

REVIT MUDEL JA BIM 360 ANDMETE VISUALISEERIMINE

*Reviti mudeli ja BIM 360 andmed Excelisse
ning nende visualiseerimine PowerBI abil*

ETTEKANNE
Kristel Uibo

28.01.2021



- Asutatud 1991a.
- 20 spetsialisti ning konsultanti.
 - CAD/BIM ja äritarkvara lahendused;
 - Koolitused ja konsultatsioon;
 - Ehituse- ning tootmise andmete juhtimine ja visualiseerimine;
 - IT tugiteenused.



Specialization
Architecture, Engineering &
Visualization

Value Added Services
Authorized Training Center
Authorized Certification
Center

SISUKORD

ANDMETE VISUALISEERIMINE

<https://usesoft.ee/autodesk-university-2020/>
<https://www.autodesk.com/autodesk-university/class/BIM360yushujufensi-2020>
<https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020>



28.01.2021 | Lühikoolitused 2021

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ANDMED REVITI MUDELIS



28.01.2021 | Lühikoolitused 2021

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MODEL CHECKER FOR REVIT

<https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020>



28.01.2021 | Lühikoolitused 2021

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DYNAMO

<https://www.dynamonow.com/export-to-excel>



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REVIT DB LINK

[Linkveebirakendusele](#)



28.01.2021 | Lühikoolitused 2021

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BIM 360 >>> POWER BI

BIM 360 DATA CONNECTOR

<https://www.autodesk.com/autodeskuniversity/class/BIM360yushujufensi-2020>



28.01.2021 | Lühikoolitused 2021

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ANDMETE VISUALISEERIMINE

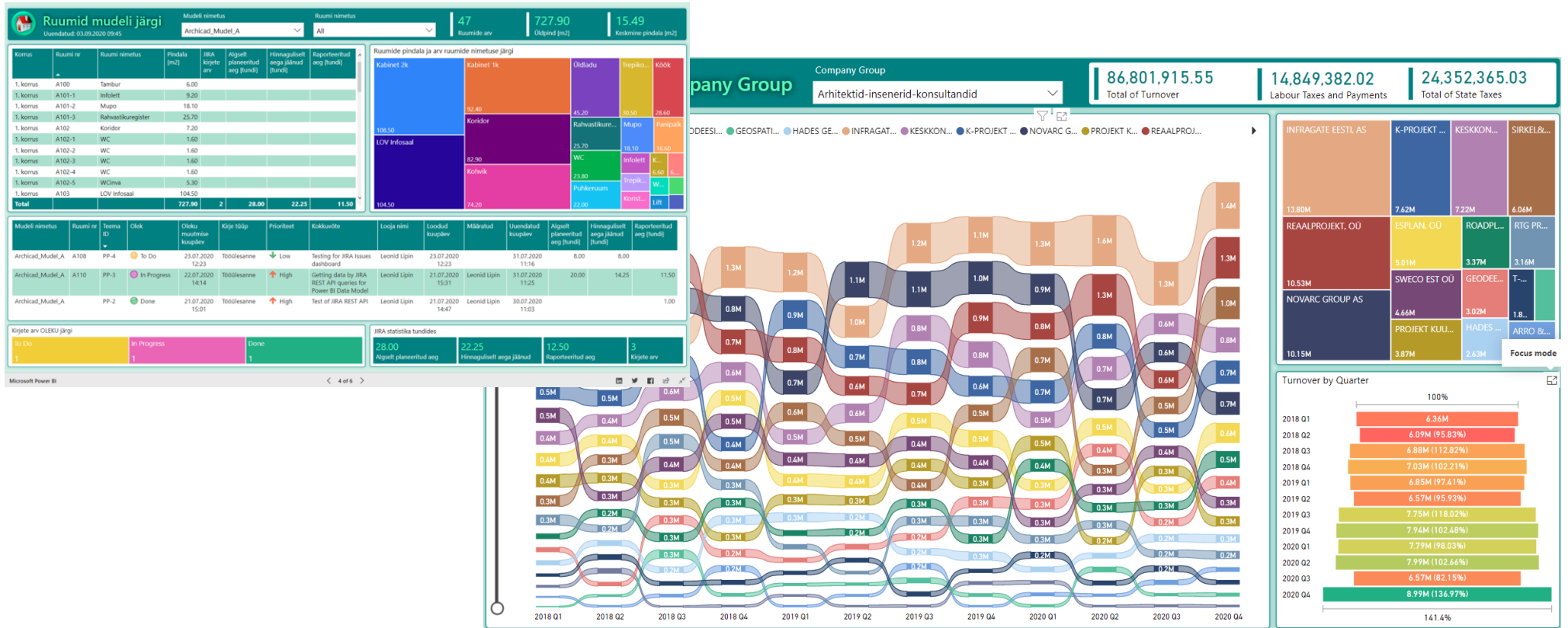
<https://usesoft.ee/autodesk-university-2020/>

<https://www.autodesk.com/autodesk-university/class/BIM360yushujufenxi-2020>

<https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020>

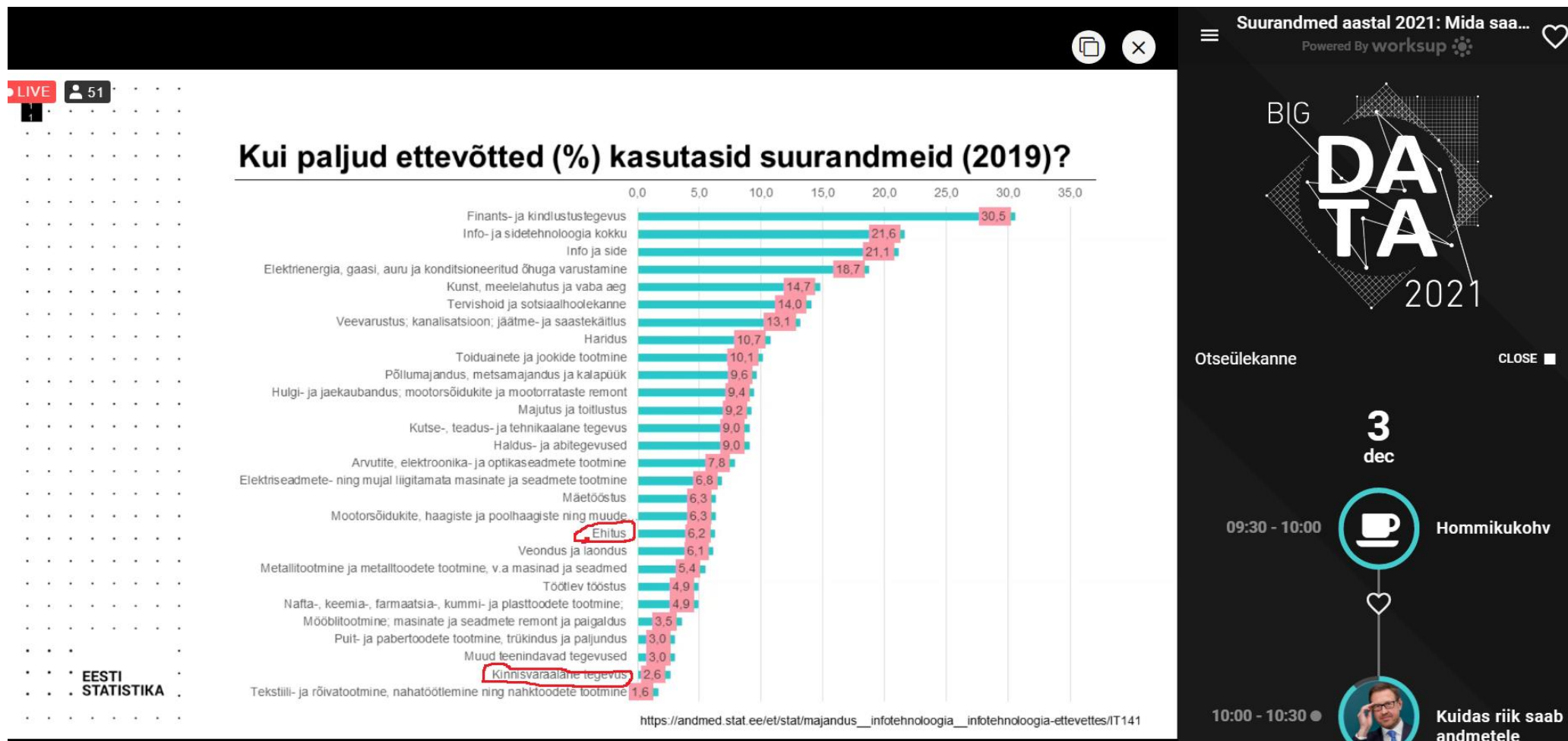


KOONDAB INFOT (ERINEVAD ALLIKAD + AEG)



