



TALLINNA
TEHNIKAKÕRGGKOOI
TTK UNIVERSITY OF APPLIED SCIENCES

RoadBIM Seminar
11.09.2013 Tallinn

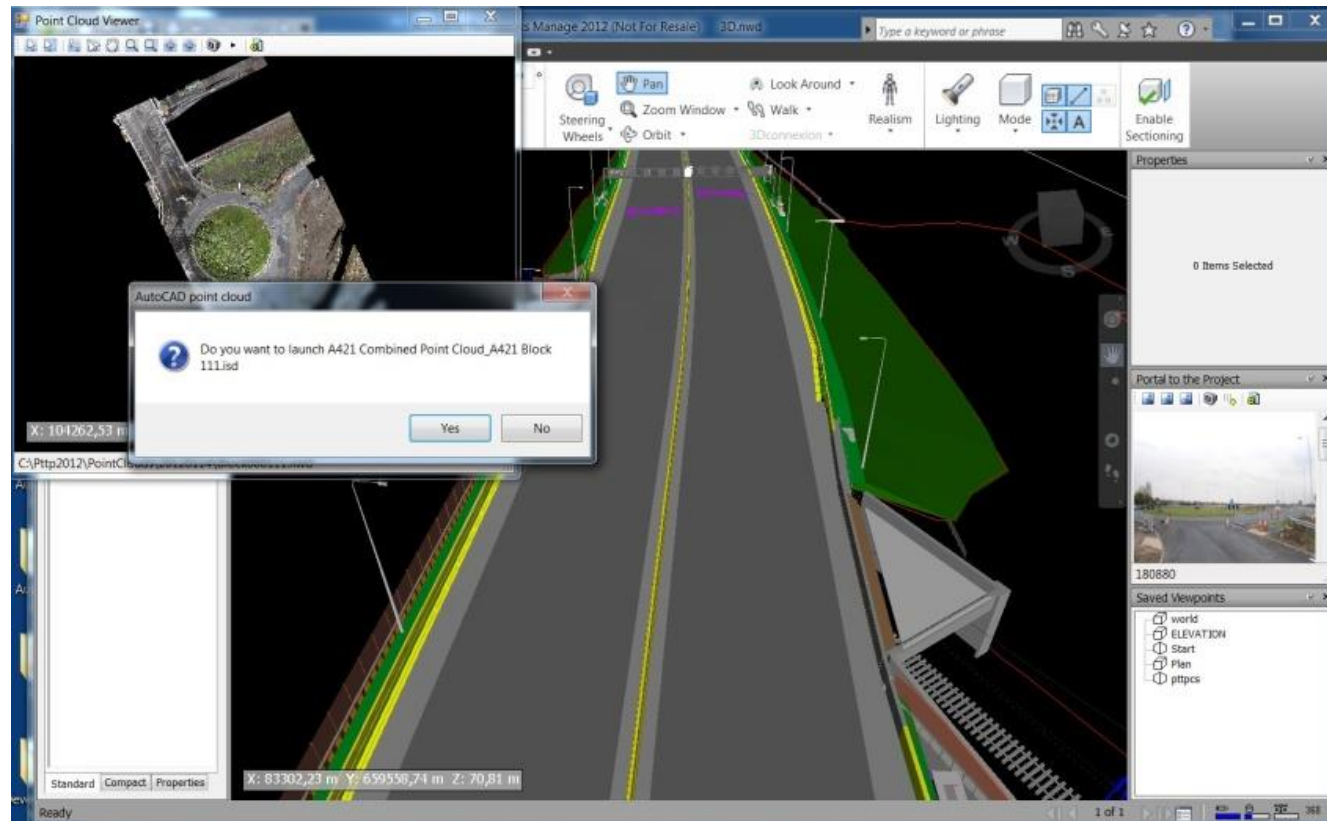


VIRTUAL DESIGN AND CONSTRUCTION SPECIALISTS



Skanska UK -Infra BIM Case Study M25 DBFO project Ari Puuskari Profox Companies Ltd

RoadBIM Seminar in Tallinn September 11th 2013



Company Profile

www.profox.com

www.navistools.com

Founded 1991

- Autodesk Plant Solutions Focus
- Autodesk Navisworks Focus
- Navisworks Development Specialists

Autodesk Development Partner

Autodesk VAR:

