BIM FIT CHECK

Sept. 2025 Edition

Georeferencing
Alignment Exchange

Info Calls

2025/06/17
2025/06/19
2025/06/26

About BIM Fit Check®

- BIM FIT Check® is a new interactive event format from buildingSMART Germany – a playful challenge for software companies
- The target audience is software companies and development teams who want to demonstrate that their products support the open standards and services of buildingSMART for specific use cases, thereby offering additional value to users.
- Software companies that take up this challenge will be brought up to speed in several workshops so that they can implement the functionalities required for the use cases in their products within a specified period of time.
- Those who feel ready can demonstrate how their product masters the challenges at the end of the challenge in front of an audience at a buildingSMART Germany event.
- If the software solution passes the challenge in front of an independent jury, proving that the product ensures greater interoperability, it's "Check!" and "Congratulations!"
- Then the software company is happy and buildingSMART Germany is happy – the successful software company is awarded a digital badge documenting its achievement, and together we will spread the word about this joint success via our communication channels.

Introduction

Sept. 2025 Edition: 2 Use Cases

- Georeferencing: Engineering company is designing a bridge in **ETRS89/UTM32 at (e,f,g)** and shall submit IFC to the client.
- Alignment exchange: Engineering company is designing **a railway alignment** and shall submit IFC to the client **for code compliance checking**.

Questions

- Can company‘s design software model and export to IFC?
- Can client‘s coordination software import IFC and understand it?

Goal

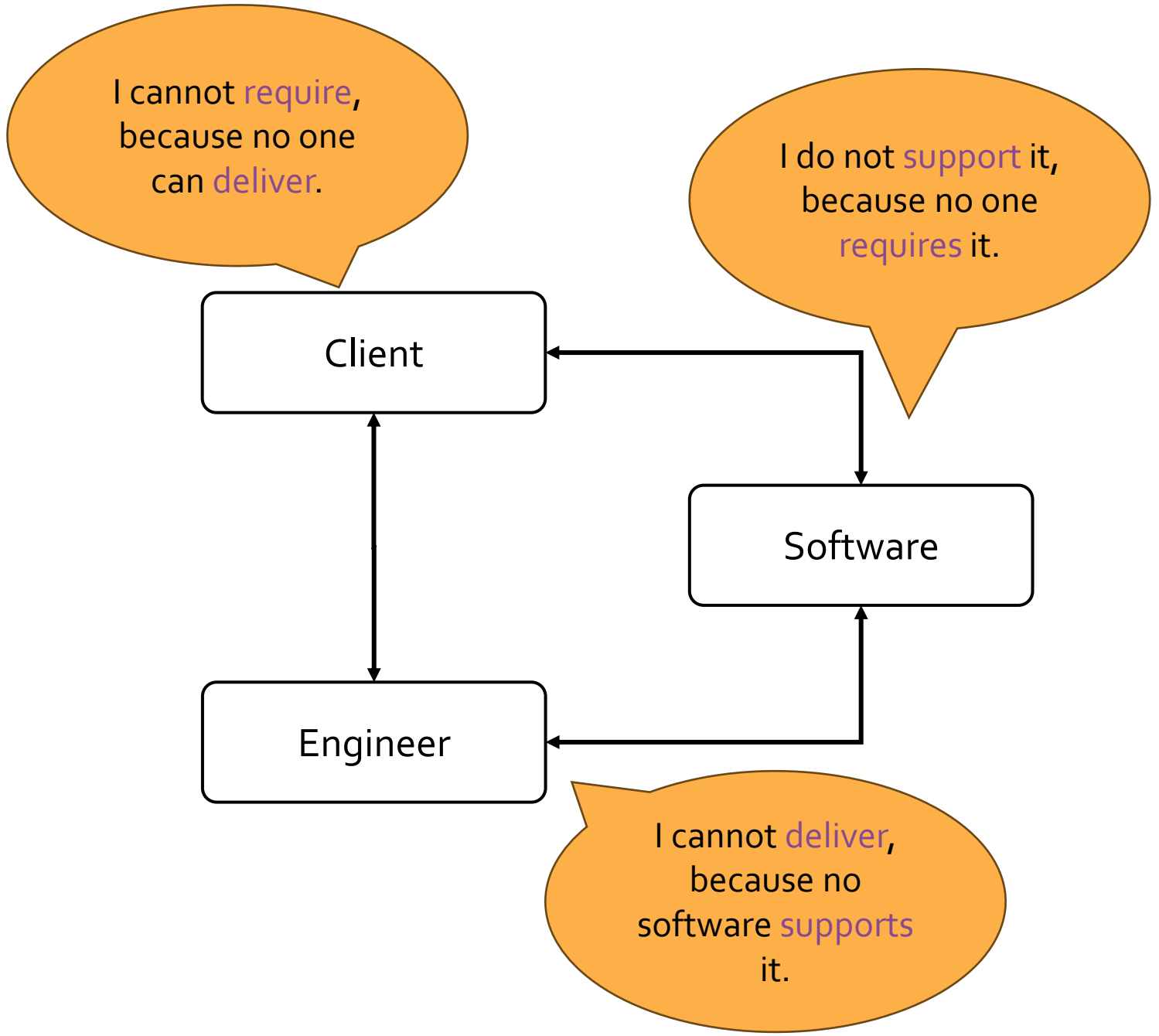
- Let‘s ensure that IFC interfaces are **correctly implemented**

