



Ehitusprojektist haldusmudelini – kuidas korraldada infovahetust RB Rail näitel

Urmas Alber

BIM and AIM Coordinator

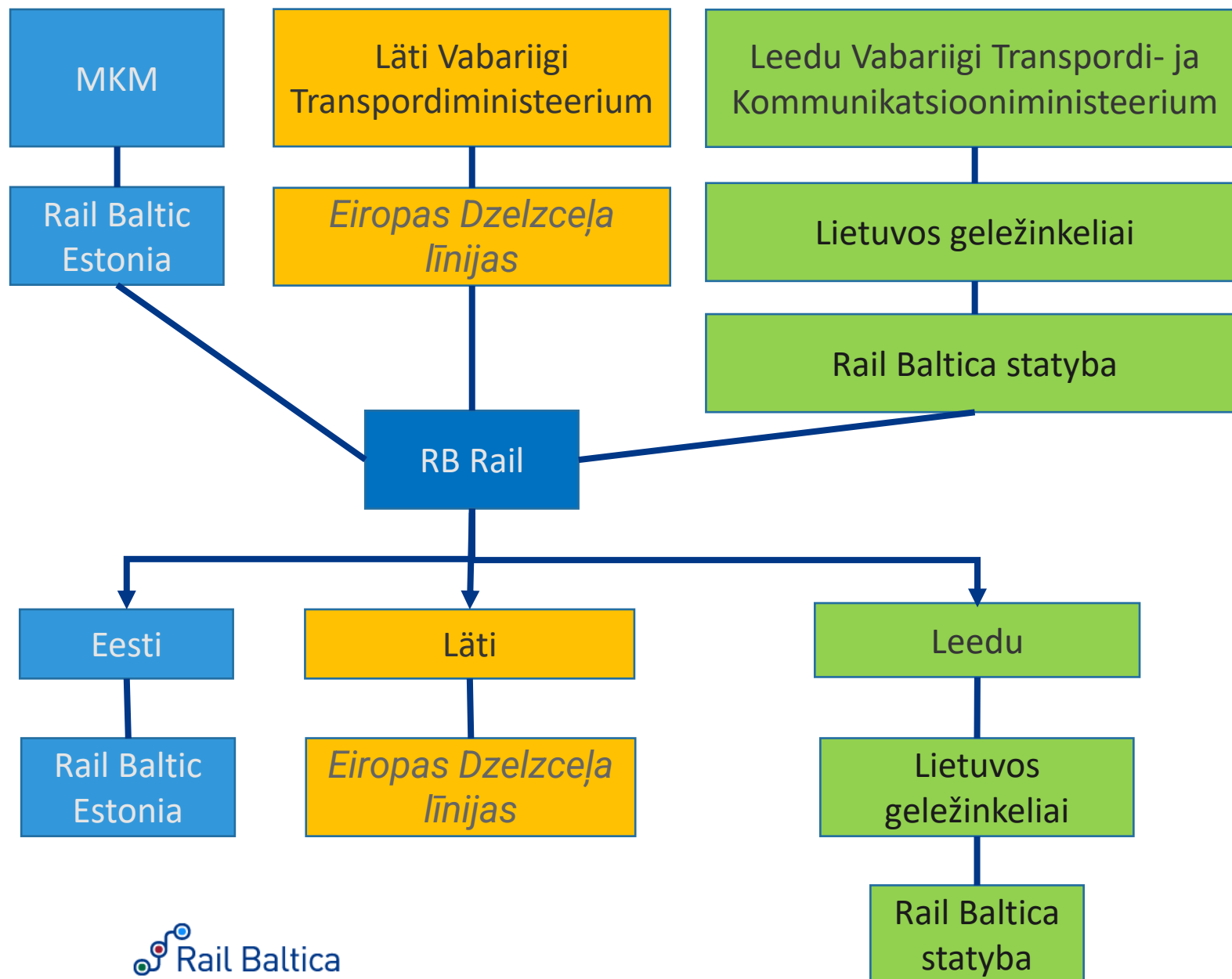
Parema ehitiste ja füüsiliste varade elukaare infojuhtimise koordinaator

20. oktoober 2021



Co-financed by the Connecting Europe
Facility of the European Union





Toetuse saajad

RB Rail ASi aktsionärid

Keskne projektikoordinaator

Riiklikud projekti elluviivad asutused

<https://www.railbaltica.org/rail-baltica-academy/>



This is the official website of the Rail Baltica Global Project



EN ▼

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Rail Baltica Academy



“Rail Baltica Academy” is a global knowledge-sharing platform that provides lectures for **STEM** students as well as for the general public across the Baltics.

