

AUTODESK® BIM 360®

KAASAEGNE PROJEKTIPANK

ja selles „*Reality Capture*“ töövood

Ettekanne

Hendrik Park



MINA

LinkedIn
linkedin.com/in/hendrikpark



BIM konsultant
2018 -



Tootejuht
2018 -



**Projekteerimise
projektijuht**
2017 - 2018



**Objektijuht /
Projektijuht**
2013 - 2017



**õpingud, diplomeeritud
ehitusinsener**
- 2018

SISUKORD

ÜHTNE INFOKESKKOND

ehk CDE ja selles koostöö korraldus



10.06.2019 | Droonid Ehituses 2019

usesoft

B AUTODESK® BIM 360™

**DIGITALISEERI –
Integreeri &
Automatiseeri -
Analüüsi & Ennusta!**



10.06.2019 | Droonid Ehituses 2019

usesoft

B AUTODESK® BIM 360™

INTEGRATSIOONI VÕIMALUSED



AUTODESK® FORGE
integrations.bim360.autodesk.com



FORGE



10.06.2019 | Droonid Ehituses 2019

usesoft

ÜHTNE INFOKESKKOND

ehk CDE ja selles koostöö korraldus



CDE?

Common Data Environment

ehk siis projektipank?!

*Mitte ainult, vaid
ühisjagatud
infoplatvorm!*

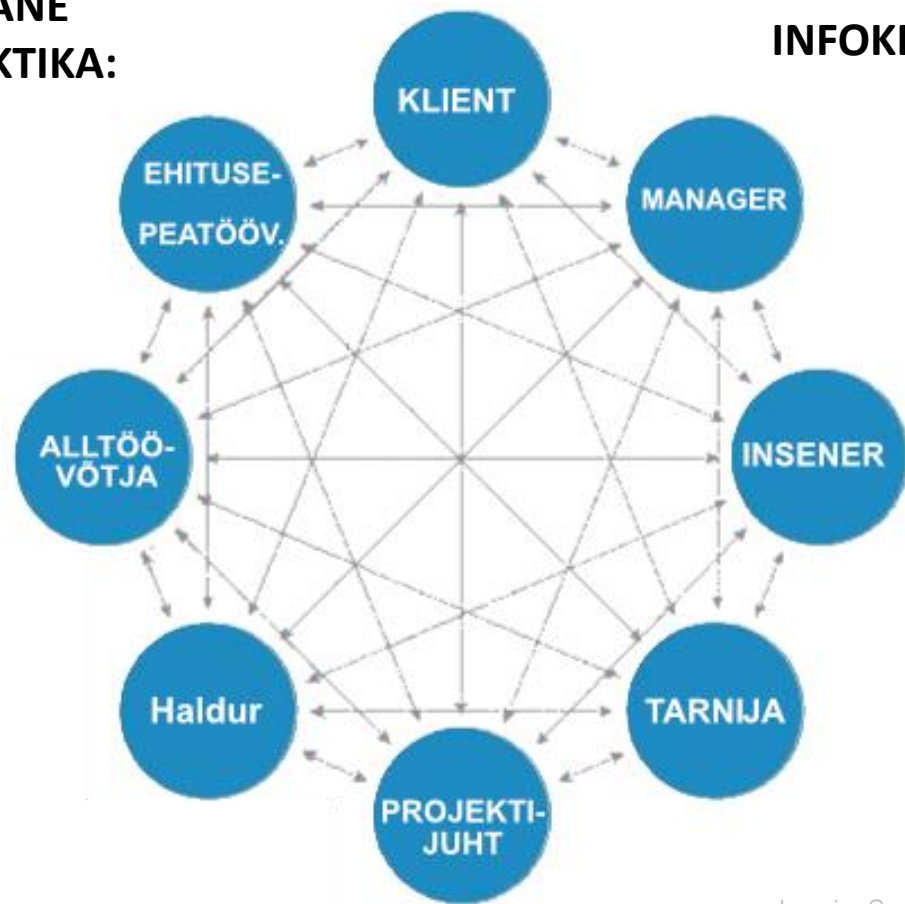
Ühtne infokeskkond
ja selle vajadus?



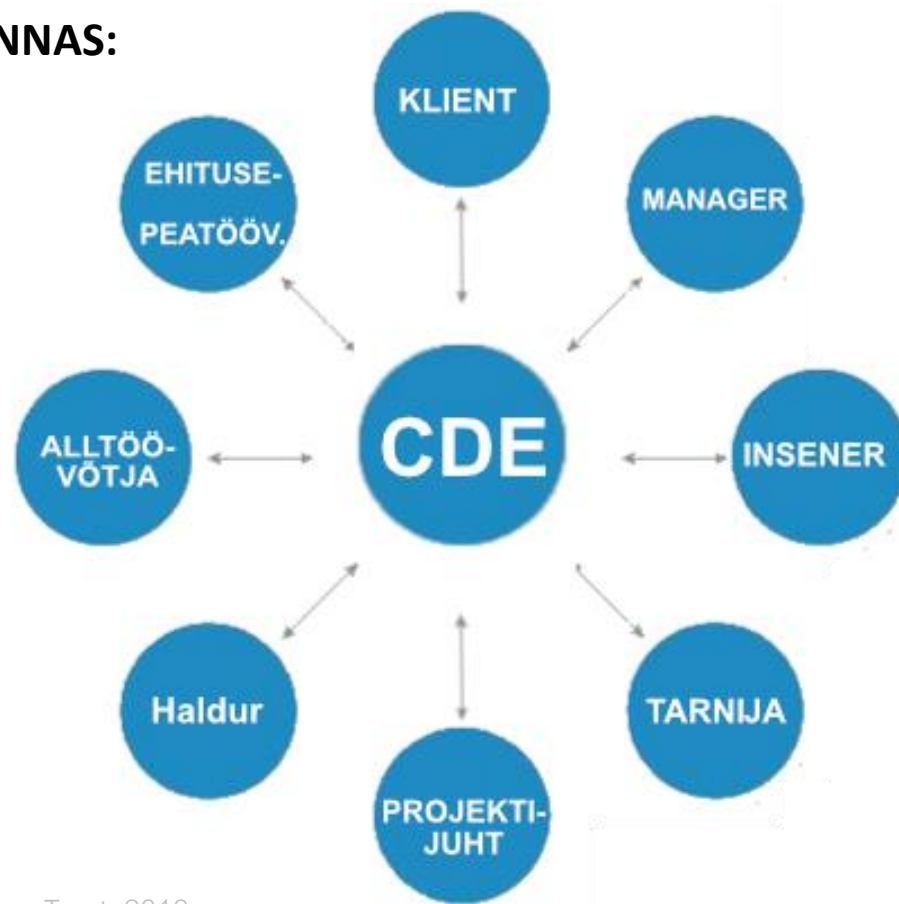
Joonis. Näide ühe konkreetse keskmeta projektipõhisest infoväljast.

