



Jaud IT



jahre



2025 Edition:
Georeferencing

Info Call 1&2

2025/02/25

BIM FIT CHECK

A 3D wireframe model of a hand holding a pencil, rendered in a light blue color. The hand is positioned as if writing or pointing at the text.

Introduction

Scenario:

- Engineering company is designing a bridge in ETRS89/UTM32 at (e,f,g) and wishes to submit IFC to the client.

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

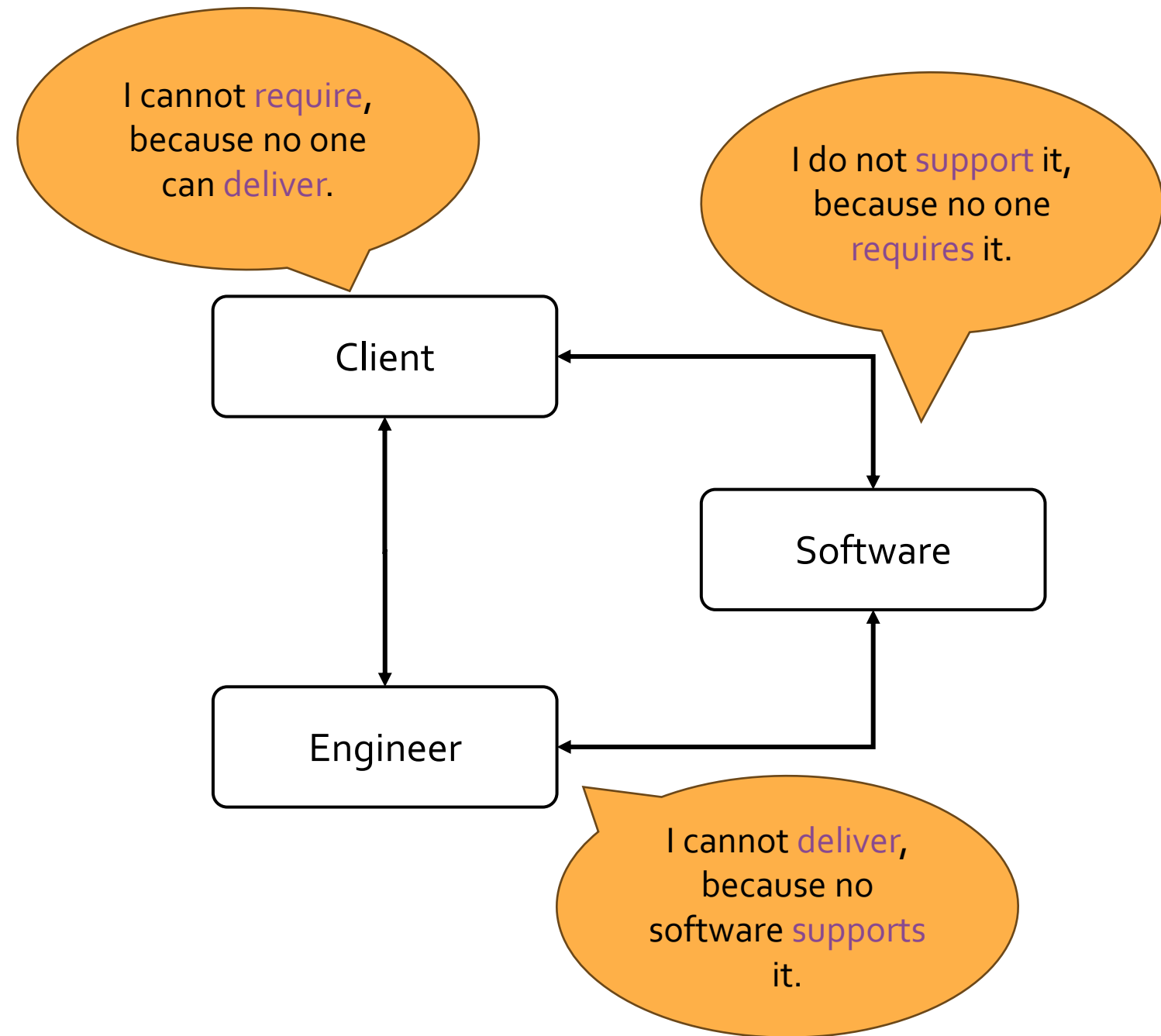
- Motivation
- Challenge
- Content
- Timeline
- Examples
- Homework
- Documentation
- Contact

