

Smisto kraftverk – Tegningsløs prosjektering og bygging

Digitalisering i tunnelbransjen – Kursdagene
10. januar, 2018

Herman B. Smith



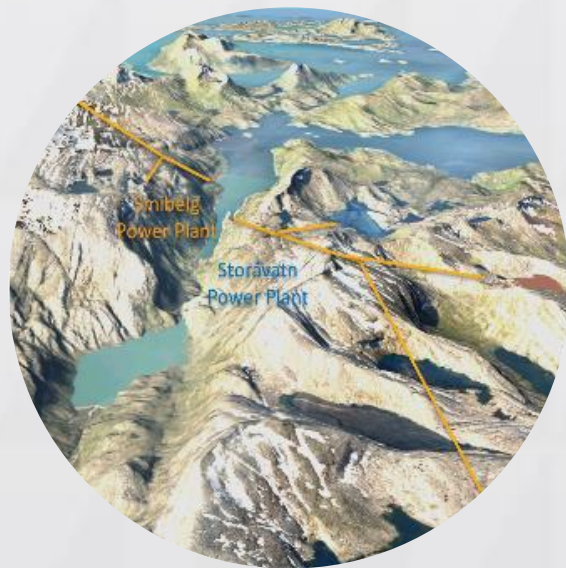
Multiconsult



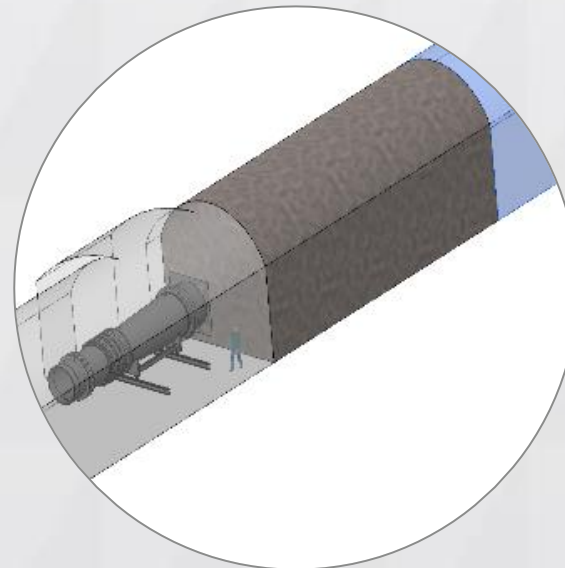
Herman B. Smith
Sivilingeniør – Oppdragsleder
hbs@multiconsult.no

AGENDA

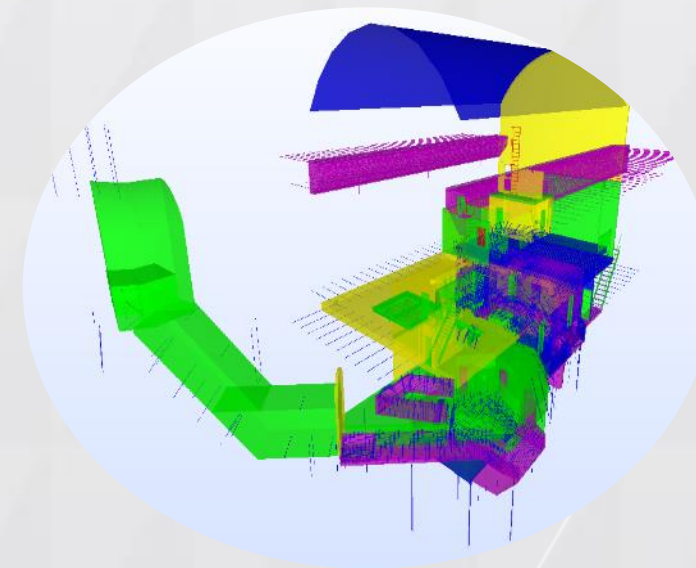
Prosjektet og målsetning

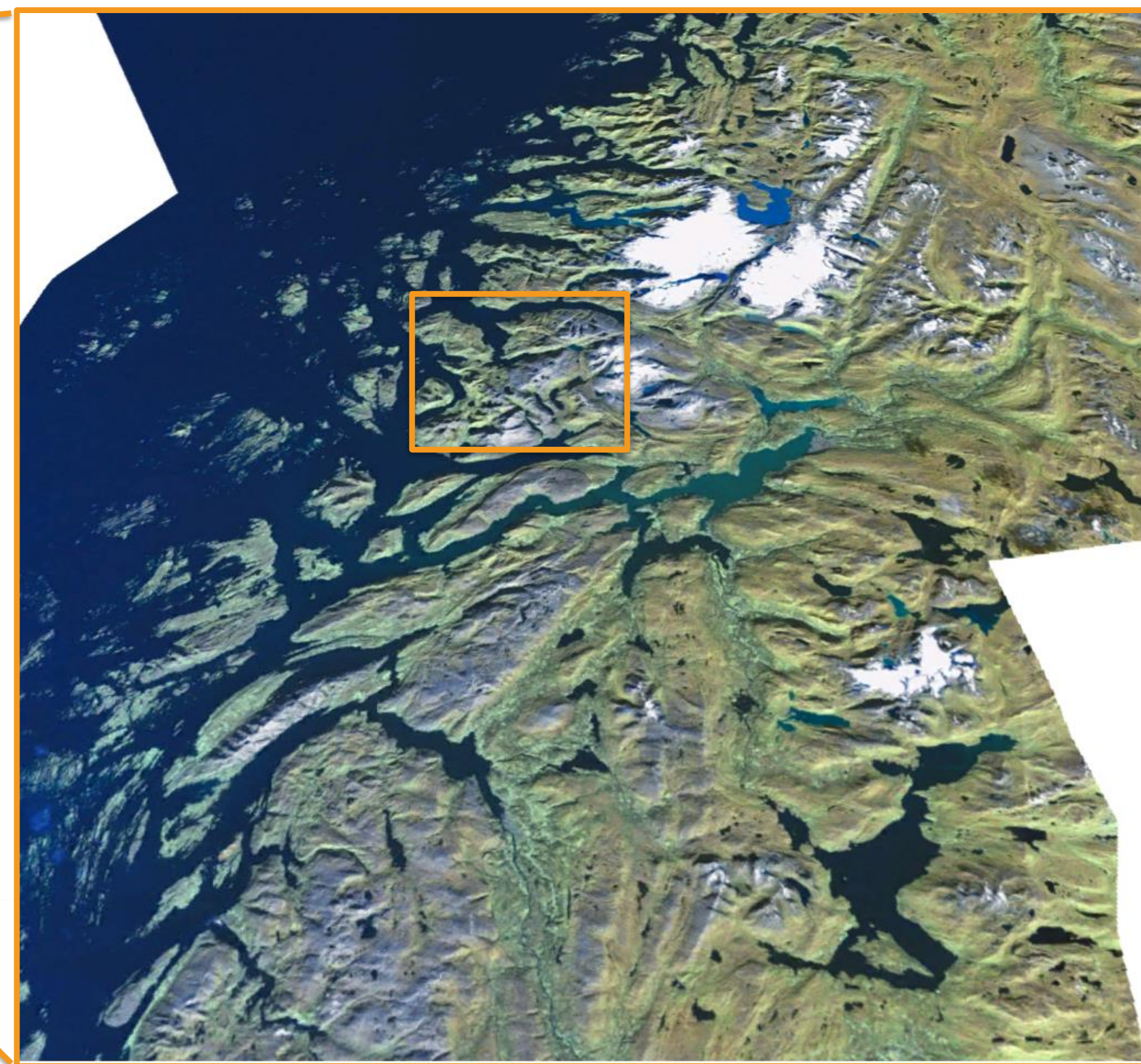


Hvorfor tegningsløst



Planleggings- og prosjekteringsprosess









Totalentreprise

Byggherre



Entreprenør

Rådgiver



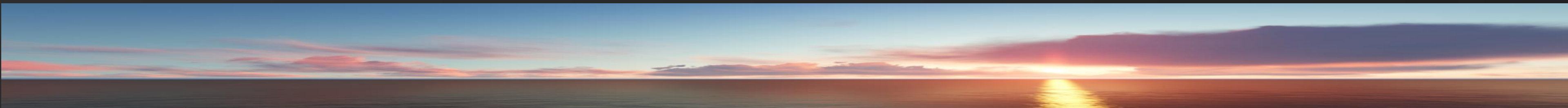
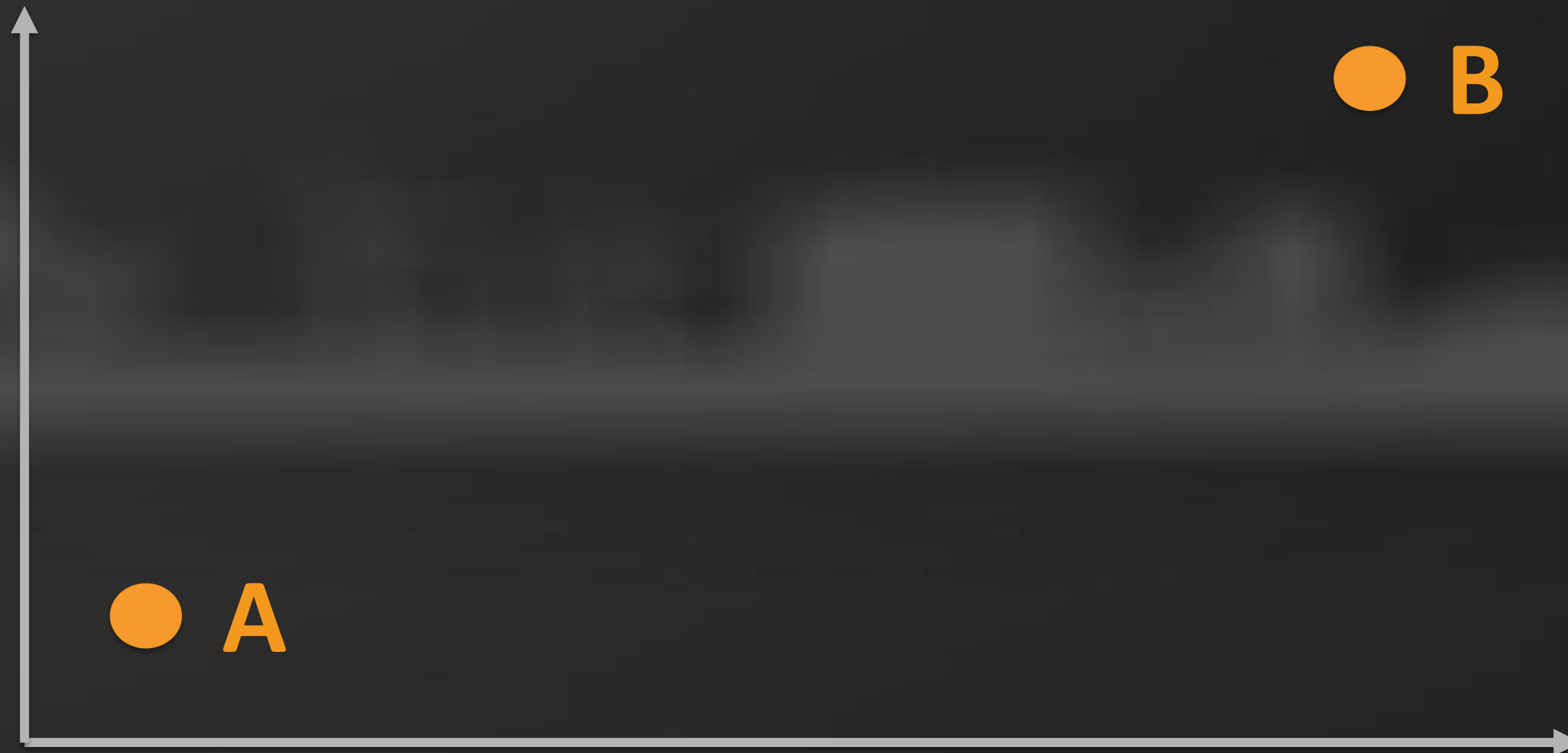


Espen Dahl-Mortensen
Prosjekteringskoordinator og stikningsleder
espen.dahl@zenithsurvey.no

Hvor var vi?

