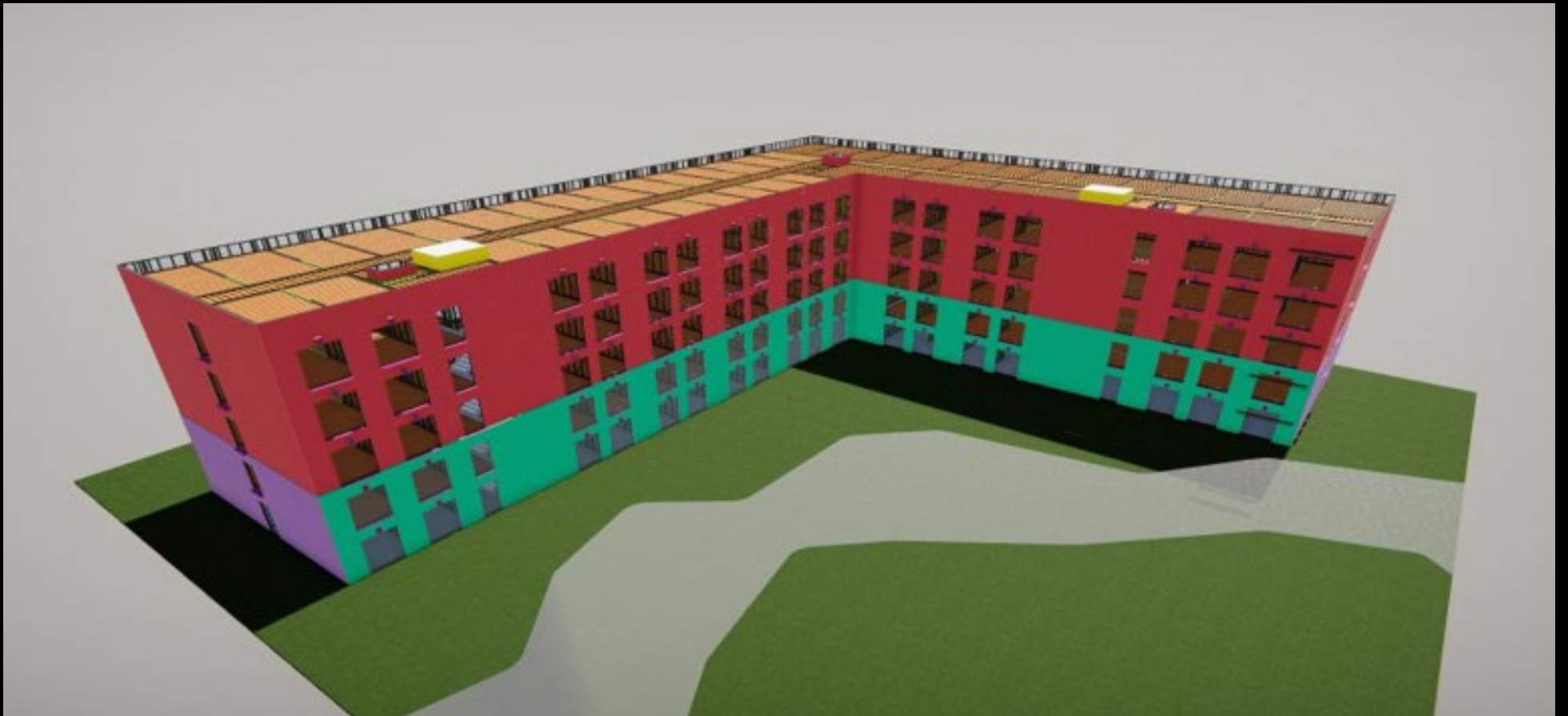




Testbed: The Derby Block E6 project

Context

HadleyFRAME develops structural models in Tekla Structures for residential and commercial projects. The Derby Block E6 project — a completed five-storey modular residential building — serves as a test bed simulating design-stage challenges and requires repeated replication of cold-formed steel framing assemblies across all levels. At this scale, copy operations are continuous, and two significant operational problems arise: 1) the existing recorded-macro workflow requires a separate file for every combination of axis, offset, and copy count, and 2) Tekla's copy engine re-evaluates connections silently at the destination, meaning bolt groups can be dropped without raising any error.

BCU Support

Development and validation of two Tekla Structures automation tools under the WMACC Business Innovation Support Sprint programme:

