest commit 02d0f40 on Oct 22, 2018

Images	Total rework, see README.md	4 years ago
Schemas_draft-03	Make updateDocumentReferences consistent	a year ago
OAuth2Examples.md	Removing BCF API OAuth2 specifics	2 years ago
README.md	Added badges to repository	4 months ago

README.md

buildingSMART Official Repository BCF Implementers Group

BCF REST API



Version 2.1 based on BCFv2.1. [BCF XML GitHub repository](#)

[Version 1.0 of the BCF API specification is available here](#)

- 4. BCF Services
 - 4.1 Project Services
 - 4.1.1 GET Projects Service
 - 4.1.2 GET Project Service
 - 4.1.3 PUT Project Service
 - 4.1.4 GET Project Extension Service
 - 4.1.5 Expressing User Authorization Through Project Extensions
 - 4.1.5.1 Project
 - 4.1.5.2 Topic
 - 4.1.5.3 Comment
 - 4.2 Topic Services
 - 4.2.1 GET Topics Service
 - 4.2.2 POST Topic Service
 - 4.2.3 GET Topic Service
 - 4.2.4 PUT Topic Service
 - 4.2.5 DELETE Topic Service
 - 4.2.6 GET Topic BIM Snippet Service
 - 4.2.7 PUT Topic BIM Snippet Service
 - 4.2.8 Determining Allowed Topic Modifications
 - 4.3 File Services
 - 4.3.1 GET Files (Header) Service
 - 4.3.2 PUT Files (Header) Service



BCF API – Key Take-outs

Harmonized with BCF XML

Central storage of the BCF topics in a common place

Server-Client integration

Standardized interface

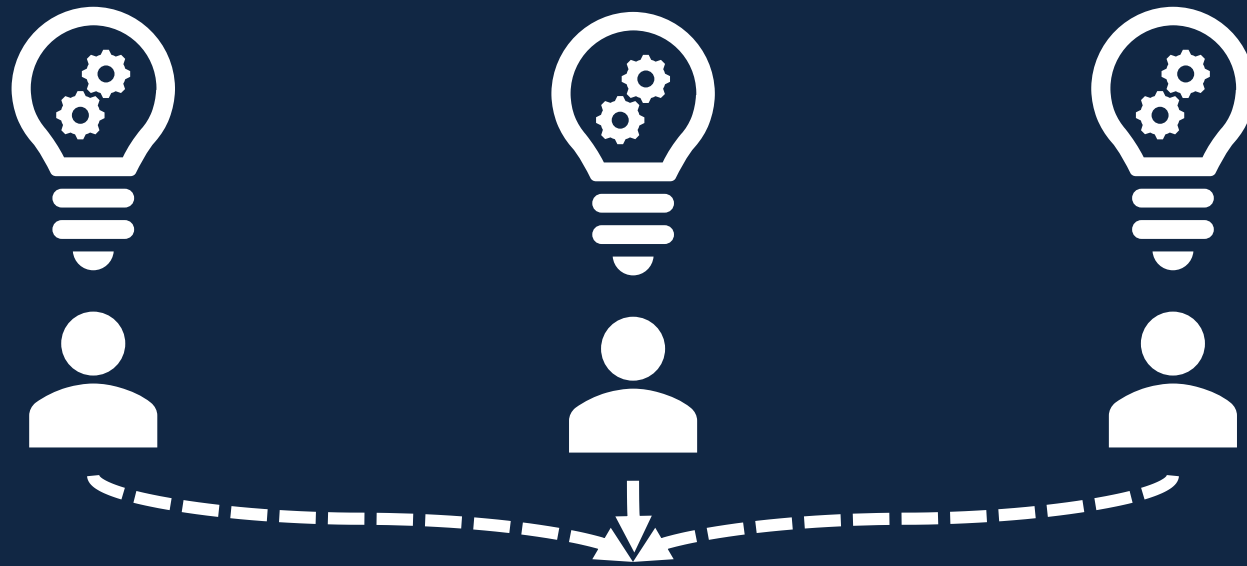
Authentication

Challenges

Awareness for BCF API

Live Communication via BCF API

Standardization Process

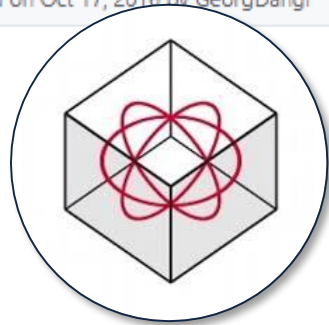
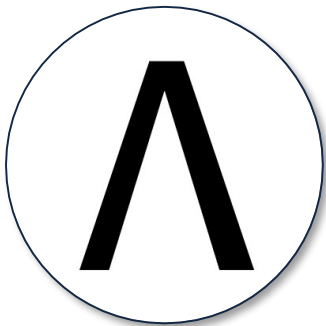