PROJEKTI OSAPOOLED

**TÄNANE
PRAKTIKA:**

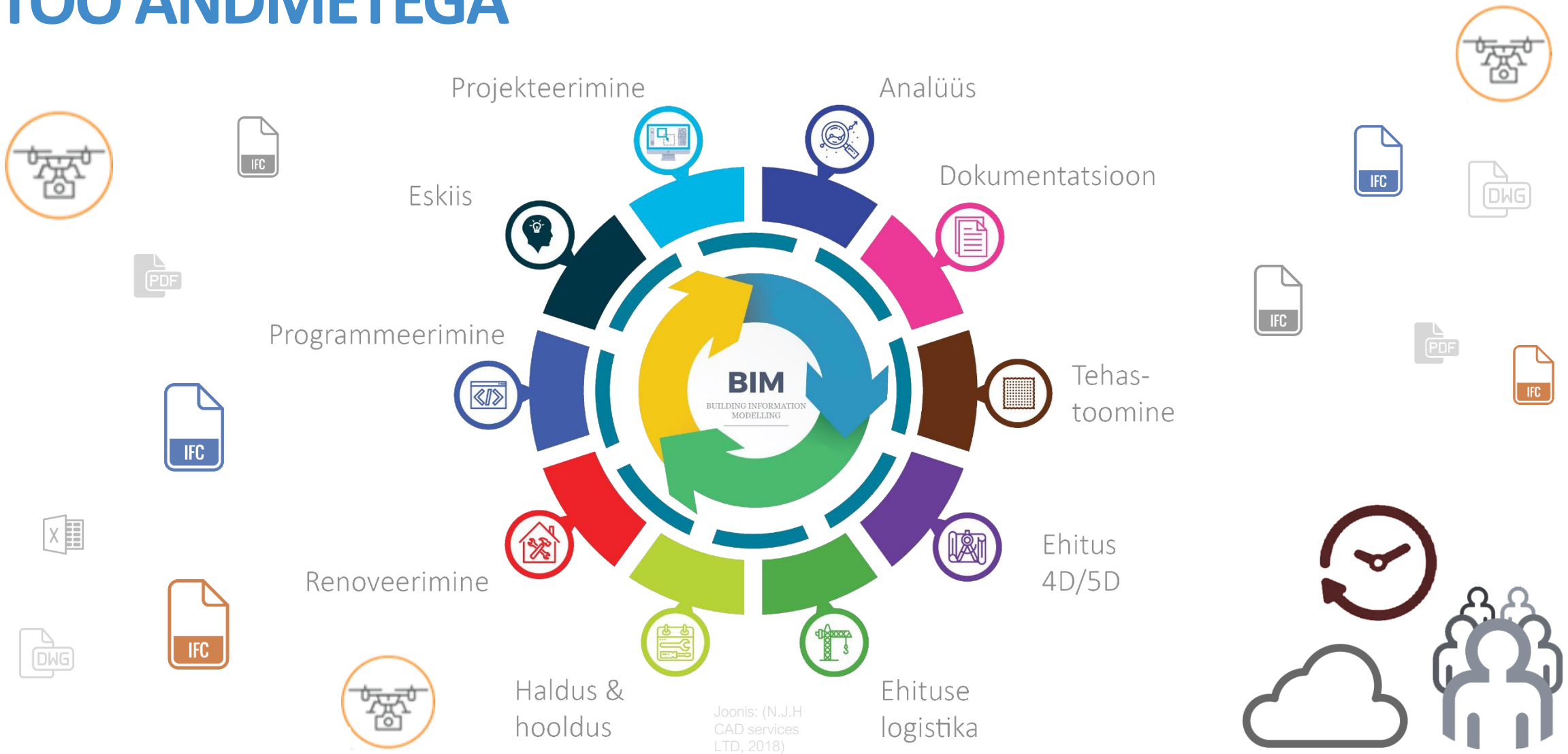


**ÜHTSES
INFOKESKKONNAS:**

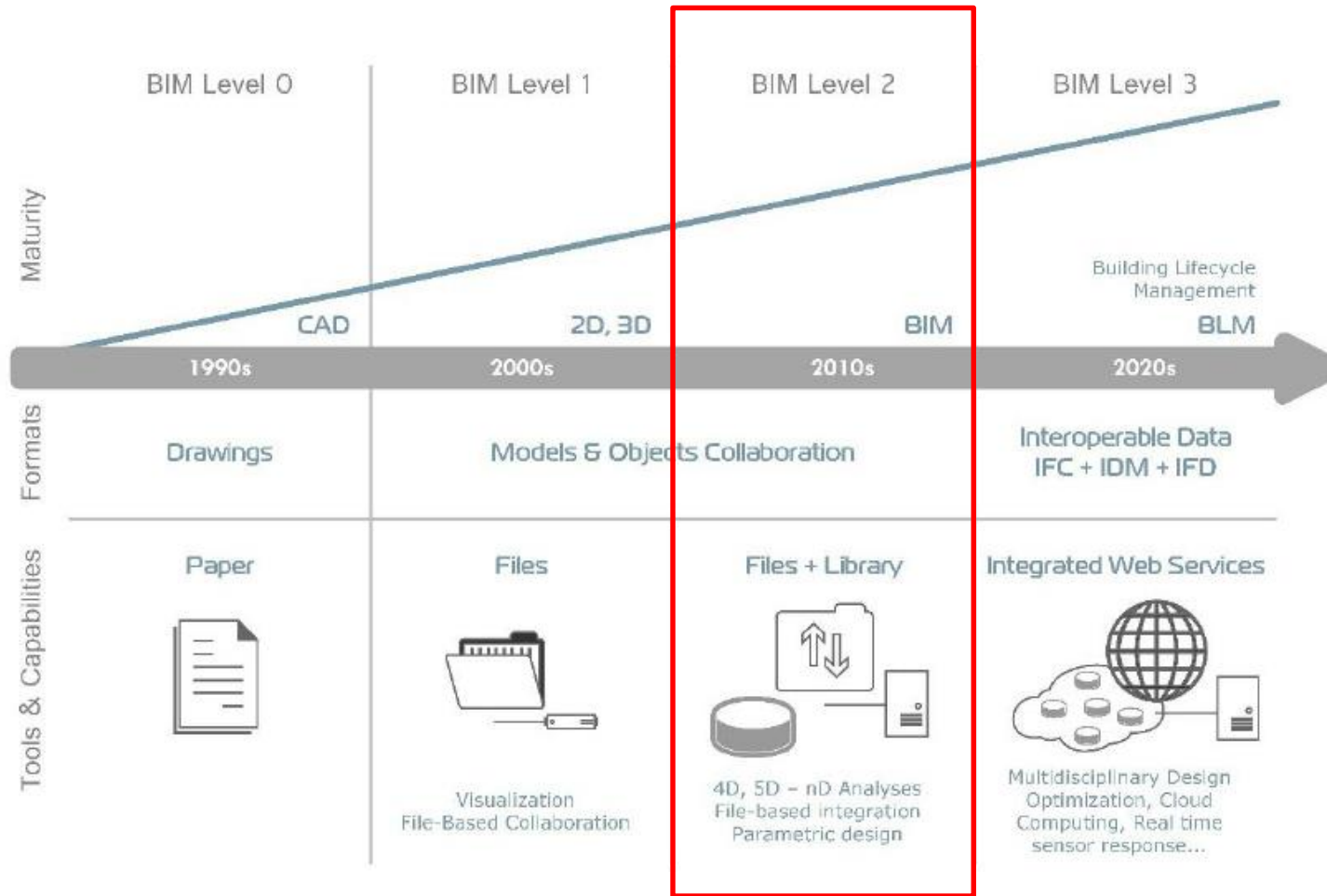


Joonis: Scottish Futures Trust, 2018

TÖÖ ANDMETEGA



INTEGRATSIOONI / KOOSTÖÖ TASEMED



Joonis: UK järgi BIM tasemed, nüüd on ka ISO standardiks

Joonis: Eve S. LIN, 2015



MIS ISO STANDARDIGA ON TEGEMIST?

Rahvusvaheline standard BIM projektide juhtimiseks

Avalikustatud detsember 2018

Defineerib metoodikad ja protsessid

27 riiki on juba kinnitanud selle ülevõtmise



EVS-EN ISO 19650

MILLISED ON ISO NÕUDED SEDA TOETAVALE KOOSTÖÖPLATVORMILE?



Keskse andmehoidla
olemasolu



Juhitavad protsessid



Õigustega määratavad
ligipääsud



Andmekonteinerite / failide
vahetamine



Kinnitamise protsessid



Andmekonteinerite / failide
klassifitseerimine



Läbivaatused-revisjonid



Andmete oleku-staatused

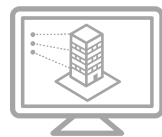


Klassifitseeringud

...MIS AGA VÕIKS OLLA LISAKS? 😊



Projekteerimistarkvarade
otse-integratsioon



Sisseehitatult failide
vaatamise võimekus



Projekteerimisprotsessi
haldamise tööriistad



Veateadete haldus



RFI haldus



Kommenteerimine &
märkmed sisul



Mobiilne juurdepääs



Keskkonnaülene
andmeanalüüs



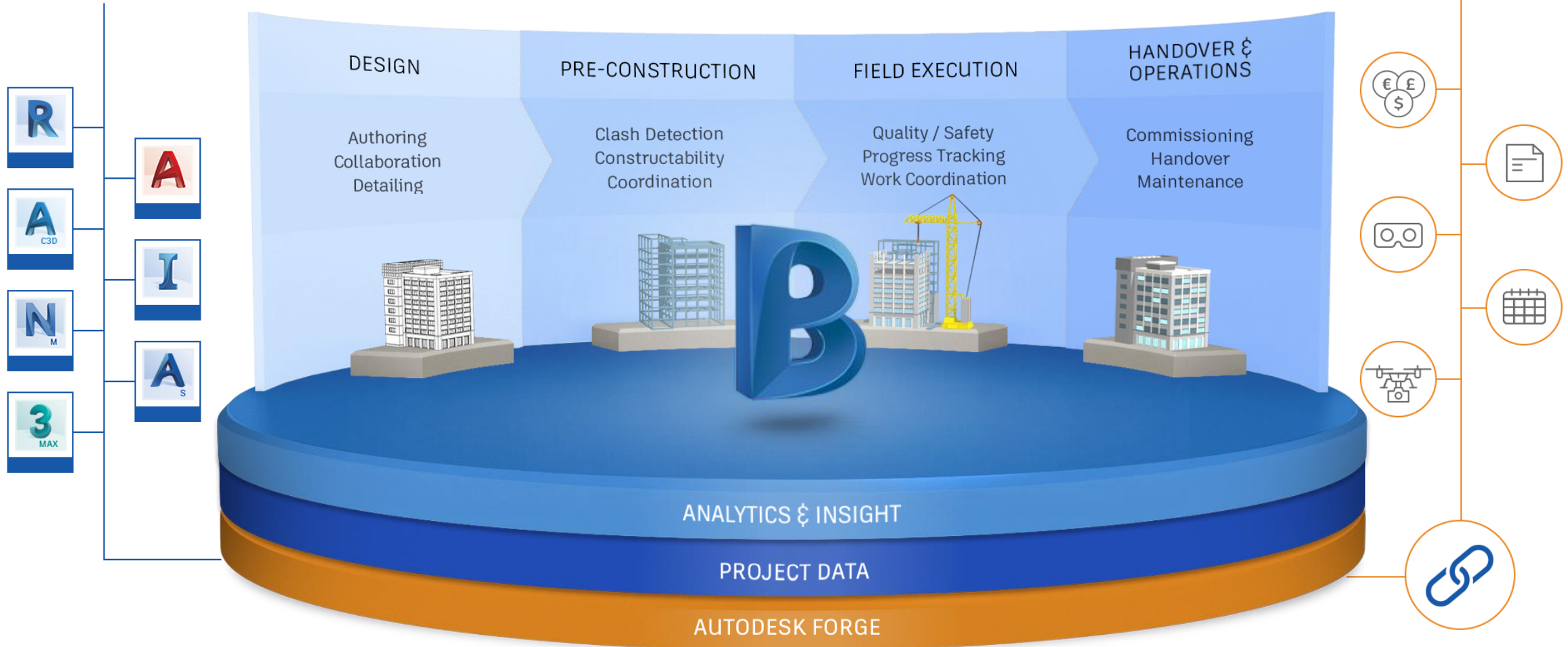
Koondmudelite haldus



AUTODESK®
BIM 360®

**DIGITALISEERI –
Integreeri &
Automatiseeri -
Analüüsi & Ennusta!**





PROJEKTI AVALEHT (1/2)


AUTODESK BIM 360

Usesoft AS
UseHouse





Project Home



Usesoft AS

UseHouse

Project Dates: Tue Aug 28 2018 - Sat Aug 01 2020


Customize

Quality Risk

Risk Today: High


Quality Risk Trend


About Risk Today

Construction IQ
PREVIEW

Weather

12°

Rain

Thu 13°

Fri 10°

Sat 11°

Sun 9°


Powered by Dark Sky

Quality Risk Factors



11

HIGH RISK SUBCONTRACTORS



159

HIGH RISK ISSUES



139

WATER RISK ISSUES



0

CHECKLIST ACTIVITY



4

OVERDUE ISSUES

Construction IQ
PREVIEW

My Issues

ID	Title	Type	Due Date
1	Flashing at joint	Quality	Feb 15, 2019
5	Update railings with new finish	Design	Feb 16, 2019
33	Please verify the dimensions and edge details for the elevator shaft...	Coordination	Feb 22, 2019
37	Missing handrails on floor 2	Safety	