[Veebilink digitaalehituse klasteri rakendusele](#)
[Link sektori majandusnäitajatele](#)

SUURANDMETE KASUTUS 2019



Statistikaamet detsember 2020

ANDMED REVITI MUDELIS



ERINEVAD VIISID REVITIST ANDMETE SAAMISEKS

Täna teemaks:

- Model Checker ja Model Checker on Forge

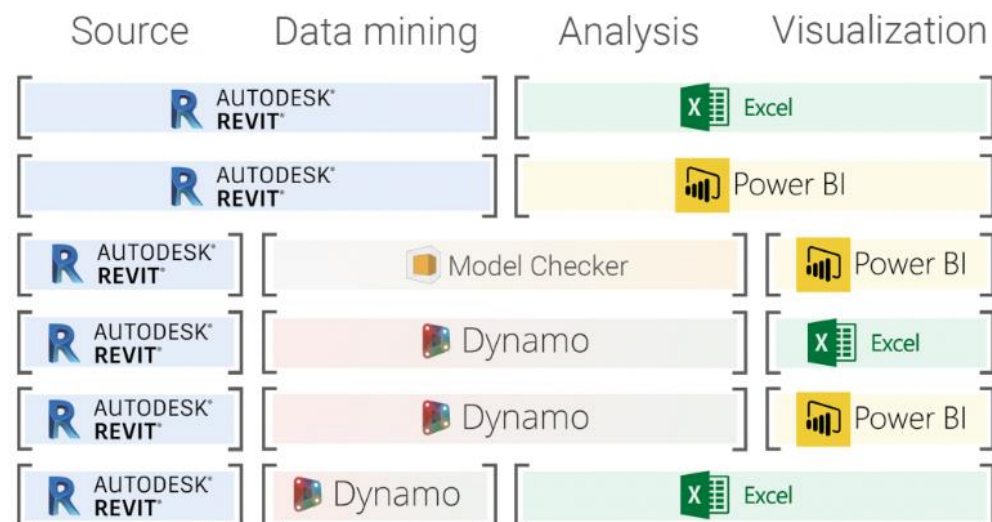
AU 2020 class: <https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020>

- BIM 360 data connector projektijuhtimise andmete jagamiseks

AU 2020 class: <https://www.autodesk.com/autodesk-university/class/BIM360yushujufenxi-2020>

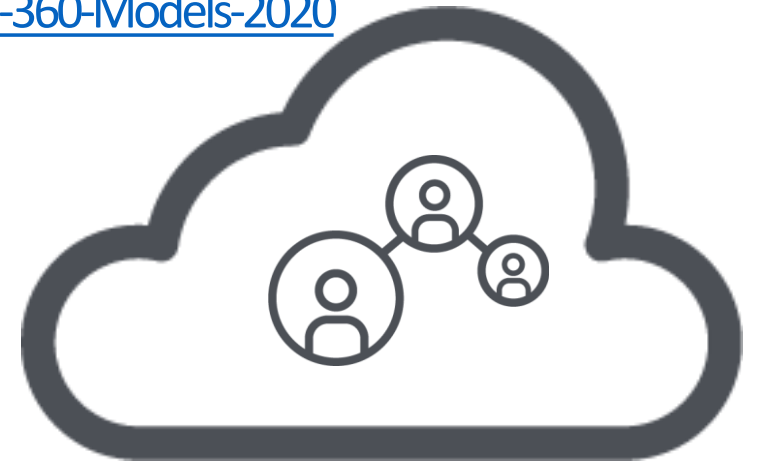
- Dynamo <https://www.dynamonow.com/export-to-excel/>

- Revit DB link <https://www.youtube.com/watch?v=SzQ4YDtf22c>

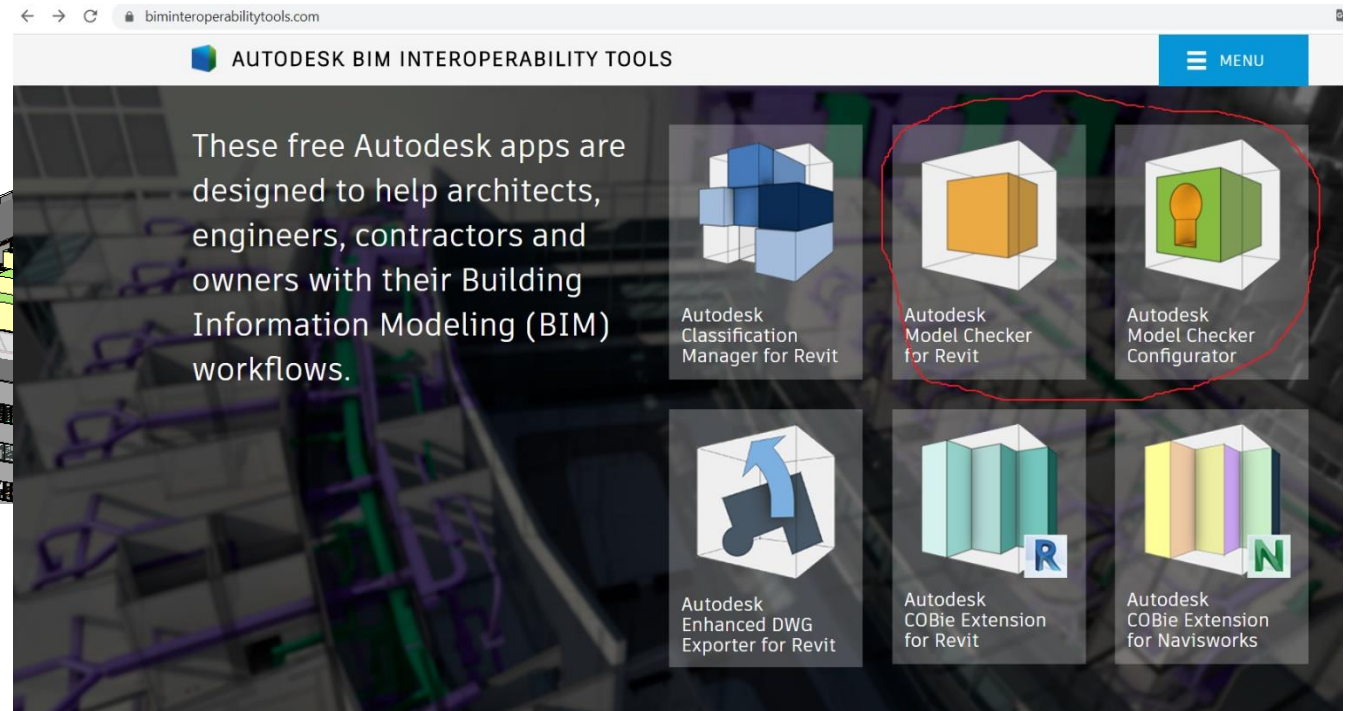
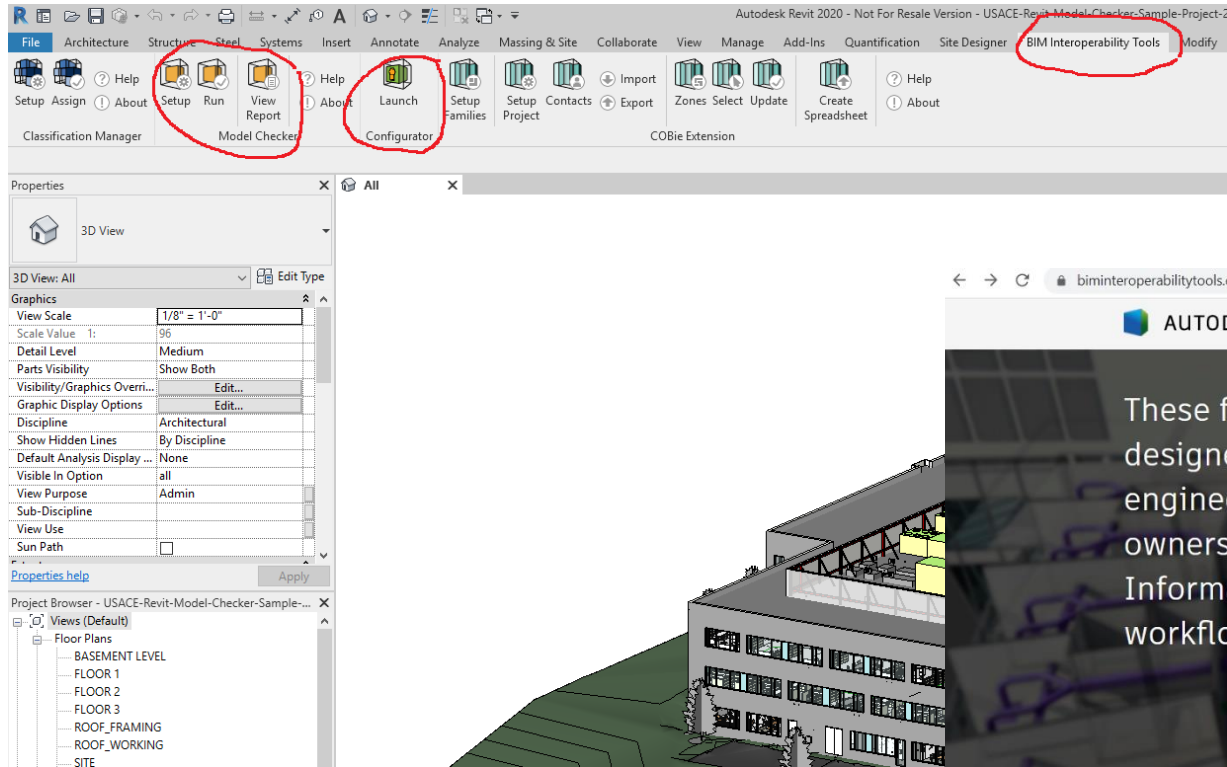