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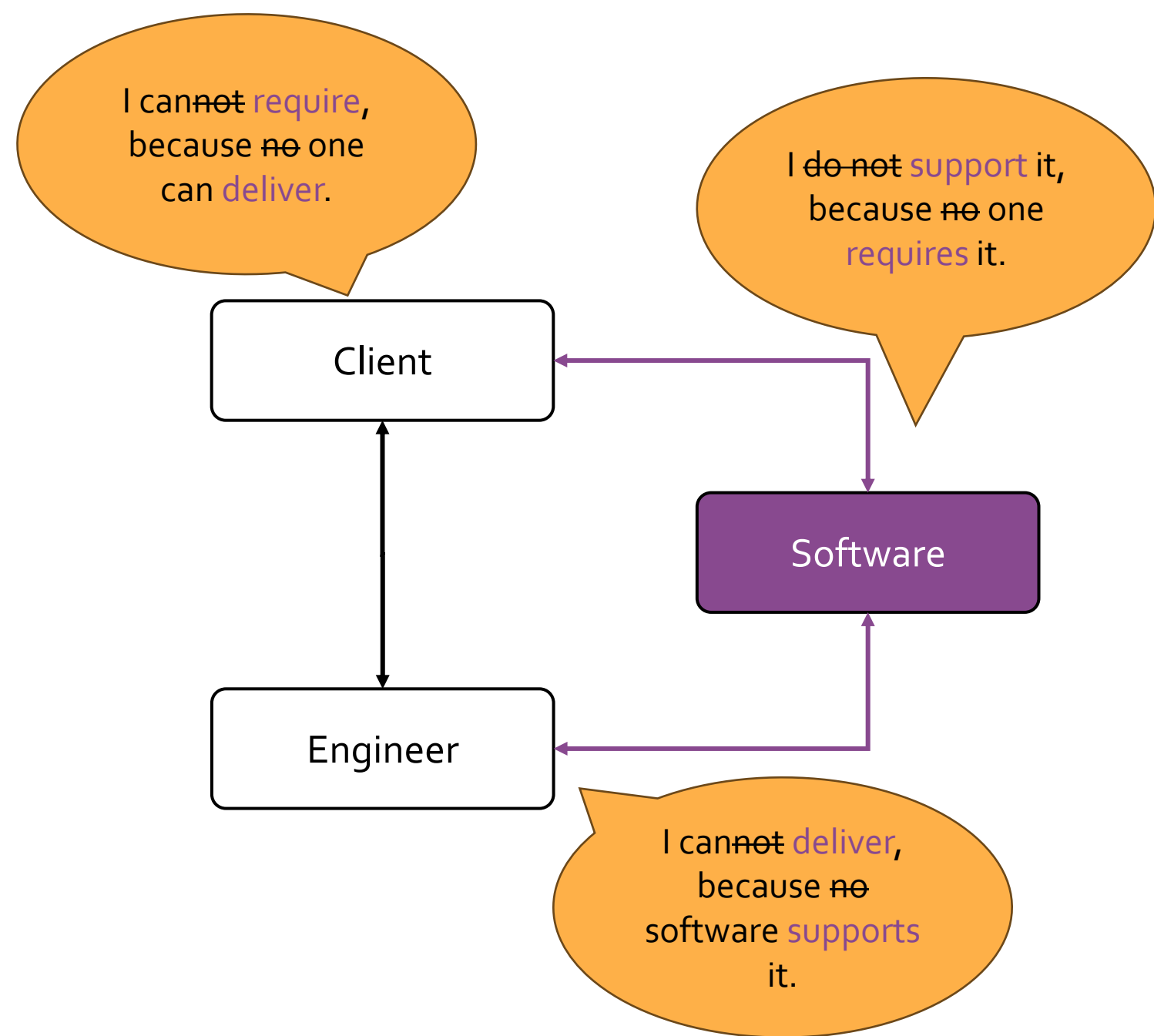
Status Quo