Discussion -> Consensus



Best Practices





SOLIBRI

buildingSMART / BCF-XML

Watch 58 Star 100 Fork 41

Code Issues 10 Pull requests 3 Projects 0 Wiki Insights

First time contributing to buildingSMART/BCF-XML? [Dismiss](#)

If you know how to fix an [issue](#), consider opening a pull request for it.

Filters is:pr is:open Labels Milestones [New pull request](#)

3 Open 76 Closed

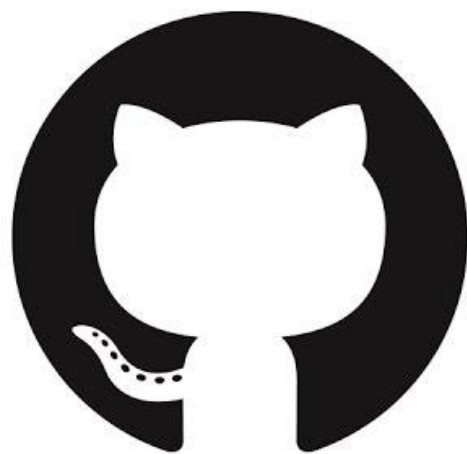
	Author	Labels	Projects	Milestones	Reviews	Assignee	Sort
167: Add documentation regarding decomposed components							1
Tests for BCF 2.1							
Feature/topic area							

#168 opened on Sep 17, 2018 by pasi-paasiala

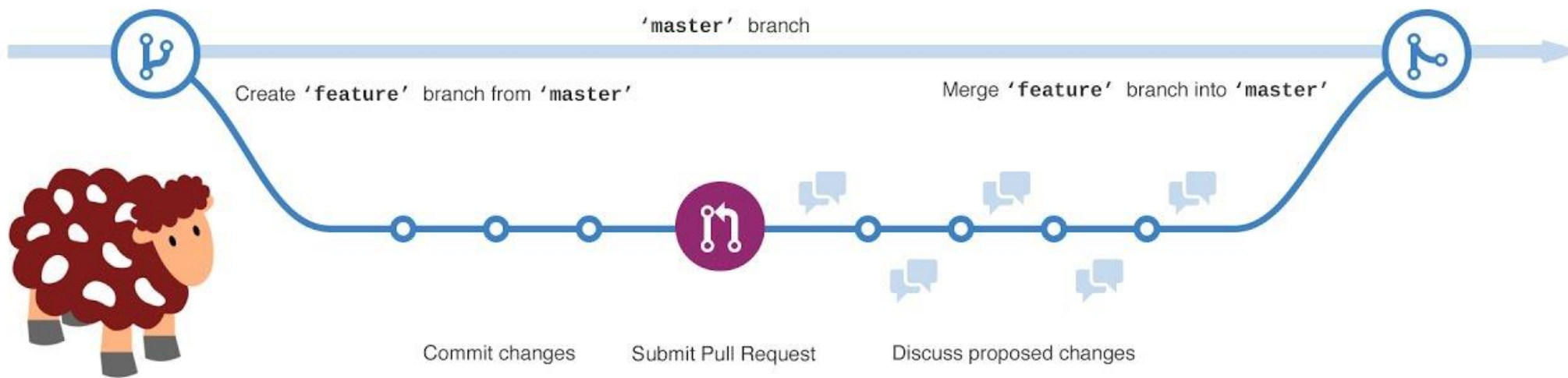
#149 opened on May 30, 2017 by rahulsule

#115 opened on Oct 17, 2016 by GeorgDangl [Release 3.0](#)

ProTip! Exclude everything labeled bug with `-label:bug`.



GitHub Workflow





Future Standardization

Bring real life experience/scenarios into standardization

What does work?

What doesn't work?