MODEL CHECKER FOR REVIT

<https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020>



BIM INTEROPERABILITY TOOLS



<https://www.biminteroperabilitytools.com>

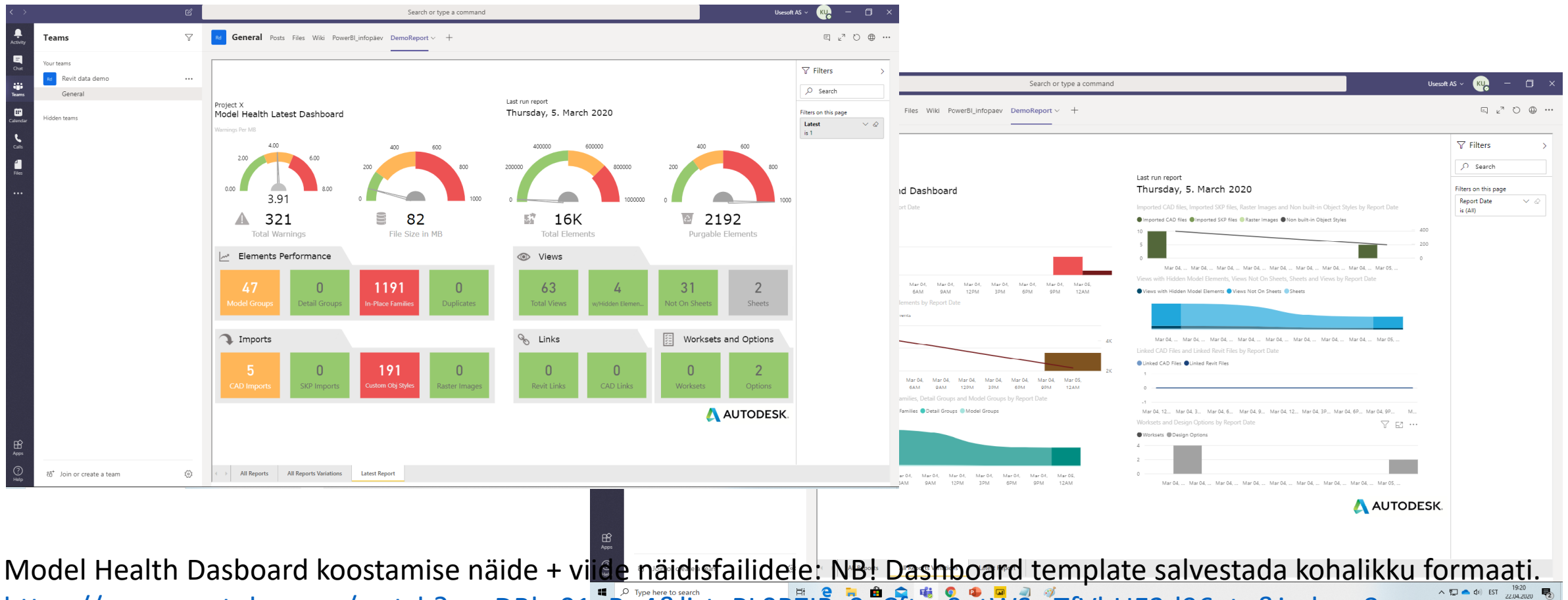
NÕUETELE VASTAVUS JA MUDELI TERVIKLIKKUS

- terviklikkuse näitajate;
- erinevatele standarditele vastavus;

Mitmeid juba saadaval nt Revit Best Practices.

Näiteks RKAS andmesisu test Revit EST alusel

REVIT MODEL HEALTH DASHBOARD



Model Health Dashboard koostamise näide + vinge näidisfailidele: NB! Dashboard template salvestada kohaliku formaati.
<https://www.youtube.com/watch?v=DBky01uRq4&list=PLORZIBv0pCftzo9ntWSwTfVbUE3d96etu&index=8>

MIDA VAJA TEHA?

- Määratle analüüsitavad andmed
- Tekita test ehk Model Checker checkset (xml fail)
- Jooksuta testi mudelis ja ekspordi tulemus (Model Checker report) näiteks Excel faili

Sarnase Health Dashboard koostamise näide + viide näidisfailidele:

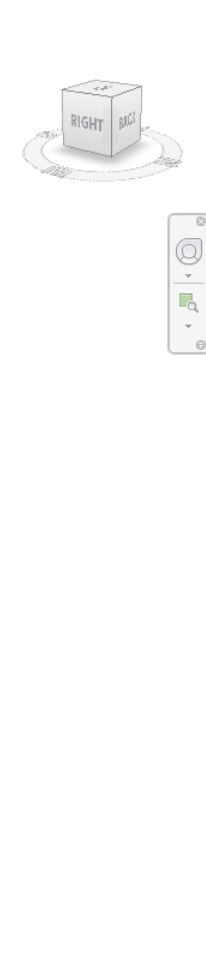
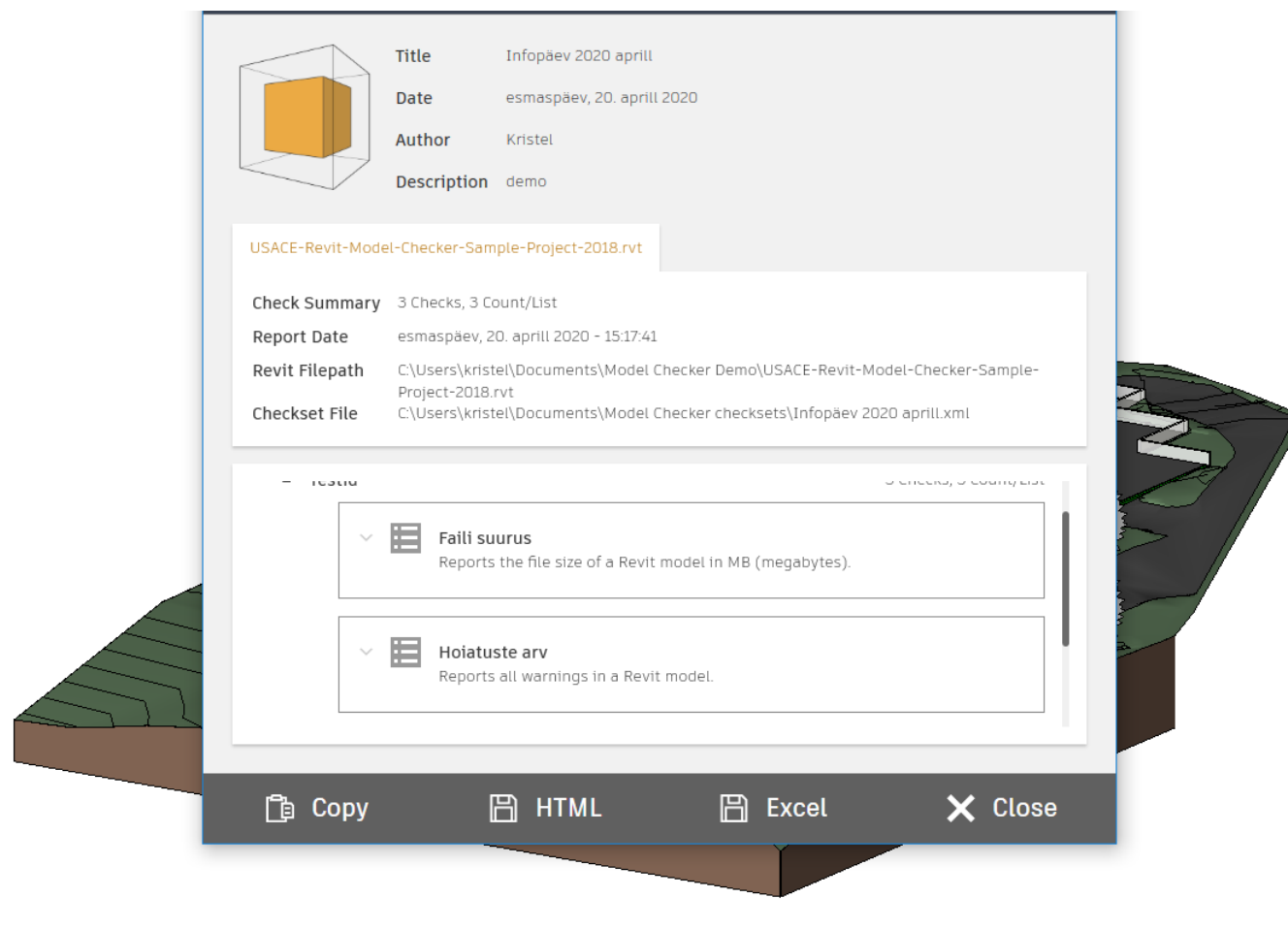
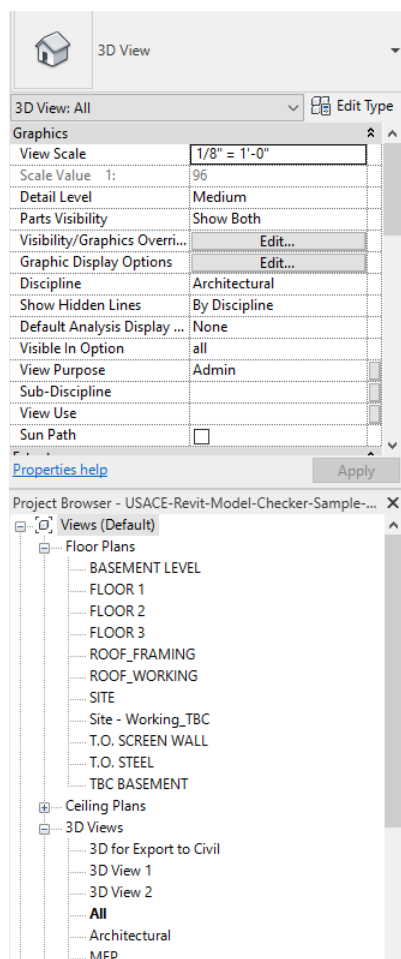
<https://www.autodesk.com/autodesk-university/class/Revit-Dashboards-Cheap-and-Easy-Way-2019>

REVIT MODEL CHECKER CONFIGURATOR

The screenshot shows the Autodesk Revit 2020 interface with the Model Checker Configurator tool open. The tool is configured for the 'Structure' tab, allowing users to change the structure of their checkset. A dialog box is open, displaying the XML configuration for the checkset. The XML includes settings for headings, sections, and checks, such as 'Dashboard', 'Testid', and 'Reports the file size of a Revit model in MB (megabytes)'. The XML is as follows:

```
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
- <MCSettings LastModified="132318586532830708" Image="" Description="demo" Author="Kristel" Name="Infopäev 2020 aprill" AllowRequired="False">
- <Heading Description="" Checks that have been created but not placed in the structure yet." IsChecked="True" HeadingText="<--Unused-->"
ID="e3f26743-6a3e-40e7-80dc-2068f2d835d7">
<Section Description="" IsChecked="True" ID="64a042d4-788a-4eb4-b7f5-be334fa1dfbb" Title="Checks that have not been placed"
SectionName="<--Unused-->"/>
</Heading>
- <Heading Description="" IsChecked="True" HeadingText="Dashboard" ID="e7f92692-9085-4336-b1dd-2f760ea319bf">
- <Section Description="" IsChecked="True" ID="d0482eb2-40e5-4524-bddd-a04c21e7dc00" Title="SectionName="Testid">
<Check Description="" Reports the file size of a Revit model in MB (megabytes)." IsChecked="True" ID="db0d6b82-76d4-4cfd-acc4-
a3258d5f91f3" IsRequired="False" CheckType="FileSize" ResultCondition="FailMatchingElements" FailureMessage="" CheckName="Faili
suurus"/>
- <Check Description="" Reports all warnings in a Revit model." IsChecked="True" ID="6f36dc4d-1bd2-4c0c-a5de-465ed320172c"
IsRequired="False" CheckType="WarningCount" ResultCondition="FailMatchingElements" FailureMessage="" CheckName="Hoiatuste arv">
<PrebuiltOptions ShowList="False"/>
</Check>
- <Check Description="" COUNT of all in-place family elements in the model. In-place families can significantly impact model size and
performance and should be used sparingly." IsChecked="True" ID="5bd9790b-1044-462e-a8e8-b3c277536904" IsRequired="False"
CheckType="Custom" ResultCondition="CountOnly" FailureMessage="" CheckName="In-place perekonnad">
<Filter ID="bb44c1ca-7643-4d41-adb8-714dd0f9813c" Validation="None" UserDefined="False" FieldTitle="" UnitClass="None" Unit="None"
CaseInsensitive="False" Value="Autodesk.Revit.DB.Family" Condition="Equal" Property="Full Class Name" Category="APIType"
Operator="And"/>
<Filter ID="331fd4e0-068b-4143-927d-72ef90e9f12e" Validation="None" UserDefined="False" FieldTitle="" UnitClass="None" Unit="None"
CaseInsensitive="False" Value="True" Condition="Equal" Property="IsInPlace" Category="APIParameter" Operator="And"/>
</Check>
</Section>
</Heading>
</MCSettings>
```

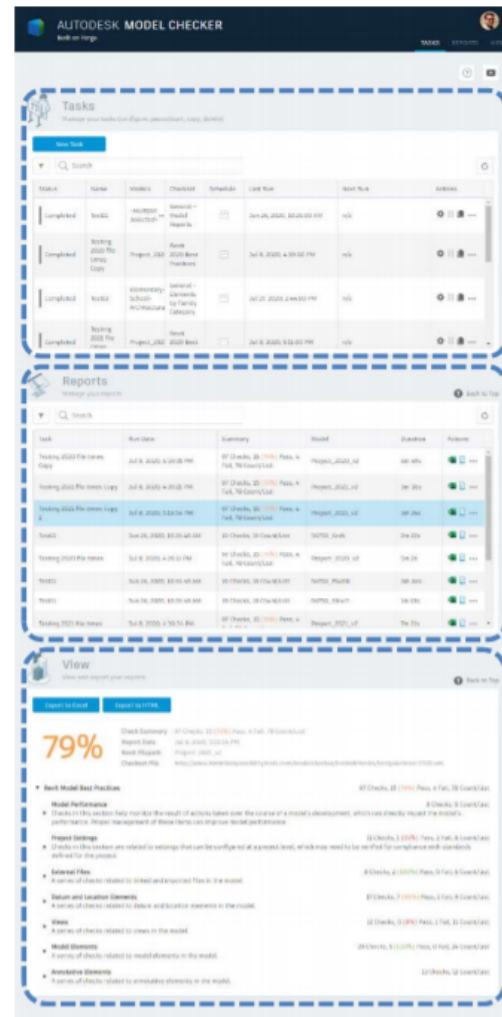
REVIT MODEL CHECKER



MODEL CHECKER ON FORGE (BIM 360 ASUVAD FAILID)