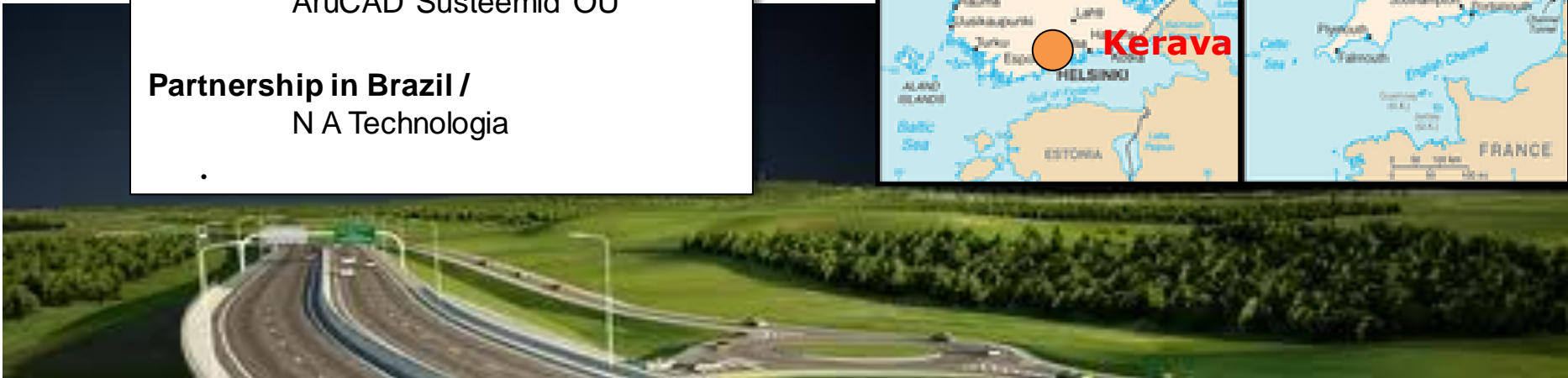
- Sweden
- Finland

Partnership in Estonia /

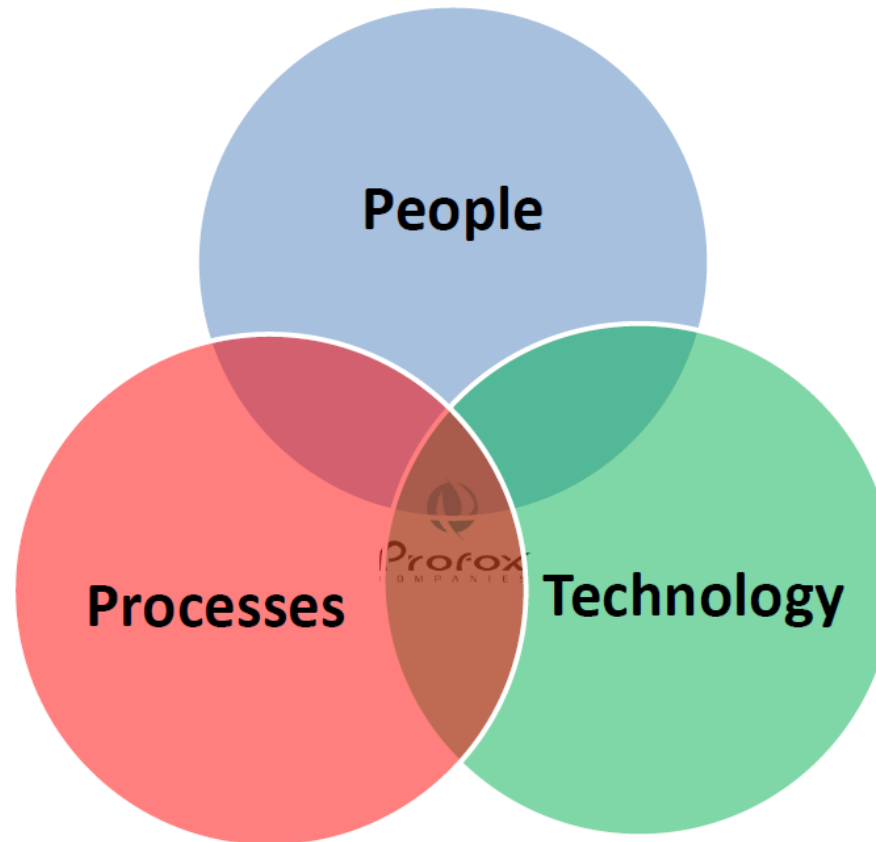
AruCAD Süsteemid OÜ

Partnership in Brazil /

N A Technologia



The key to successful projects...



The key to successful Navisworks projects...



Project : SBBJV – Skanska Balfour Beatty Joint Venture;

M25 DBFO – Later Upgrade Sections

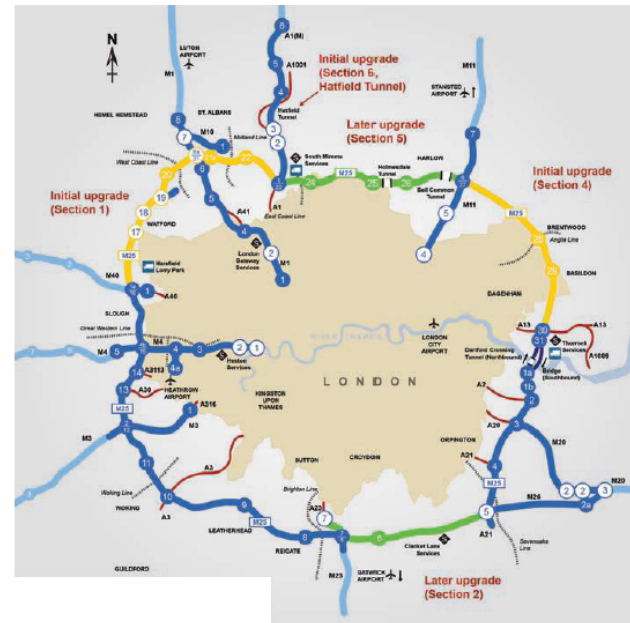
Introduction

The M25 DBFO will be providing additional capacity on two sections of the M25. The works will be between J5 and J7 (Section 2) and J23 to J27 (Section 5). The works will be undertaken to the new HA standard for Managed Motorways called MM-ALR (IAN 161/12).