Chicken-Egg problem.



Goal

No excuses – the software is capable!



Idea

Let's cut this Gordian knot!



2025/02/25

BIM Fit Check

- ISO 16739-1:2024 is published
- Transparent use-case based certification
 - IFC2x3 und IFC4 were stopped
 - IFC4.3 does not exist
- 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

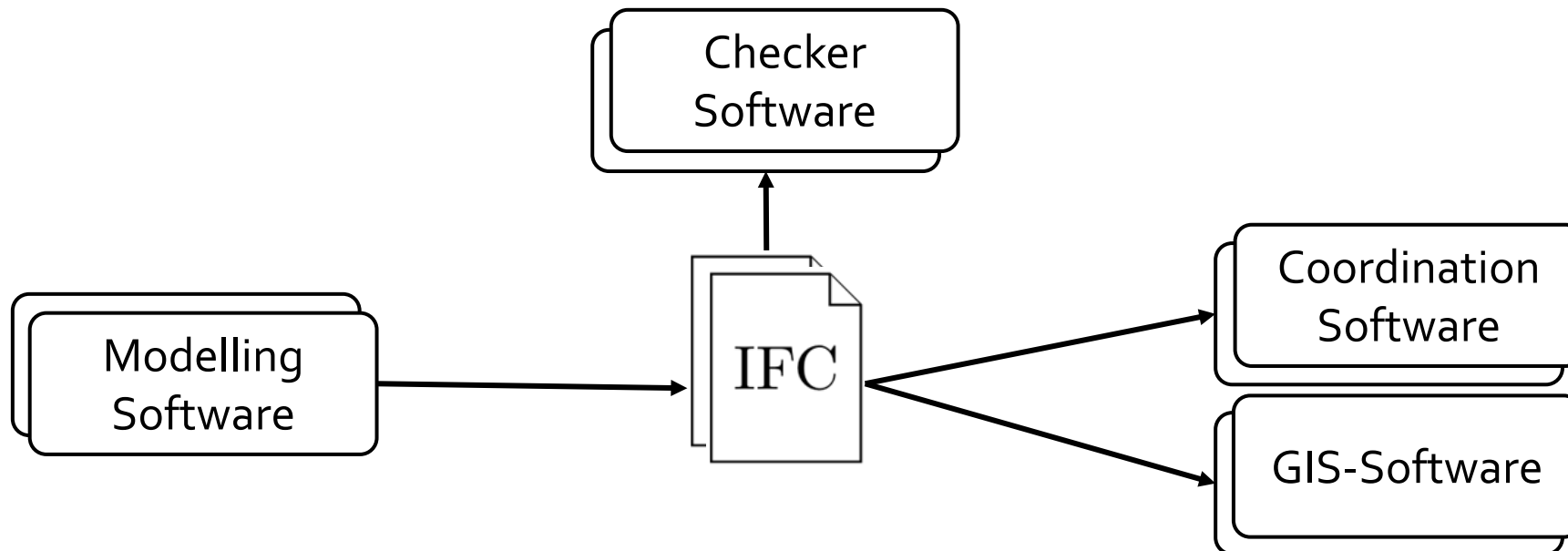
BIM & Georeferencing

- Georeferencing
 - Hot topic
 - Important to users across the domain
 - GeoMVD published in Juli 2024
 - → technical groundworks
- Implementation
 - Different quality & dialects
 - Workarounds possible
- Possible software participants
 - Modelling (Export / maybe Import)
 - Coordination (Import / maybe Export)
 - GIS (Import)