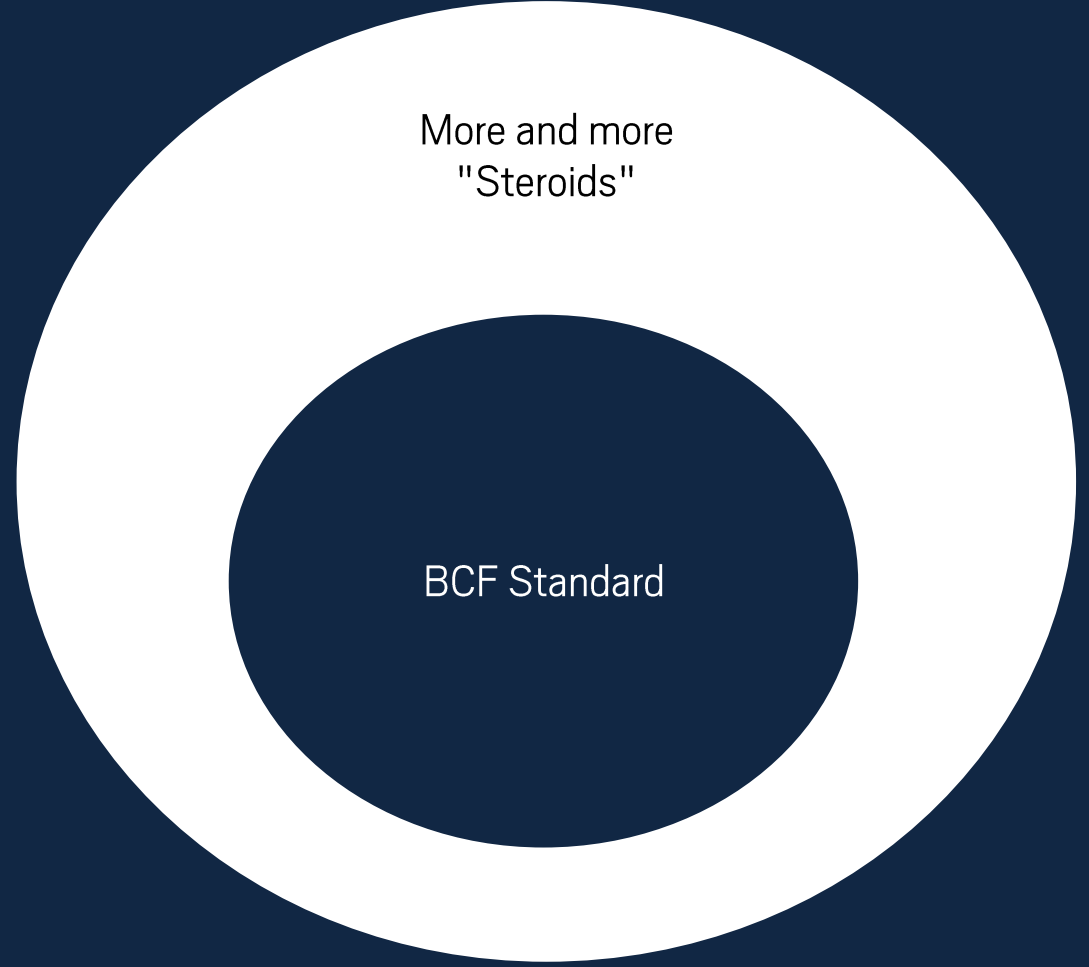
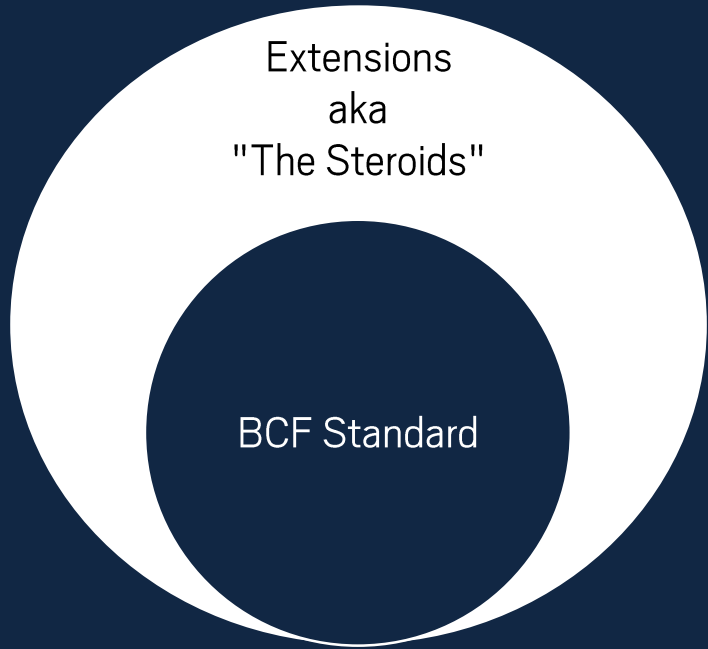
How would/should it work?