Subcontractor Risk Today

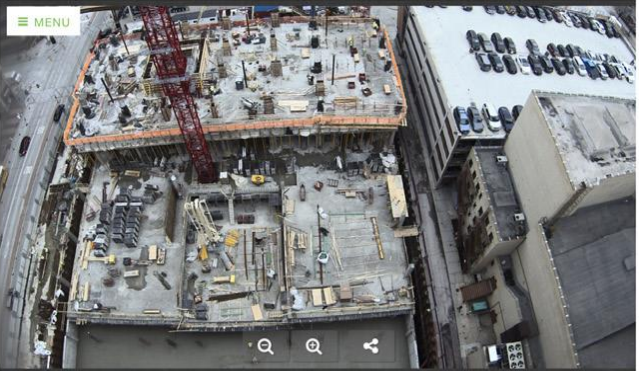

CC Concrete


Driveway Inc

High

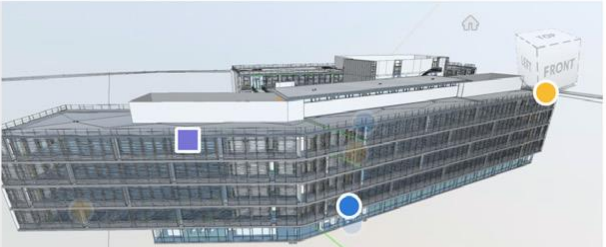
High

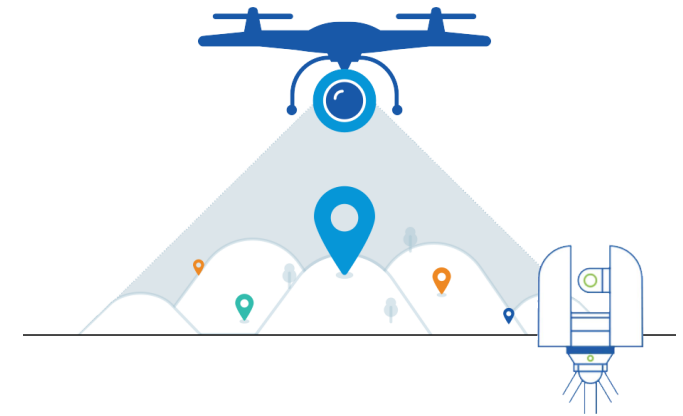
TrueLook - Jobsite Camera



TRUELOOK

Project Model





PROJEKTI AVALEHT (2/2)

Project Address



1 Market Street
San Francisco, CA 94105

Weather

12° 

Overcast

Wed 14° Thu 14° Fri 10° Sat 11°

Powered by Dark Sky

My Issues

ID	Title	Type	Due Date
1	Flashing at joint	Quality	Apr 15, 2017
33	Please verify the dimensions and edge details for the elevator shaft opening i...	Coordination	
5	Update railings with new finish	Design	

DroneDeploy



SmartVid

Bayfront Arena - IMG_d...

Public User (PU)

Tags

SmartFilter

7 14 14

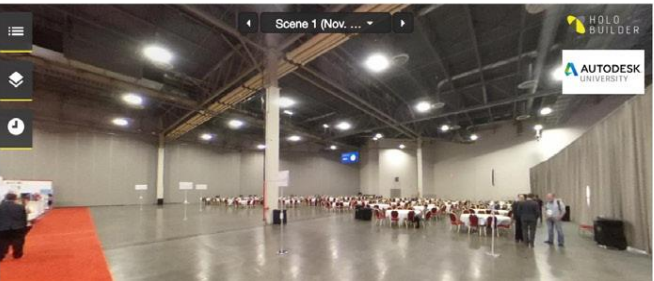
MOORE CONFIDENT

LESS CONFIDENT



HoloBuilder

Scene 1 (Nov. ...)