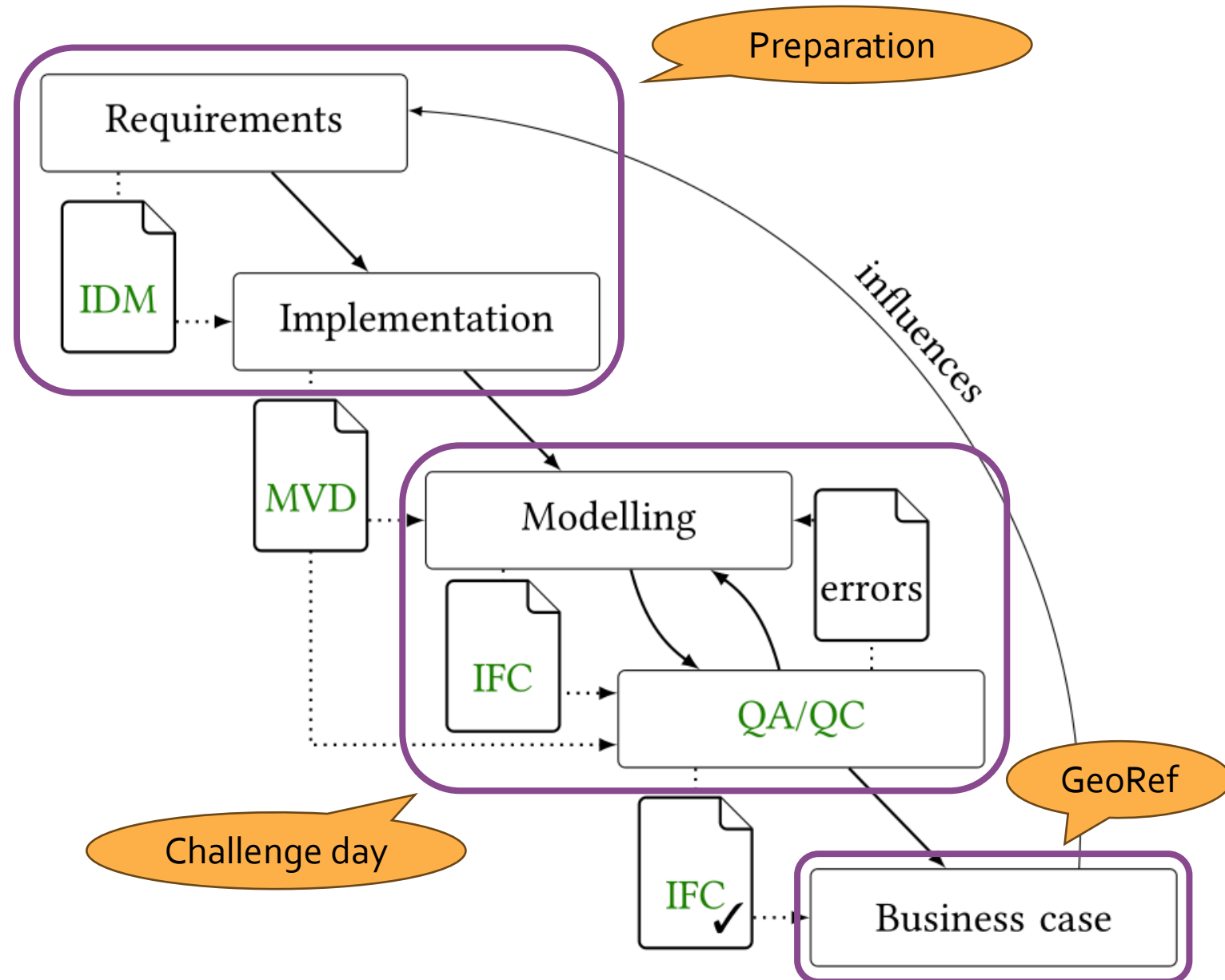
Exchange Scenario

Export

Import



Overarching process



Jaud et al. (2024)