Economical Benefits

BIM Knowledge Center ▼

RB Rail's BIM documentation

Digital Rail Baltica

Useful information

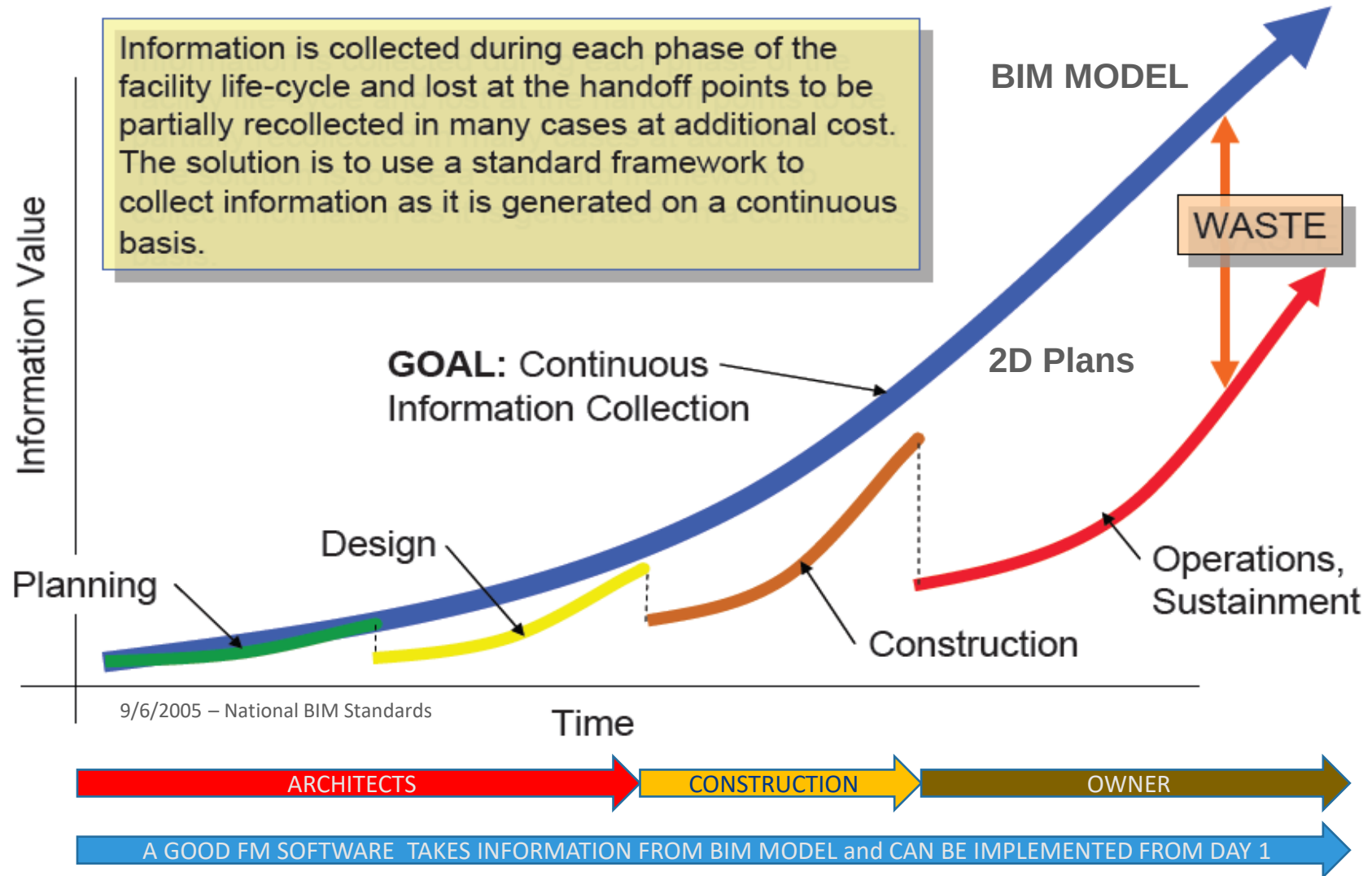
Rail Baltica Global Cost-Benefit Analysis

Mineral Material Supply Studies for the Rail Baltica Railway Construction



 Rail Baltica
Academy

Väldime info kadumist elukaare jooksul



ESRI North American conference on 2021-10-04



Conclusions

In upcoming years we will be able to manage and improve the construction process of linear infrastructure projects in order to improve data quality, reduce costs and time by 60%, reduce wastefulness and promote sustainability

OpenBIM reduces cost
Do more with less
Better 5d (cost) planning and
control



**Value &
Lifecycle Cost**

Simulate construction methods
for enhanced worker safety



Safety & Security

Enhanced project delivery
The project quality is improved
and extra cost is reduced



**Project Delivery
Method**

Enables clients to own their
data with confidence



**Asset & Facility
Performance**



**Design & Engineering
Quality**

Efficiency of structural analysis was improved by
50%
Flexible parametric designs enable easy revision
and speedy changes



**Programme &
Time Management**

Better 4d (time)
Reducing a large amount of time dealing with
different format and files



**Communications &
Decision Making**

Continuous and collaborative improvement of
the BIM process



**Management &
Operations**

Expected gains in terms of productivity, quality
Making the project issue management more
efficient and effective



