



Using BIM in an infrastructure project

The Fornebu Line

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Standard Norge 19.10.26





Agenda

- BIM Vision and overall strategy
- Practical BIM Applications in the Fornebu Line Project: Examples
- Opportunities and value



Oslo



Integrated use of building information models in construction

- Digital innovation – BIM is the main information platform for the project
- Digital innovation through management, planning, cost control, contract, systematic completion, GIS
- Communication with landowners, neighbours, stakeholders and the approval authorities



“I” in BIM – Information

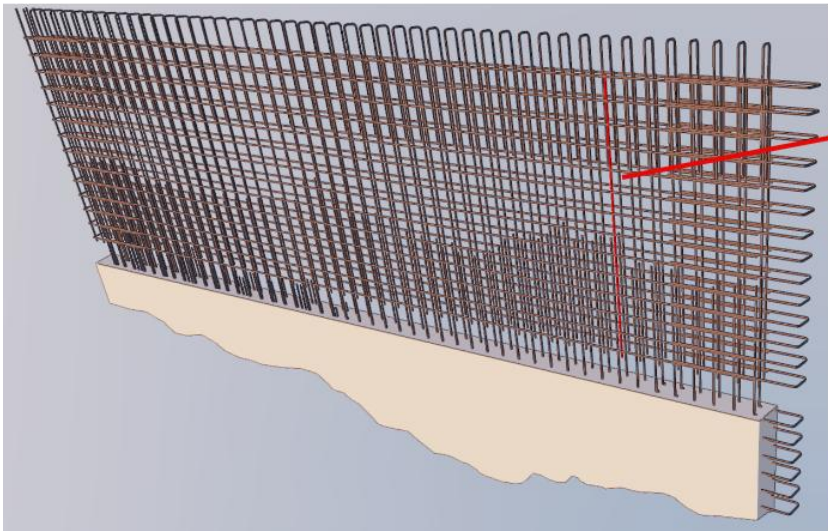
- Construction **information** embedded in 3D object properties
- ~10 million unique objects, each with 50-100 properties



- Examples of such properties;
 - the surface finish of a door
 - the circuit and distribution board numbers for a power outlet
 - the weight of an escalator
 - the centre-to-centre spacing between two rebars
 - the fire resistance rating of a steel beam