Key features of the scheme:

- a.) No Hardshoulder – ERA at 2.5km centres
- b.) MS4 communication at max 1.5km centres
- c.) Gateway and Enforcement Gantries
- d.) CSB in central reserve

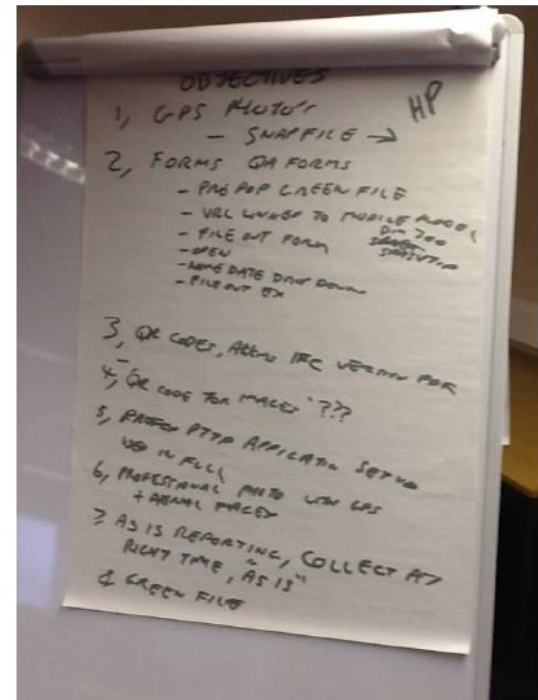
Source: Harry Parnell,
Balfour Beatty Civil Engineering UK
Profox PSK seminar May, 2013



M25 DBFO – M25 Section 2 and Section 5

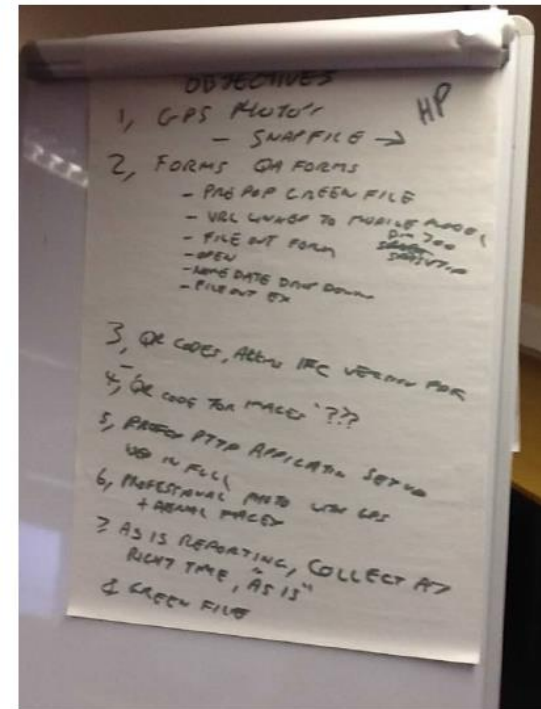
Project Objectives

- 1.) 3D 'live' construction model using PTPP (and iPTTP when available) will access all drawings and documents via BC as well as showing all aspects of the design in one place, accurately and with the ability to dynamically cross section any part of the project.
- 2.) QA records completed electronically and 'paperless'.
- 3.) As built red-line completed electronically and 'paperless'
- 4.) Use of QR codes on drawings and documents. A quick scan of the code will find the document in BC and open the model to the correct place.
- 5.) All site photos will be geo referenced. A form that is 80% auto completed by the iphone or ipad will accompany every photo within the database. This will allow all site photos to be visible via PTPP. It will be like having our own Google street view.