BETTER INFORMATION MANAGEMENT

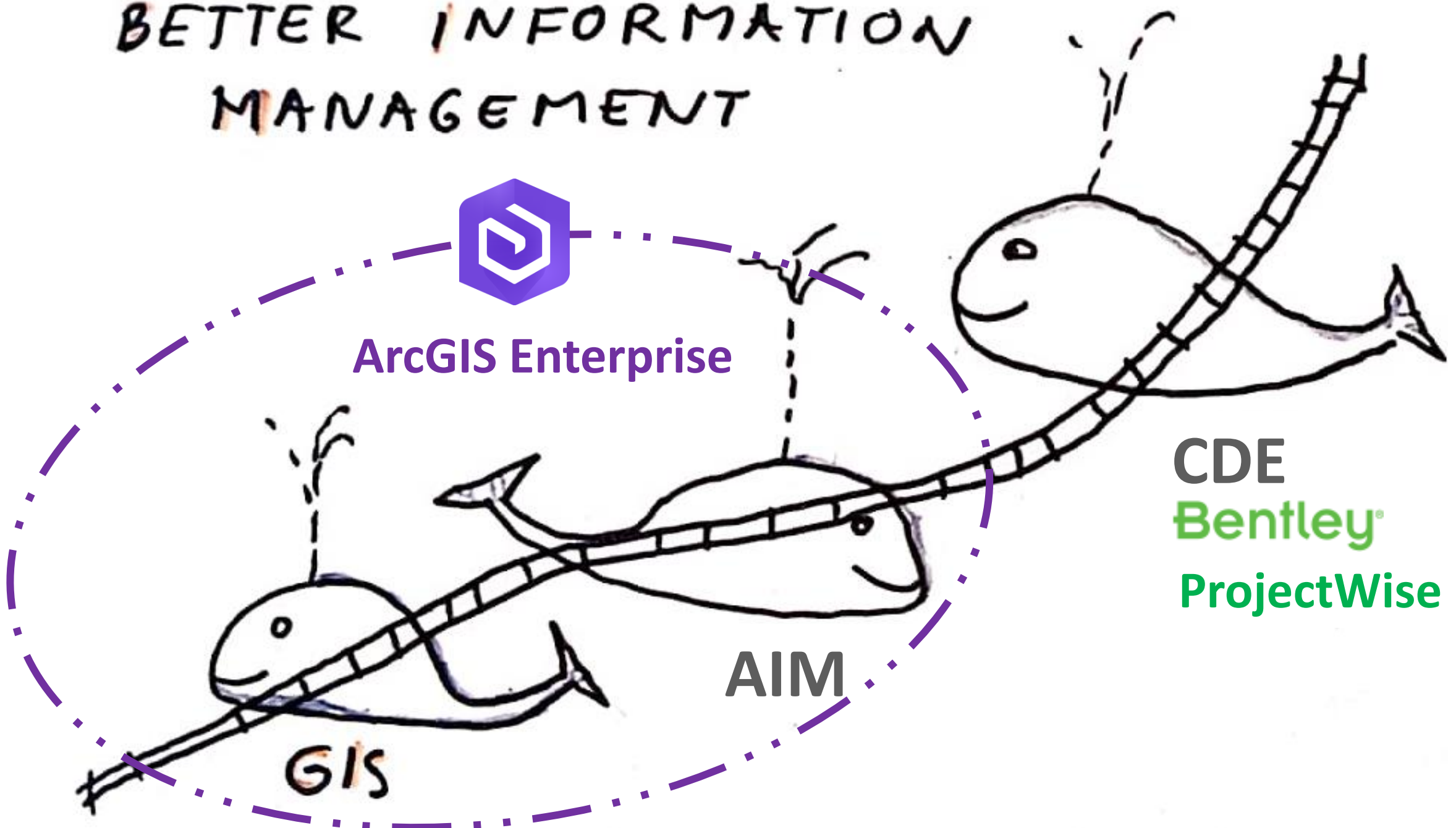


ArcGIS Enterprise

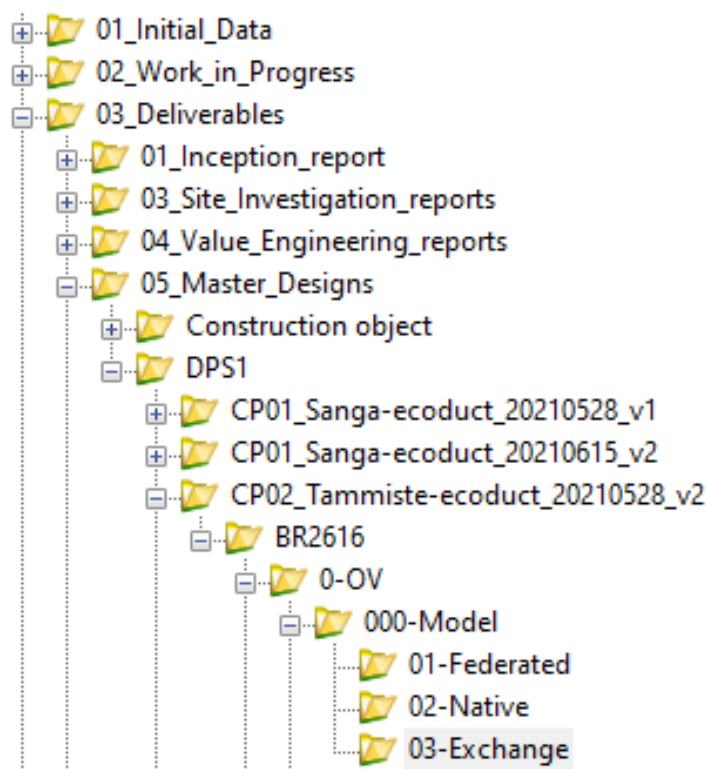
CDE
Bentley®
ProjectWise

AIM

GIS



Pakk laetakse üles ProjectWise (PW) keskkonda



List		Spatial	
Name	Deliverable (Title)	File Size	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_RW-TR_MD_00001_Railway.ifc	Railway	5,585 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_GT-AA_MD_00001_terrain&boreholes.ifc	terrain&boreholes	3,043 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_DR-VK_MD_00001_Manholes.ifc	Manholes	3,251 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_BR-TS_MD_10007_Ecoduct.ifc	Ecoduct	12,756 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_CV-AA_MD_00001_Backfill&excavations.ifc	Backfill&excavations	6,493 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_GL-AA_MD_00001_Terrain_model_trimmed.ifc	Terrain_model_trimmed	4,902 KB	
 RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_HS-AA_MD_10001_Fence.ifc	Fence	1,307 KB	
<			
Document Properties Work Area Properties Folder Properties Project Forms ProjectWise Project Portal Photo Preview Dependency Viewer Acc			
Responses			
In response to	Recipient	Response	Attachments
 00058_OBR-TR-0000148 - B	kaur.laansalu@railbaltica.org	 Rejected with comments	

General Security **Attributes** More Attributes File Properties Audit Trail WorkSpace Spatial