Card Library

Search

FILTERS

Construction IQ Companies Issues Project Controls

Design RFIs Submittals Quality Safety Cost

Schedule Partner Cards

CARDS

Select and add cards to your dashboard

Issues

DESIGN ISSUE TREND

DESIGN ISSUES

DESIGN ISSUES BY COMPANY

18 HIGH RISK SUBCONTRACTORS

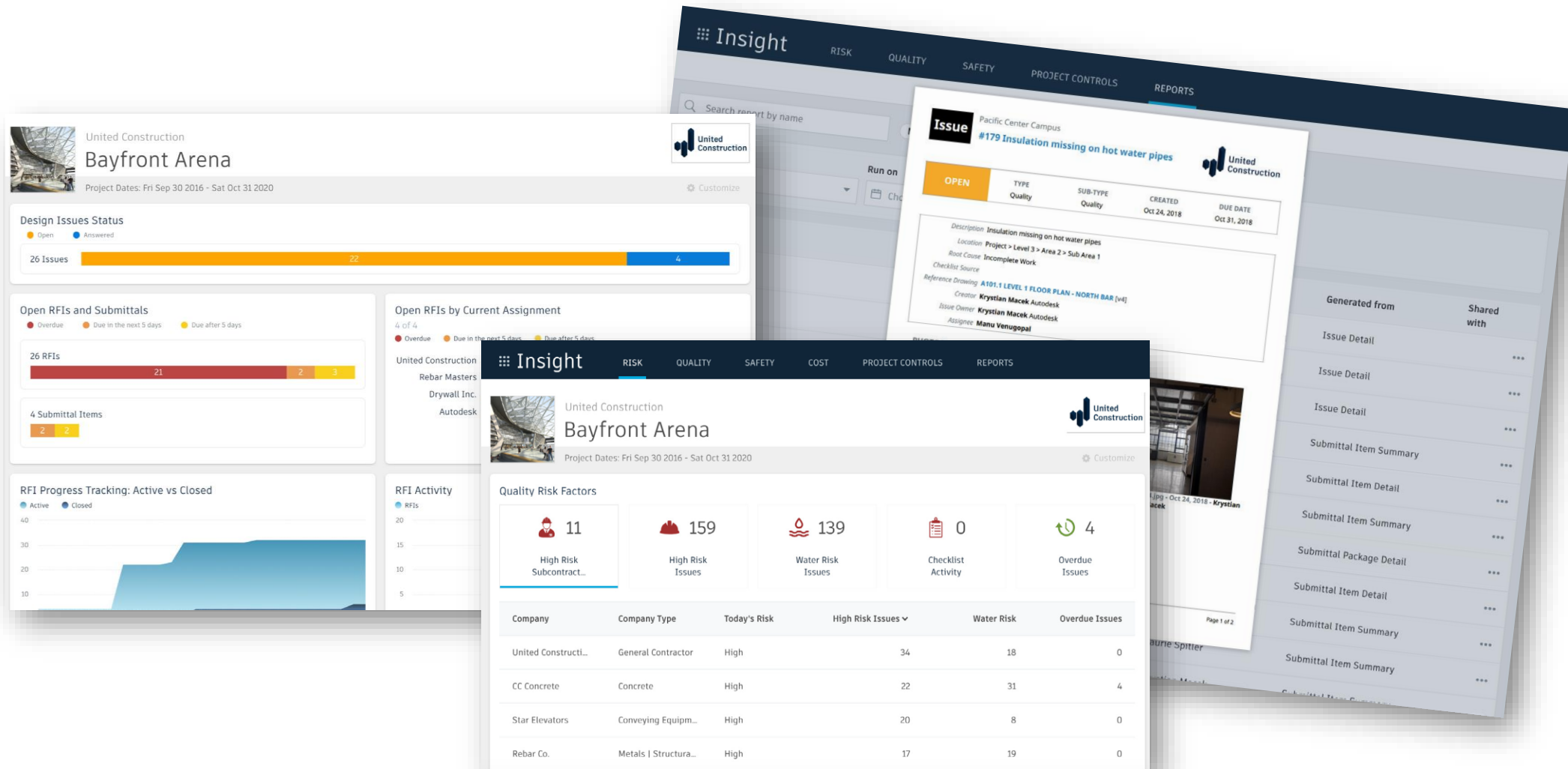
294 HIGH RISK ISSUES

200 WATER RISK ISSUES

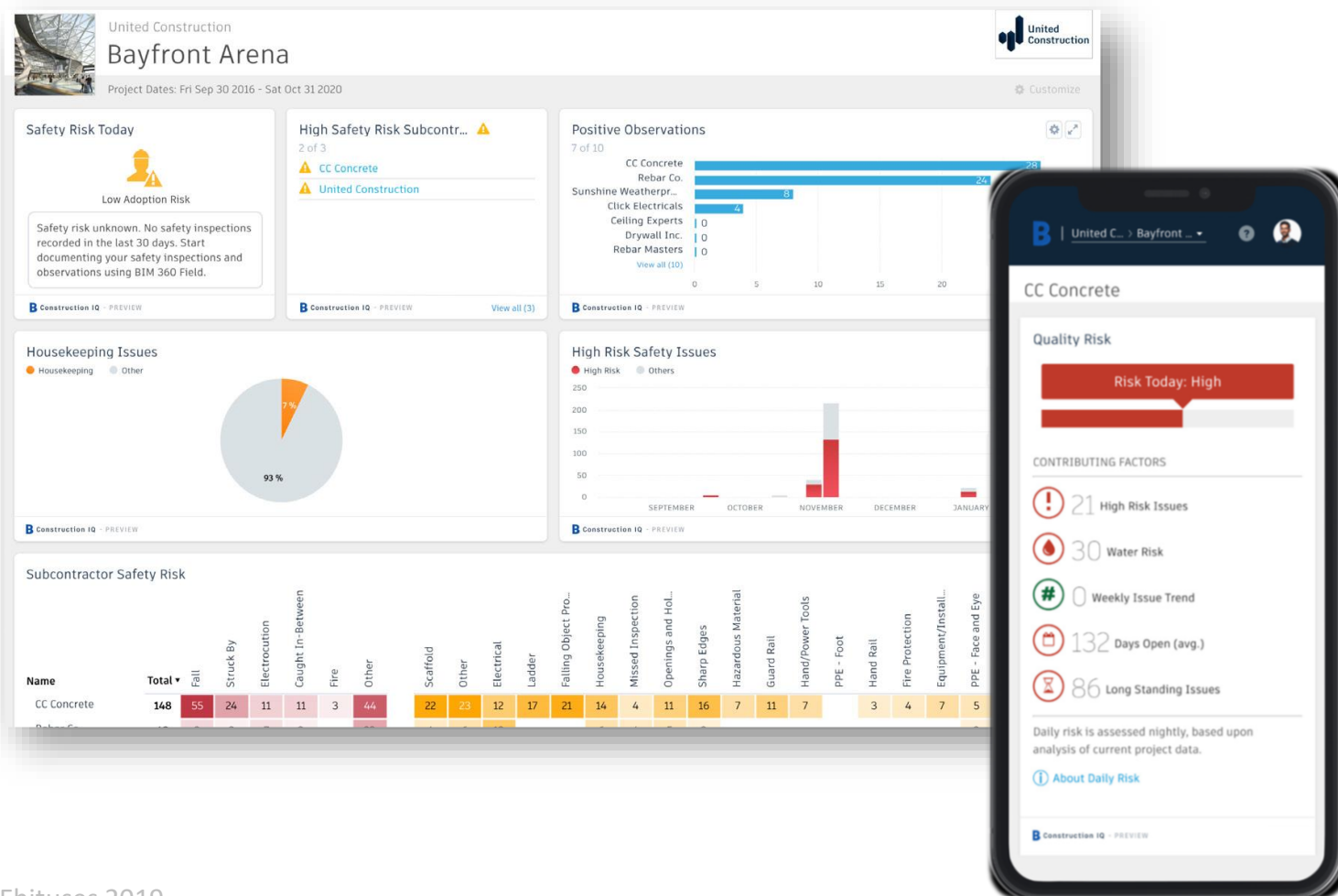
1 CHECKLIST ACTIVITY

OVER 150

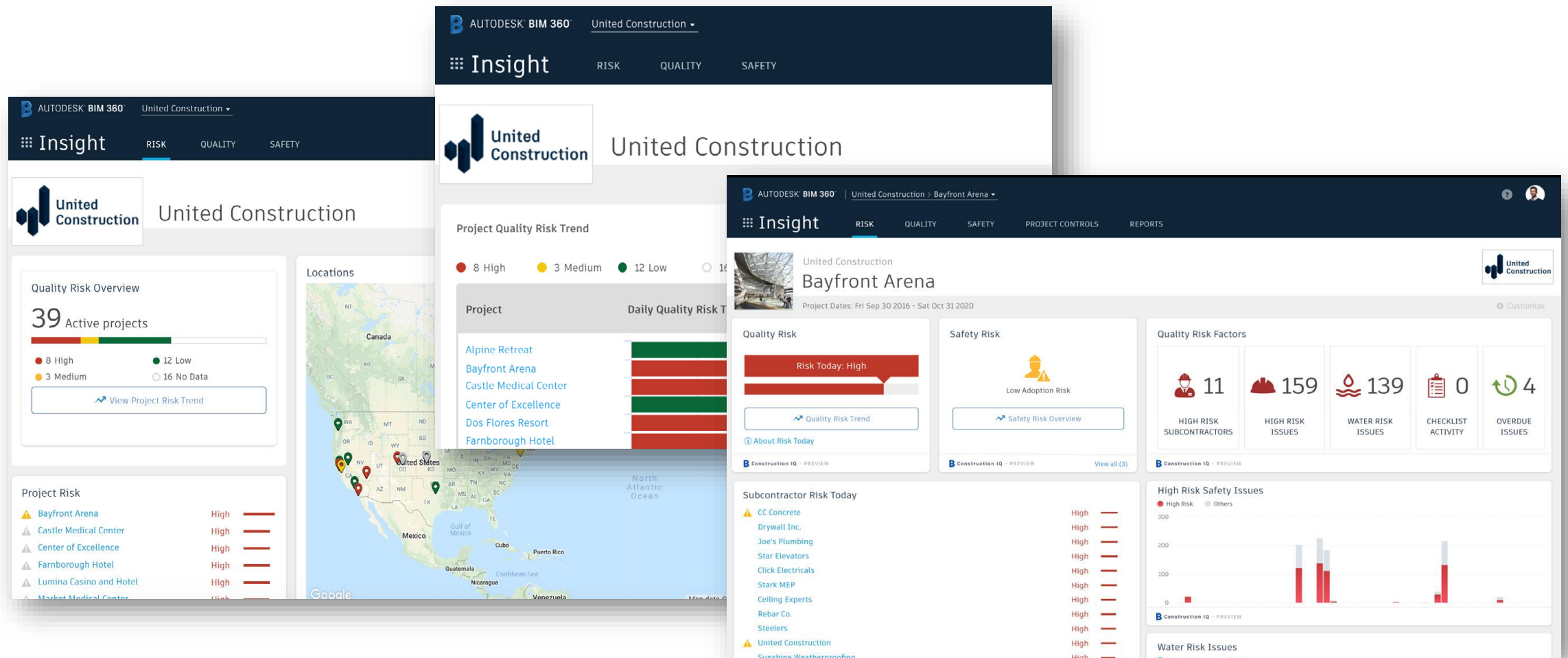
PROJEKTI SOORITUSE JÄLGIMINE



OHUTUSE JÄLGIMINE JA ANALÜÜS



ETTEVÖTTE ÜLESELT BIG-DATA ANALÜÜS



BIM 360 MOODULID



*Platvormil info
talletamise kesse, nn
projektipank ehk ühtne
infokeskkond (**CDE**)*



*Projekteerimisel vahetu
koostöö korralduseks
(Revit)*



*Automaatseks
koondmudelite
loomiseks ja kontrolliks
(RVT ja IFC)*



*Ehitusprotsessi
juhtimiseks*

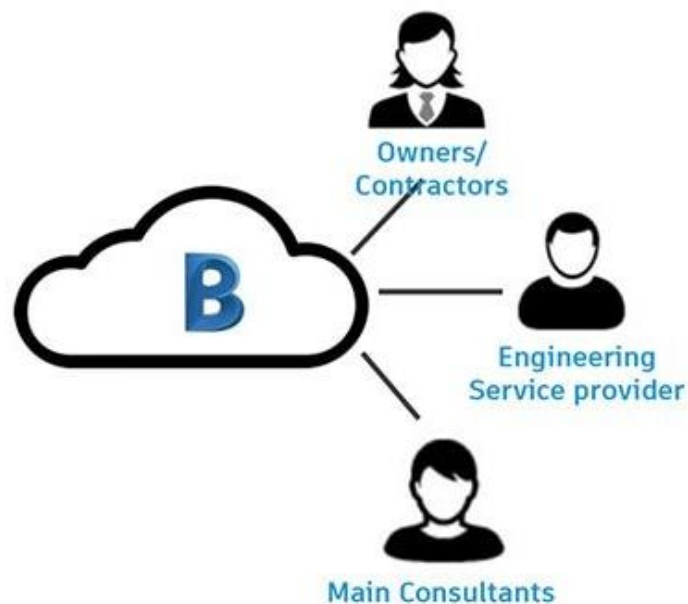
INFRAVALDKOND

+





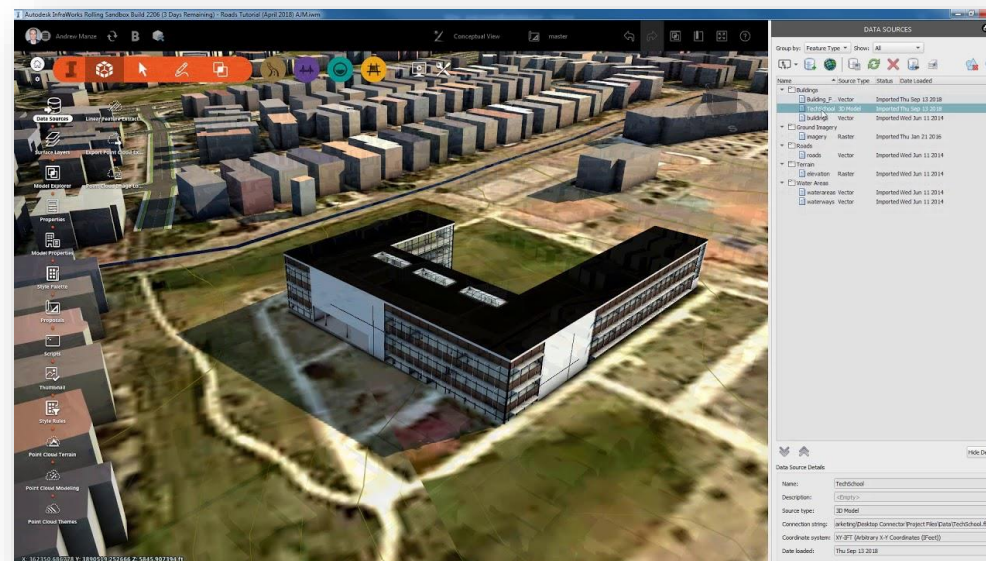
Ka infravaldkonna tarkvarade
otseintegratsioon BIM 360 keskkonda!



DATA MANAGEMENT SOLUTIONS FOR CIVIL INFRASTRUCTURE



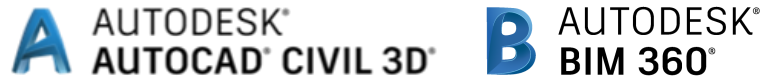
**Agregeeritud infomudel ehk
infraBIM + BIM + CAD + GIS + RealityCapture...
ühtses CDE keskkonnas (InfraWorks + BIM 360)**



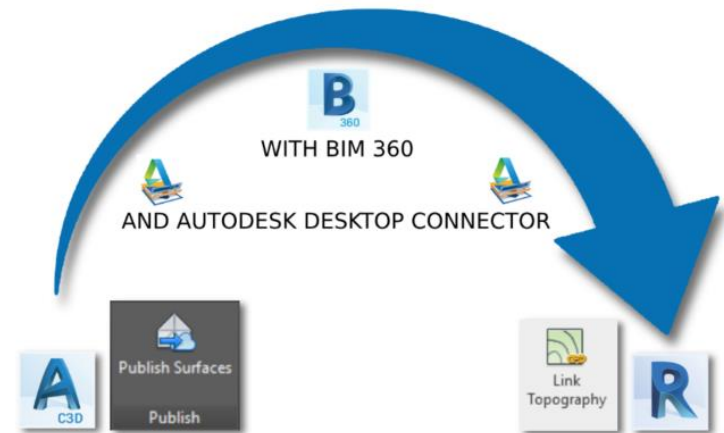
5 Reasons to believe in Context Modeling