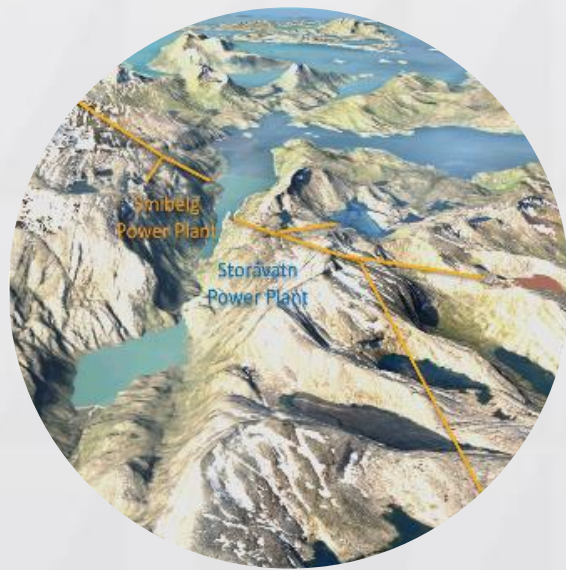
Hvor skulle vi?

Hvordan skulle vi komme dit?

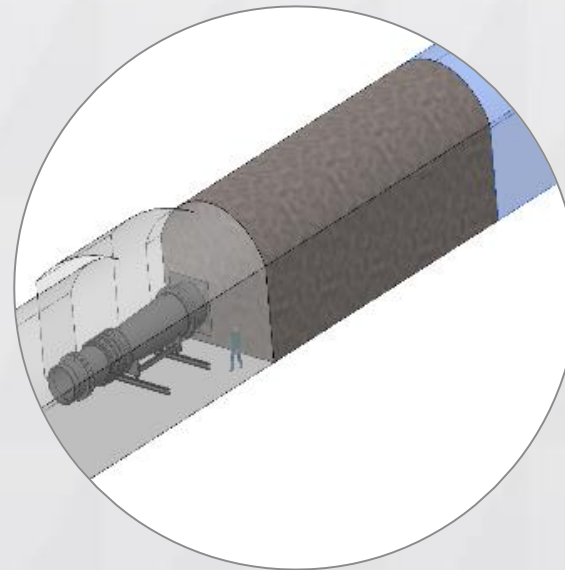


AGENDA

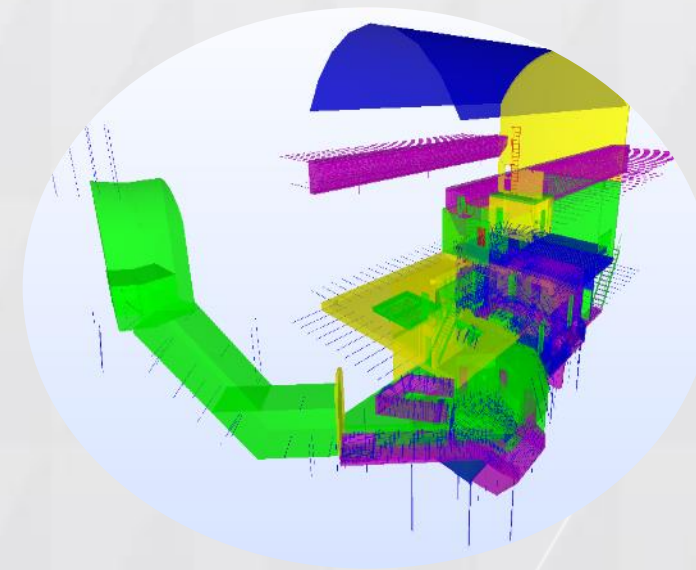
Prosjektet og målsetning



Hvorfor tegningsløst



Planleggings- og prosjekteringsprosess







Planning and Design