RB Rail Incoming/Outgoing Documents

Project No	RBDTD-EE	Design Section	DS3	DPS1	Location	0016
Originator	OBR	OBERMEYER-PROINTE	Role (RBR)	BR	Bridges	
Doc. Type	IF	BIM Model IFC format	Role (Local)	TS	Bridges, viaducts, estaci Sillad, viaduktid, estakaad	
Design Phase	MD	Master Design	Vol/Sys	BR2616		
Is Exchange Format	No		Zone	00	No Zone applicable	
File Number	RBDTD-EE-DS3-DPS1_OBR_BR2616-00_0016_IF_BR-TS_MD_010007					Valid
Doc. Description						
Deliverable (Title)	Ecoduct					9

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00058

RBDTD-EE-DS3_Pärnu-EELV_border ▾

[Deliverables management](#) > [Incoming](#) > 00058_OBR-TR-0000148 - F

CO BR2616 Tammiste Eco-duct - Version 2_Coordination

ID 00058_OBR-TR-0000148 - F Current ▾[General](#)[Recipients](#)[Documents](#)[Responses](#)

Project RBDTD-EE-DS3_Pärnu-EELV_border

Subject CO BR2616 Tammiste Eco-duct - Version 2_Coordination



CO BR2616 Tammiste Eco-duct - Version 2_Coordination

ID 00058_OBR-TR-0000148 - F Current ▾[< Back](#) History

User	Action	Date ▾	Details
Service information	Response downloaded	06/10/2021 09:59	
Service information	Final response	06/10/2021 09:31	Full responses collected
Kaur Laansalu	Responded	06/10/2021 09:31	Final response sent by Kaur Laansalu Approved with recommendation, RBDTD-EE-DS3-DPS1 & Environmental-001-02: Administrative Review