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Aspects

Must have

- Reference (tessellated) geometry & local placement
- German CRS (e.g. ETRS89/UTM32)
- LoGeoRef 50:
 - IfcProjectedCRS with EPSG codes
 - IfcMapConversion / IfcRigidOperation
- One IFC version (4 or 4.3)

Nice to have

- WKT CRS
- Any CRS (Europe / World)
- Import: Two different CRS simultaneously
- LoGeoRef 50 alternatives:
 - IfcGeographicCRS
 - IfcMapConversionScaled
- Both IFC versions + IFC2x3

Not Covered / Not Expected

Geodesy

- Geodetic transformations
 - Datum change
 - Reprojection
- European / Worldwide CRS

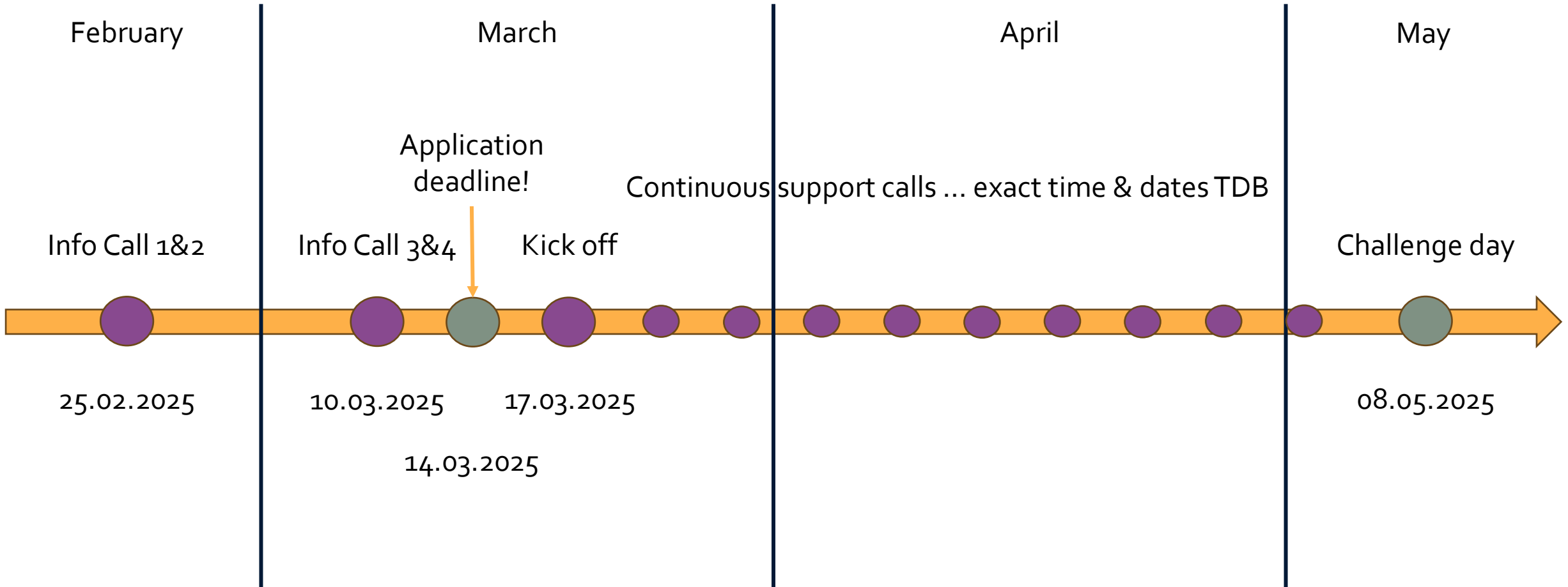
IFC

- Complex IFC classes
- Spatial structure
- Linear placement
- Different length units

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Timeline



Challenge day

Essen, 08.05.2025

(draft agenda)

Multiple tasks envisioned.