LÄHTEOLUKORRA DIGITALISEERIMISEST PROJEKTINI



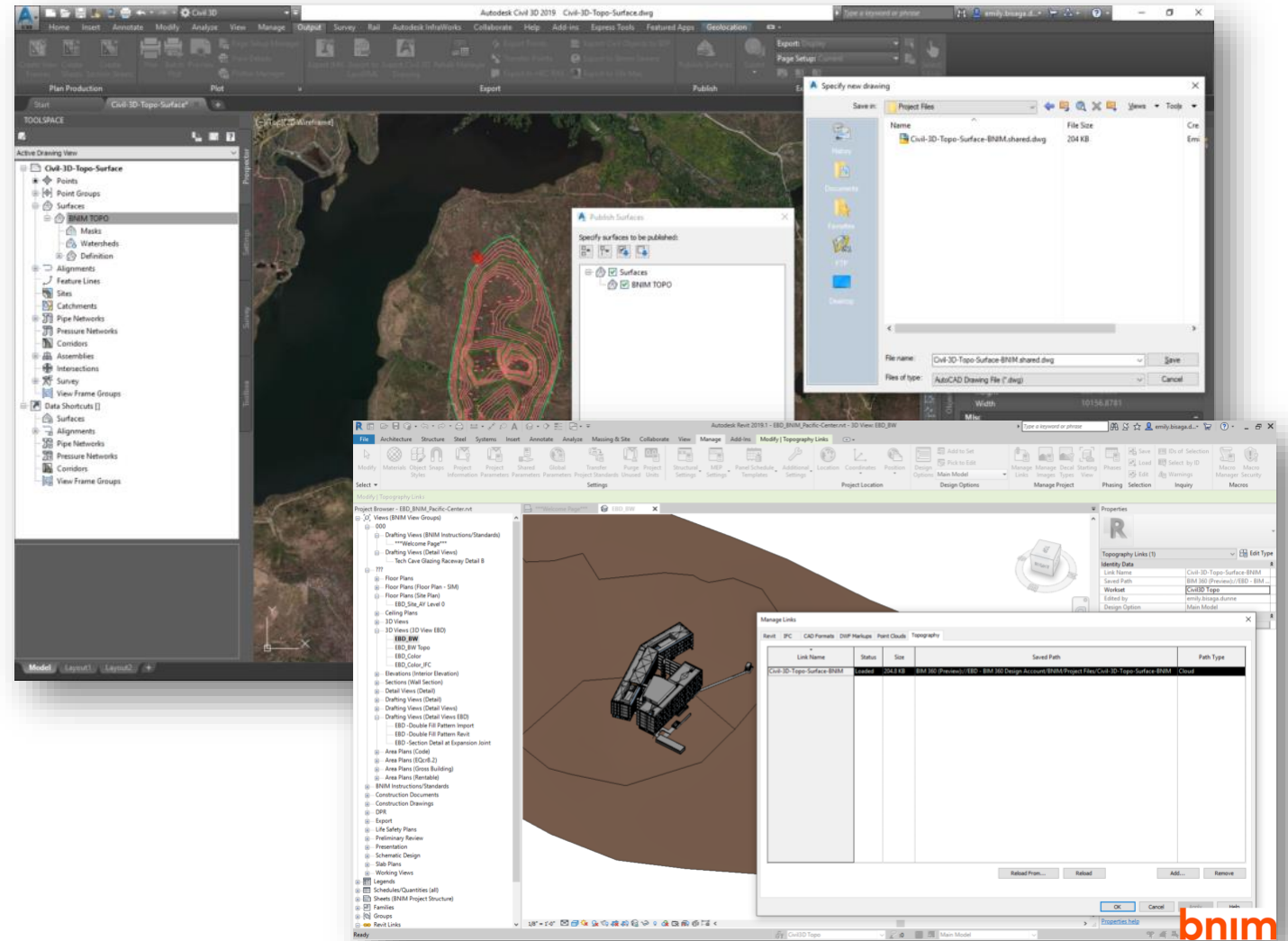


TRANSFER YOUR TOPOGRAPHY



FROM CIVIL 3D TO REVIT

Four ways the latest Civil 3D 2019 features will improve efficiency



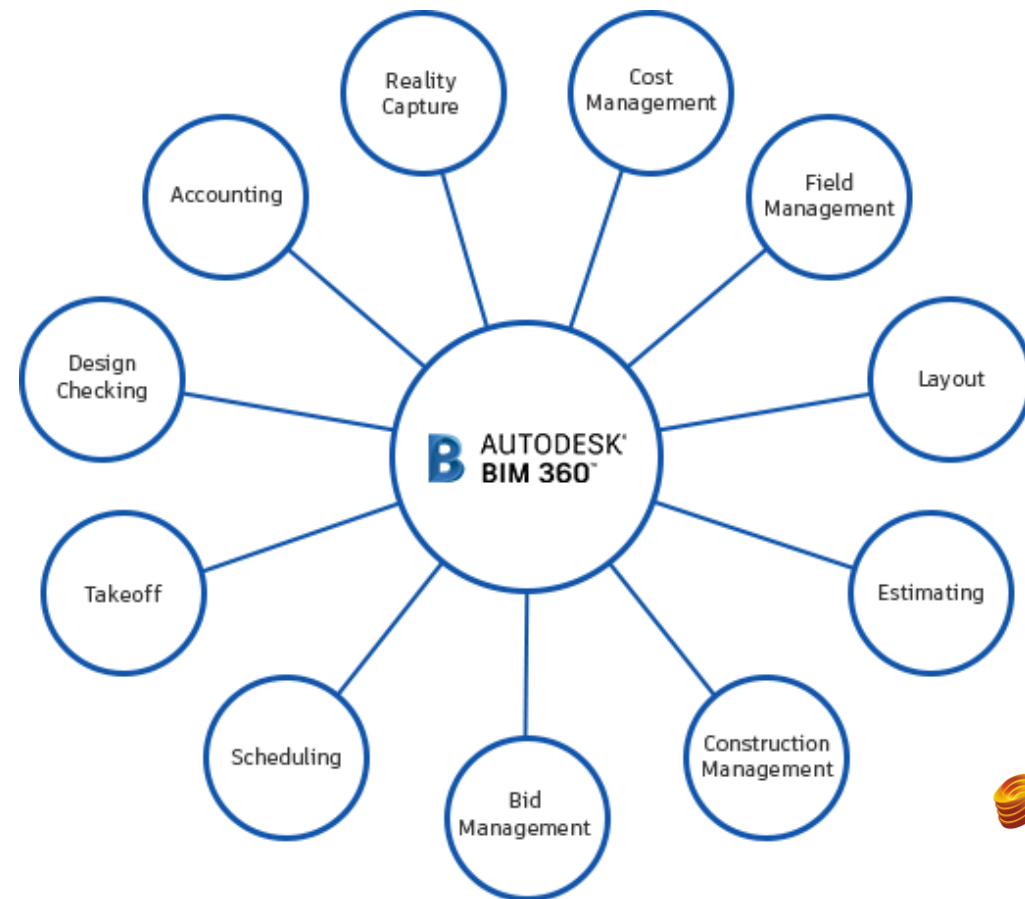


INTEGRATSIOONI VÕIMALUSED

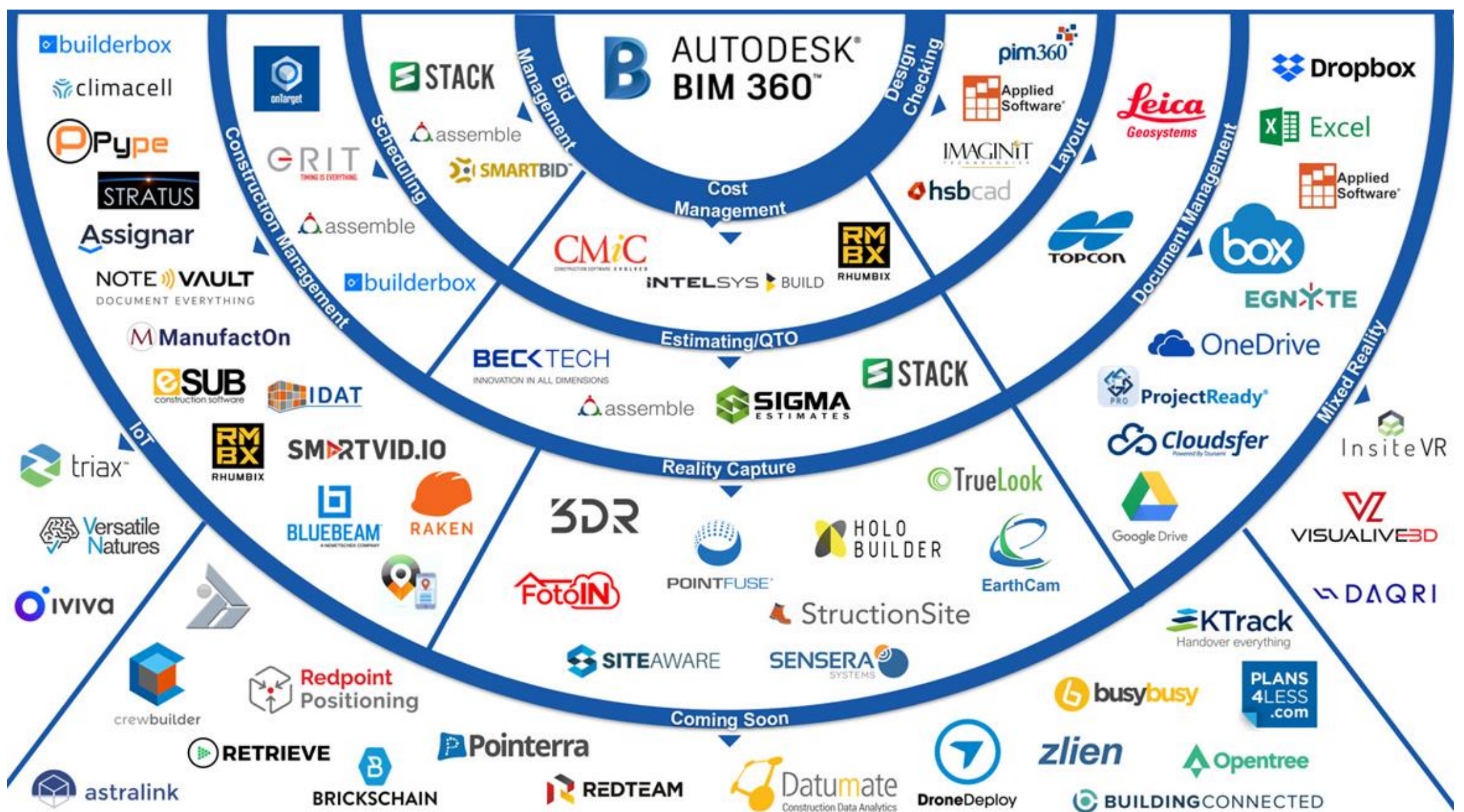


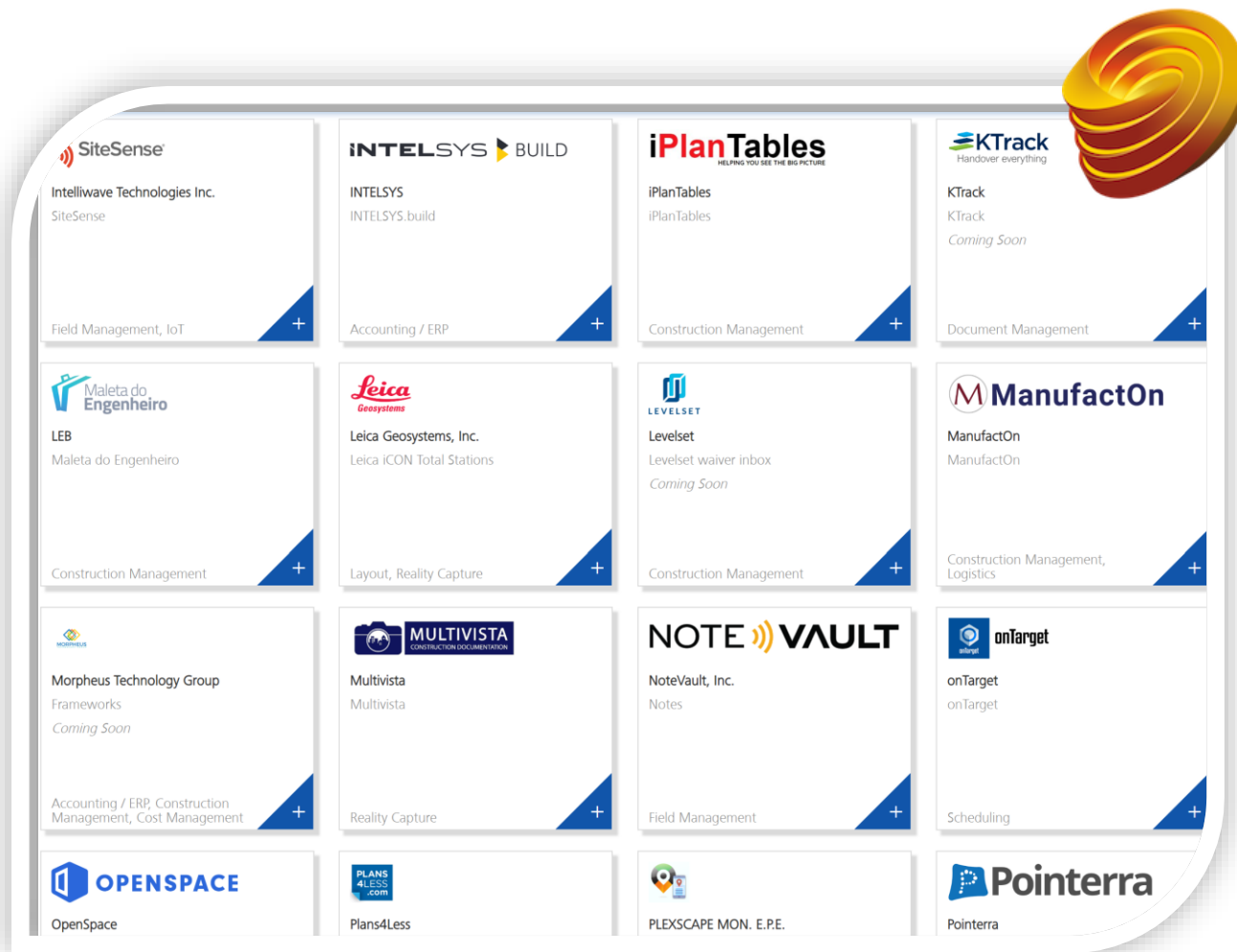
AUTODESK® FORGE

integrations.bim360.autodesk.com



BIM 360 API





AUTODESK[®] FORGE + BIM 360 API

Koostööpartnerid:

<https://integrations.bim360.autodesk.com>

Forge platvormi võimaluste näited:

<https://forge.autodesk.com/learn-examples>

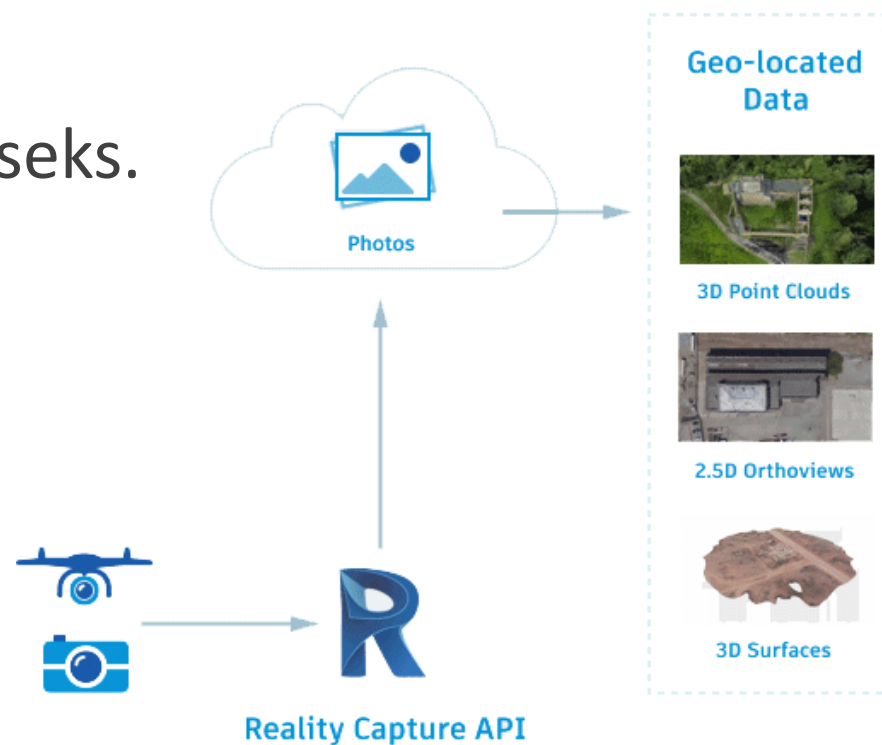
Joonis. Autodesk BIM 360 integratsioonid läbi Forge. Hetkeseisul 77+ koostööpartnerit.