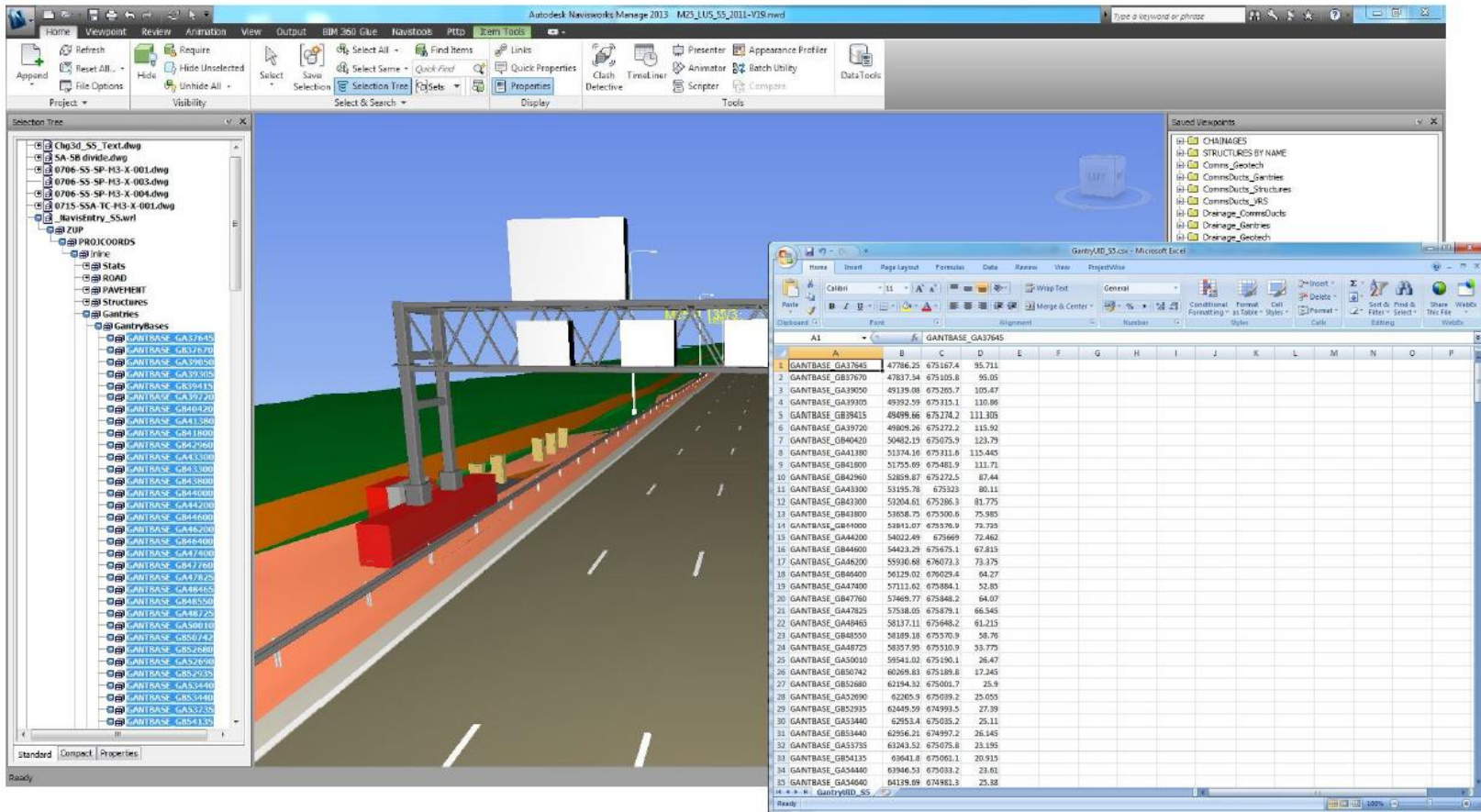


M25 DBFO – M25 Section 2 and Section 5

- 6.) Cloud data and as built survey data will be available via PTPP.
- 7.) Views from model will be used via Sketch up to create 'story board' Method Statements and Temporary works briefs.
- 8.) Completion of RFIs, NCRs and DOWLS reporting in the field and visual status via the model.
- 9.) As built 'live' model if CP / CPS invest a modeller to maintain this as data is captured.
- 10.) Professional Photos with GPS and Ariel Images
- 11.) As is reporting out in the field every day which feeds back in to 3D model
- 12.) Green File Place holders set up and populated as we go
- 13.) Interactive Whiteboard used for Better Communication and efficiency



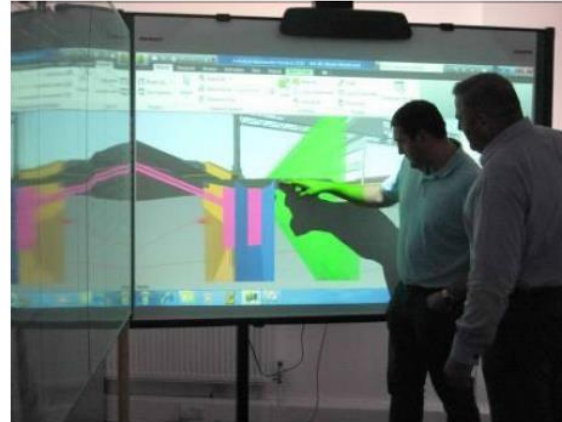
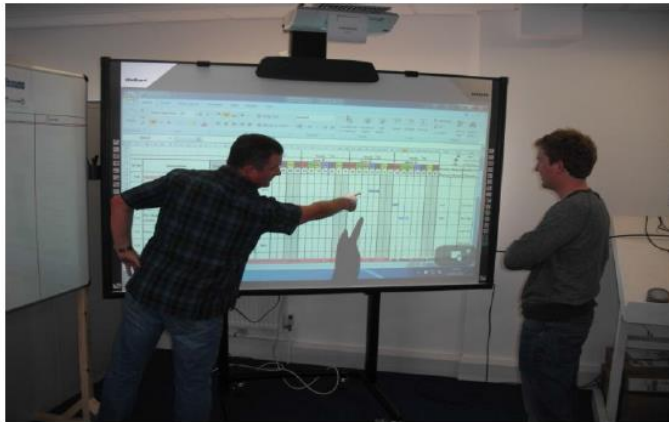
Design: Putting the 'I' in BIM – Profox Data Manager and Reporter



IT Systems Requirements – Site Team Requirements

Hardware Requirements

Interactive Whiteboards – the user experience is like an 88inch touch screen / tablet.
The M25 Team have found new ways to improve the way we communicate and interact with information as a team, engaging the supply chain and collaborating. See Appendix.



Putting the 'I' in BIM – Portal to the Project



- 1.) Point Cloud Viewer
- 2.) Image Viewer
- 3.) Cross Section Viewer
- 4.) DWF Viewer
- 5.) Plan Viewer

Dynamic Point Cloud Tool



M25 Section 2

212 NWD Blocks = 10.3GB

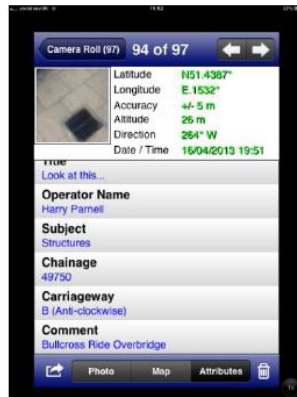
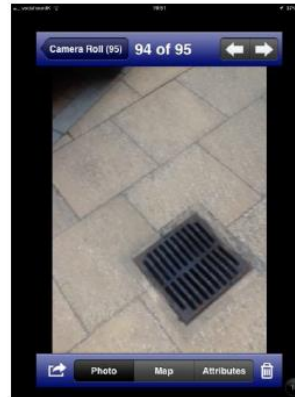
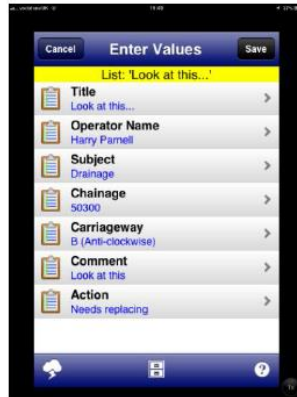
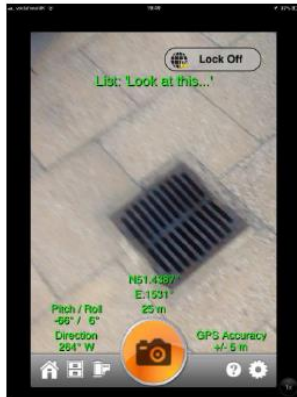
212 .TXT Blocks = 41.3 GB