Agenda

- Motivation
- Challenge
- Content
- Timeline
- Examples
- Homework
- FAQ
- Contact

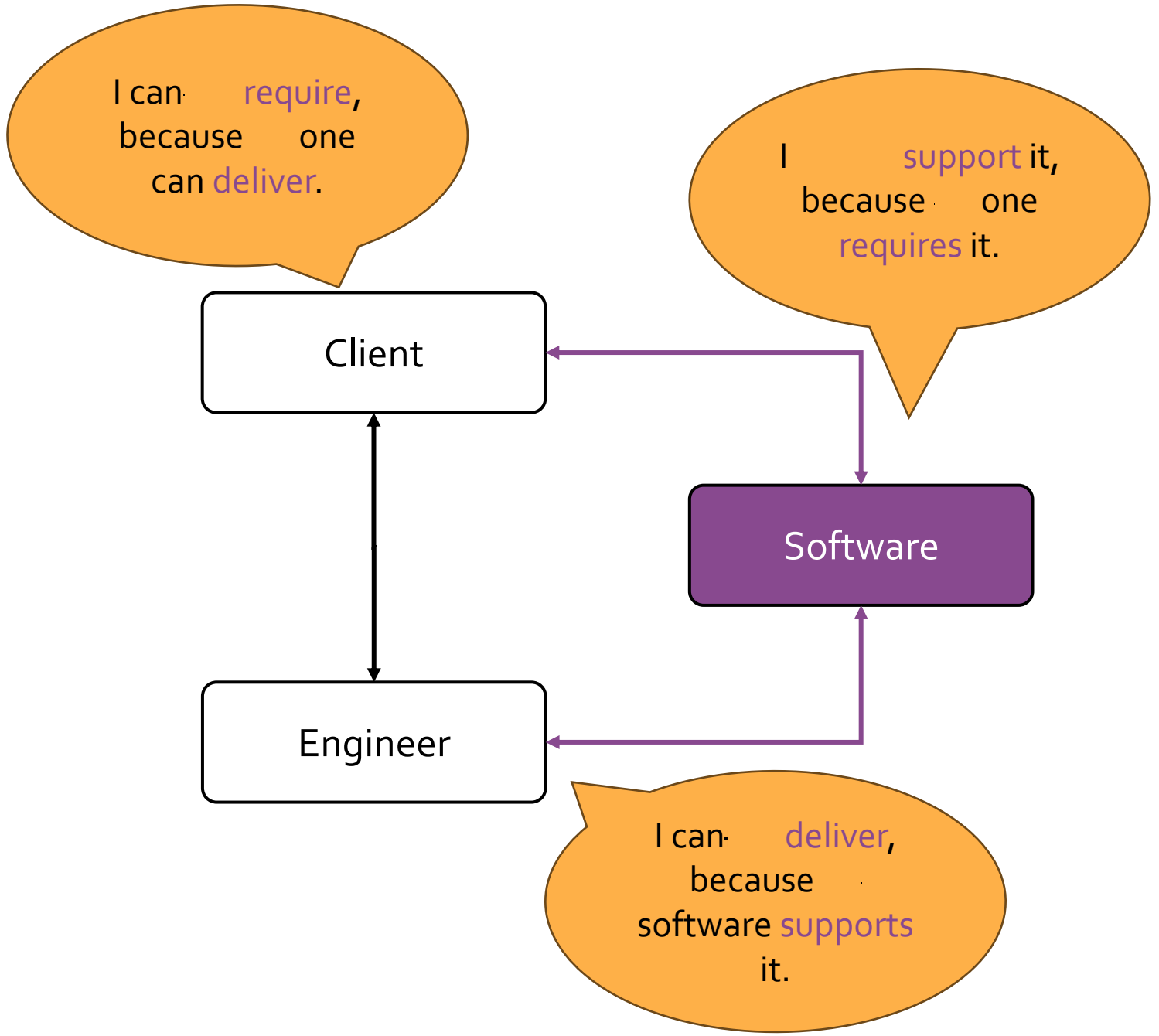
Status Quo

Chicken-Egg problem.



Goal

No excuses –
the software is capable!



Idea

Let’s cut this Gordian knot!

BIM Fit Check

- ISO 16739-1:2024 is published
- Transparent use-case based certification