<https://www.autodesk.com/autodesk-university/class/Automatic-Checking-Your-BIM-360-Models-2020#video>

Lühike demo 14:30 – 18:30



Tasks
name, model(s), checkset, “trigger”

Reports
manage the Reports generated by the Tasks

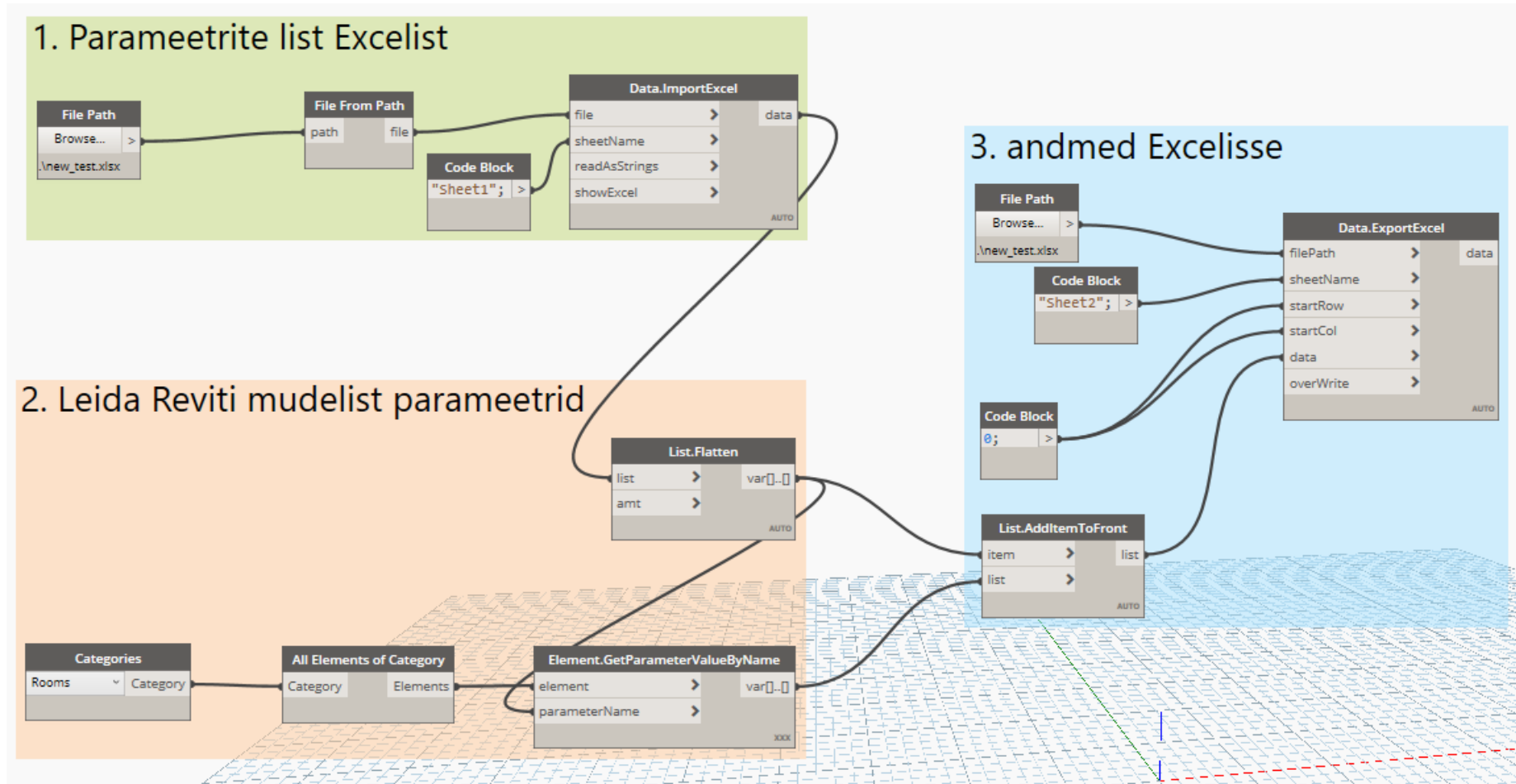
View
look at the reports and export if needed

DYNAMO

<https://www.dynamonow.com/export-to-excel>



REVITI ANDMED EXCELISSE (PARAMEETRITE VALIK EXCELIST)



REVIT DB LINK

[Link veebirakendusele](#)

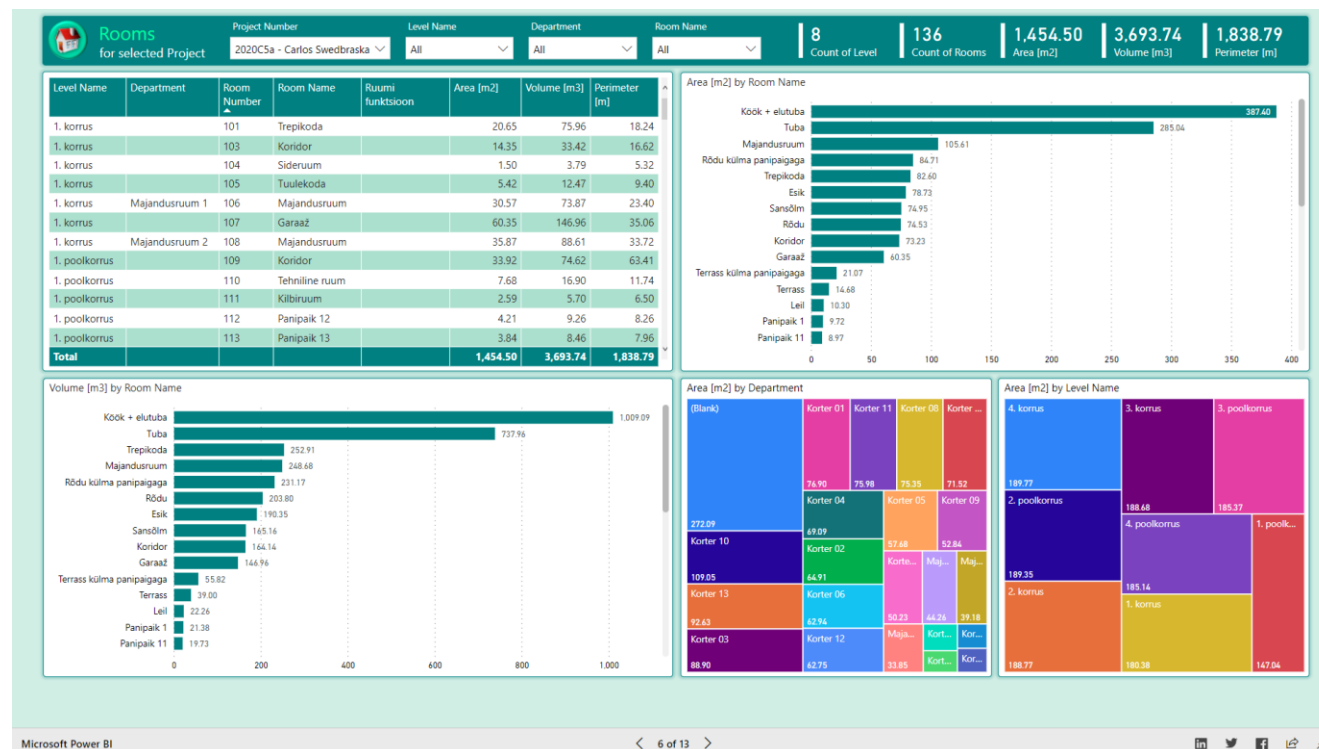


REVIT DB LINK

Revit DB Link võimaldada hoida seost Revitiga tehtava projekti ja erinevate andmebaaside vahel: Microsoft Access, Microsoft Excel või ODBC andmebaas.