M25 Section 5

285 .TXT Blocks = 86.5GB

285 . NWD Blocks = 17.6GB

Mobile Devices GeoTag Photos



Photo's

Mobile Laser Scanning Photo's

DOWLS / SNAGS

Inspections

Progress

Communication

Mobile Devices Documents Quality Forms / Inspections Filled out in the Field

SKANSKA **Balfour Beatty** Project Procedure
M25 Joint Venture
Inspection and Testing
Construction of Strengthened Embankments

Page 1 of 1

Location / Change:	Contingency:		
Strengthened Earthwork Detail No.	Form No. Date		
Activity	Checked	Date	Acceptable (Y/N)
1 Setting out			
2 Excavation of slopes shear key & drainage blanket X..... Y..... Z.....			
H HOLD POINT/ treatment of soft spots/areas			See sections 101 See Appendix 5.8 Moffrod compaction
3 Drainage layer (Class of material)			
H HOLDPOINT			
4 Backfill of Shear Key (Class of material)			
5 Compaction of Shear Key (layer thickness/ no. of passes)			See Appendix 5.8 Moffrod compaction
6 HOLDPOINT(Geogrid length, level, grade) Design No. _____ H (above base of Shear Key) Length _____ Grade _____			
7 Compaction of Embankment fill and within Formwork			See Appendix 5.8 Moffrod compaction
8 End product compaction			
9 Embankment slope check (HSM1 values) H1..... H2.....			
10 Final survey for line and level			See survey

SBB JV Construction Team	Subcontractor	SBB/ATK Inspection Team/CHUS
Signed:		
Date:		

SBB 18 Appendix 5.19 Revision 6.4 November 2010

SBB 18 App. 5.19 Rev. 6.4 In...

Activity	Checked
Setting out	
Excavation of slopes shear key & drainage blanket X..... Y..... Z.....	
OLD POINT/ treatment of soft spots/areas	
rainage layer (Class of material)	
OLDPOINT	
backfill of Shear Key (Class of material)	
compaction of Shear Key (layer thickness/ no. of passes)	
OLDPOINT(Geogrid length, level, grade)	
Geogrid No. _____	
H (above base of Shear Key)	
Length _____	

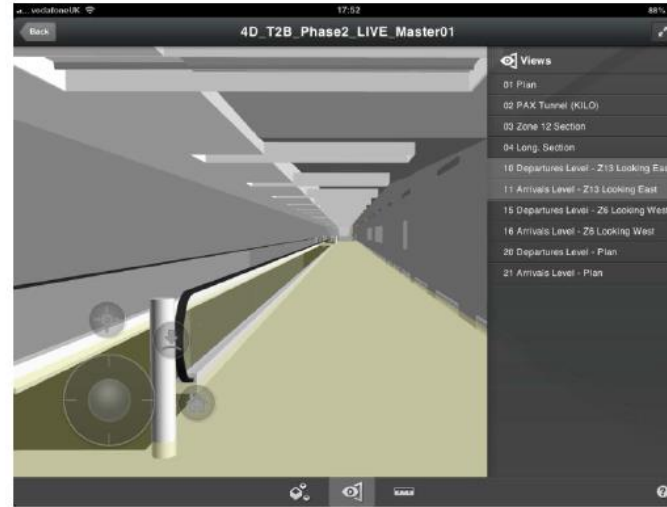
Page 1 of 1

SBB JV Construction Team	Subcontractor
Signed: <i>J. P. [Signature]</i>	
Date: 15/05/2013	

13 March 2011
14 April 2012
15 May 2013
16 June 2014
17 July 2015

SBB 18 Appendix 5.19 Revision 6.4 November 2010

Viewing 3D models on the Mobile Device



Asset Management

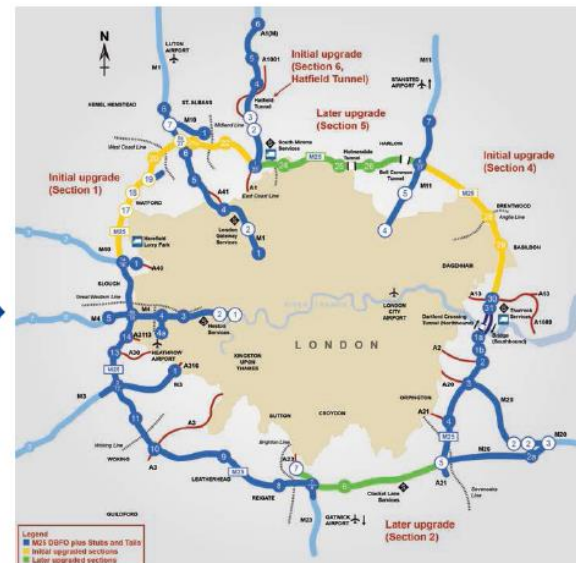
Model is converted in to Works Break Down Structure model.

All Green Files Linked to 3D model

All Operations + Maintenance Data linked to 3D Model

Hard over to Connect Plus Services to Maintain

BIM Cycle Completed ...