  - currently not available
- Simple, small tasks for software
  - a.k.a. integration tests
- Live hackathon to showcase to customers
  - Preparation time in advance with technical support from IFC experts
  - Publicity & Participation badge at the event

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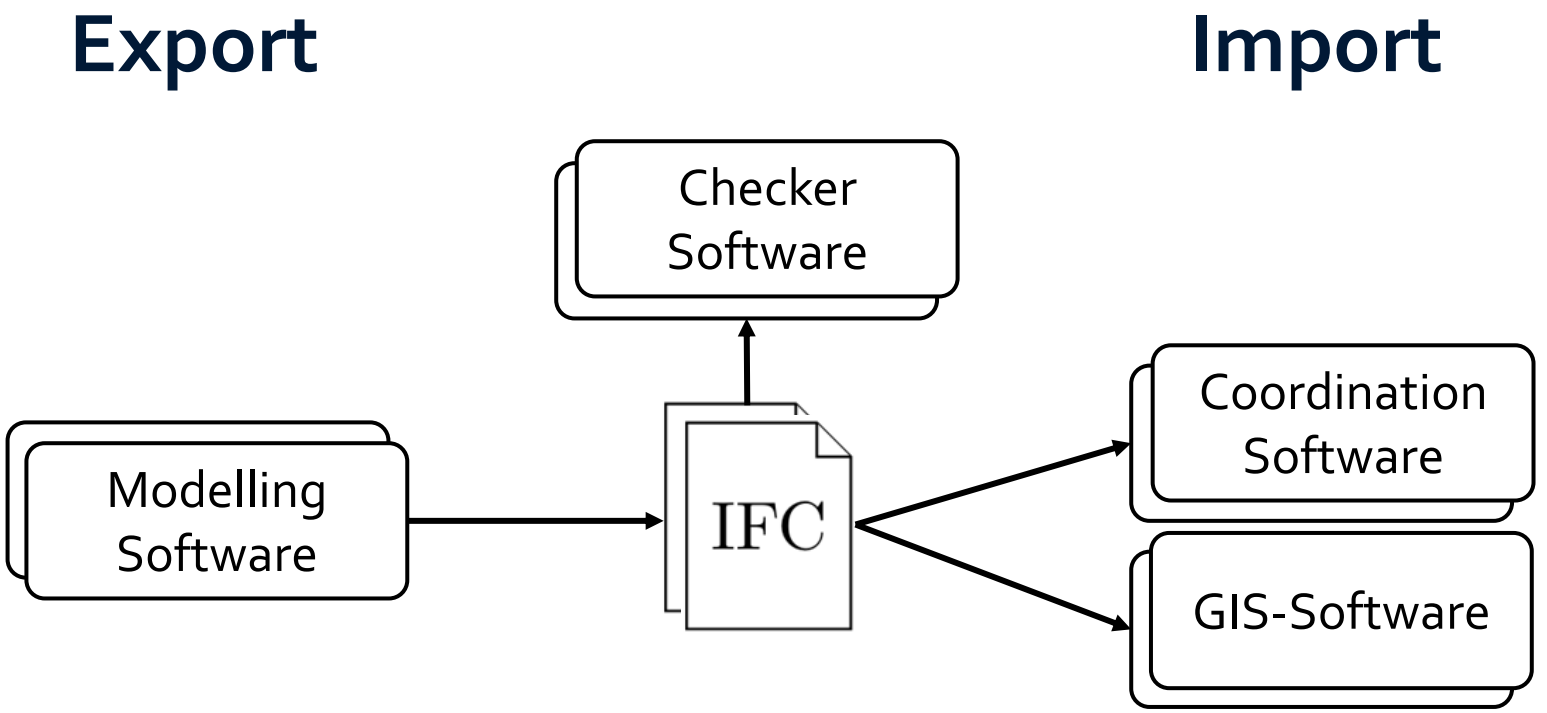
Use case 1