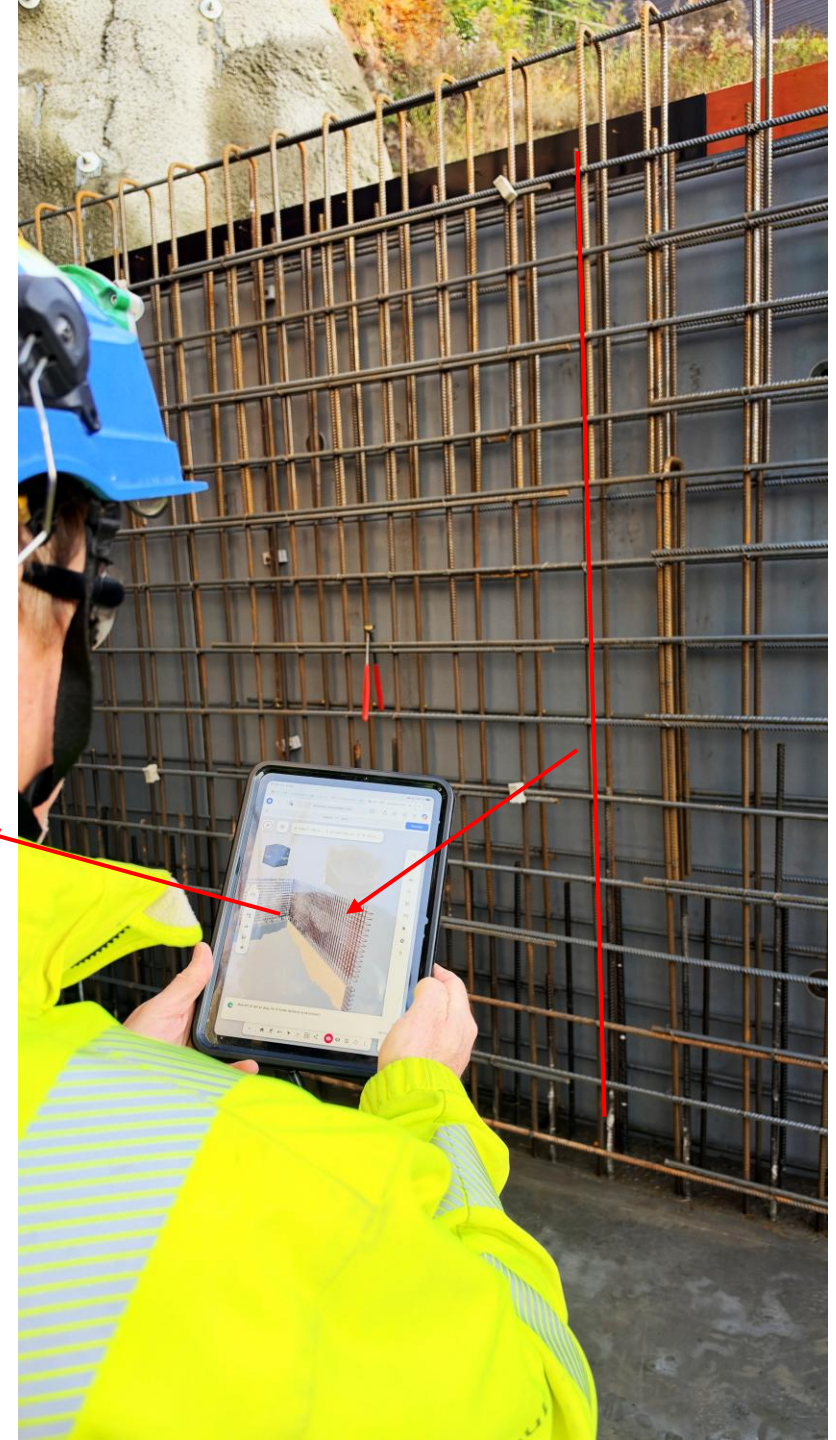
Inspection and Checking Procedures

- Rebars checked before formwork are completed
- Everyone understands a 3D model

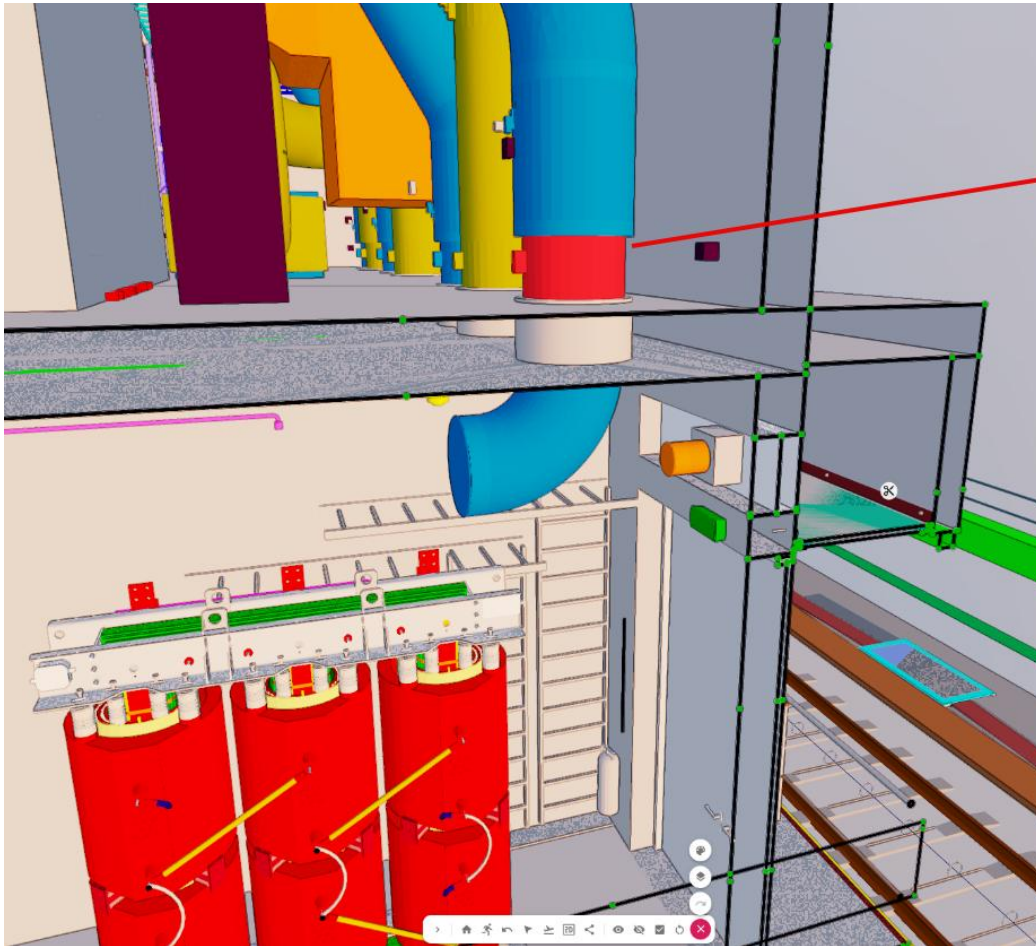


PGF_RIB_Info		
Stangdiameter	16.00mm	☐
Materialfasthet	B500NC	☐
Vekt	4.300000	☐
PosNr	P-6LP051-1068	☐
Formkode	00	☐
Senteravstand	200.00mm	☐
Dim A	2700.00mm	☐
Dordiameter	50.00mm	☐
Lengde	2700.00mm	☐
EndetypeStart	--	☐
EndetypeSlutt	--	☐

REBAR PROPERTIES



Commissioning Phase



PGF_MEK_VEN_Info		
01 System	736-10.4 Tilluft	☐ ::
02 Dimensjon	ø630-ø630	☐ ::
03 Material/Beskrivelse	36_Brannspjeld, Sirkulær 315-800, EI60 ø6...	☐ ::
05 Isolasjonstykkelse [mm]	0	☐ ::
07 Luftmengde m³/h · max [m³/h]	1880	☐ ::
K7_Tilleggsinfo		
Lengde	0	☐ ::
Dimensjon fittings	ø630-ø630	☐ ::
Romnavn	Teknisk rom	☐ ::
Romnummer	CU6.02	☐ ::

DAMPER PROPERTIES

- Damper object
- Sufficient information for testing and balancing is included directly in the model object properties

Cable structures and system affiliation

LIGHT FIXTURE PROPERTIES		
FOB_Merke		
FOB_System	422	
FOB_Merkesystem	SPV	
FOB_Selvensnummer	466	
FOB_Funksjonskode	LYS	
FOB_Merkestreng	LYA0-422-LYS-466	
FOB_Omraade	LYA0	
FOB_TilhorerObjekt	LYA0-440-NSF-009	
FOB_FysiskMerke	LYA0-440-NSF-009-107	
K7_Tilleggsinfo		
Romnavn	Vestibyle	
Romnummer	BH1.01	
PGF_Info		
PGF_RIF_Info		
Diameter trekkerør	0	
Vekt	-	
Tilkoblet	LYA0-440-NSF-009-107	
Elkraftsystemer	LYA0-440-NSF-009-107	