Navistools

for Autodesk® Navisworks®

Turn Your Navisworks model into a Project Portal:

- Engineering phase - On-site phase - Asset Management
- Access all project data using Navisworks including Freedom
- Maintain and query project progress using Status & colours
- Locate objects in the model based on database information
- Search database information based on objects in the model
- Generate material take-off reports, component lists directly from your Navisworks model
- Publish models with database information for Navisworks Freedom

For who:

- Project engineering team members and project managers
- On-site workers
- Maintenance Personnel



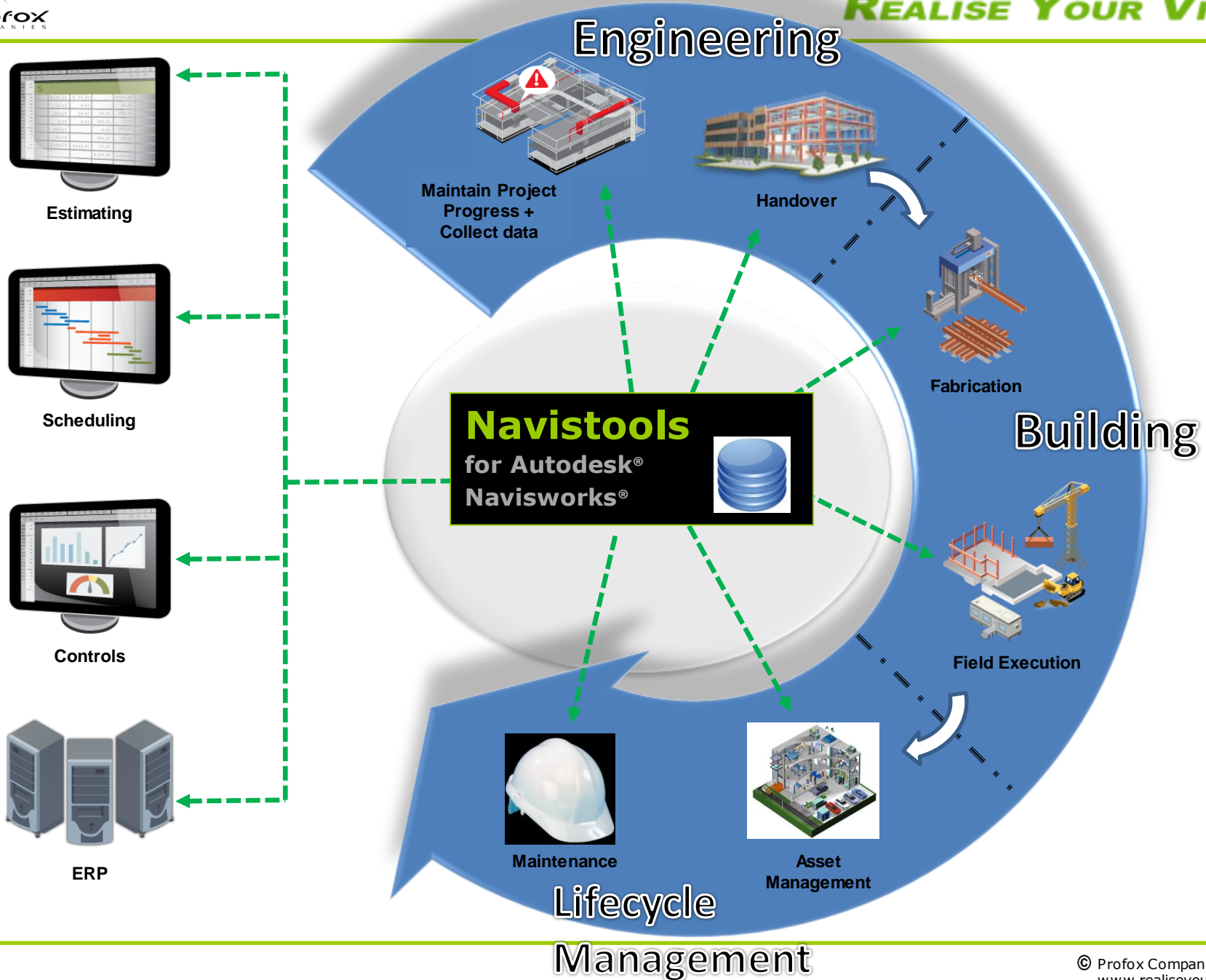
Building

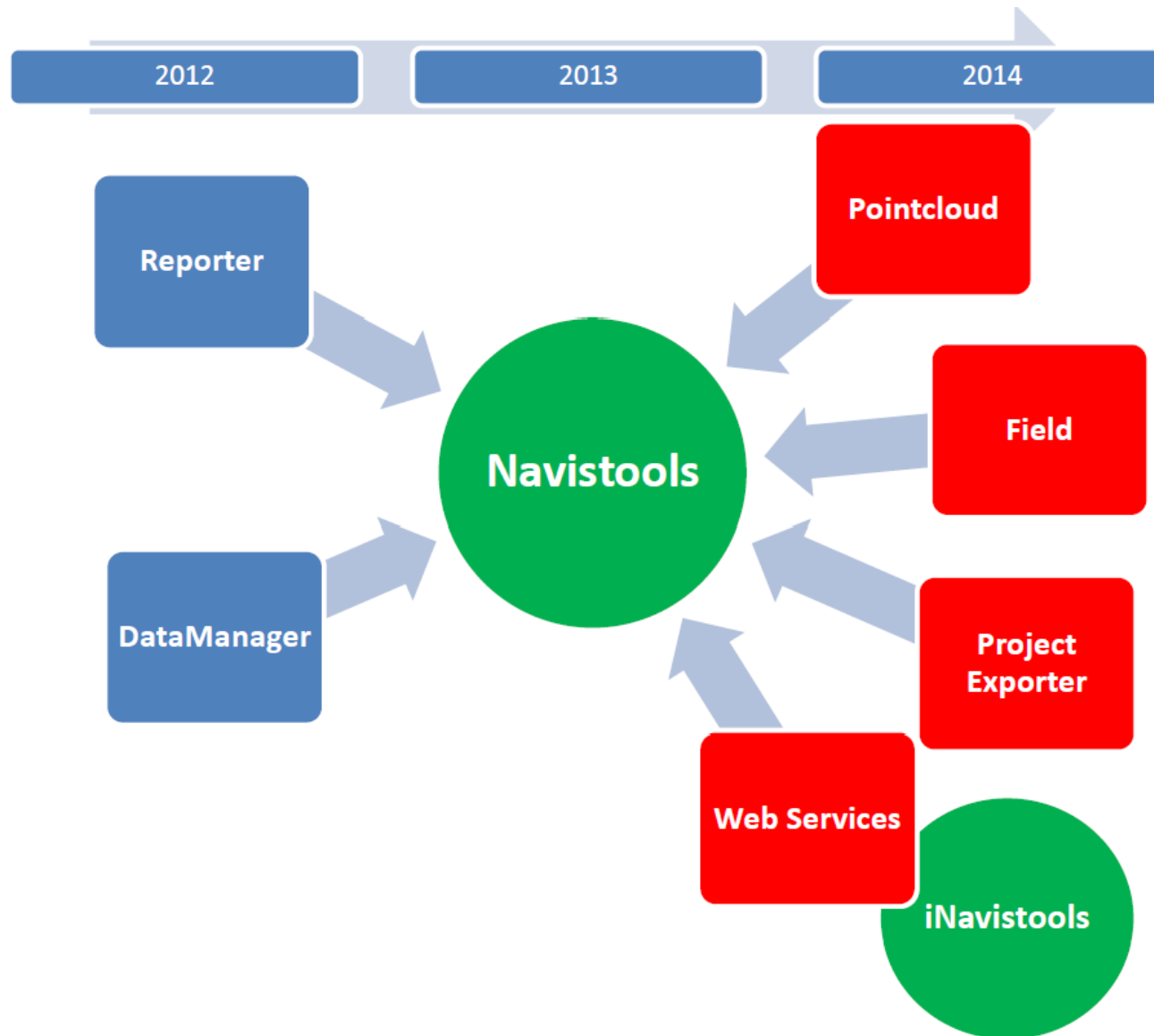


Plant



Infrastructure

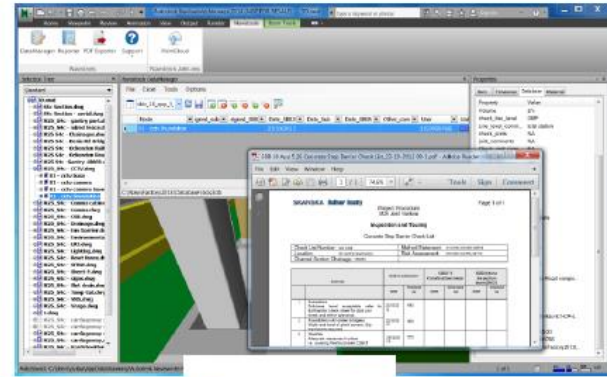




Navistools Field



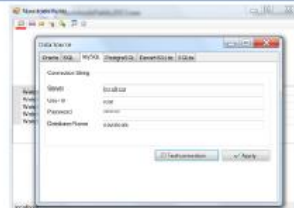
- Field QA / Inspection on iPad
- Use standard and familiar company forms
- direct input into Navistools database
- integrates to server or web-based collaboration system
- Internet connection not required on-site
- stores form entries and completed pdf with signatures



Standard