BIM & Georeferencing

- Georeferencing
  - Hot topic
  - Important to users across the domain
  - GeoMVD published in Juli 2024
    - → technical foundation
- Implementation
  - Different quality & dialects
  - Workarounds possible
- Possible software participants
  - Modeling (Export and/or Import)
  - Coordination (Import required / Export opt.)
  - GIS (Import)

Exchange Scenario: Georeferencing



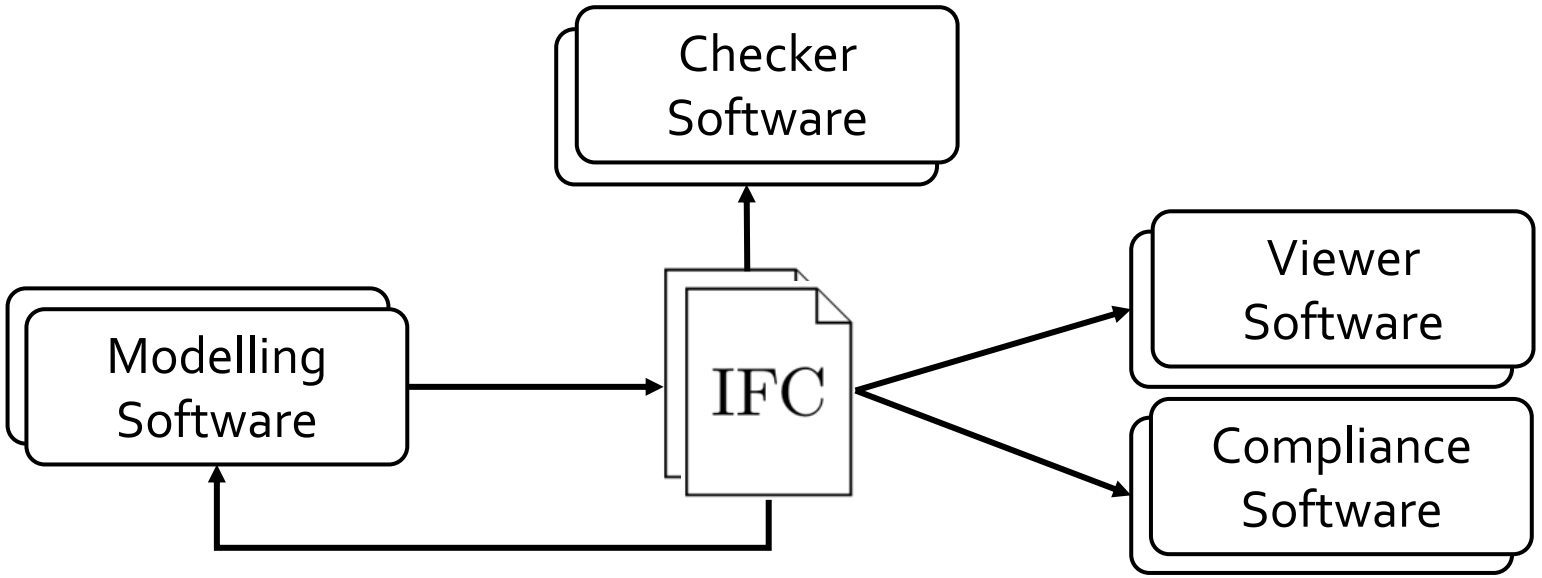
Use case 2

Alignment Exchange

- Infrastructure
  - Alignment is the backbone
  - Important to users across the infrastructure domains: rail, road, pipelines, …
  - IFC4x3 published in April 2024
    - → technical foundation
- Implementation
  - Different quality & dialects
- Possible software participants
  - Modelling (Export & Import of semantics)
  - Viewer (Import of geometry)
  - Code compliance (Import of semantics)