▼

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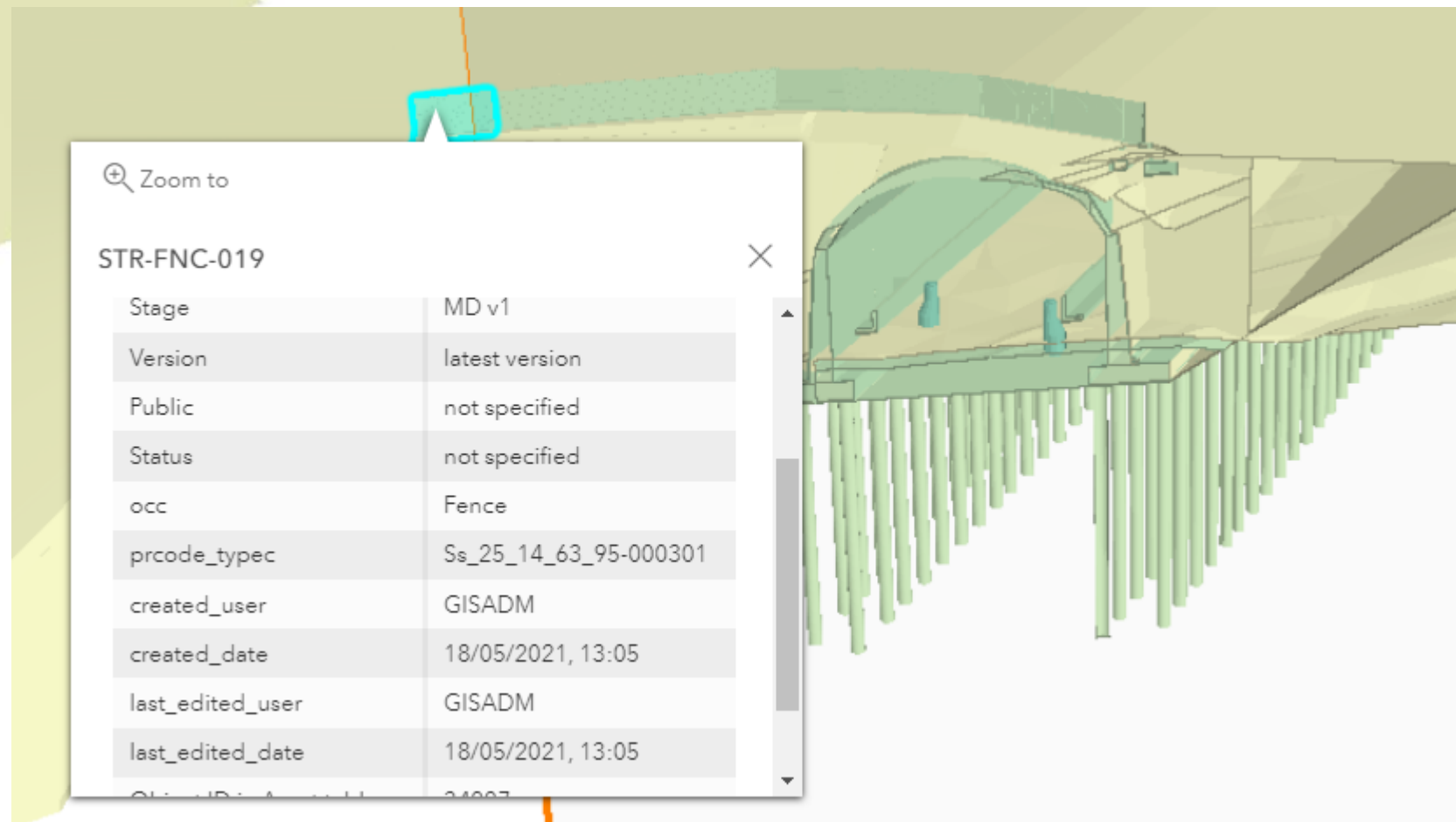
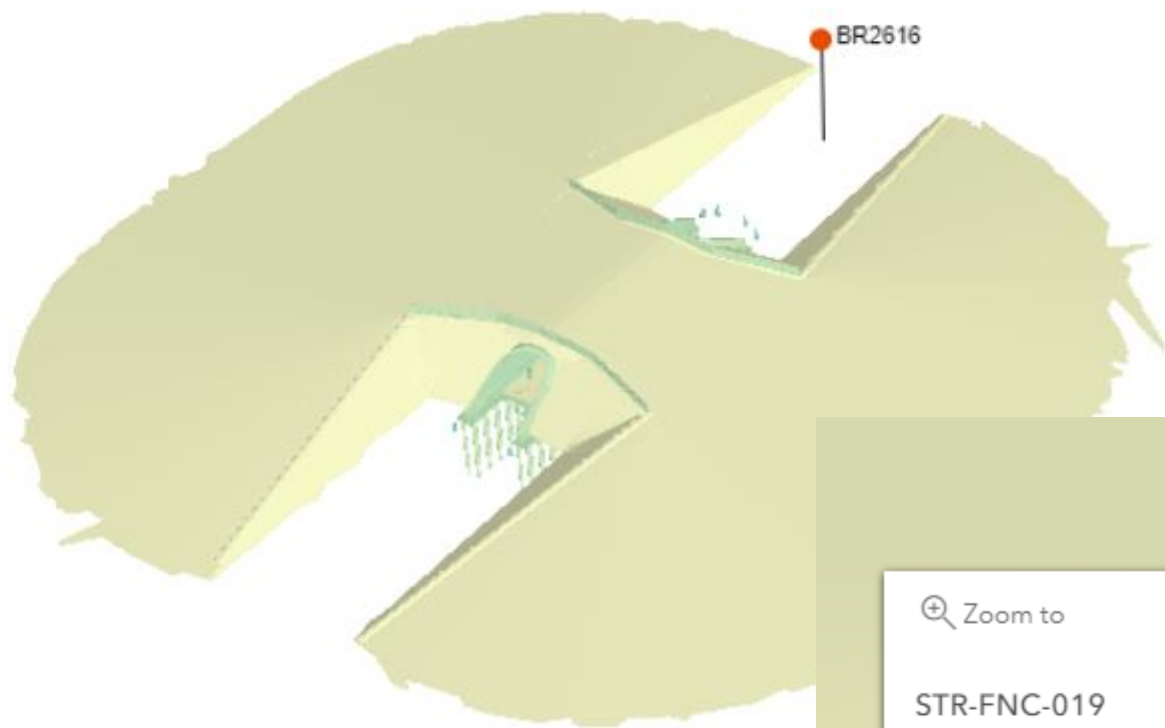
Show search results for Tammis...