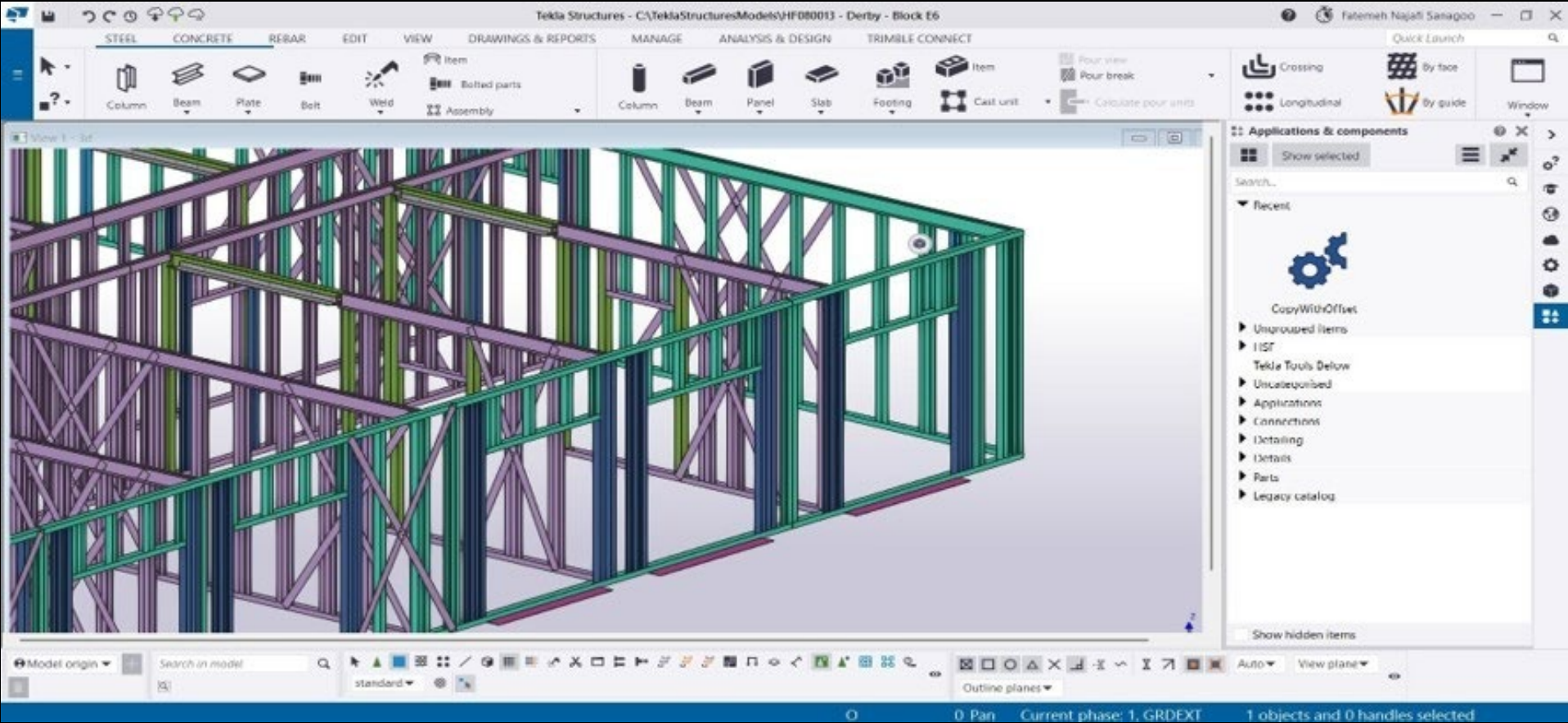
- CopyWithOffset Macro (C#) — a single dynamic tool replacing an unbounded library of static recorded macros
- Connection Integrity Inspector (Python / Tekla Open API) — automated bolt-count verification across all HadleyStudBase and HadleyStudTop connections

Full scan of Derby Block E6 production model (18,441 connections) Technical report and time-in-motion analysis delivered to HadleyFRAME.

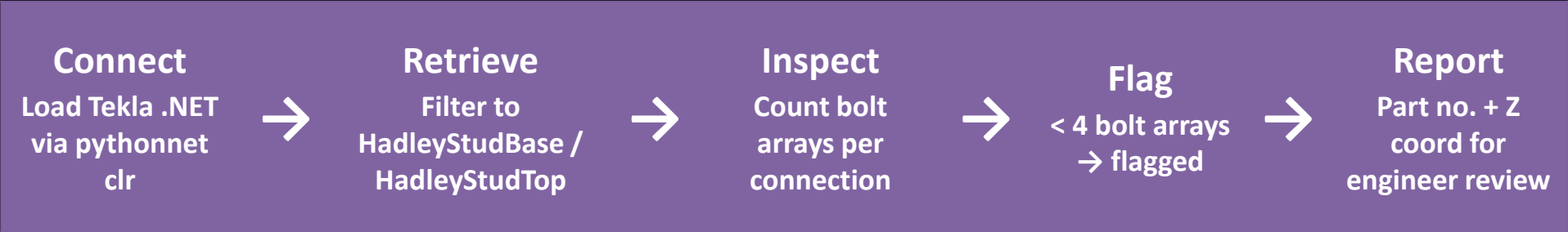
Feedback

“ Having a tool that scans the full model in ten minutes and tells our engineers exactly where to look changes the economics of quality assurance on projects of this type entirely.”





The Derby Block E6 project Tekla Structures Model



Connection Integrity Inspector: inspection workflow

Tools Used

- Tekla Structures 2021
- C# Akit scripting host
- Python via Tekla Open API /
- PyTekla / pythonnet
- Trimble Connect · Derby Block E6 model (HF080013)

Results

- **Result 1** : CopyWithOffset Macro with ~20% improvement on copy operation time per batch.
- **Result 2** : Connection Integrity Inspector with 96% reduction in inspection time. 18,441 connections scanned, 38 flagged for review.

Benefit Estimation

Tool	Manual approach	With automation	Time saving
CopyWithOffset macro	≈ 15 min (batch of 5 copies)	≈ 12 min	≈ 20% (≈ 3 min)
Connection Integrity Inspector	≈ 4 hours (half a working day)	≈ 10 minutes	≈ 96% (≈ 3 h 50 min)