Juhend proovimiseks:

<https://www.youtube.com/watch?v=SzQ4YDtf22c>



NB! MS Access Microsoft 365 paketi osana

<https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/CloudHelp/cloudhelp/2020/ENU/Revit-AddIns/files/GUID-BBA71A6A-8D7A-4050-A279-9783AE6E918F-htm.html>

BIM 360 >>> POWER BI

BIM 360 DATA CONNECTOR

<https://www.autodesk.com/autodeskuniversity/class/BIM360yushujufenxi-2020>



TÖÖVOO SAMMUD

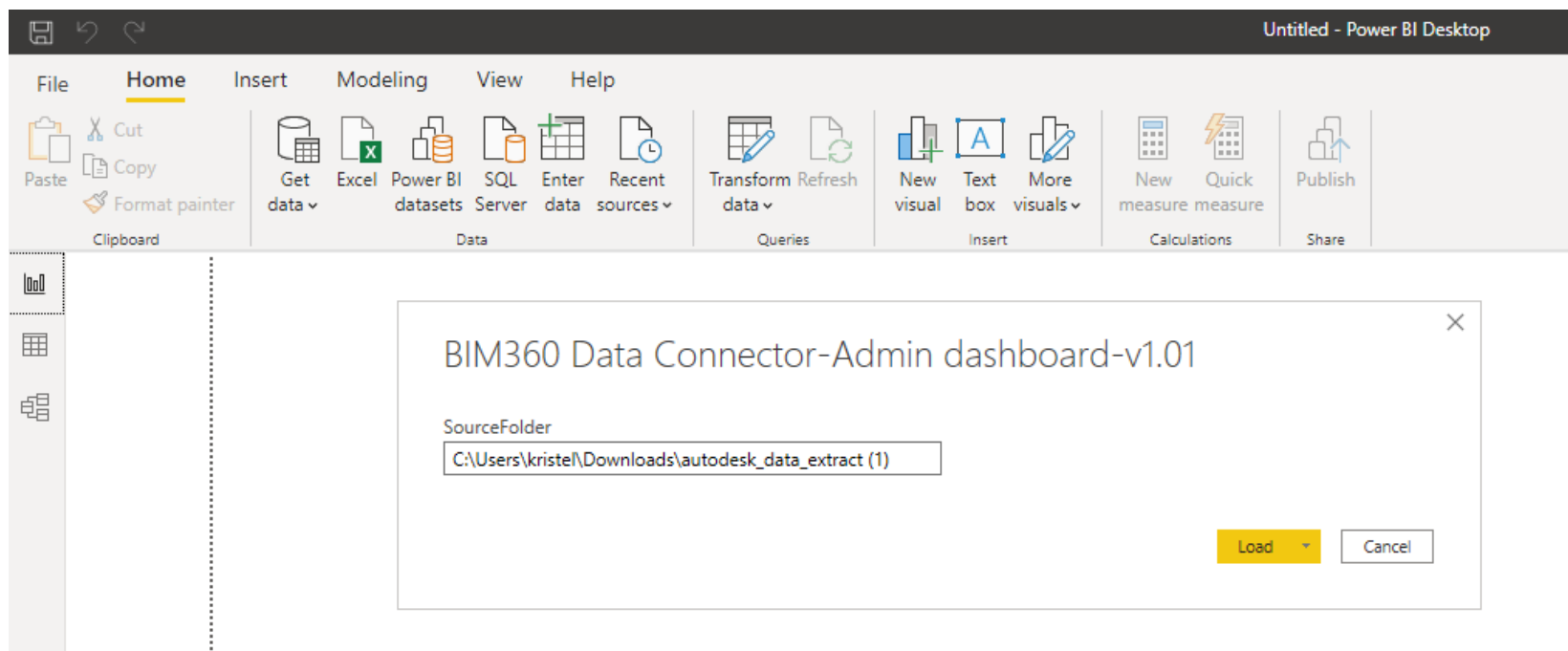


1. Hangi Power BI Templates for BIM 360;
<https://www.autodesk.com/bim-360/power-bi-template-construction-projects/>
2. Aktiveeri BIM 360 Executive Overviews (Ainult Account Admin);
3. Executive Insight > Data Tab (Data Connector), et jooksutada ja alla laadida Excel dataset-id;
4. Ava Power BI Template sisesta Excel Dataset asukoht oma arvutis;
5. Vajadusel muuda andmed visualiseeritavaks (Power Query Editor)
6. Vaata ja kohanda Power BI visualiseeringut;
7. Avalikusta andmed (Power BI Dashboard)

Bim 360 Data Connector (Preview):

<https://knowledge.autodesk.com/support/bim-360/learn-explore/caas/CloudHelp/cloudhelp/ENU/BIM360D-Insight/files/BIM360D-Insight-data-extractor-html.html>

ANDMED POWER BI DESKTOP RAKENDUSSE



Palun märka! **OneDrive-s asuvale failile viitamine**

<https://docs.microsoft.com/en-us/power-bi/desktop-use-onedrive-business-links>

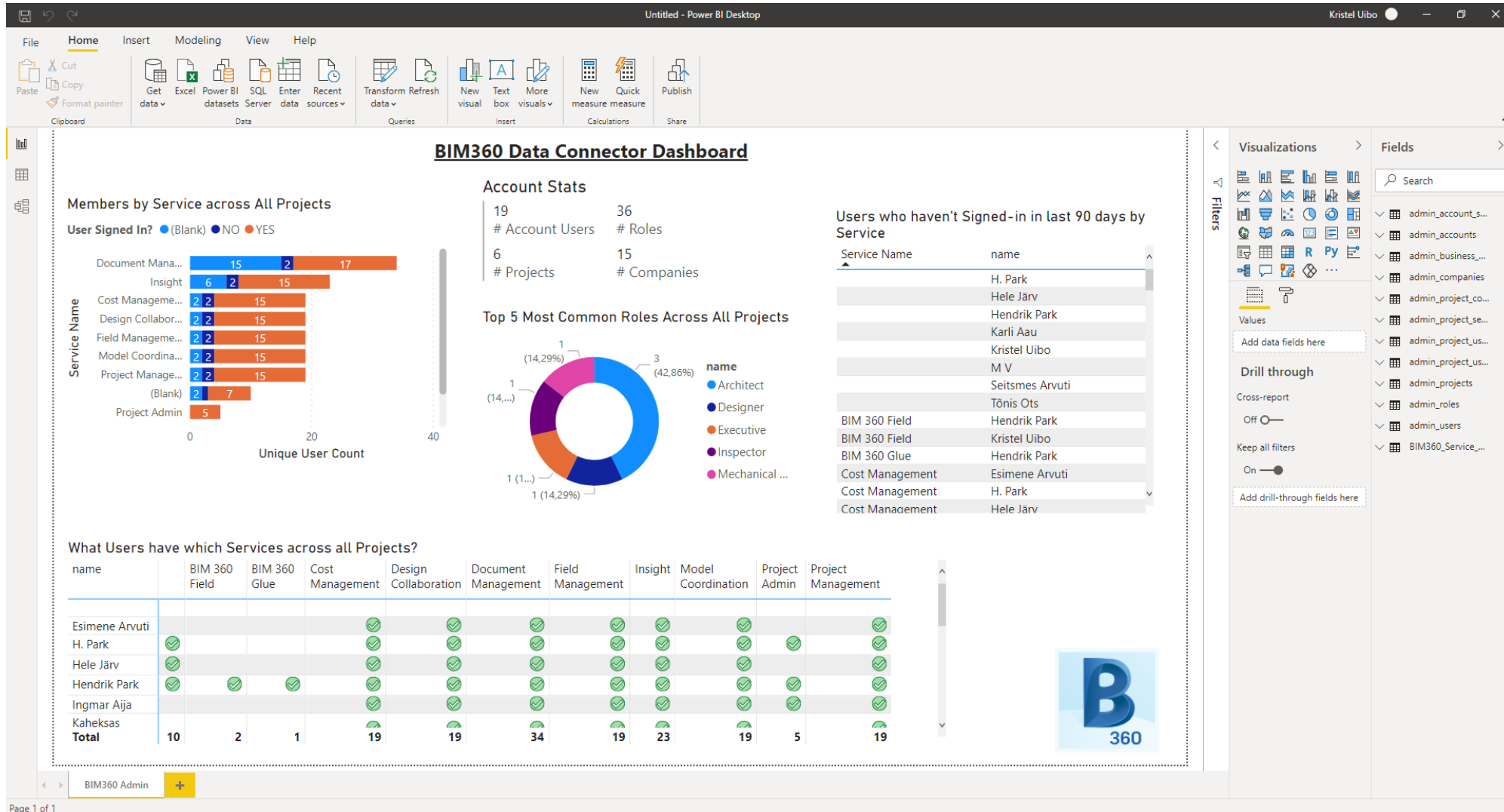
ANDMETE MUUTMINE (POWER QUERY)