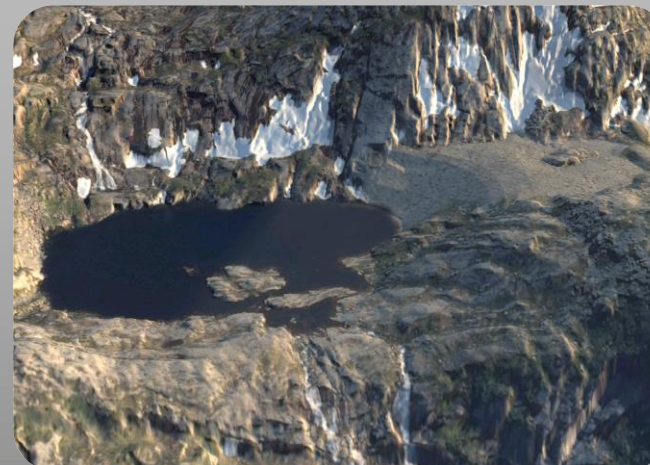


Execution

Surveying



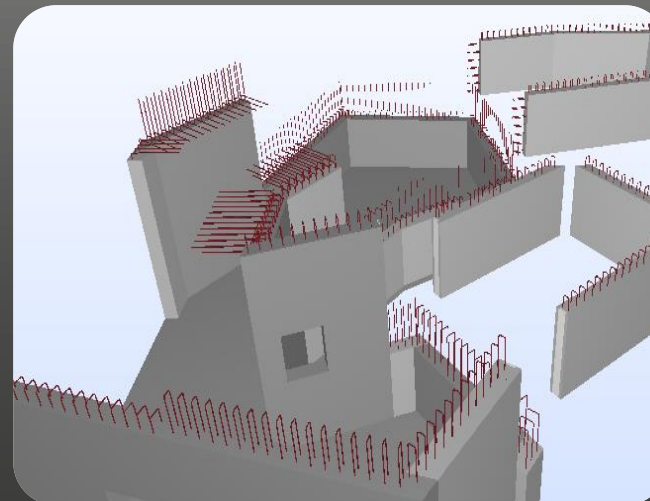
Landscaping



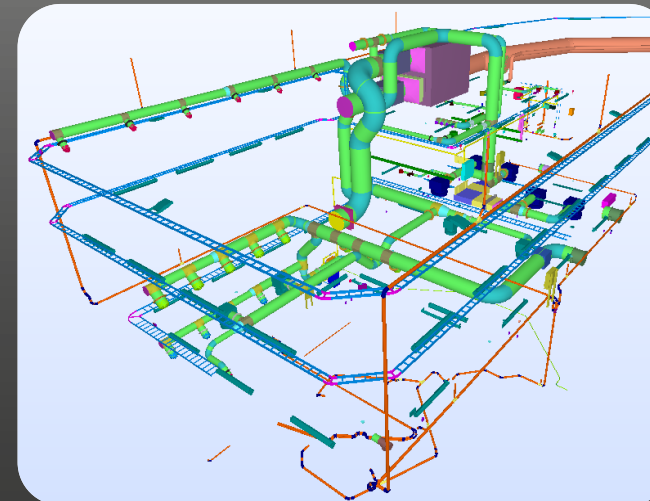
Underground works



Civil Works



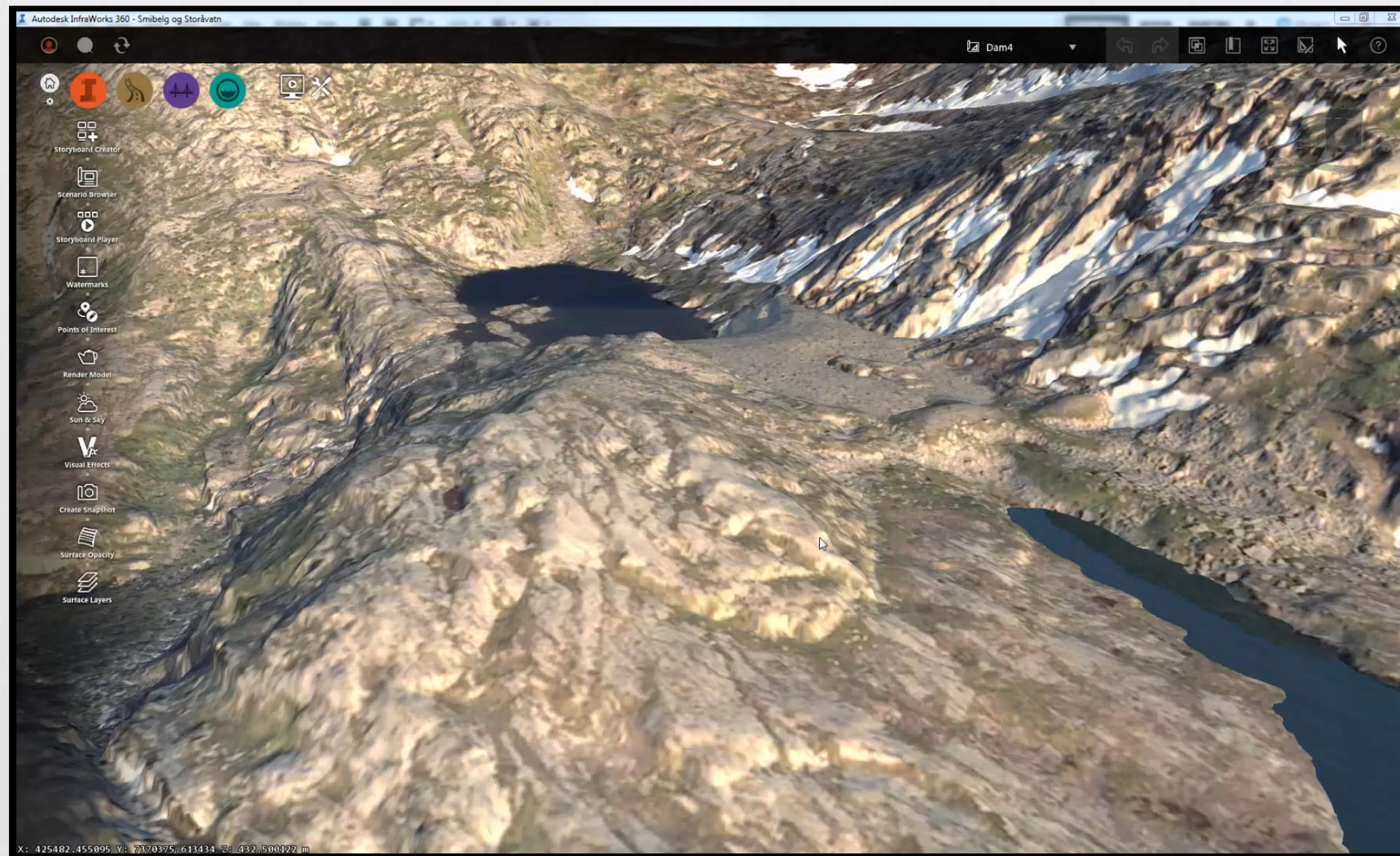
Technical Installations



Planning and Design



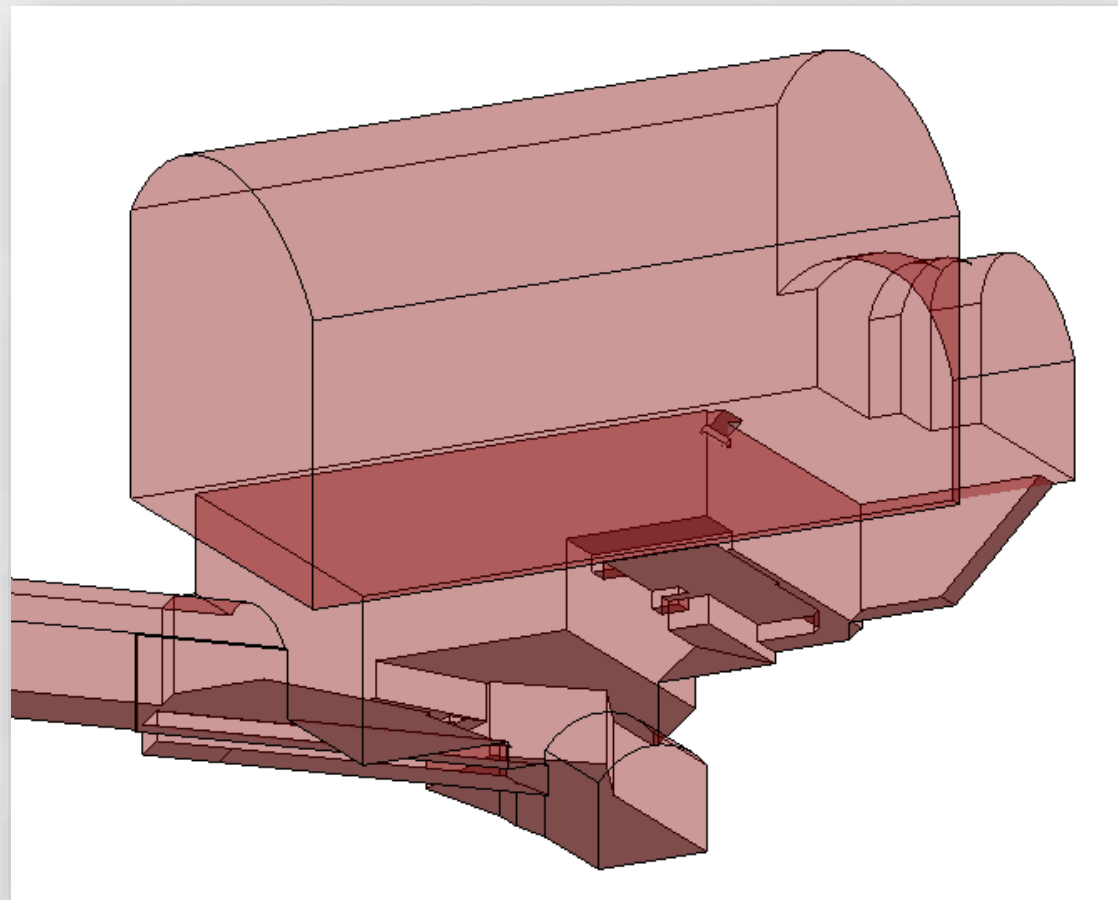