BIM 360 keskkonda integreeruv, tarkvaraarendajatele mõeldud liides/teenus fotogrammeetrial põhinevate lahenduste loomiseks.

Võimalus on luua järgmisi faile:

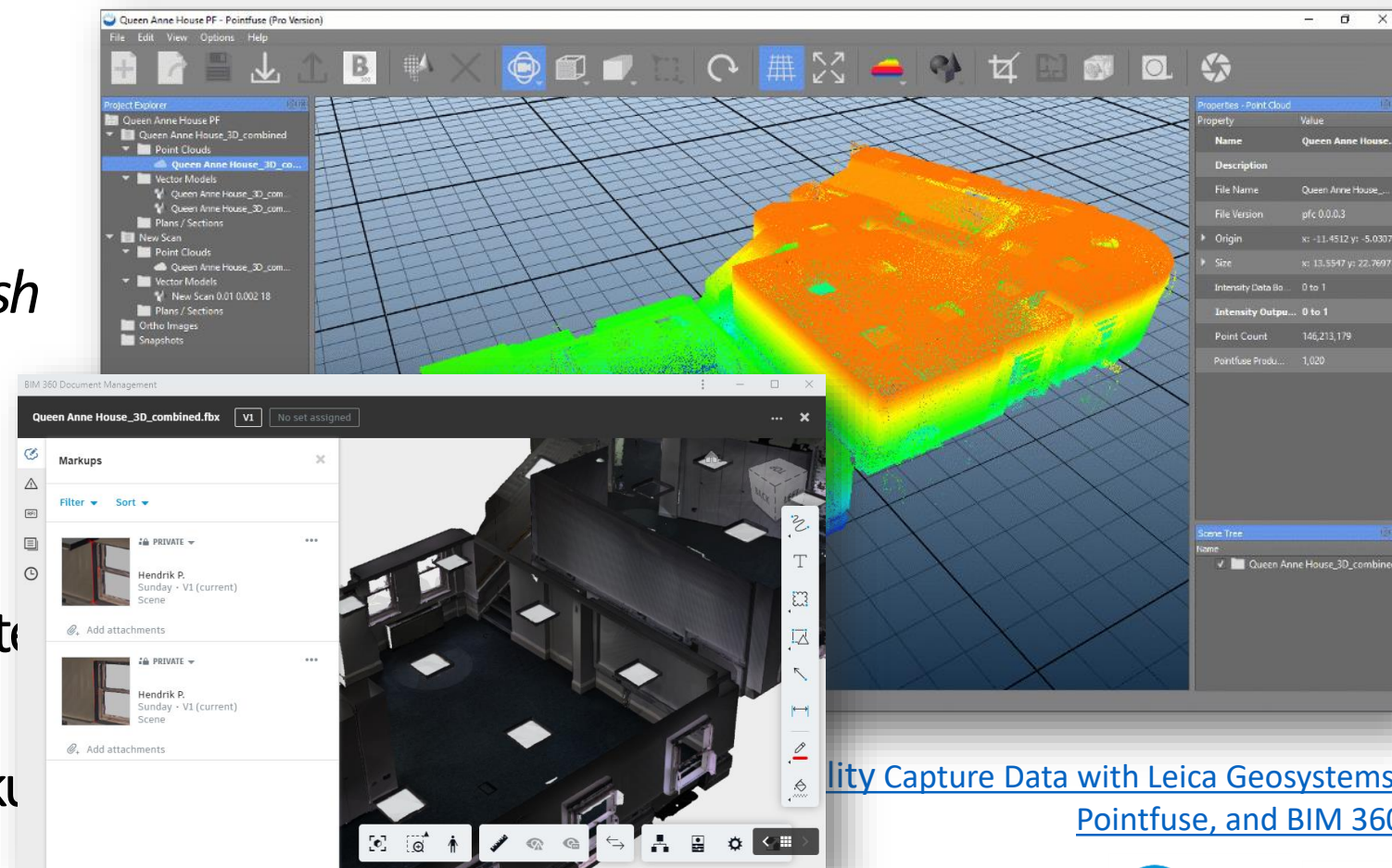
- **RCM:** Autodesk ReCap mesh;
- **RCP/RCS:** Autodesk ReCap punkt pilv
- **OBJ:** Tekstuuridega pinnamudel
- **FBX:** Autodesk FBX 3D andmeedastusformaad
- **GeoTIFF:** Ortofoto
- **Kvaliteedi raportid**



POINTFUSE

„Reality Capture“ tööriist:

- Punktipilvede töötlus ja *mesh* mudeliteks teisendamine;
- Omakorda *meshi* osade klassifitseerimine;
- Võimaldab ‘*as-built*’ mudelite loomist näiteks ristumiste kontrolliks, planeerimiseks kui ka teostuse valideerimiseks.