Intensive testing of interfaces and implementations > Recommendations for action

What is BCF compatible?

What is not BCF compatible?

Certification





Why

Is the definition of a standard sufficient?

Goals:

- Prove products – compliance with certain requirements is verified
- Certify quality by a neutral proof in order to give security
- Non-BCF information have to be at least marked as non-BCF compatible

Enhancements, extensions, changes and prototyping for or based on open standards such as BCF or IFC

→ Yes, please!

Long-term maintenance of native interfaces without a plan to switch this at some point to an open-standards-based technology

→ No, thanks!





How?

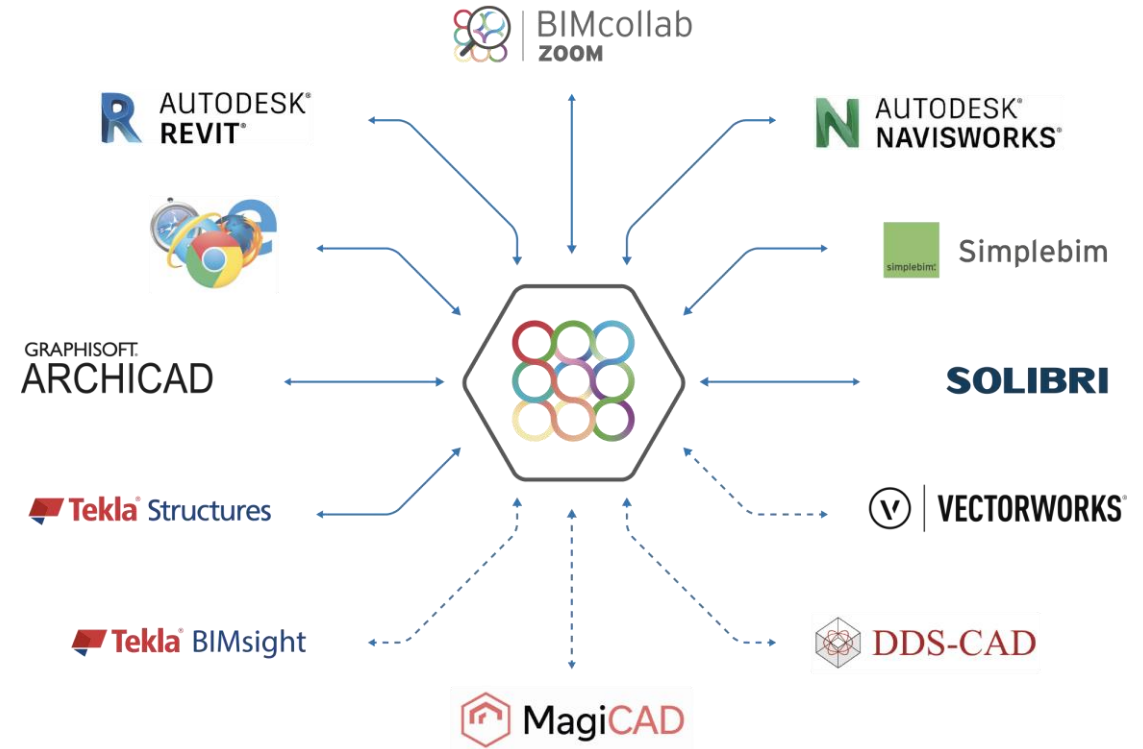
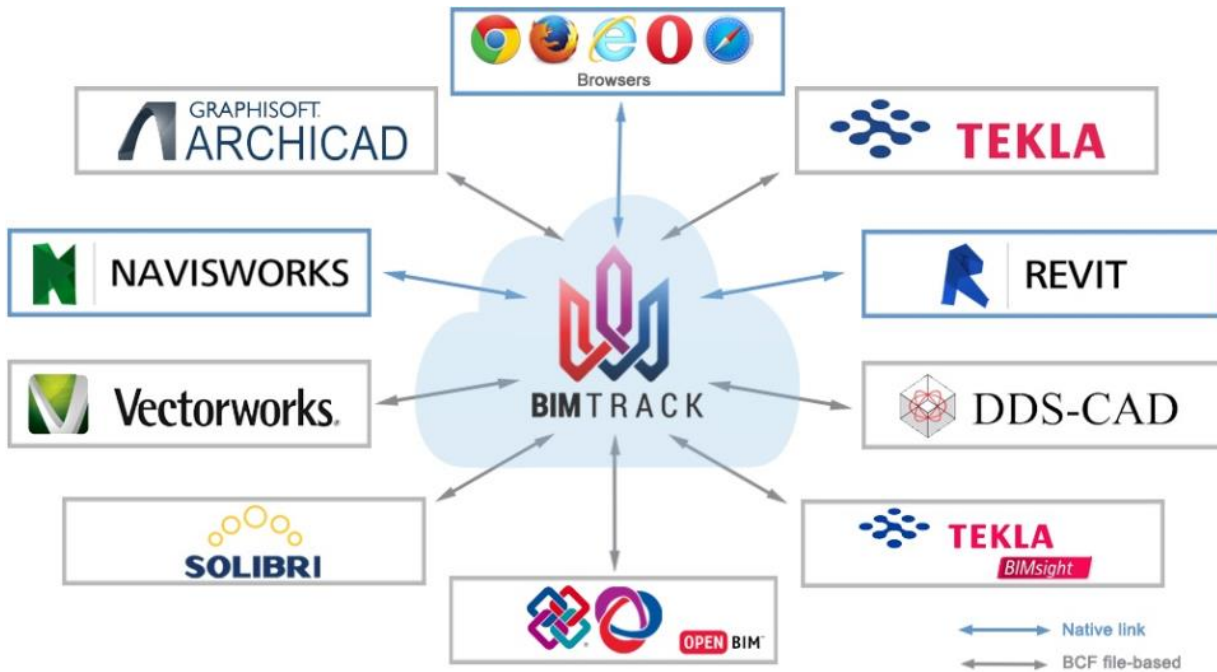