Landscaping



Planning and Design



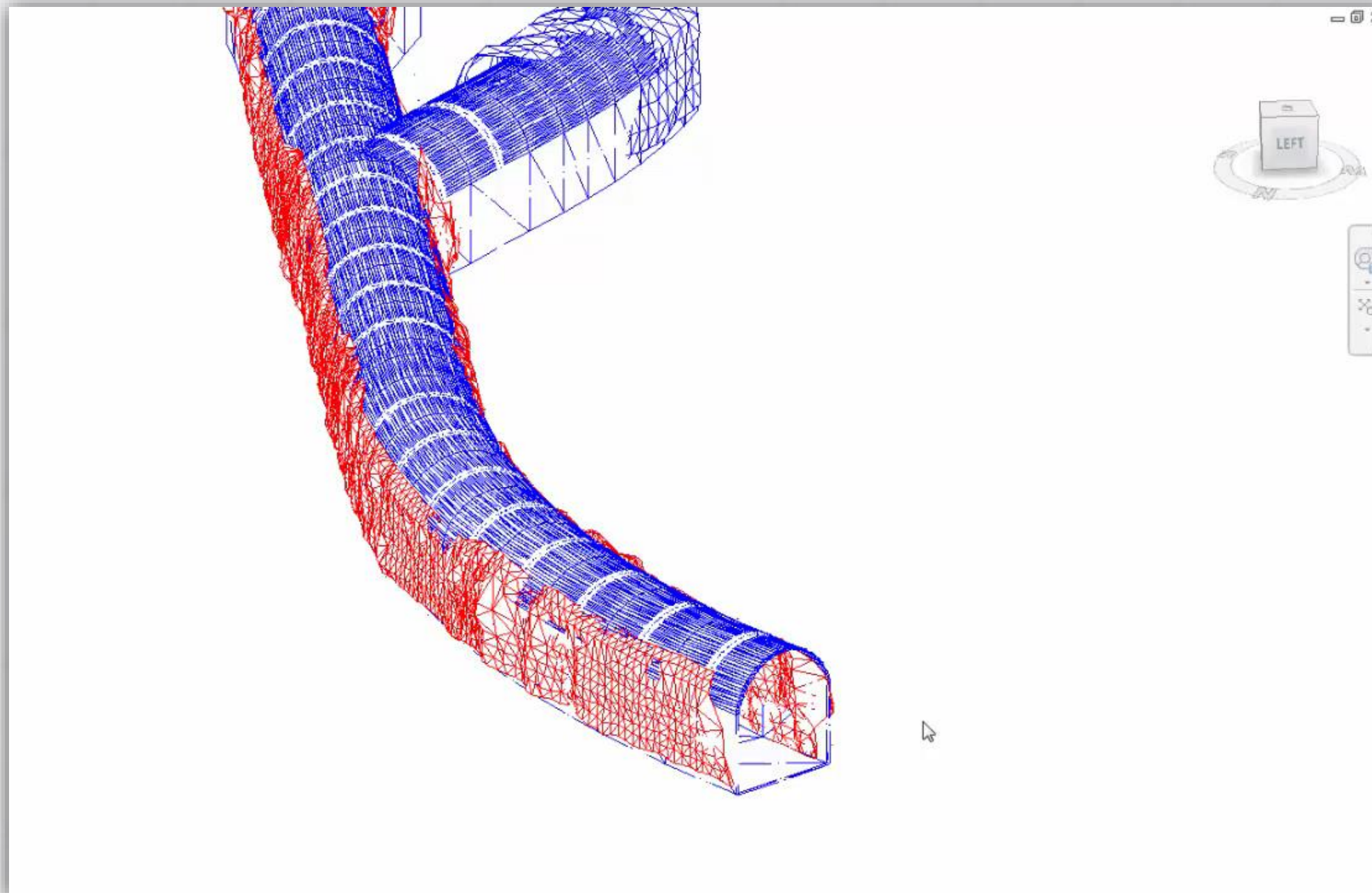
Underground works

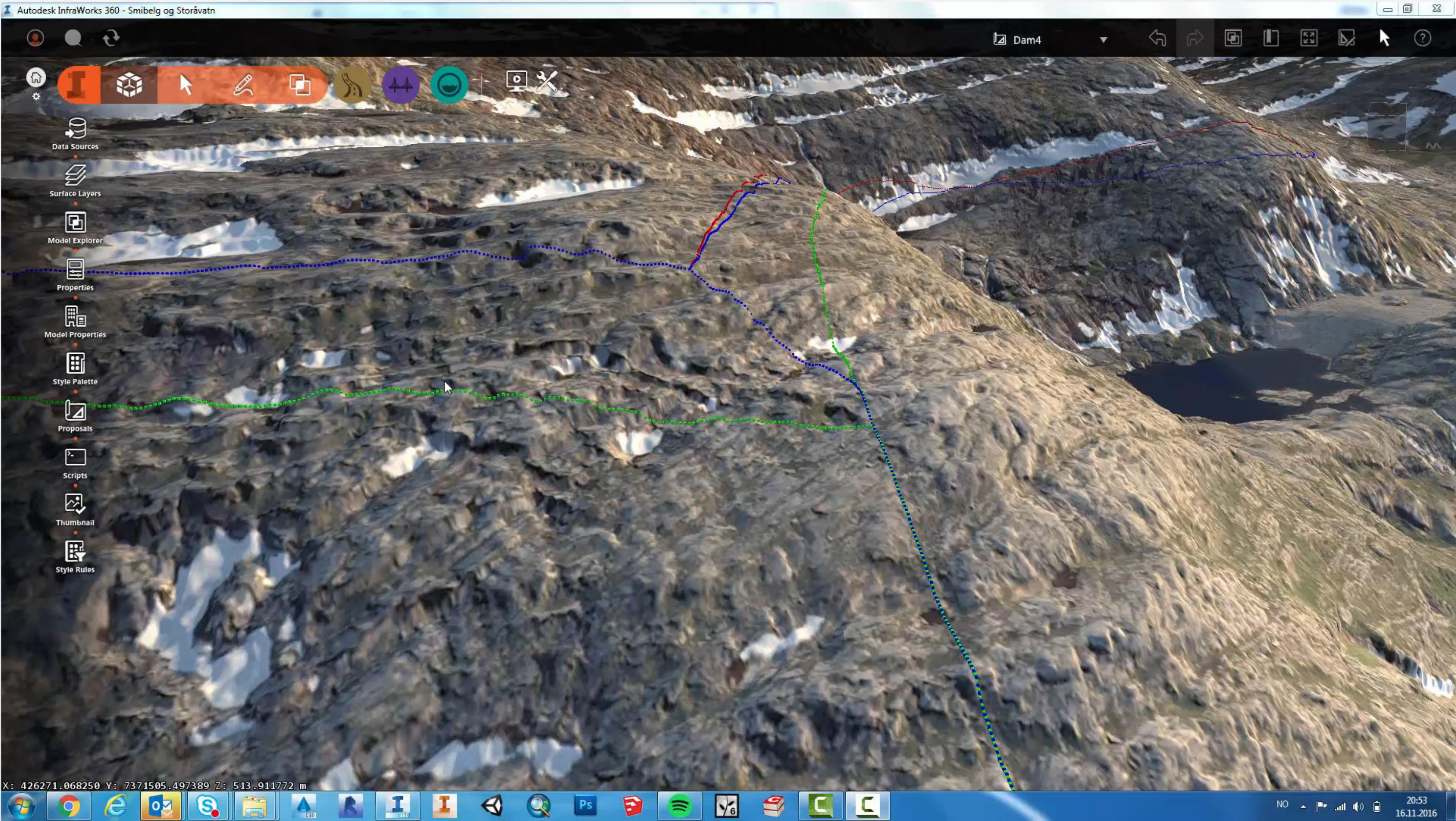


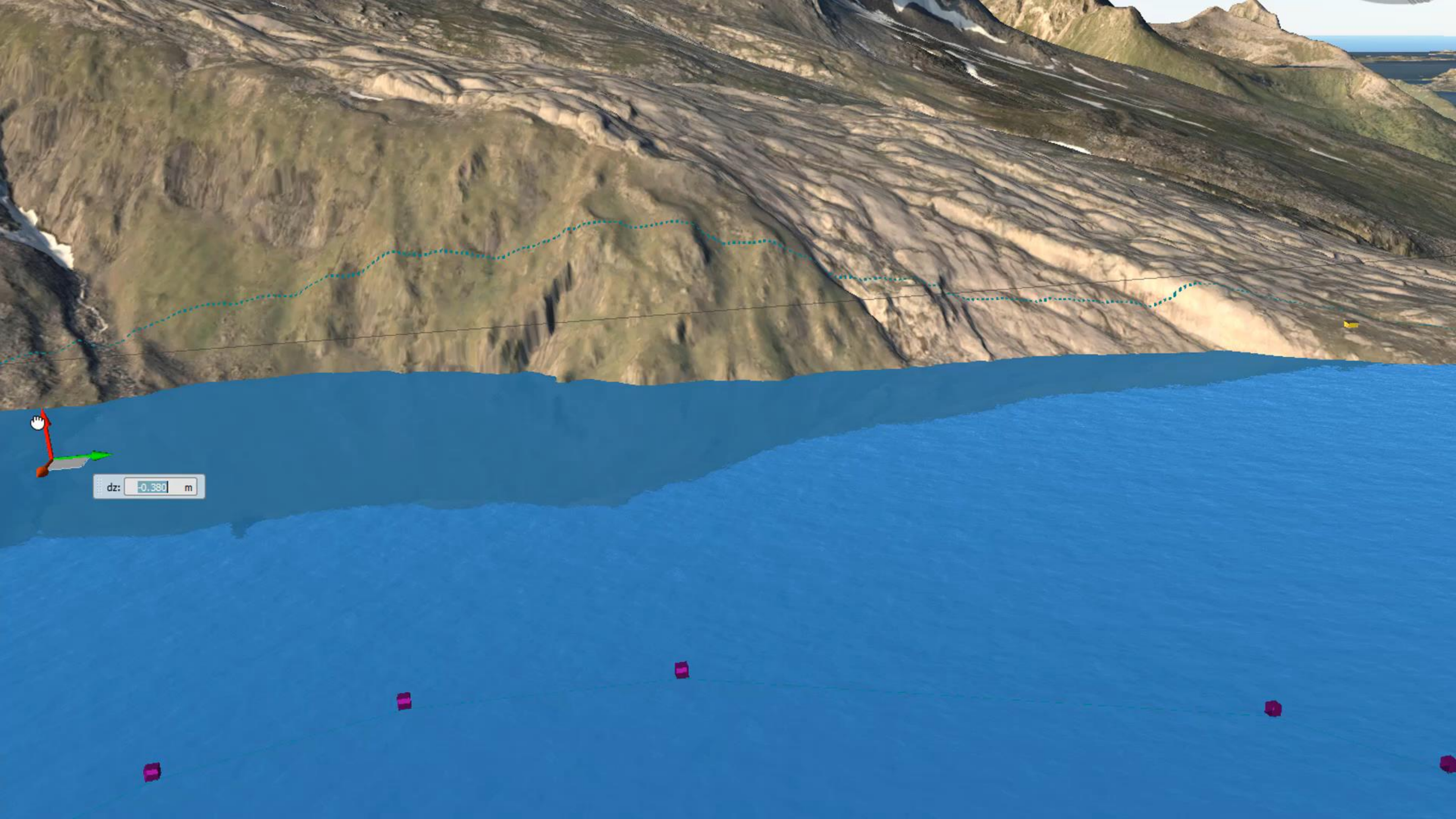
Planning and Design



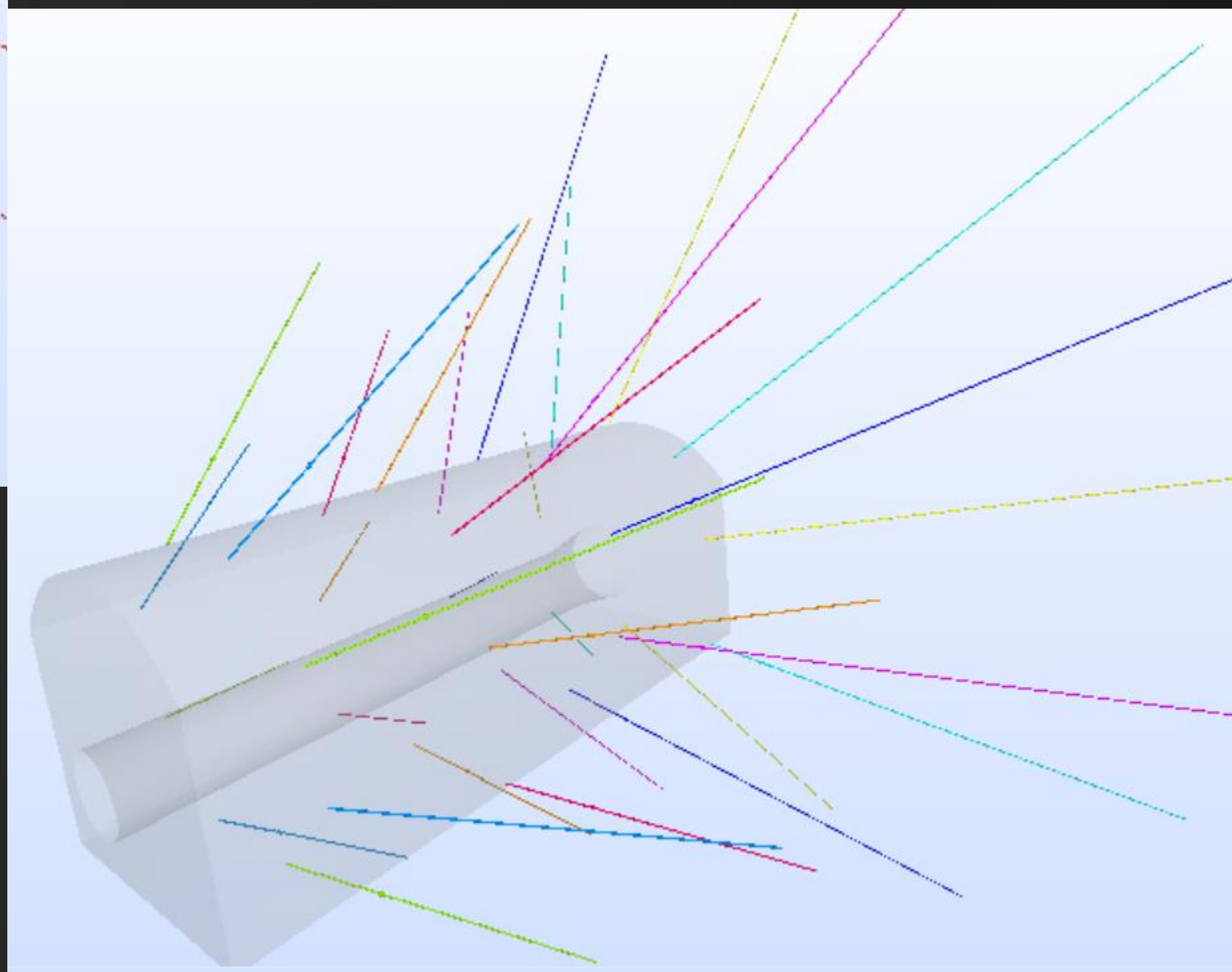
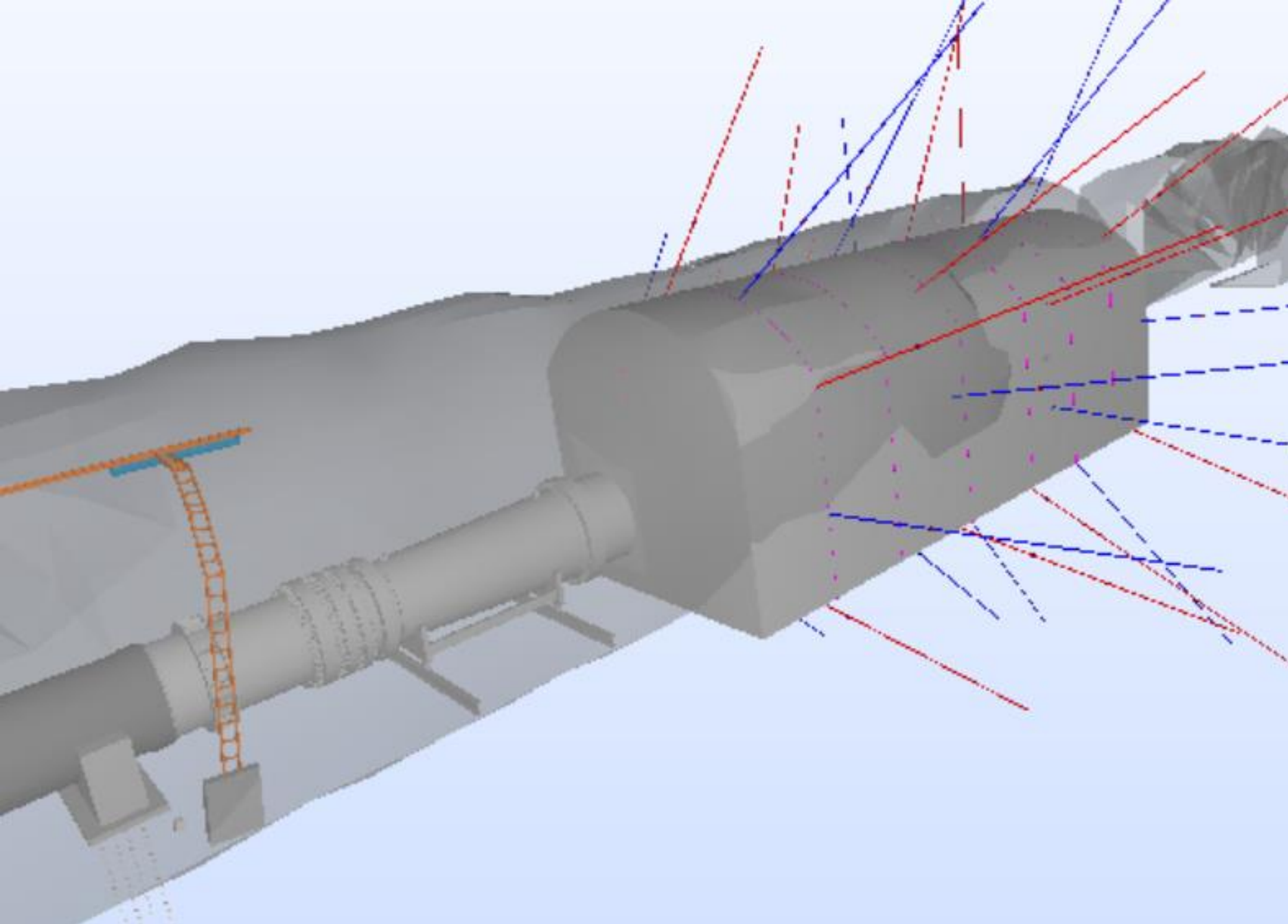
Underground works