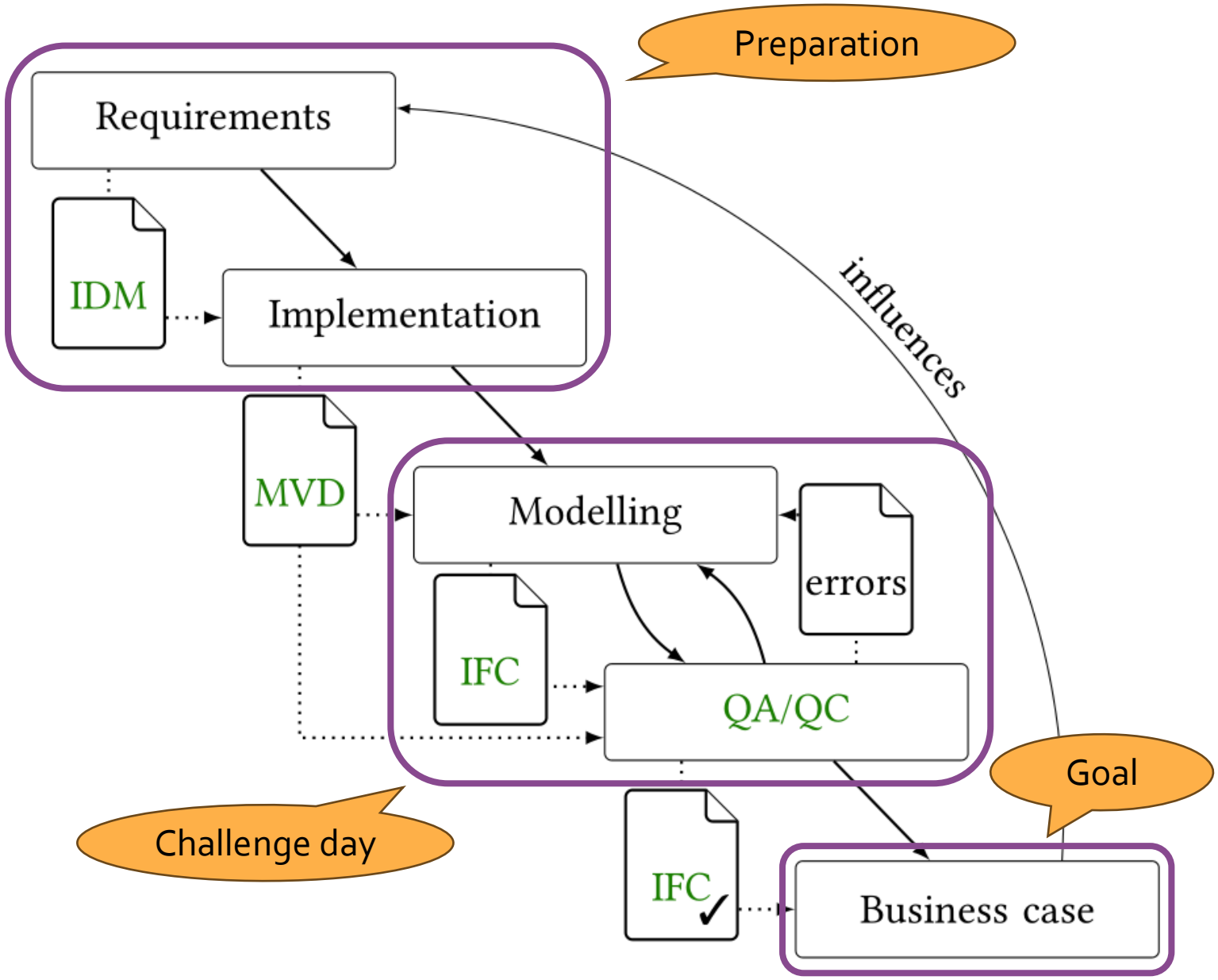
Exchange Scenario: Alignment Exchange

Ex-/Import **Import**



Overarching process

BIM Fit Check in steps



Jaud et al. (2024)

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Must Have

Georeferencing

- Basic project backbone (IfcProject, IfcUnitAssignment and IfcGeometricRepresentationContext)
- Basic spatial and object structure (IfcSite and IfcBuildingElementProxy)
- Georeferencing metadata (IfcProjectedCRS, IfcMapConversion and IfcRigidOperation)
- Tessellated geometric representation (IfcProductDefinitionShape, IfcShapeModel and IfcTriangulatedFaceSet)
- Local placement (IfcLocalPlacement)
- IFC 4.3.2.0 or IFC 4.0.2.1