SBBJV
forms



Navistools Field



Navistools/PTTP

Profox References

Outotec

SKANSKA

Balfour Beatty
Civil Engineering

NCC

loh+k

PÖYRY

W.M.
Jordan
COMPANY

eka

an Akzo Nobel company

DOW

RAMBOLL



ATKINS
The official engineering design services
provider for the London 2012 Games

FineWeld
KOKKOLA

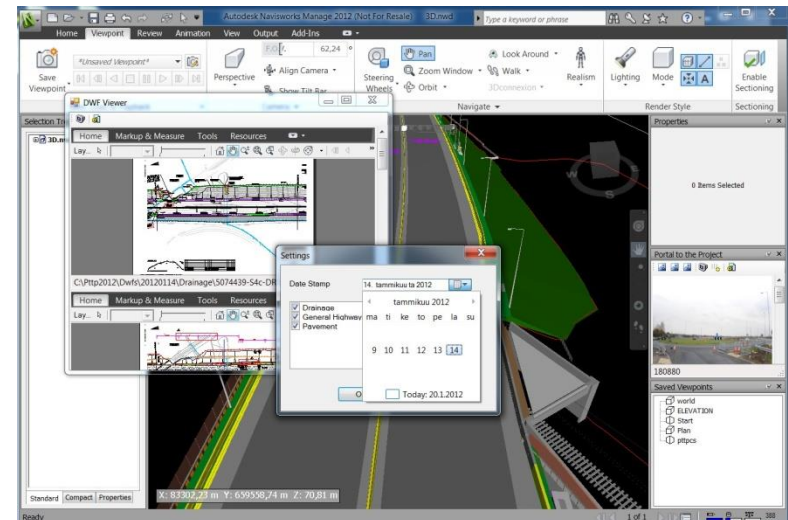
**Custom Software
 Development
 Customer**



- Navistools
- Proof of Concepts
- Dynamic linking
- Portal to the Project - PTPP
- Field BIM
- iBIM , iPTTP, iNavistools
- BC Integration

- *There is so much data on a project and there is no real system which I have come across which can provide the processes which Balfour Beatty Civil Engineering Limited require to manage the project data at each stage of the BIM Life Cycle.*
- *What I wanted was an application which could manage multiple data formats for a Civil Engineering Project.*
- *The question was how was I going to develop this type of system ?*
- *This is where Profox helped us Realise our Vision....*

Harry Parnell, BBMCE



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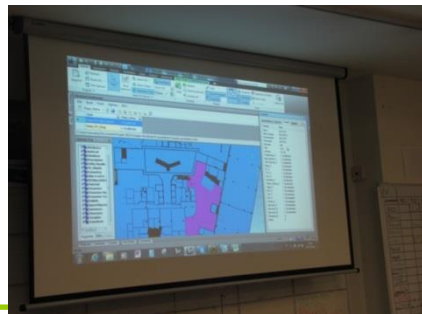
Navistools
Customer