Team

Participants

1. Intro & Task (15')

2. Modelling (60')

3. Check & switch (15')

4. Coordination (30')

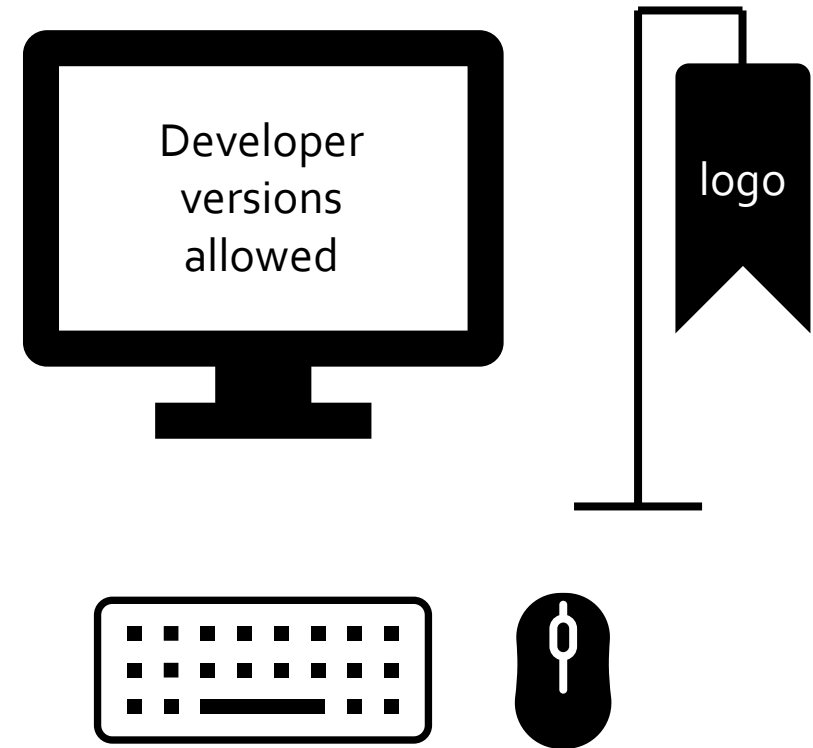
5. Conclusion (30')

Challenge day

Essen, 08.05.2025

(draft - details TBD)

Bring your own hardware!



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Example 1: 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?



Example 2: Export

Compact

Design a house (bridge, ...):

- CRS: ETRS89/UTM32 with DHHN2016.
- Base point is [some given coordinates].
- Bottom-left point is at [other given coordinate values].
- One side at least twice the length of other.
- Direction 30 degrees from North with the long side, i.e. North-East, one o'clock.
- What is the top-right point?
- Export to IFC.

Infrastructure

Design a road (railway, ...) segment:

- CRS: ETRS89/UTM32 with DHHN2016.
- Base point is [some given coordinates].
- Starts at [other given coordinate values].
- Direction: 60 degrees from North, i.e. North-East, two o'clock.
- Length: 300m; vertical slope: 1%.
- Cross section etc. – pick one.
- What is the end point?
- Export to IFC.

Example 2: Import

Single

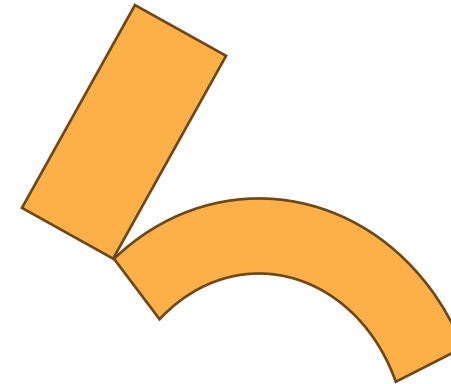
Import one exported IFC file:

- What is the CRS?
- Is the base point at [some given coordinate values]?
- Compact: Is the top-right point at [coordinates from export]?
- Infrastructure: Is the end point at [coordinates from export]?