- BCF XML: Import & Export
- BCF API: Client & Server
- BCF Hybrids (?)

BCF - Hot Topics



BCF Integrations as USP?



teocomi / BCFier

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Code Issues 13 Pull requests 0 Projects 0 Wiki Insights

Extensible BCF client and tools <http://bcfier.com/>

67 commits 4 branches 10 releases 5 contributors GPL-3.0

Branch: master New pull request

Create new file Upload files Find file Clone or download

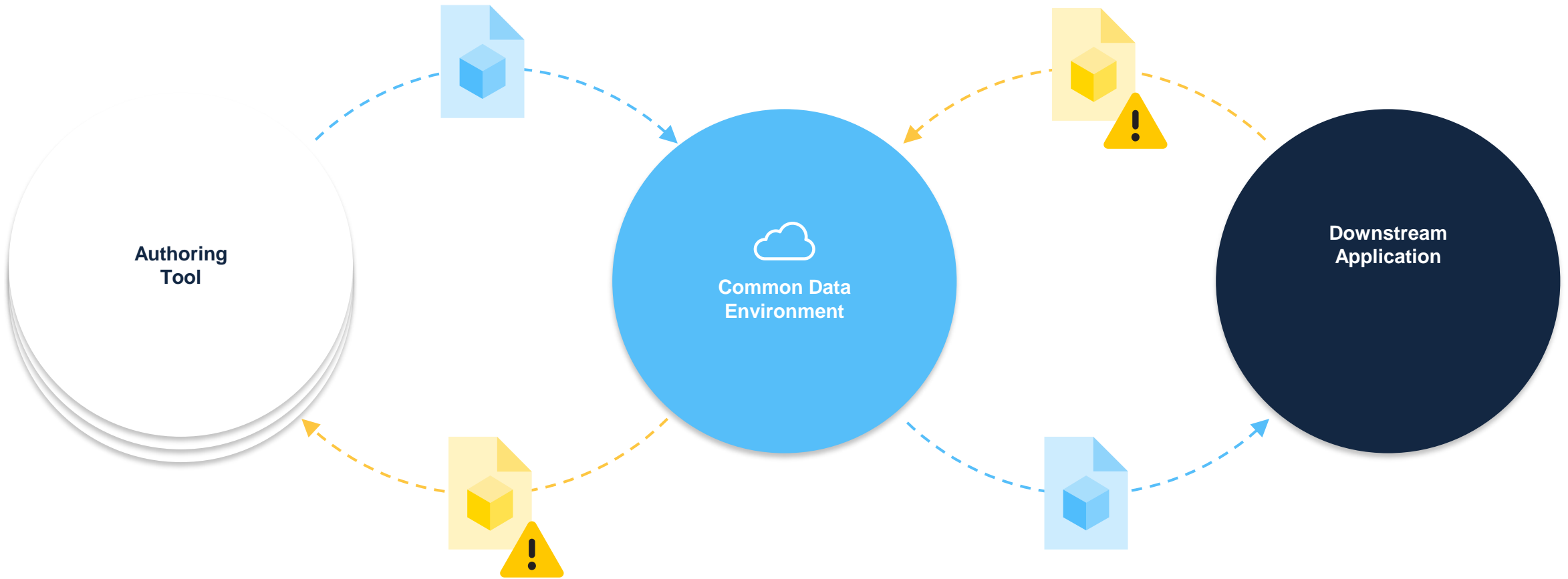
teocomi update to Revit 2019	Latest commit 57b1b6a 16 days ago
Assets	Fixed the Project.cs class for compatibility with Tekla/Solibri, remo... 3 years ago
Bcfier.Navisworks	update to Revit 2019 16 days ago
Bcfier.Revit	update to Revit 2019 16 days ago
Bcfier.Win	update to Revit 2019 16 days ago
Bcfier.XbimXplorer	update to Revit 2019 16 days ago
Bcfier	update to Revit 2019 16 days ago
InnoSetup	update to Revit 2019 16 days ago
.gitignore	Initial commit 4 years ago
AssemblyVersionInfo.cs	update to Revit 2019 16 days ago
BCFier.exe	update to Revit 2019 16 days ago
BCFier.sln	update to Revit 2019 16 days ago
CHANGELOG.md	updated changelog 2 years ago
LICENSE	Fixed bug with "open project button", changed license, updated readme... 3 years ago
README.md	Fixed markdown headings 11 months ago
Release.proj	project start 4 years ago
bcfier-update.xml	project start 4 years ago



<https://github.com/teocomi/BCFier>



CDE API - "And what about IFC?"





BIMsnippet

Idea

Partial model exchange

- Geometry: Affected Component, Clash Geometry, ...
- Property: Fire Rating, Material, ...