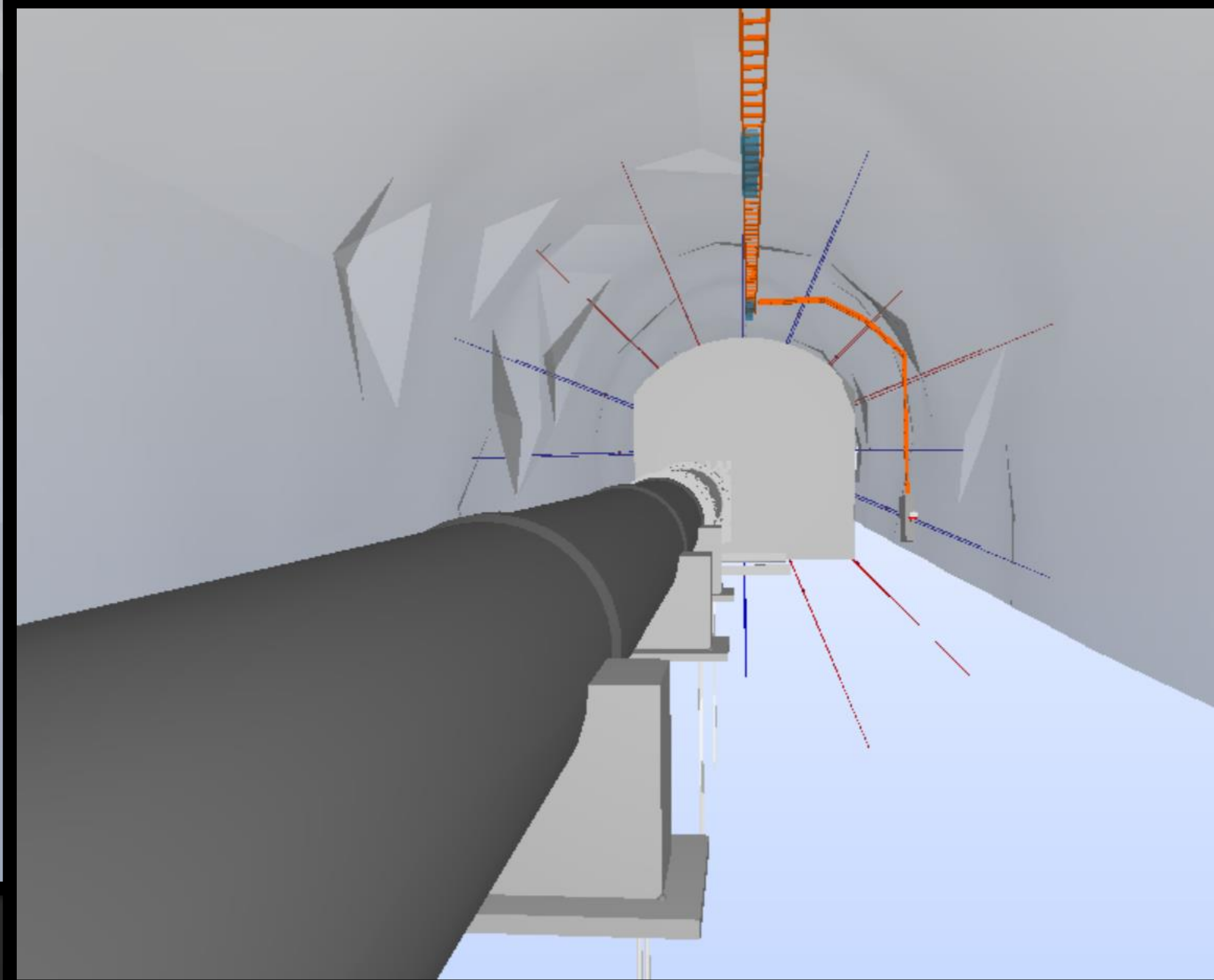
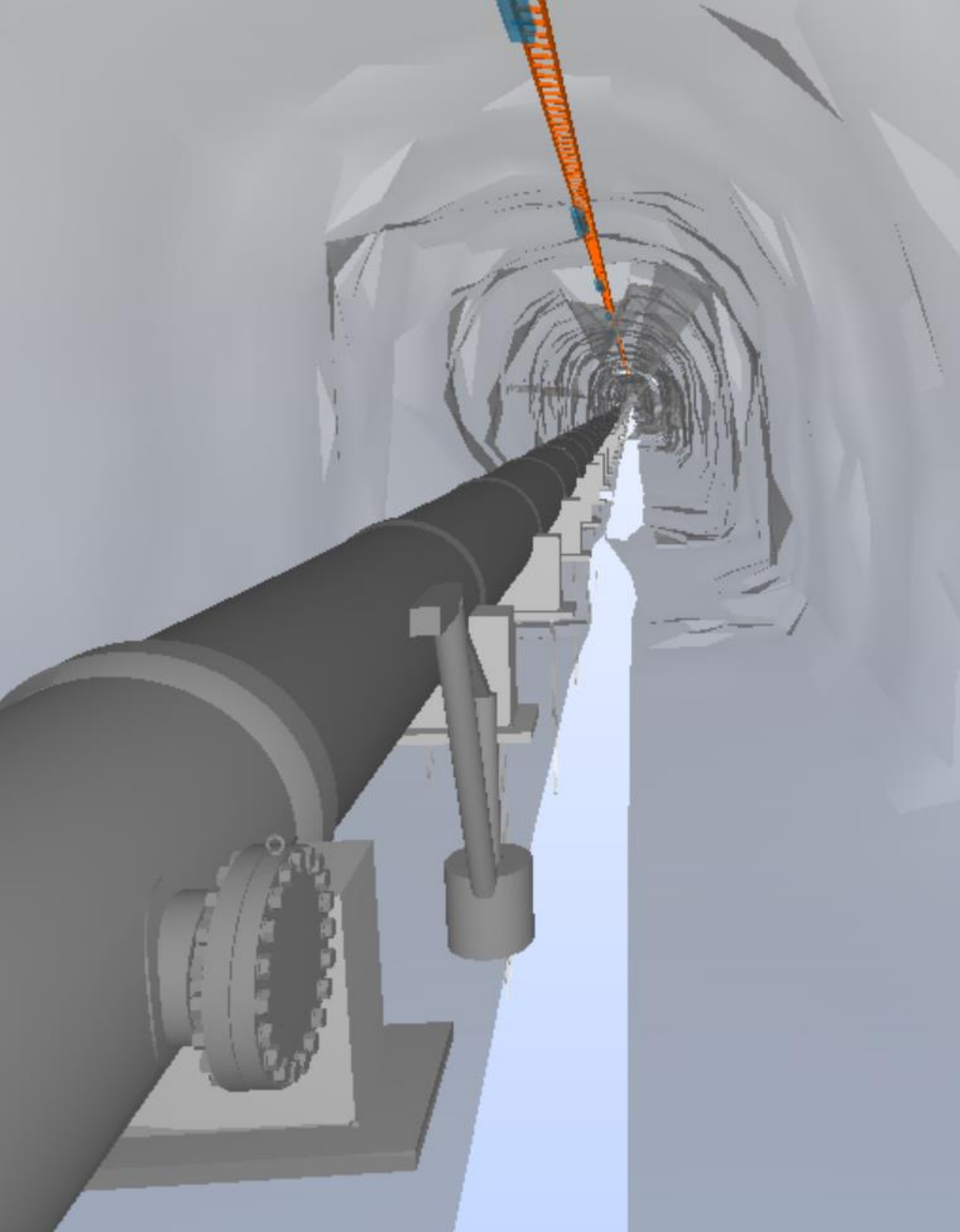








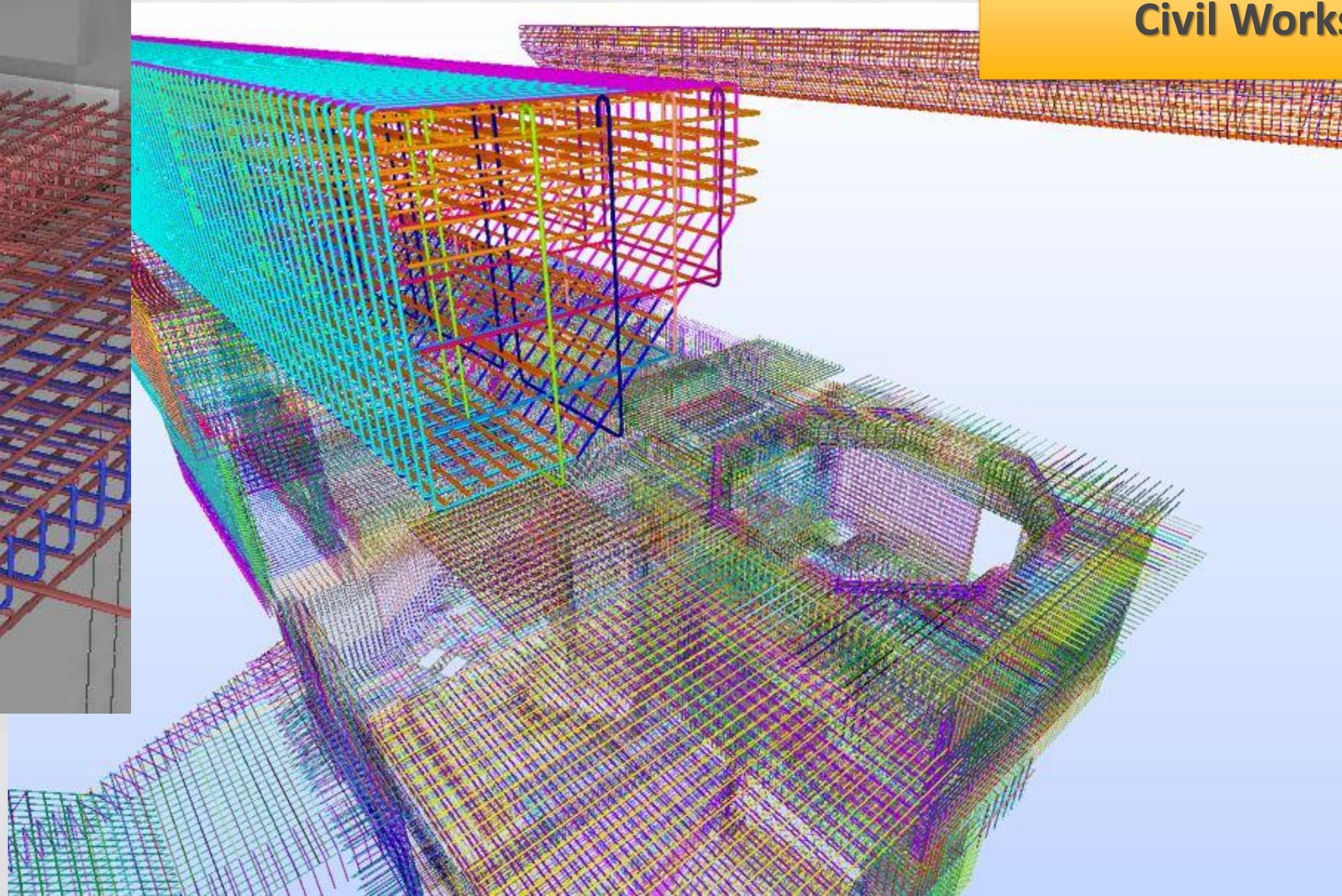
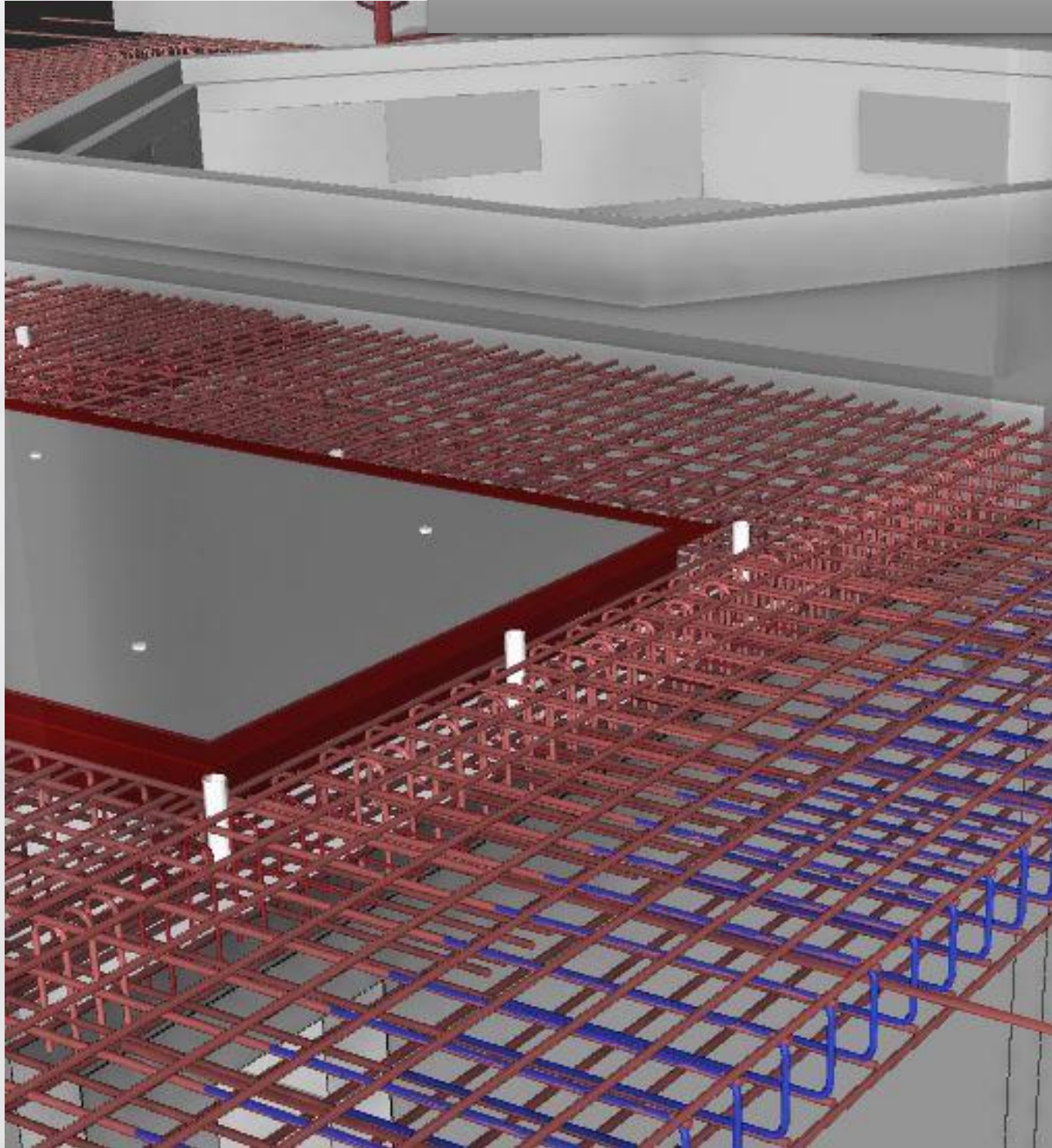