Alignment Exchange

- Basic project backbone (IfcProject, IfcUnitAssignment and IfcGeometricRepresentationContext)
- Basic spatial and object structure (IfcSite and IfcAlignment)
- Alignment semantic structure (IfcRelNests, IfcAlignment, IfcLinearElement)
  - Horizontal
  - Vertical
- Local placement (IfcLocalPlacement)
- IFC 4.3.2.0

Nice to Have

Georeferencing

- Well-known text (WKT) definition of a coordinate reference system (IfcWellKnownText)
- Geodetic transformations between different coordinate reference systems (import)
- Georeferencing metadata (IfcGeodeticCRS, IfcMapConversionScaled)
- Both IFC 4.0.2.1 and IFC4.3.2.0, as well as IFC 2.3.0.1

Alignment Exchange

- Georeferencing use case
- Cant alignment (IfcAlignmentCant)
- Alignment parametric geometric representation (IfcCompositeCurve, IfcCurveSegment)
- Alignment tessellated geometric representation (IfcPolyline)
- All transition curves (IfcSpiral)
- Stationing & stationing jumps (IfcReferent, IfcLinearPlacement)

Not Covered / Not Expected

Georeferencing

- Complex IFC geometries (e.g. IfcAdvancedBrep or IfcExtrudedAreaSolid)
- Linear placement (IfcLinearPlacement)
- Complex spatial and functional structure (IfcSpatialElement and IfcGroup)

Alignment Exchange

- Volumetric IFC geometries (IfcSolidModel)
- Complex spatial and functional structure (IfcSpatialElement and IfcGroup)
- Digital terrain models (IfcGeographicElement)

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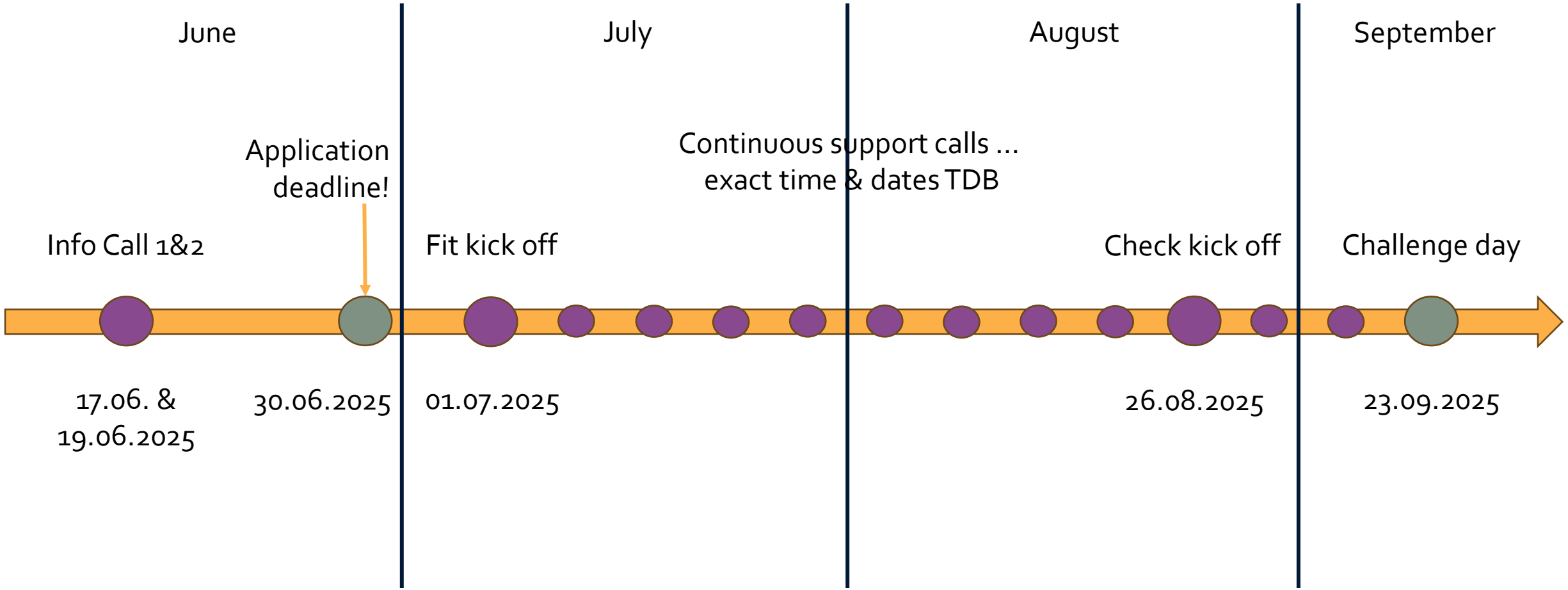
Timeline


June
July
August
September
Application deadline!
Continuous support calls … exact time & dates TDB
Info Call 1&2
Fit kick off
Check kick off
Challenge day
17.06. & 19.06.2025
30.06.2025
01.07.2025
26.08.2025
23.09.2025

Talks | Exchangaton

Challenge day

Berlin, 23.09.2025

(draft agenda)

Multiple tasks envisioned.