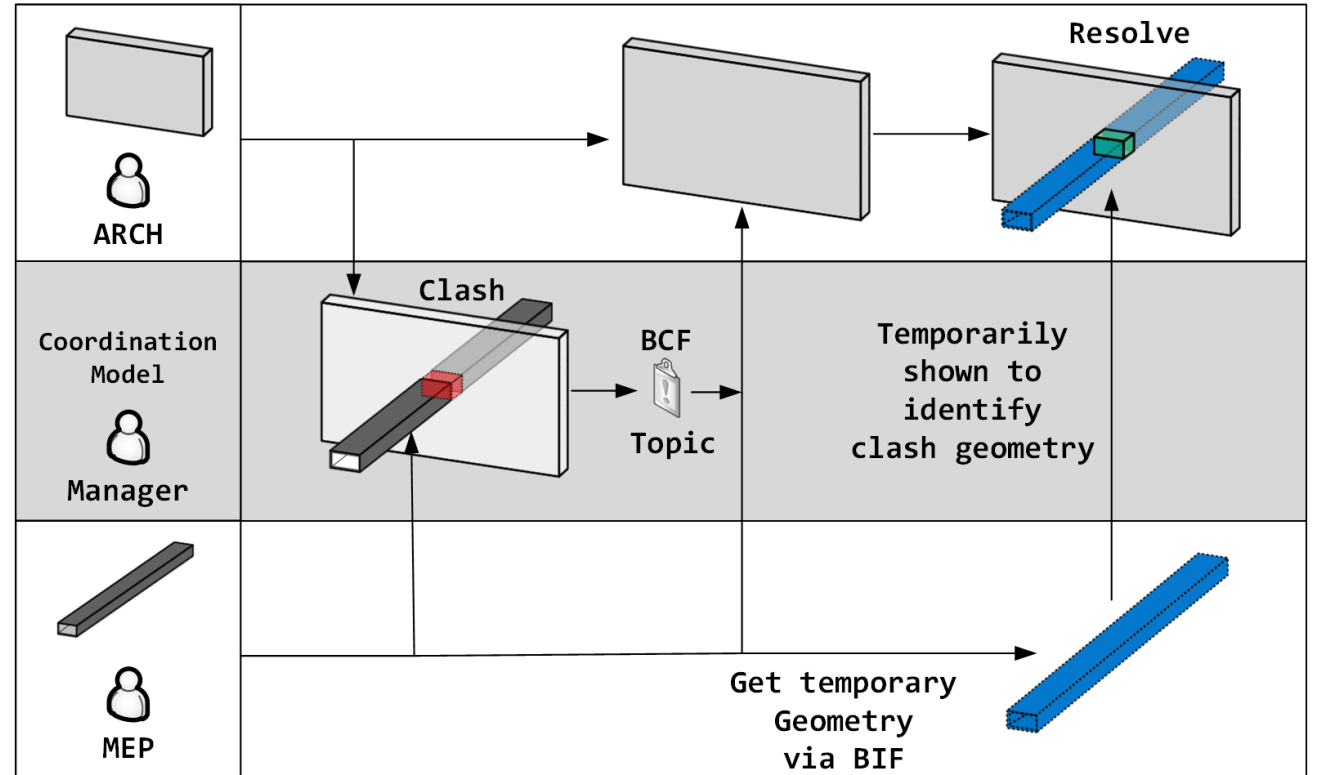
Exchange schematized files

Challenges

Contextual Diff

Exchange of references

Request for Change/Request for Information





BIMsnippet

BimSnippet (optional)

BimSnippet is an additional file containing information related to one or multiple topics. For example, it can be an IFC file containing provisions for voids.

Attribute	Optional	Description
SnippetType	No	Type of the Snippet (Predefined list in "extension.xsd")
IsExternal	Yes	Is the BimSnippet external or within the bcfzip. (Default = false).

Element	Optional	Description
Reference	No	URI to BimSnippet. IsExternal=false "..\snippetExample.ifc" (within bcfzip) IsExternal=true "https://.../snippetExample.ifc"
ReferenceSchema	Yes	URI to BimSnippetSchema (always external)

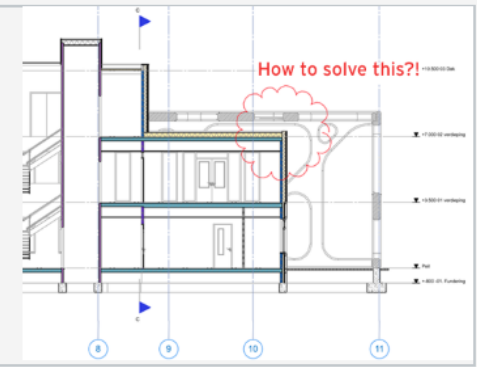
<https://github.com/BuildingSMART/BCF-XML/tree/master/Documentation#bimsnippet-optional>



BCF for 2D drawings

Issues on 2D documents

Create issues in 2D floor plans, sections, elevations and detail drawings. Even create issues within your 3D model. They are easily located because every issue automatically opens the right drawing, zoom and view in your BIM model. Use this functionality for BIM tools that include 2D documents like Revit and ARCHICAD.











Custom Attributes for BCF

Customize your
issue attributes

Get the issue data you always wanted

ATTRIBUTES

Zones Phases Status Types Disciplines Priorities **Cost Level Grid**

GRID (Predefined values custom attribute)  	COLOR	+ Add value
Grid A - K	#5c01e2	 
Grid L - R	#4688f4	 



Key Takeouts

Standards are already in place ...

... but we need to use them!

If it doesn't work ...

... let's find out why! Is it a BCF-related problem? Is it a software-related problem? Is it a workflow-related problem?

... let's find a way how to fix it!

... let's feed the improvements back into our standards!

SOLIBRI
A NEMETSCHKE COMPANY

Thank you!