Planning and Design



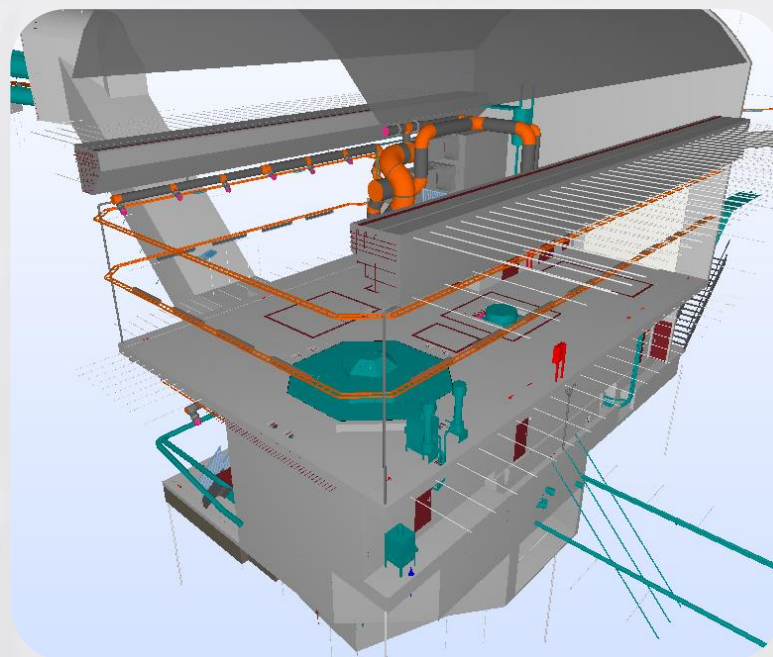
Civil Works



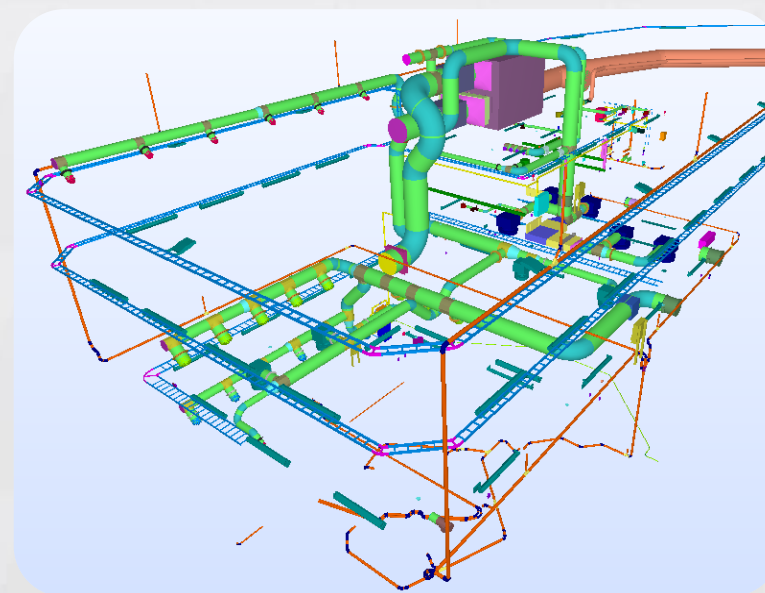
Planning and Design



Total

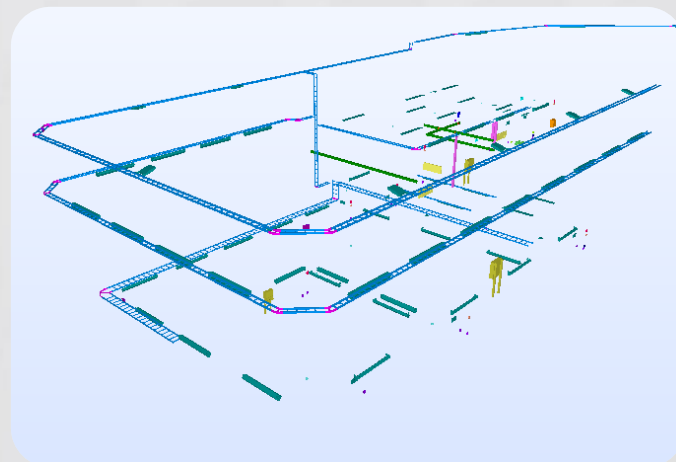


Technical installations

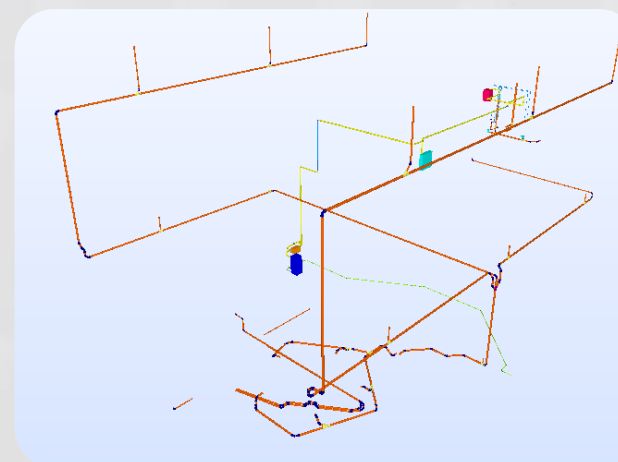


Technical Installations

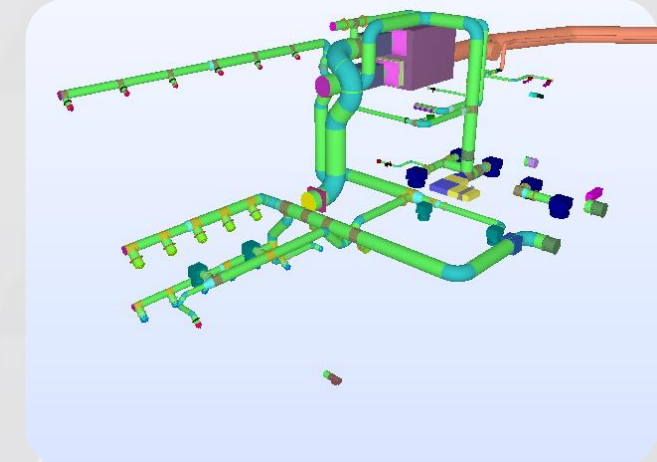
Electrical

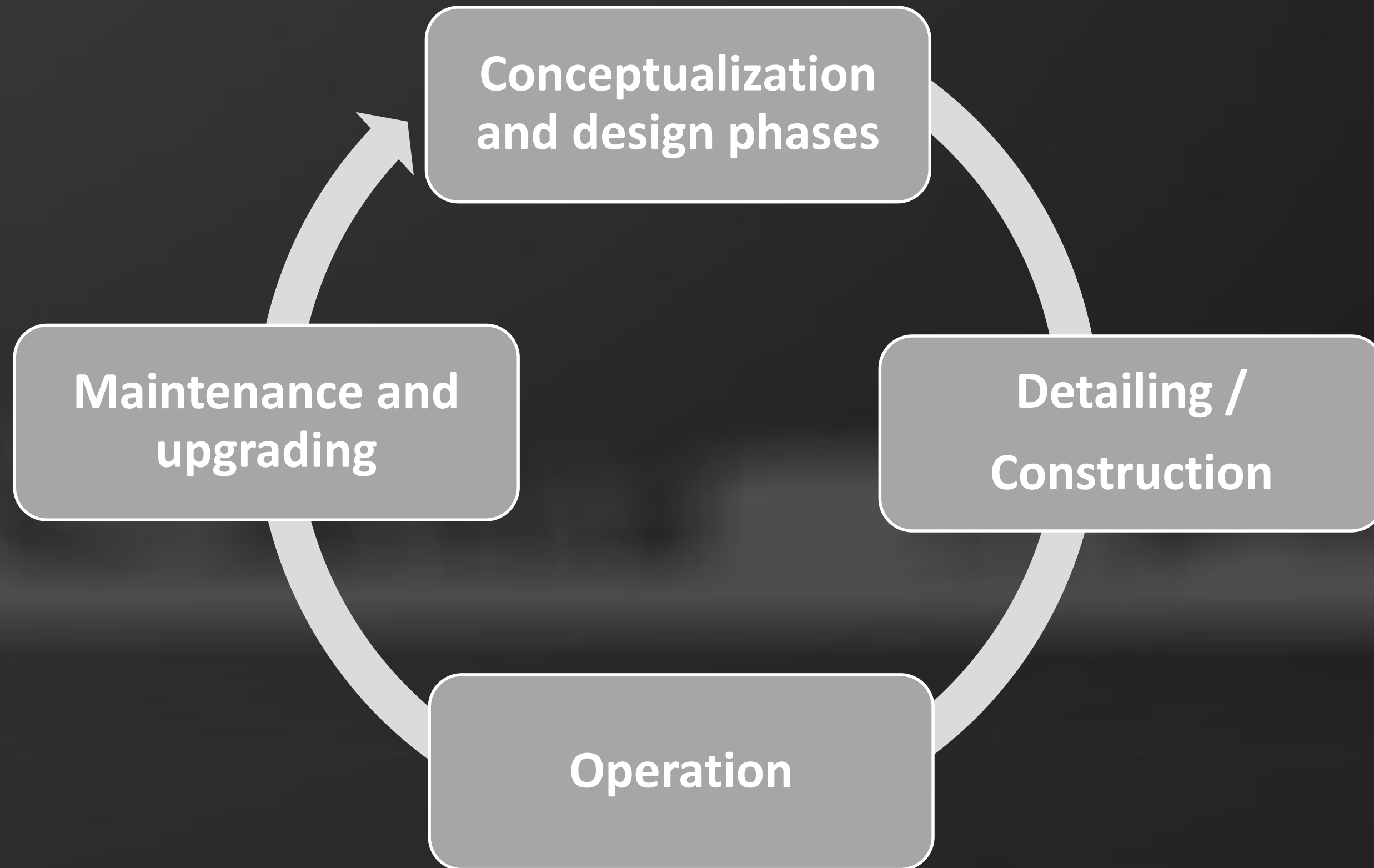


Sanitary



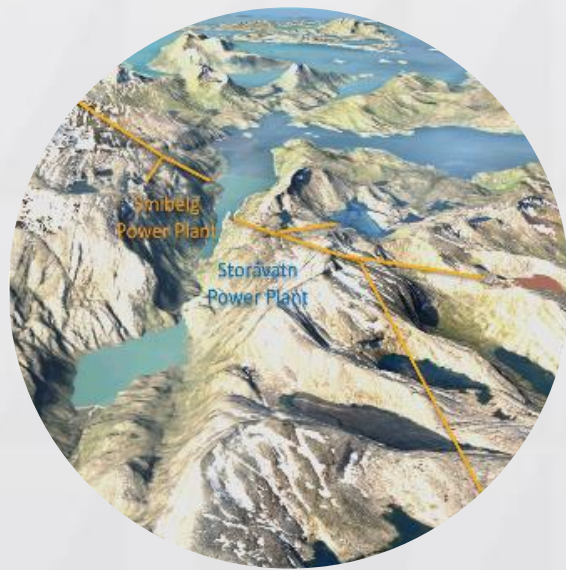
Ventilation



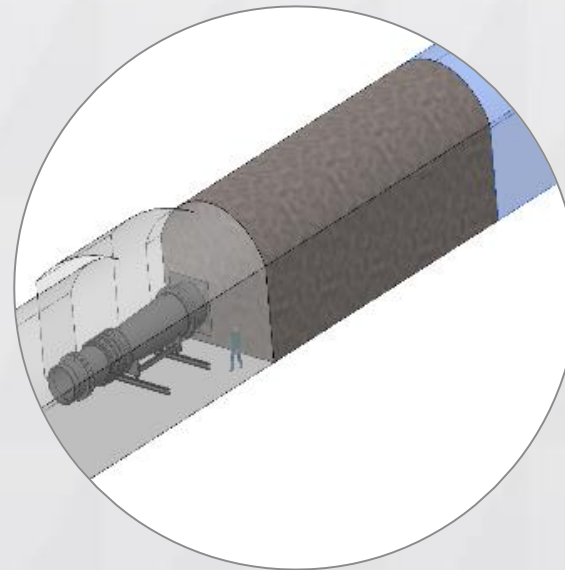


AGENDA

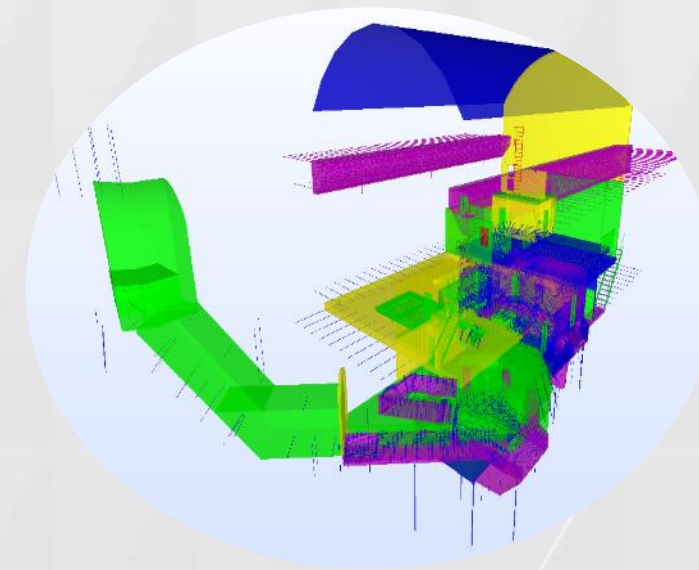
Prosjektet og målsetning

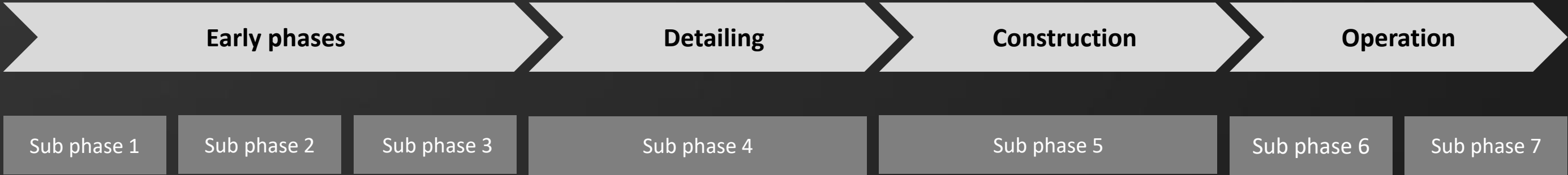


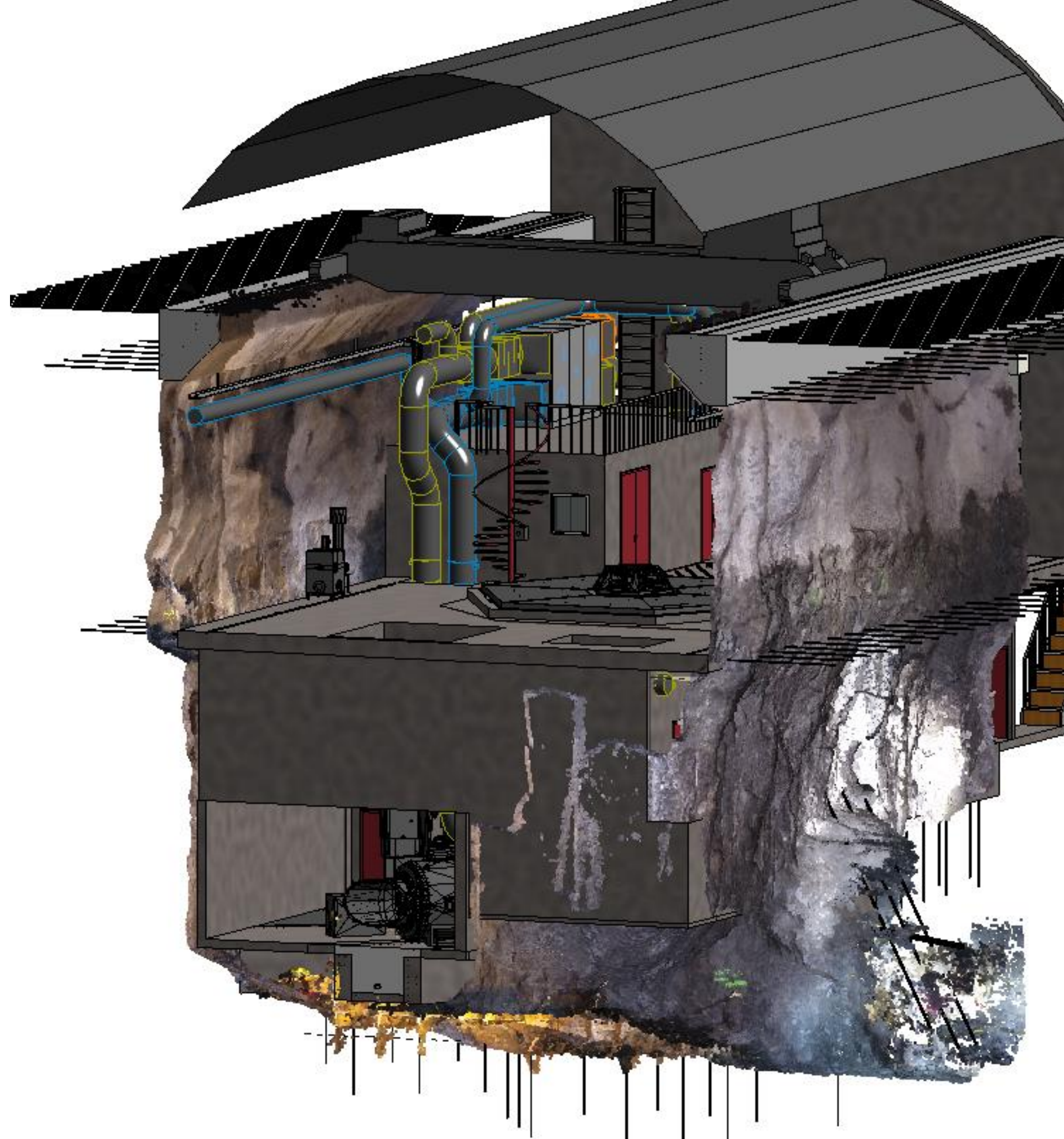
Hvorfor tegningsløst



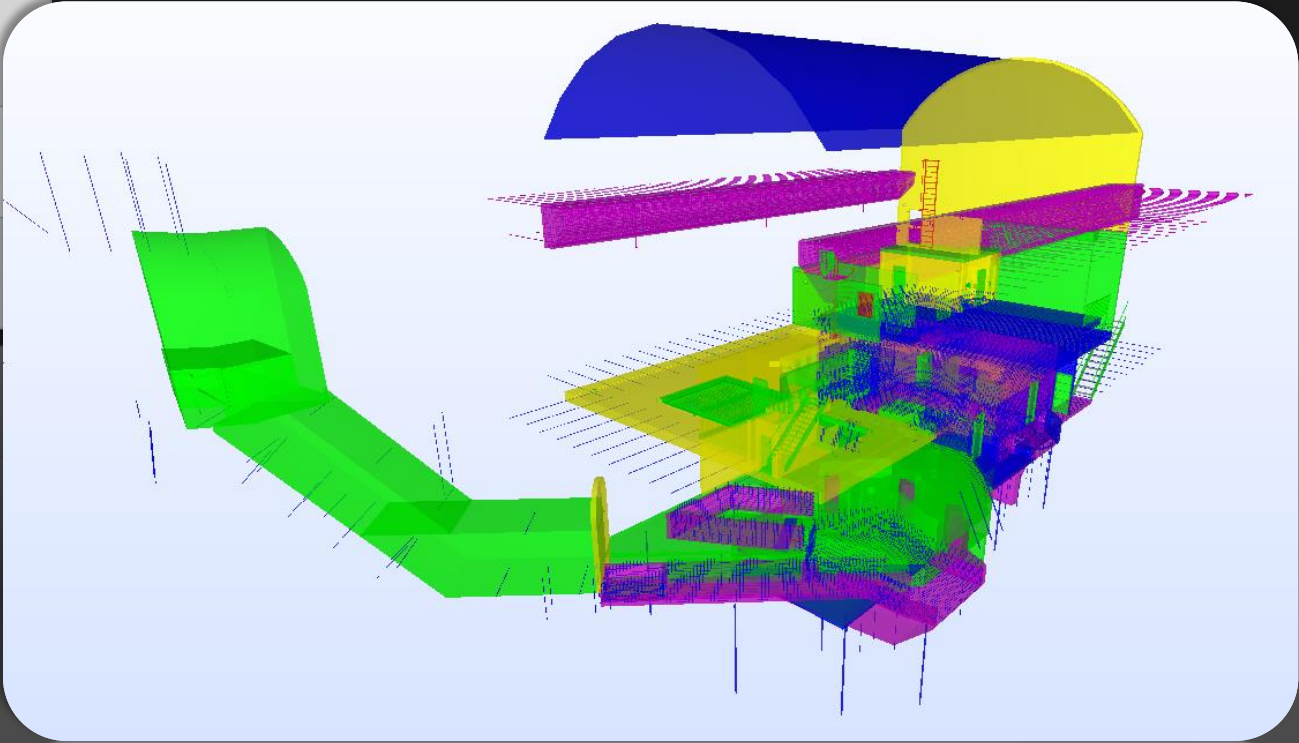
Planleggings- og prosjekteringsprosess

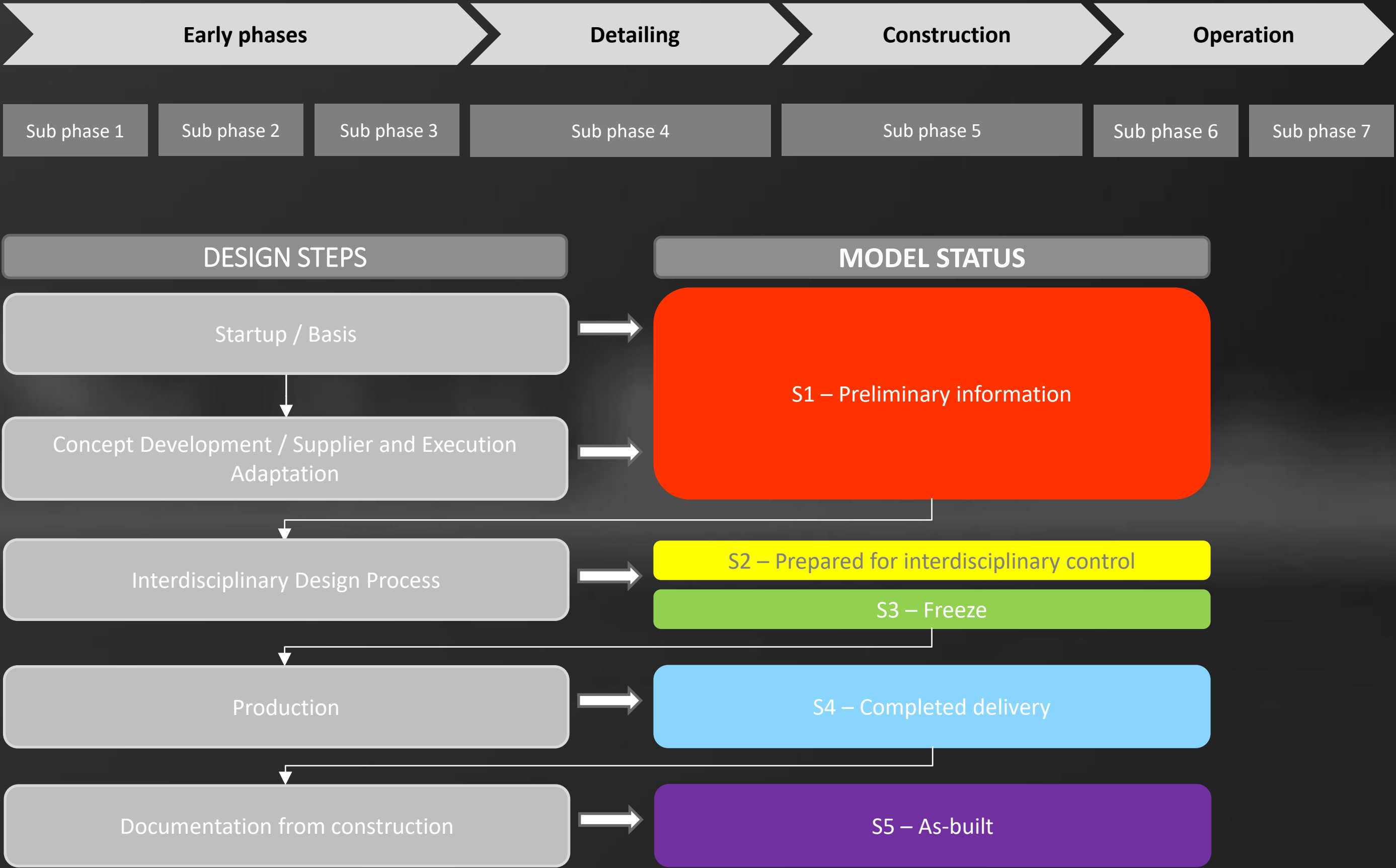




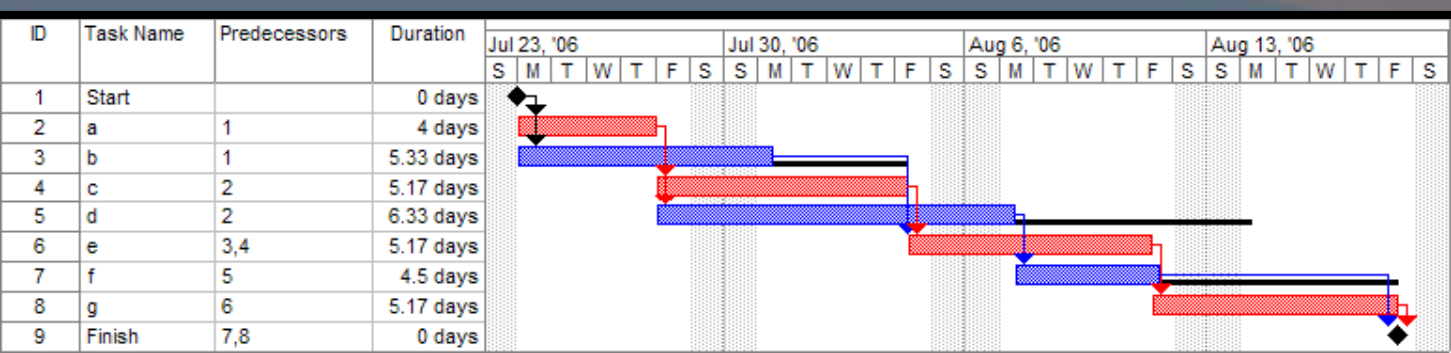


Status	Definisjon	Farge
S1	Foreløpig informasjon	
S2	Klar for tverrfaglig kontroll	
S3	Frys	
S4	Ferdig leveranse	
S5	As-built dokumentasjon	







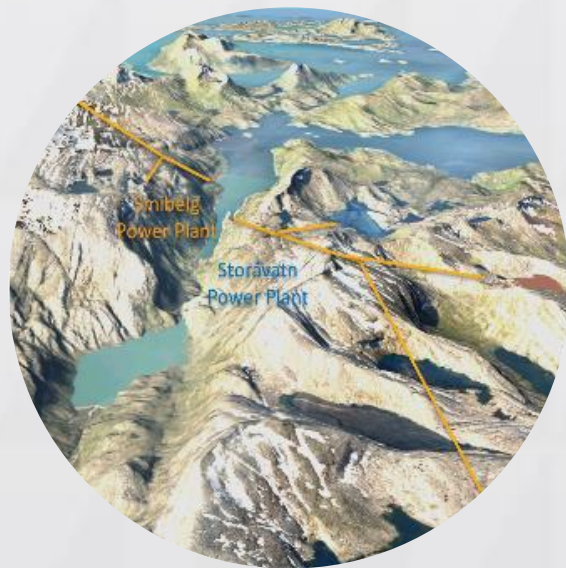


Betong ID	Pos.nr.	Type	Color
Div E-01		Innstøping omløpsrør	
Div E-02		Utstøping rør	
Div E-03		Igjenstøping	
Div F-01	114, 115, 116, 117, 118 and 54 others	Floor:Betong 200mm, Innstøping turbin, Rebar Bar:ø12:1183488, Struc...	
Fundament A-01-01	200, 20110, 20111, 20112 and 141 others	Floor:Betong 100, Rebar Bar:ø12:1183488, Structural Area Reinforcem...	