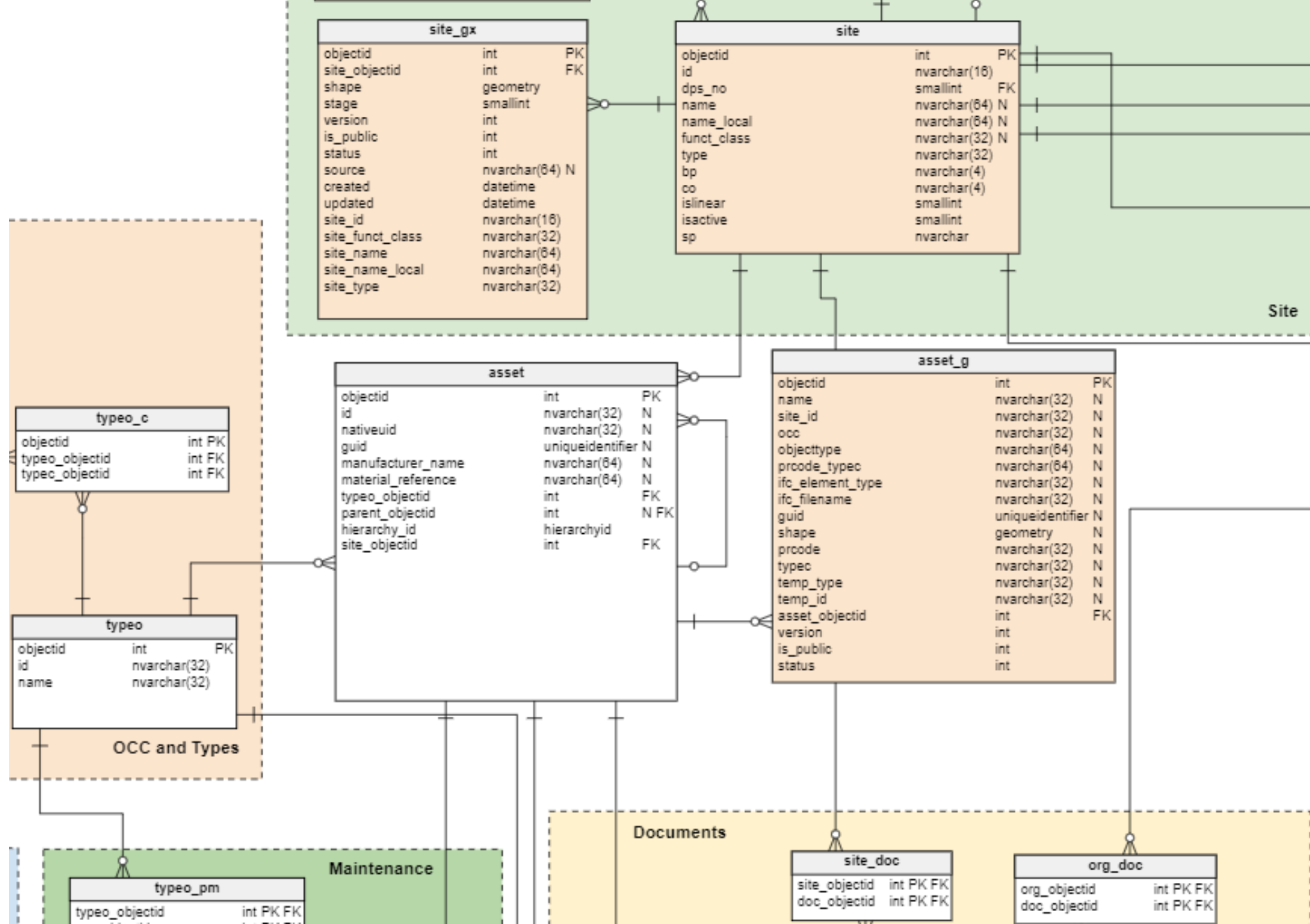
(1 of 2)
▶ □ ✕

BR2616 Tammiste ecoduct

DPS-SP	EE-DS3-DPS1-SP102
Stationing	15+392.5
PD code	03-EC01
VE code	BR-2616
Funct.Class	CV-BR-OPSS-WL
Priority	PRI2
Type code	9
Comments	BR2616v1
Construction Package	CP02
Construction Object	CO065
Edited on	4/10/2021
Local name	Tammiste ökodukt
Local PM	
Design status	2MSRC

[Zoom to](#)
...