BOARD AND CIRCUIT
INFORMATION

- Light fixture object
- Contains properties with electrical wiring information

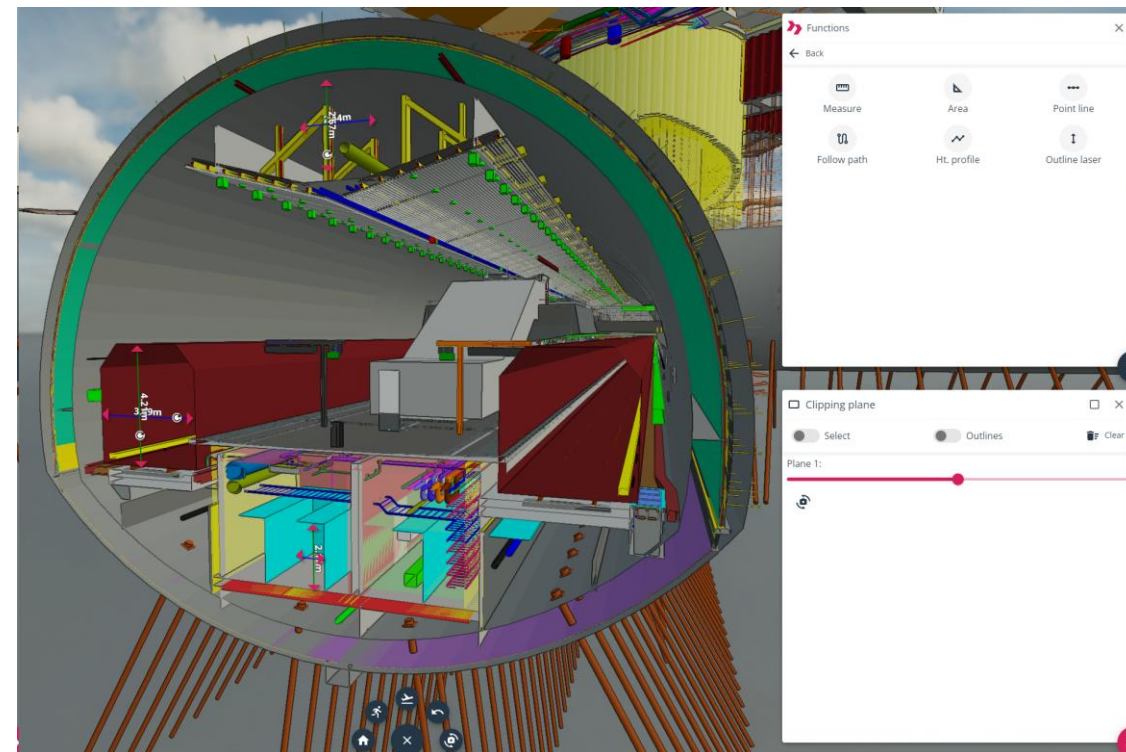
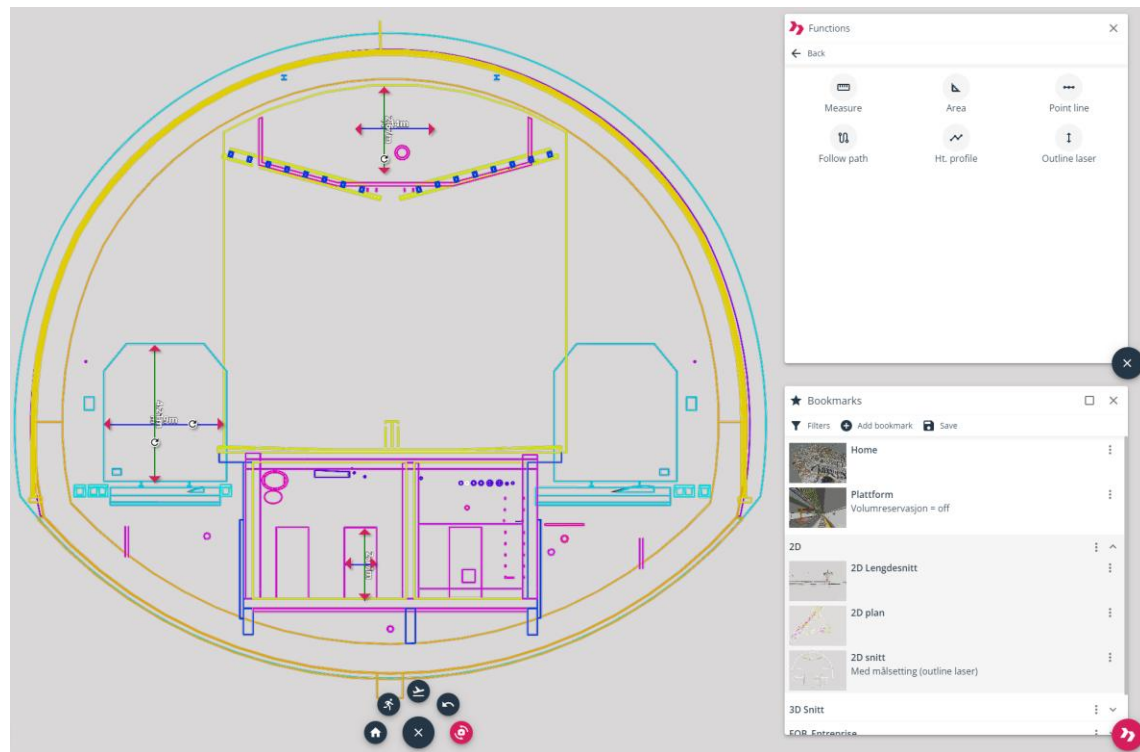