Fundament B-01-01	300, 30024, 331, 336	Foundation Slab:Betong 200, Rebar Bar:ø12:1183488, Structural Area ...	
Fundament B-01-02	300, 30026, 30028, 302 and 4 others	Floor:Betong 200mm, Rebar Bar:ø12:1183488, Structural Area Reinforc...	
Fundament B-01-03	30001, 301, 308, 313, 314, 329, 338	Betongtykkelse 200 mm, Foundation Slab:Betong 600, Rebar Bar:ø12:1...	
Fundament E-01	1, 10, 11, 12, 13, 14 and 13 others	Floor:Betong 200mm, Rebar Bar:ø12:1183488, Structural Area Reinforc...	
Fundament E-02		Floor:Betong 200mm	
Fundament F-01		Foundation Slab:Betong 350	
Kulvertdekke B-01	30032, 30033, 30034, 30035 and 4 others	Angivelse, Foundation Slab:Betong 200, Rebar Bar:ø12:1183488	
Luke D-01-01	506, 507, 508, 509, 510, 519	Foundation Slab:Betongluke t=200 mm and 4 others	
Luke D-01-02	506, 507, 508, 509, 510, 519	Foundation Slab:Betongluke t=200 mm and 4 others	
Massivstøp F-01	1, 11, 121, 125, 126, 127 and 51 others	Innstøping turbin, Rebar Bar:ø12:1183488, Rebar Bar:ø16:1183490	
Massivstøp F-02	10, 100, 115, 118, 121 and 126 others	Innstøping turbin, Rebar Bar:ø12:1183488, Rebar Bar:ø16:1183490	
Massivstøp E-03	1, 100, 101, 102, 103 and 125 others	Innstøping turbin, Rebar Bar:ø12:1183488, Rebar Bar:ø16:1183490	

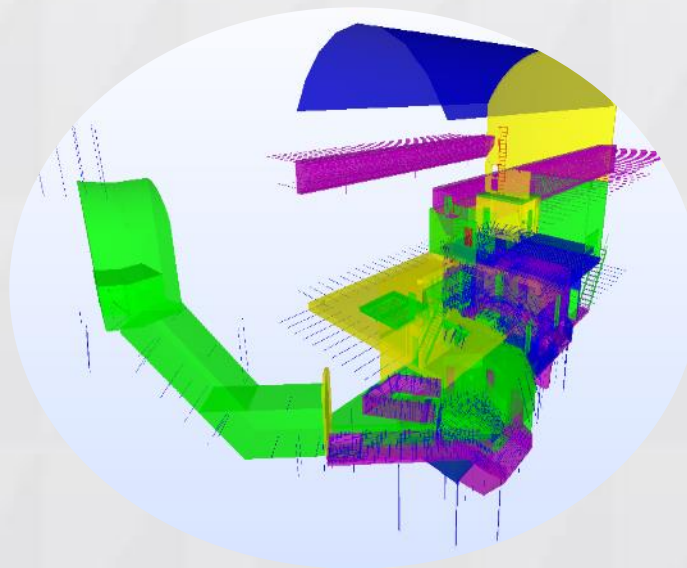
Information Takeoff																	Takeoff All 04.2 Bayeliste Report									