IFC import GLSi

Python/Jupyter notebook

1 - asset_gm 3D

2 - asset_ga 2D

3 - asset 1D



Olukord 2021-10

- ⦿ Projekteerimishanked (ja ehitushanked) on töös
- ⦿ BIM nõuded ehitusele
- ⦿ Import GISi
 - Mudelid (3D, 2D, 1D)
 - Atribuudid (tüübid, seosed standarditega)
 - Hoolduse ja ülevaatuse graafikud (COBie)

Mis on ISO 55000?

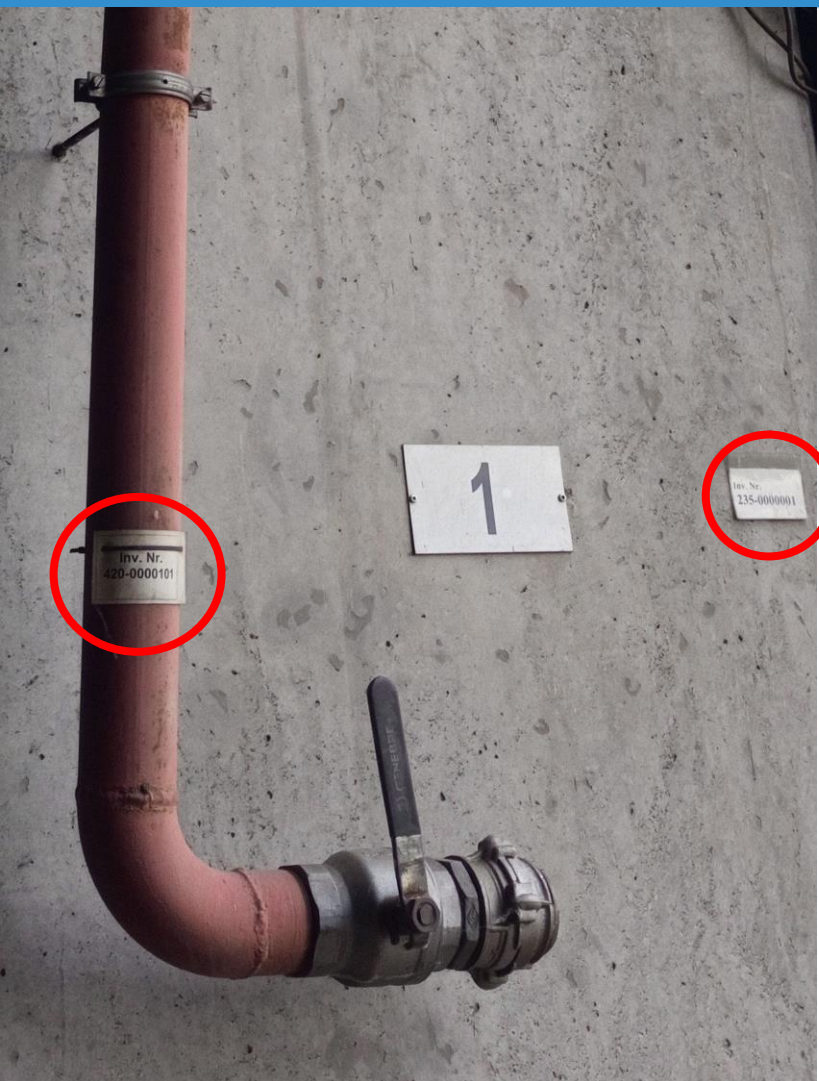
- ⦿ ISO 55000 on rahvusvaheline **standard füüsiliste varade korrashoiu korraldamiseks**. See kirjeldab, et mida organisatsioon peaks tegema, et tema varad oleksid võimalikult hästi ja jätkusuutlikult hallatud.
- ⦿ ISO 55000 (endise nimega UK PAS 55) sisaldab nõudmisi ja parimaid praktikaid ehitatud varade efektiivseks haldamiseks. Selle elluviimiseks **on hädavajalik omada täpset, täielikku ja usaldusväärset infot nende varade kohta**.
- ⦿ Kahjuks ISO 55000 ei selgita kuidas ja kust organisatsioonid ja varade haldajad selle info leiavad.

Mis on ISO 19650?

- ⦿ ISO 19650 on rahvusvaheline **standard ehitatud varade info haldamiseks kogu elukaare vältel** kasutades BIMi.