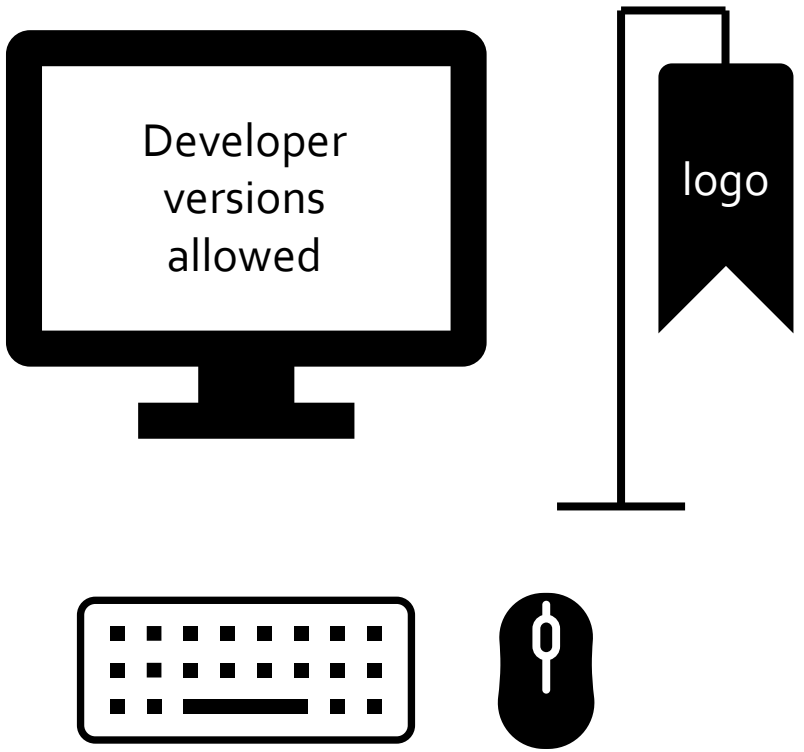
1. Intro & Technicalities
2. Georeferencing
3. Alignment Exchange
4. Summary & Lessons learned

Challenge Day

Berlin, 23.09.2025

(draft - details TBD)

Bring your own hardware!



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Georeferencing: Coordination Body

Exporting Software

- Select ETRS89/UTM32 as the horizontal CRS with EPSG:25832.
- Select DHHN2016 as the vertical CRS with EPSG:7837.
- Select base point at
  - East = 361800.000
  - North = 5701150.000
  - Height = 116.000
- Place a small 3D object with its corner at the base point + [5,5,0].

Importing Software

- Is the CRS really EPSG:25832 and EPSG:7837?
- Is the base point as specified?
- (Is it in Essen?)
- Does geometry somehow touch base point + [5,5,0]?
- Multiple files: What is the bodies' constellation?