- A – viide andmete allikale;
- B – muudetud andmed;
- C - muudatuste ajalugu;

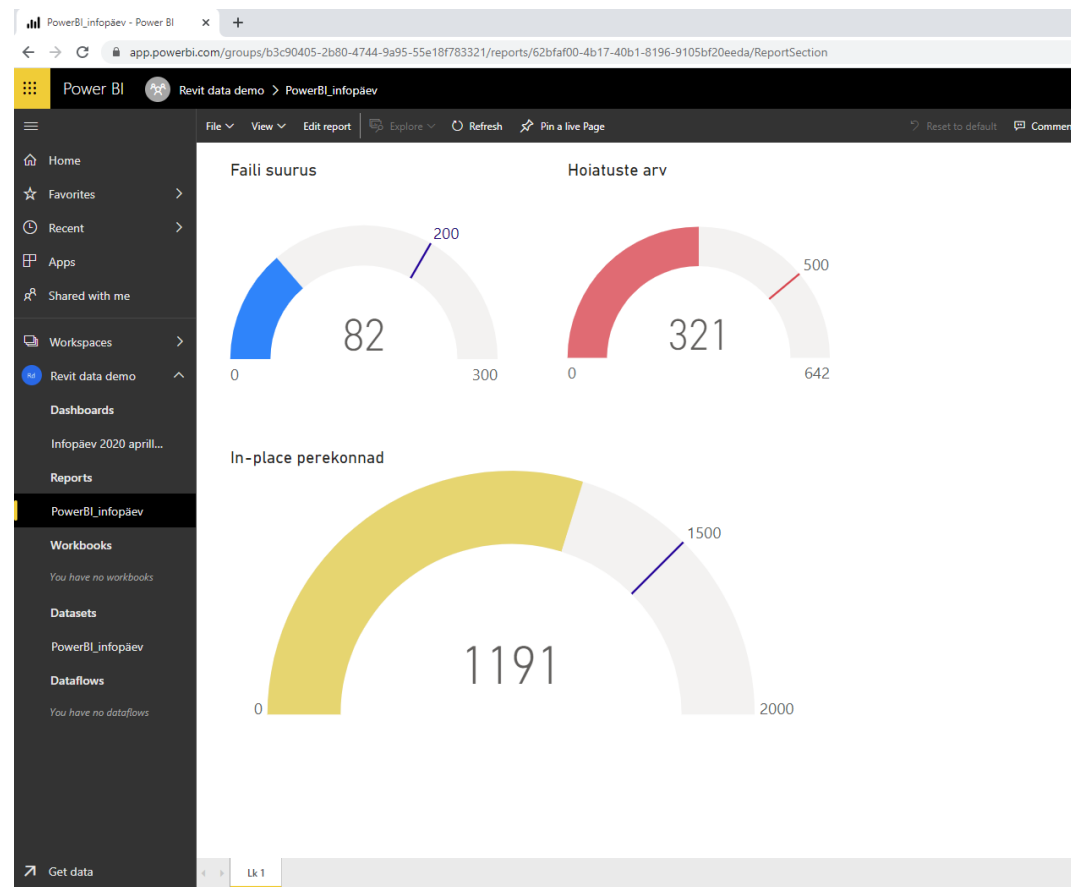
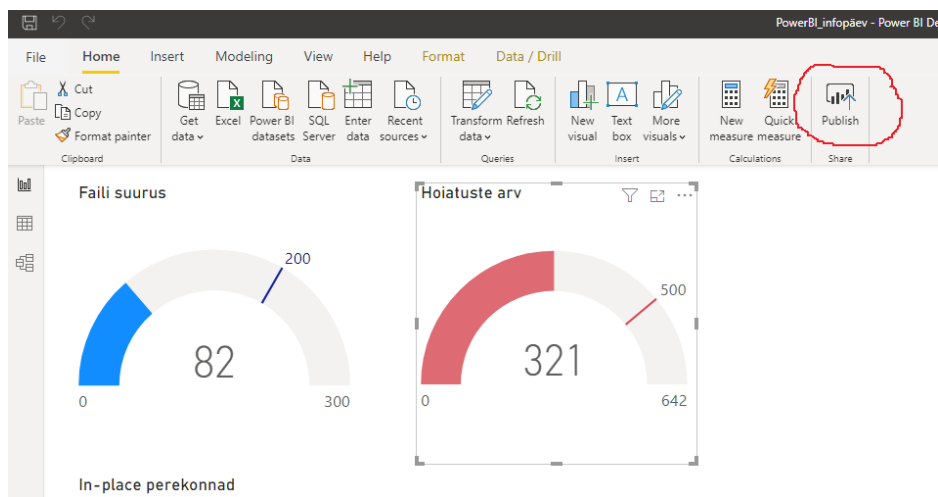
Table.TransformColumnTypes(#"Replaced Value2",{("access_level_account_admin", type logical), ("access_level_project_admin", type logical)},

	id	autodesk_id	bim360_account_id	email	name	first_name	last_name
1	c5987805-38d0-4a57-ac8a-026004e74dc	XDK2NG2F839L	d8976f09-dac1-4739-93aa-ea8945301f87	tund10@bimakadeemia.ee	Kümmes Arvuti	Kümmes	Arvuti
2	70d35c8b-c359-4c88-99cb-61aa40e11dd3	2A19LVLFCTW	d8976f09-dac1-4739-93aa-ea8945301f87	tund07@bimakadeemia.ee	Seitsmes Arvuti	Seitsmes	Arvuti
3	4902769d-405d-4003-8f4d-00b9d42bf03e	YQAGK76NQ4YM	d8976f09-dac1-4739-93aa-ea8945301f87	meelis@hyperruum.com	M V	M	V
4	cc98af83-7124-4f4c-8891-bc9c4770dc7a	97BHLDMGSRQ	d8976f09-dac1-4739-93aa-ea8945301f87	tund02@bimakadeemia.ee	Teine Arvuti	Teine	Arvuti
5	c6e66500-2fca-412d-b8a0-9e48eda2ba50	YYZGKURDT793	d8976f09-dac1-4739-93aa-ea8945301f87	lauri@usesoft.ee	Lauri Kalljuee	Lauri	Kalljuee
6	9d273345-0b9e-4c14-b956-93ad2cf63564	9H9MPJNZJNR	d8976f09-dac1-4739-93aa-ea8945301f87	tund03@bimakadeemia.ee	Kolmas Arvuti	Kolmas	Arvuti
7	14377ea0-d8b1-4001-a39c-ecbb75b999eeef	MFUYKEIPNCES	d8976f09-dac1-4739-93aa-ea8945301f87	tund06@bimakadeemia.ee	Kuues Arvuti	Kuues	Arvuti
8	96044067-af47-4269-970e-1f8b1d835fa4	ZLXYKU2K47LZ	d8976f09-dac1-4739-93aa-ea8945301f87	tund01@bimakadeemia.ee	Esimene Arvuti	Esimene	Arvuti
9	178eef64-c4d9-4739-9bce-8caee7ad88ba	ZQYXNLSZ255S	d8976f09-dac1-4739-93aa-ea8945301f87	tund05@bimakadeemia.ee	Viies Arvuti	Viies	Arvuti
10	cc164f54-b482-4f1b-82ec-883320884207	685RMCUBYUQU	d8976f09-dac1-4739-93aa-ea8945301f87	tund04@bimakadeemia.ee	Neljas Arvuti	Neljas	Arvuti
11	388b30c6-c03c-425a-86c6-971fa566737b	FHE2N3U453QA	d8976f09-dac1-4739-93aa-ea8945301f87	ingmar.alja@gmail.com	Ingmar Alja	Ingmar	Alja
12	59386216-3375-4afd-8e0c-26b6d19950dd	6496LUCLG8UM	d8976f09-dac1-4739-93aa-ea8945301f87	tund08@bimakadeemia.ee	Kaheksas Arvuti	Kaheksas	Arvuti
13	f297d41-83a8-4720-8dd0-6b71fe55153d	Y8MRNWS8FUH	d8976f09-dac1-4739-93aa-ea8945301f87	tuuli.rilit@usesoft.ee	Tuuli Riit	Tuuli	Riit
14	27b18098-ed7c-4622-bcd0-74a5b4e9a4c2	VADTLMU9CXSQ	d8976f09-dac1-4739-93aa-ea8945301f87	tonis.ots@dowisely.ee	Tõnis Ots	Tõnis	Ots
15	31483dfe-8d94-4ee2-9c01-fc427609b4fa	TGNEN4746JZ3	d8976f09-dac1-4739-93aa-ea8945301f87	hele.jarv@usesoft.ee	Hele Järv	Hele	Järv
16	a00c4bb1-823e-4dfd-89e6-42bab7704547	419FM5CHG8M8	d8976f09-dac1-4739-93aa-ea8945301f87	karli.aau@gmail.com	Karli Aau	Karli	Aau
17	212e8c7f-a920-42aa-acee-c7711e98268a	F5D4PUQ396HM	d8976f09-dac1-4739-93aa-ea8945301f87	park.hendrik@gmail.com	H. Park	H.	Park
18	7e45b7b4-4f5e-49e5-8fe5-0db5aa7aea78	BVAANFY3BG3E	d8976f09-dac1-4739-93aa-ea8945301f87	hendrik.park@usesoft.ee	Hendrik Park	Hendrik	Park
19	9579e630-e13b-415e-a039-20b401ce4011	ADXBMUYGAXT8	d8976f09-dac1-4739-93aa-ea8945301f87	kristel@usesoft.ee	Kristel Uibo	Kristel	Uibo