**Pole võimalik
kasutusele võtta
ISO 55000 ilma
eelnevalt ISO 19650
juurutamata – on
raske mängida malet
kui laual pole
malendeid**



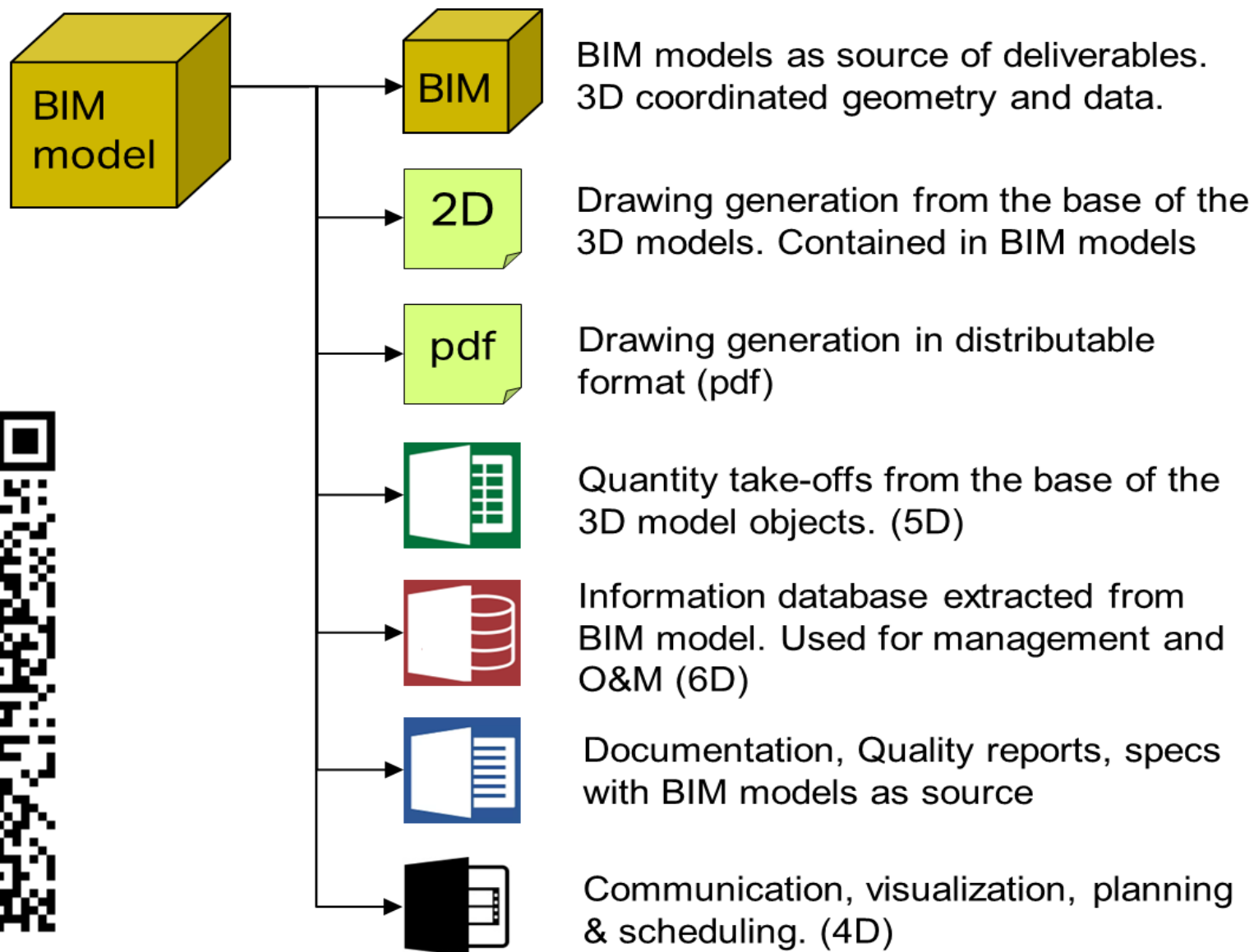


- Pole ei vanu andmeid ega süsteeme
- Ei pea otsustama, et milline vana info on oluline
- Meil on BIM strateegia, mis paneb paika nõudmised füüsiliste varade info koosseisule, mida kogutakse projekteerimise ja ehituse etappides selleks, et see üle anda INFRASTRUKTUURI HALDURILE, kes tegeleb selle korrashoiuga vastavalt oma strateegiale.

- Meil on BIM strateegia, mis vastab standardile ISO 19650-1: Informatsiooni haldamine kasutades BIMi
- Me kogume ja süstematiseerime infot vastavalt projekteerimisjuhendile ja salvestame selle varade registrisse – *geomeetria, omadused, hooldusjuhendid*

varade register on varade haldamise süsteemi vundament

3D on vaid üks BIMi osa



Andmed haldusesse

- ⦿ Millised andmed?
- ⦿ Kes annab / kust tulevad?
- ⦿ Kes nõuab, tagab ja kontrollib?
- ⦿ Kes maksab?
- ⦿ Kes hoiab värskena?