Alignment: Export

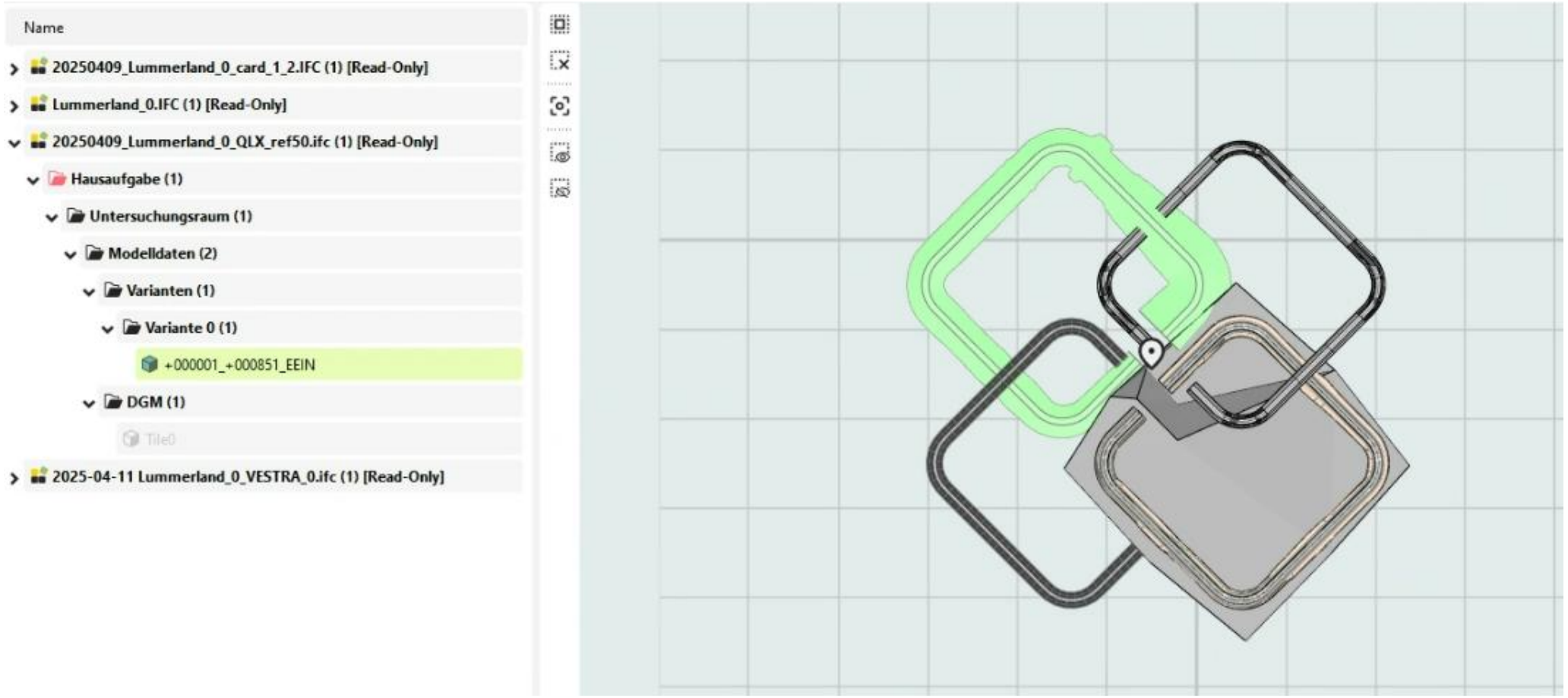
Alignment

Element	Parameter
Straight	L = 80m
Right curve	R = 40m; L = 62.832m
Straight	L = 160m
Right curve	R = 40m; L = 62.832m
Straight	L = 160m
Right curve	R = 40m; L = 62.832m
Straight	L = 160m
Right curve	R = 40m; L = 62.832m
Straight	L = 40m

Further input

- (Width: about 20m)
- Start height: 125m
- Vertical slope: 1%
- (Cross section etc. – pick one.)
- Start point: [E,N,H] (given)
- Start direction: [alpha] (given)
- What is the end point?

Alignment: Import



Sources of Examples

Published at the kick-off:

- Unit tests:
  - Small increments
  - Individual concepts
- Integration test:
  - From real world projects

Examples:

- Follow the KISS principle.
  - Keep it Simple, Stupid!
- **Participants are encouraged to share own examples as well.**
  - We can more easily curate a challenge task to (individually) fit the software.

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Homework

Until Kick-off

- Consider which aspects to pursue
- Study documentation
- Determine participant
- Apply at https://forms.office.com/e/YZfy6hZTWC

Until 31.07.2025

- Submit company‘s logo
- Submit handout about software (template TBD)
- Participate at support calls, ask questions, show off working prototypes (optional)
- Improve own IFC implementation (optional)

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FAQ

- Language?
  - All material is in English.
  - Questions to the team can be vocalized in English & German.
- Type of tasks?
  - Depending on the participants, we will design challenge tasks to best showcase the (individual) capabilities while remaining true to the cause.
- Jury?
  - Yes, there will be a jury present.
- Our software is very specific (e.g. only signage design). Can we still participate?
  - If your software support necessary aspects of georeferencing & IFC, you are welcome to join. Shoot us an email in case of doubts.
- Badge?
  - After successful completion of the challenge, participants will receive a digitally signed patch to use e.g. in promotional material (details TBD).

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