[Reality Capture Data with Leica Geosystems, Pointfuse, and BIM 360](#)



FORGE

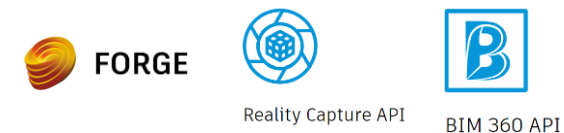


Reality Capture API

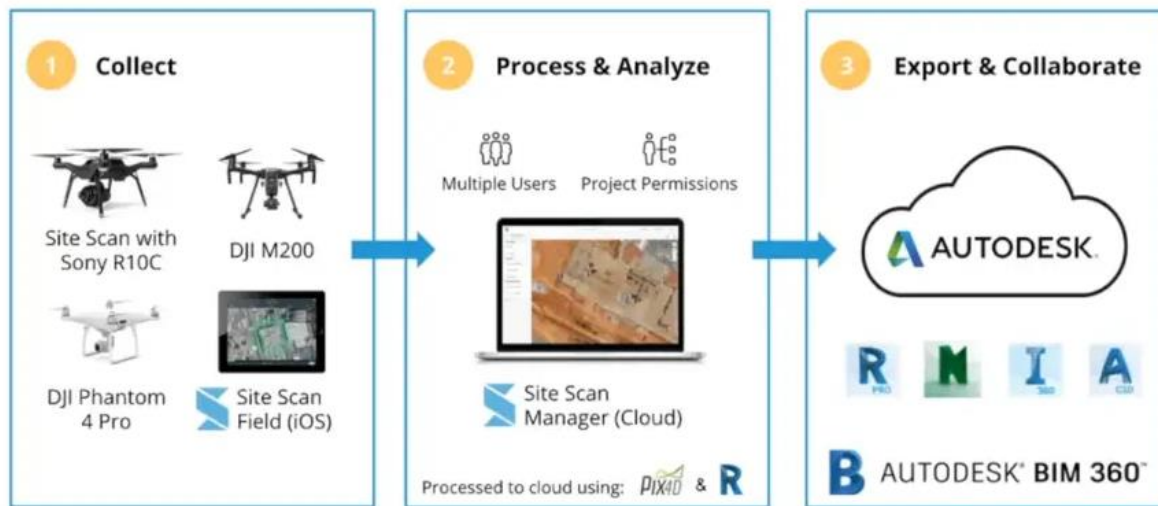


BIM 360 API

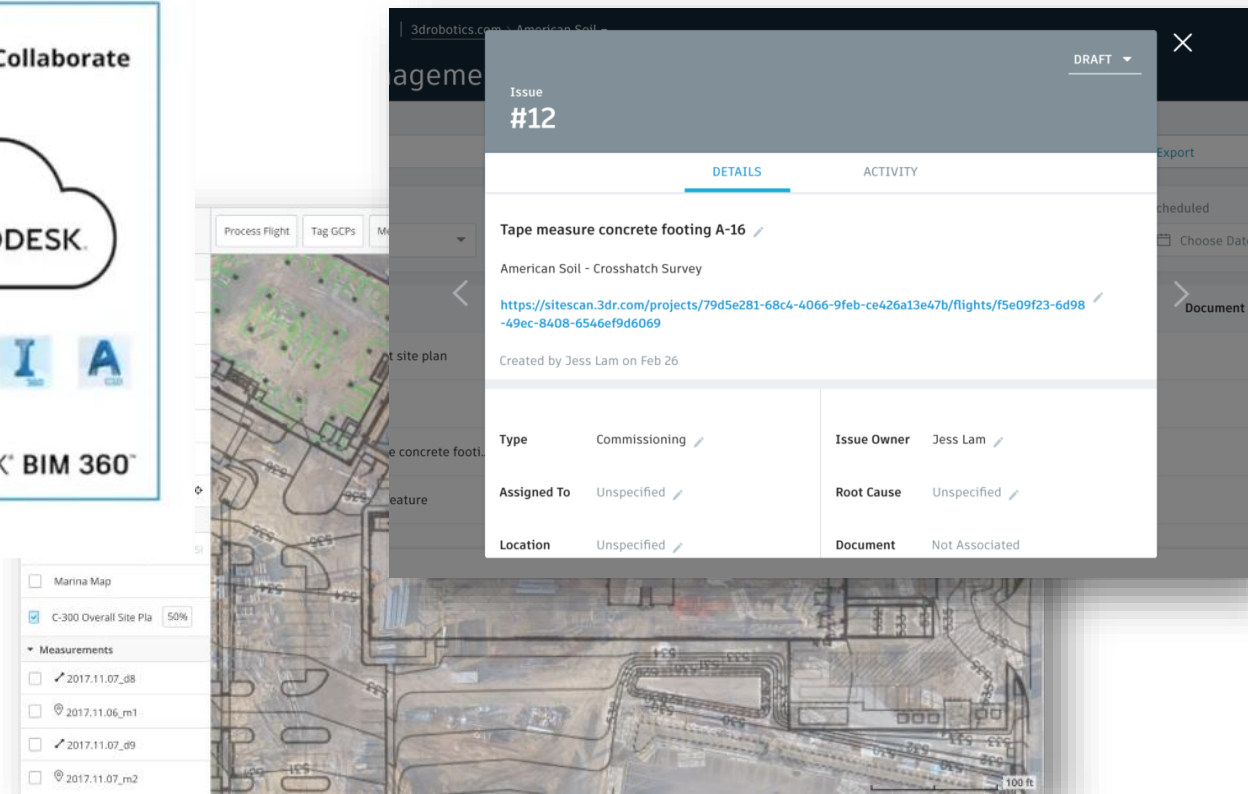
Site Scan + Autodesk® BIM 360™



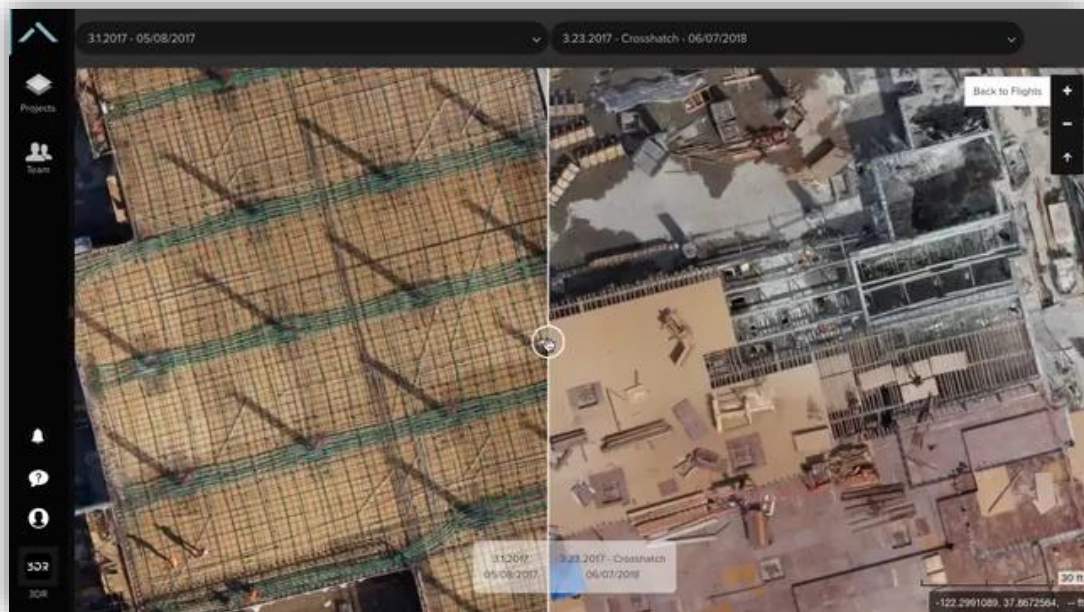
3DR Site Scan Workflow in three simple steps



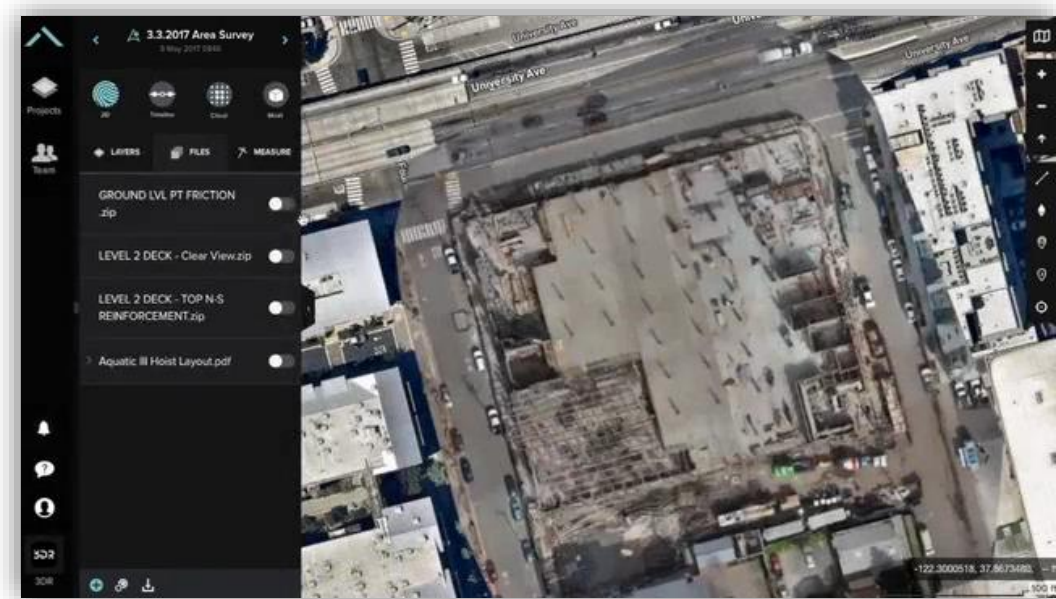
3DR



Site Scan + Autodesk® BIM 360™



Olukorra dokumenteerimine



Progressi jälgimine



BIM 360 API



FORGE



Document the entire lifecycle of your project from Design through O&M



apps.b360.autodesk.com

Talleta ja analüüsi 360° fotode
kaasabil objekti progressi.
Sidusta andmed projektipanga
mudelite/joonistega ning
korralda ka *issues* /RFI
töövooge.