DESIGN SPECIFICATIONS

LIGHT FIXTURE PROPERTIES		
FOB_Info		
FOB_Mengdelistepost	1303.40.442.4	
FOB_Entreprise	K7	
FOB_Mengde	1	
FOB_Eksistensstatus	Ny	
FOB_Status	S5	
FOB_Mengdeenhet	stk	
FOB_Innstopes	False	
FOB_Leveransepakke	LPE07	
FOB_Revisjonsdato	2025.10.09	
FOB_ENTstatus	0	
FOB_Merke		
K7_Tilleggsinfo		
PGF_Info		
PGF_PNS	1.3.03.03.02	
PGF_Klassifisering	442	
PGF_Fagkapittel	40 Elkraft, generelt	
PGF_Byggeplasztilbakemelding	False	
PGF_Revisjonsindeks	01B	
PGF_Klassebeskrivelse	Belysningsutstyr	
PGF_Mengdetype	Lysarmatur sirkulær innfelt i tak 249x150	
PGF_Revisjonsign	ADLS	

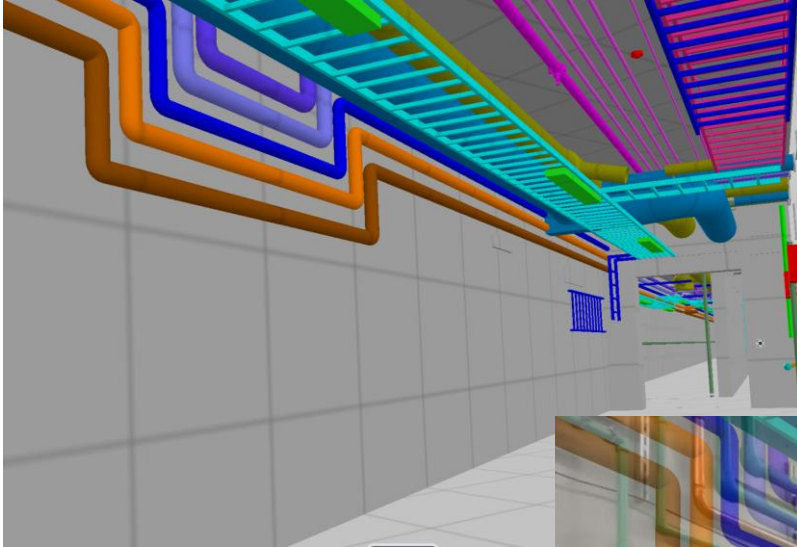
Easy access through simple user interfaces
for 2D and 3D visualisations

Novorender



Everyday Use of Model Insight Tools

- AR overlays digital information, such as 3D BIM models, onto the real-world environment.



Opportunities and value

- *“The use of drawings must be reduced to an absolute minimum for all phases of the project and also towards approval authorities”*



- **From 20 up to 200 drawings** replaced by each BIM model, on average
- **Over 1,200 active BIM models** currently in the project
- One shared source of information, accessible to everyone involved
- **Fewer construction errors**



Thanks