NCC Sverige AB

Uses Navisworks as a coordination tool with all projects , and Navistools already at 10 building sites in Sweden

- Project coordination
- Communication between designers / onsite workers
- Monitoring onsite work (Navistools)



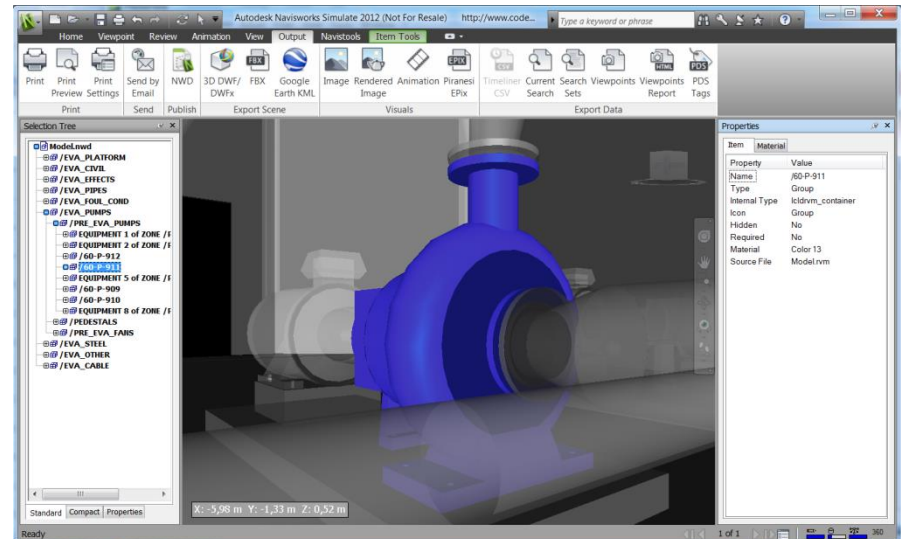
**Custom Software
Development
Customer**

SKANSKA

"I have never experienced such hassle-free software development! We had a couple of ideas for improving functions in Navisworks and were turned down everywhere we asked. With Profox it was "can do" from the start and the projects were delivered quickly and efficiently..."

Adina Jägbeck, BIM Project Manager, Skanska

- Capture
- Linking from Freedom
- Batch publishing
- Auto-Linking from SharePoint
- Locator



Navistools
Customer

FineWeld 

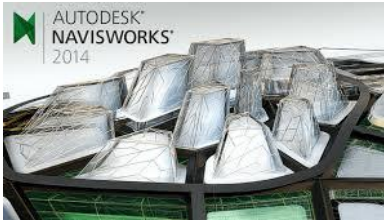
FineWeld Oy is one of the biggest Nordic companies specialising in the manufacture and installation of industrial piping systems.



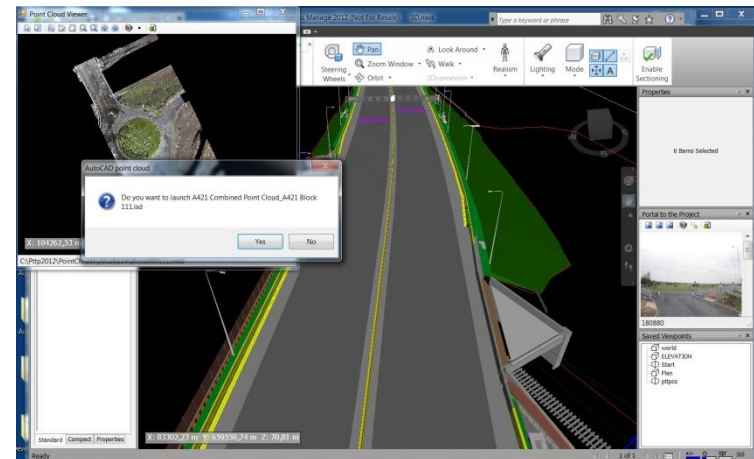
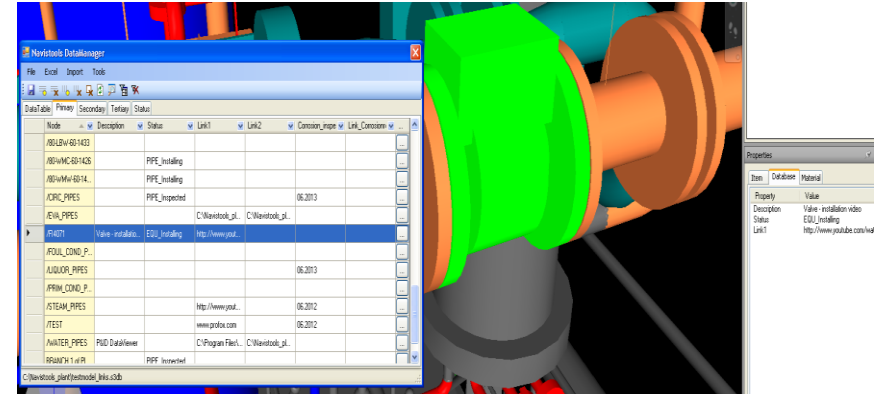
Uses Navisworks & Navistools as a coordination tool with all installation projects in Finland & Sweden

- Project coordination
- Communication between designers / onsite workers
- Monitoring onsite work (Navistools)

Custom Software Development



- Navisworks applications
- AutoCAD applications
- Navistools customisation
- Visual portals
- Mobile applications
- Integrations
- Plant applications
- Mobile applications
- Data Capture
- Automated and Background processing



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