Multiple

Foreach: all questions on the left.

- Does it look (almost) like this?



Sources of Examples

Published at the kick-off:

- HTW Dresden
- Deutsche Bahn
- AFRY
- a | sh
- VIE Build
- PNZ
- more to come ...

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://eveeno.com/bim-fit-check_08-05-2025

Until 15th April

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

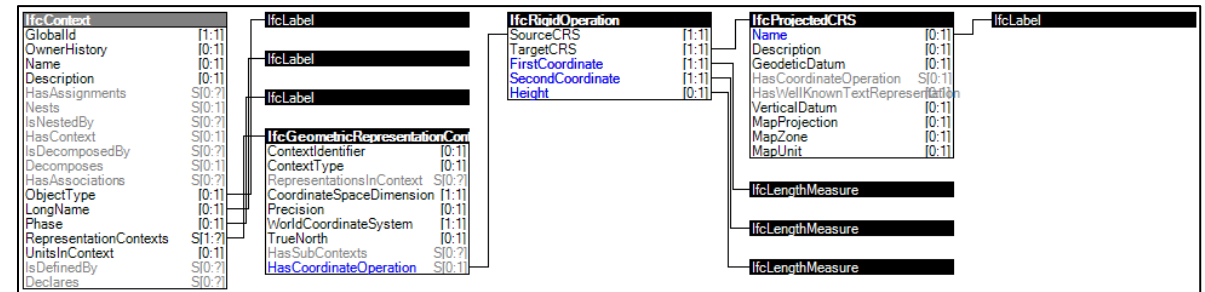
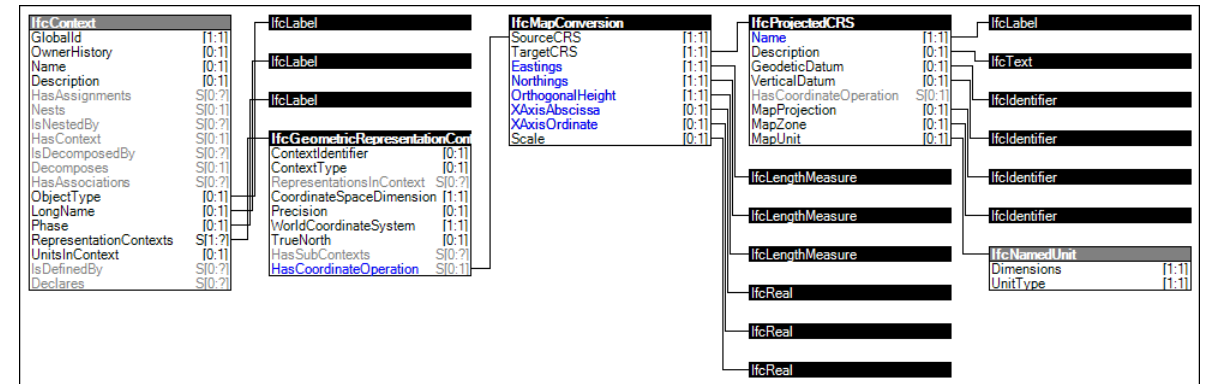
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Documentation

- How to georeference in IFC?

- See Figures 4 & 5 here: https://www.htw-dresden.de/fileadmin/HTW/Fakultaeten/Geoinformation/Bilder/Fakultaet/Personen/Clemen/IV_2023_Jaud_u_a_corr.pdf
- See Table 5 with 5.1a and 5.2 here: <https://isprs-annals.copernicus.org/articles/X-4-W5-2024/203/2024/>



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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2025/02/25



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2025/02/25



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