Add Issue

Office Construction

Title Damaged duct work

Description Repair damaged duct work

Status Open

Created by HoloBuilder on Nov 6th

Type Quality **Issue Owner** You

Assigned to Unassigned **Root Cause** Unspecified

Location Unspecified **Document** Not associated

Due date 2017/11/21

Scene URL <https://app.holobuilder.com/app/?p=5216083162169344&u=ECDB370D>

Issue #40

Damaged duct work

Repair damaged duct work

<https://app.holobuilder.com/app/?p=5216083162169344&u=ECDB370D>

Created by HoloBuilder on Nov 6

Type	Quality	Issue Owner	Jane Doe
Assigned to	Subcontractor	Root Cause	Unspecified
Location	Level 3	Document	Not Associated
Due Date	11/21/17		

HOLO BUILDER

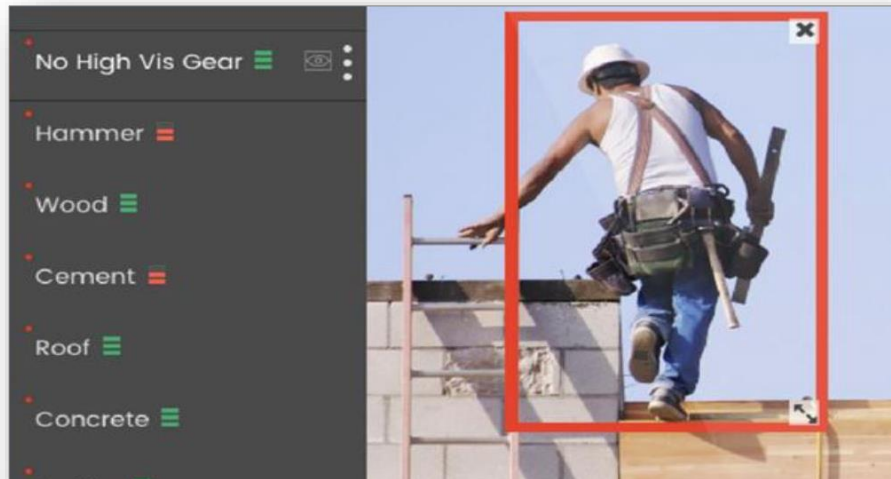
AUTODESK® BIM 360™



BIM 360 API



SMARTVID.IO



Automatic:

- All photos in BIM 360 Field and BIM 360 Docs automatically analyzed



Photos and videos from ongoing and old projects



SMARTVID.IO

Automatic:

- Images now searchable with image recognition and more
- Content sharable across organization

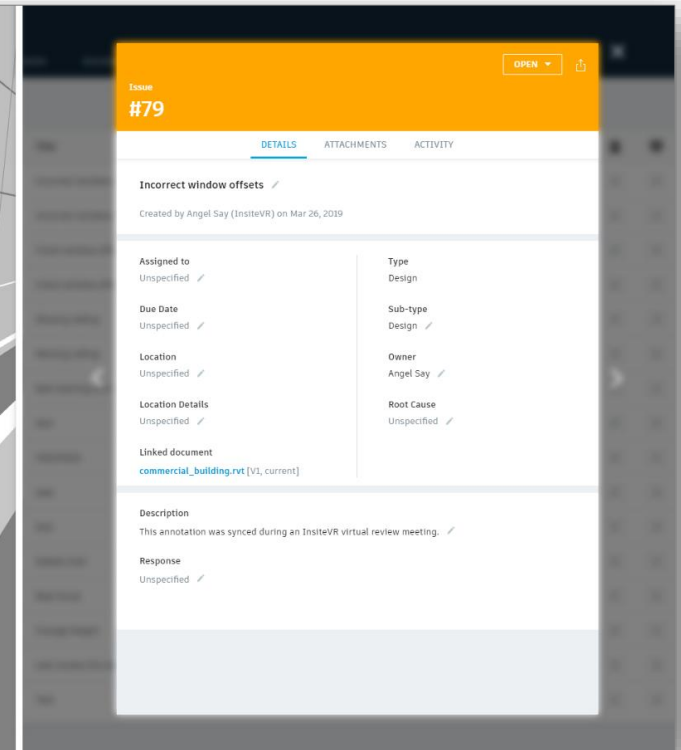
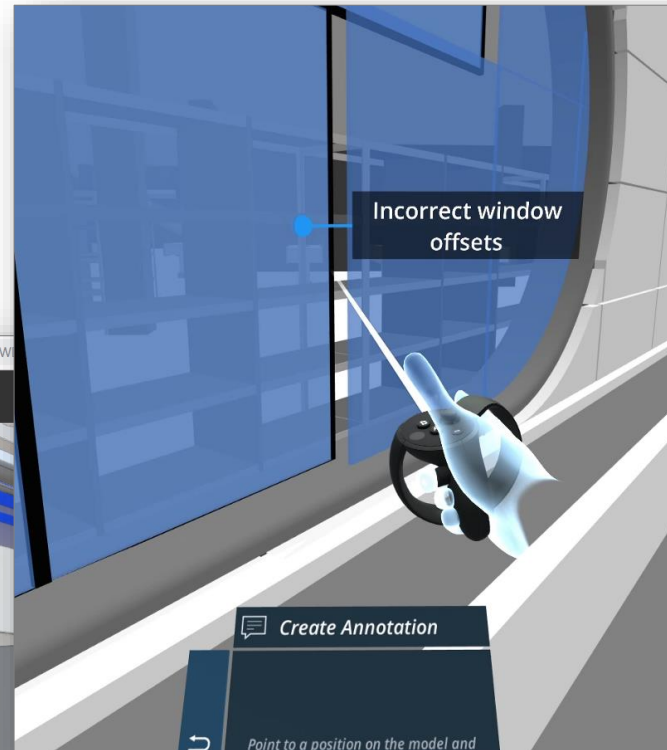
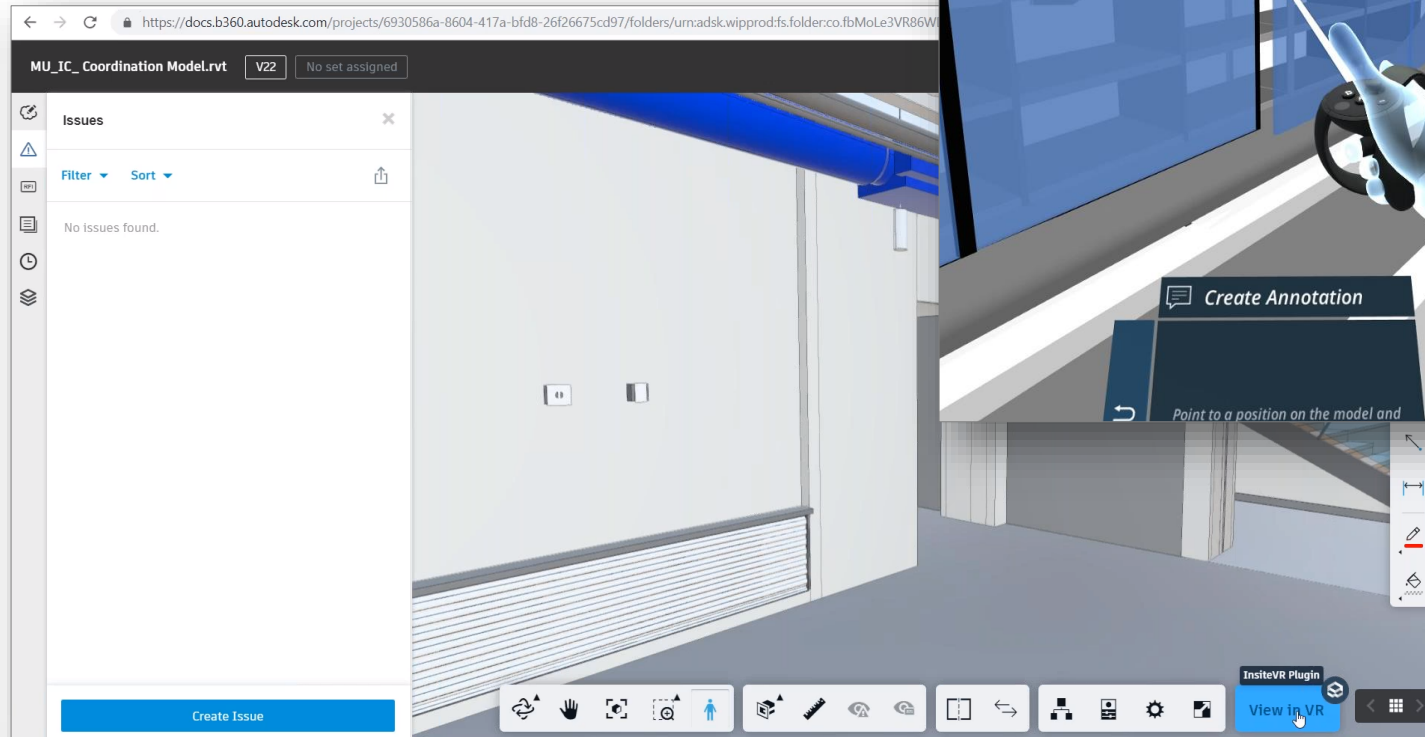




BIM 360 API



FORGE



InsiteVR integrates with Autodesk BIM 360 for immersive modeling

DEMO

B AUTODESK®
BIM 360®



KOKKUVÕTTEKS:

DIGITALISEERI – Integreeri & Automatiseeri - Analüüsi & Ennusta!

- Lähte- ja hetkeolukord
- Protsessid
- Projektiloome ja teostus
- ...

TÄNUD TÄHELEPANU EEST!

hendrik.park@usesoft.ee

+372 58 163 712