LOO VISUALISEERING (POWER BI DESKTOP)



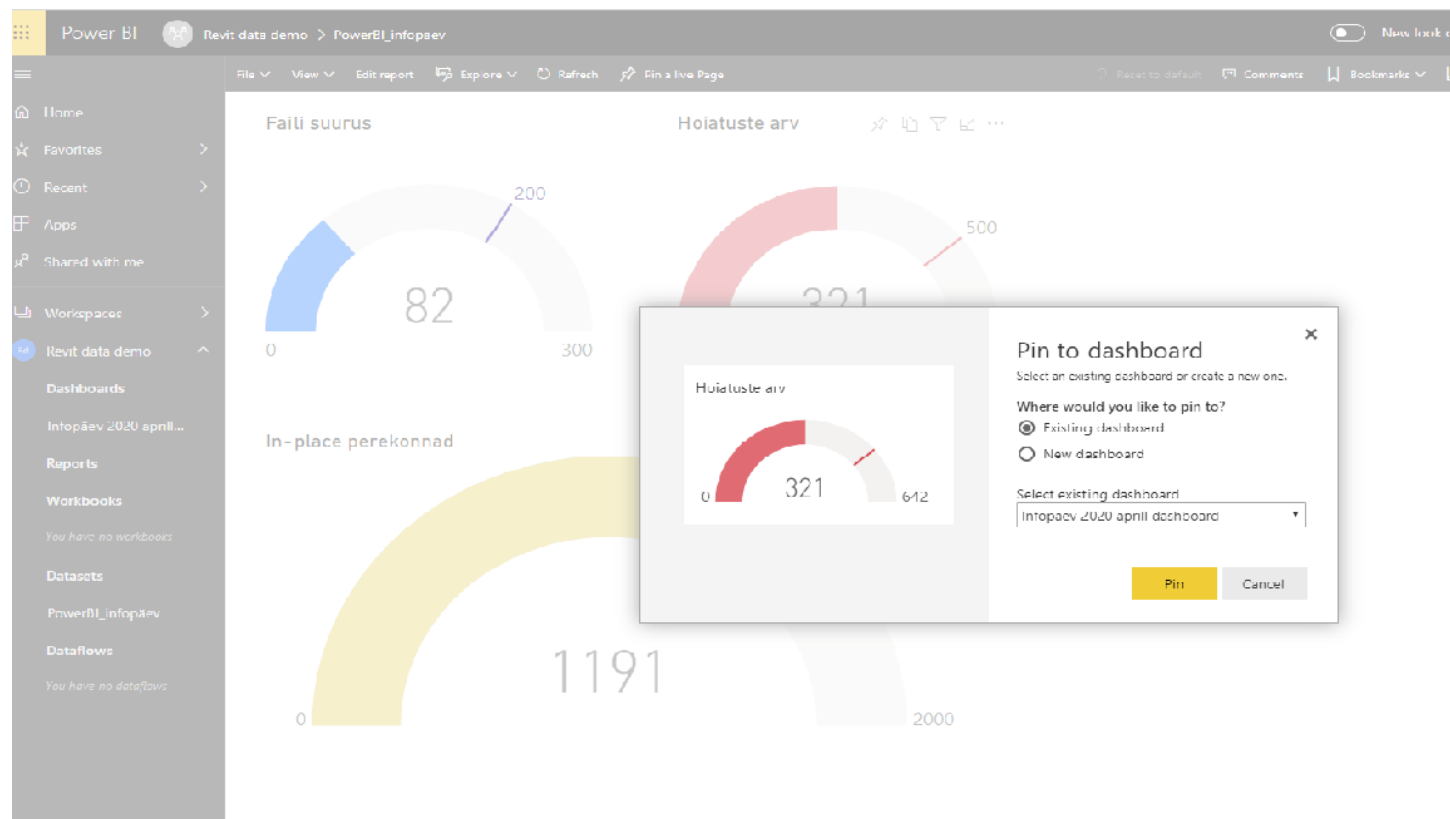
ANDMED AVALIKUKS (POWER BI DASHBOARD)



Pilvepõhine MS Power BI PRO graafikute jagamiseks ja teiste tehtud töö vaatamiseks

<https://powerbi.microsoft.com/en-us/landing/signin/>

POWER BI DASHBOARD LOOMINE



Power BI dashboardi loomine ja jagamise erinevad viisid:

<https://docs.microsoft.com/en-us/power-bi/service-how-to-collaborate-distribute-dashboards-reports>

LISAKS: RAPORDI JAGAMINE TEAMSIS

The image shows a Microsoft Teams interface with a Power BI report embedded. The report displays three gauges: 'Fälli isurus' (82), 'Hoiatusarv' (321), and 'In-place parakevad' (1191). The sharing interface is visible, showing the report name 'PowerBI_infopäev' circled in red, and the sharing link 'https://app.powerbi.com/groups/b3c90405-2b80-4744-9a95-55e18f783321/rep...' also circled in red.

Power BI rapordi jagamine MS Teamsis:

<https://docs.microsoft.com/en-us/power-bi/service-embed-report-microsoft-teams>

LISAKS: JAGA DASHBOARDI LINKI VEEBIS (BIM 360 PROJEKTI KODULEHEL)

The image shows a Power BI interface with a menu open, highlighting the 'Publish to web' option. The menu also includes 'Save as', 'Print', 'Embed', 'Embed in SharePoint Online', 'Export to PowerPoint', 'Export to PDF', and 'Download report (Preview)'. The background shows a BIM 360 project dashboard with various charts and tables.

Hoiatuste arv

32

1191

Project Home

Customize Dashboard

Organize the order and add new cards to your dashboard.

Project Address

RAUA, KADRIORI, KESKLINN, Tallinn, 37

Weather

9° Mostly Cloudy

Power BI

Fall source: 82, Heatrate arv: 321, In-place personnel: 1191

Project Issues

ID	Title	Type	Due Date
2	Kontrollida otsenemistee laust	Design	Jun 11, 2019
5	kraanikausi probleem	Design	Jun 15, 2019
6	Võta see kast arvi	Design	Jul 14, 2019
9	Koostöödasta maomaniikuga	Design	Jul 18, 2019
11	Veateate pealrini	Design	Sep 24, 2019
16	Post vate koha peal	Coordination	Oct 30, 2019

Project Checklists

Title	Scheduled
Kvaliteedi teekirjad	

Project Field Issues

ID	Title
13	Ohtlik pargaldusvigar
14	Talika viga koha peal

Card Library

Search: power

Filters

Companies, Issues, Project Controls, Design, Reviews, RFIs, Submittals, Coordination, Quality, Safety, Cost, Schedule, Partner Cards, Planning

Power BI

POWER BI

Cancel Add Card

Power BI dashboardi jagamine BIM 360 projekti avalehel:

<https://www.youtube.com/watch?v=9nm8jdToG0Y&list=PL0RZIBv0pCftzo9ntWSwTfVbUE3d96etu&index=11&t=0s>

TÄNUD TÄHELEPANU EEST!

Kui saame andmetega aidata:

kristel@usesoft.ee

+372 50 25 369

<https://www.autodesk.com/autodesk-university/class/Forge-Road-Map-Visual-Insights-Visualizing-Data-Your-Models-2020>

<https://hyperion.autodesk.io/>