Partition	Rebar Number	Diameter	Formkode	Krok 1	Krok 2	Antall	Bar Length	Bar Length (sum)	Bend Diameter	a	b	c	H	d	e	MC-Bestemmelser	Color									
A	1	12 mm	21 3 3			7	1.221 m	8.544 m	32 mm	281 mm	500 mm	281 mm	101 mm	0 mm	0 mm											
A	10	12 mm	41			2	1.934 m	3.868 m	32 mm	340 mm	500 mm	340 mm	0 mm	500 mm	340 mm											
A	11	16 mm	26			6	1.590 m	9.542 m	50 mm	245 mm	982 mm	400 mm	0 mm	940 mm	0 mm											
A	12	16 mm	26			6	1.526 m	9.158 m	50 mm	385 mm	760 mm	400 mm	0 mm	580 mm	0 mm											
A	13	12 mm	41			2	2.174 m	4.348 m	32 mm	420 mm	500 mm	420 mm	0 mm	500 mm	420 mm											
A	14	12 mm	41			1	1.724 m	1.724 m	32 mm	270 mm	500 mm	270 mm	0 mm	500 mm	270 mm											
A	2	12 mm	21 3 3			2	1.874 m	3.749 m	32 mm	620 mm	475 mm	620 mm	101 mm	0 mm	0 mm											
A	3	16 mm	0			2	2.200 m	4.400 m	50 mm	2.200 m	0 mm	0 mm	0 mm	0 mm	0 mm											
A	4	12 mm	21 3 3			2	1.574 m	3.149 m	32 mm	470 mm	475 mm	470 mm	101 mm	0 mm	0 mm											
A	5	12 mm	0			6	2.200 m	13.200 m	32 mm	2.200 m	0 mm	0 mm	0 mm	0 mm	0 mm											
A	6	12 mm	21 3 3			6	2.634 m	15.806 m	32 mm	1.000 m	475 mm	1.000 m	101 mm	0 mm	0 mm											
A	7	12 mm	41			2	2.594 m	5.188 m	32 mm	560 mm	500 mm	560 mm	0 mm	500 mm	560 mm											
A	8	12 mm	41			1	1.724 m	1.724 m	32 mm	270 mm	500 mm	270 mm	0 mm	500 mm	270 mm											
A	9	12 mm	21			6	1.657 m	9.943 m	32 mm	600 mm	500 mm	600 mm	0 mm	0 mm	0 mm											

AGENDA

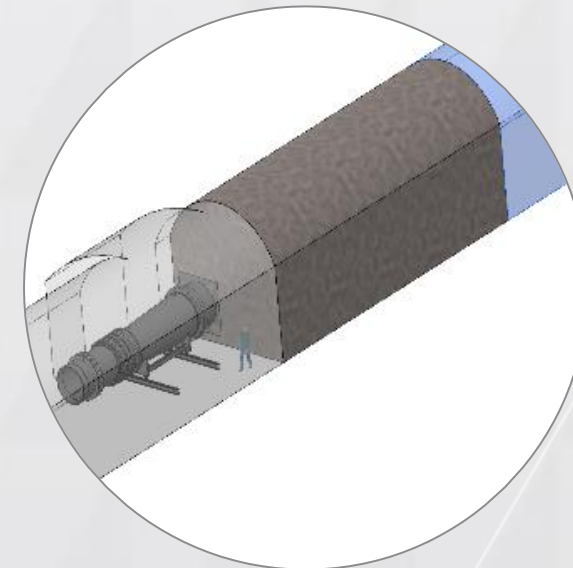
Prosjektet og målsetning

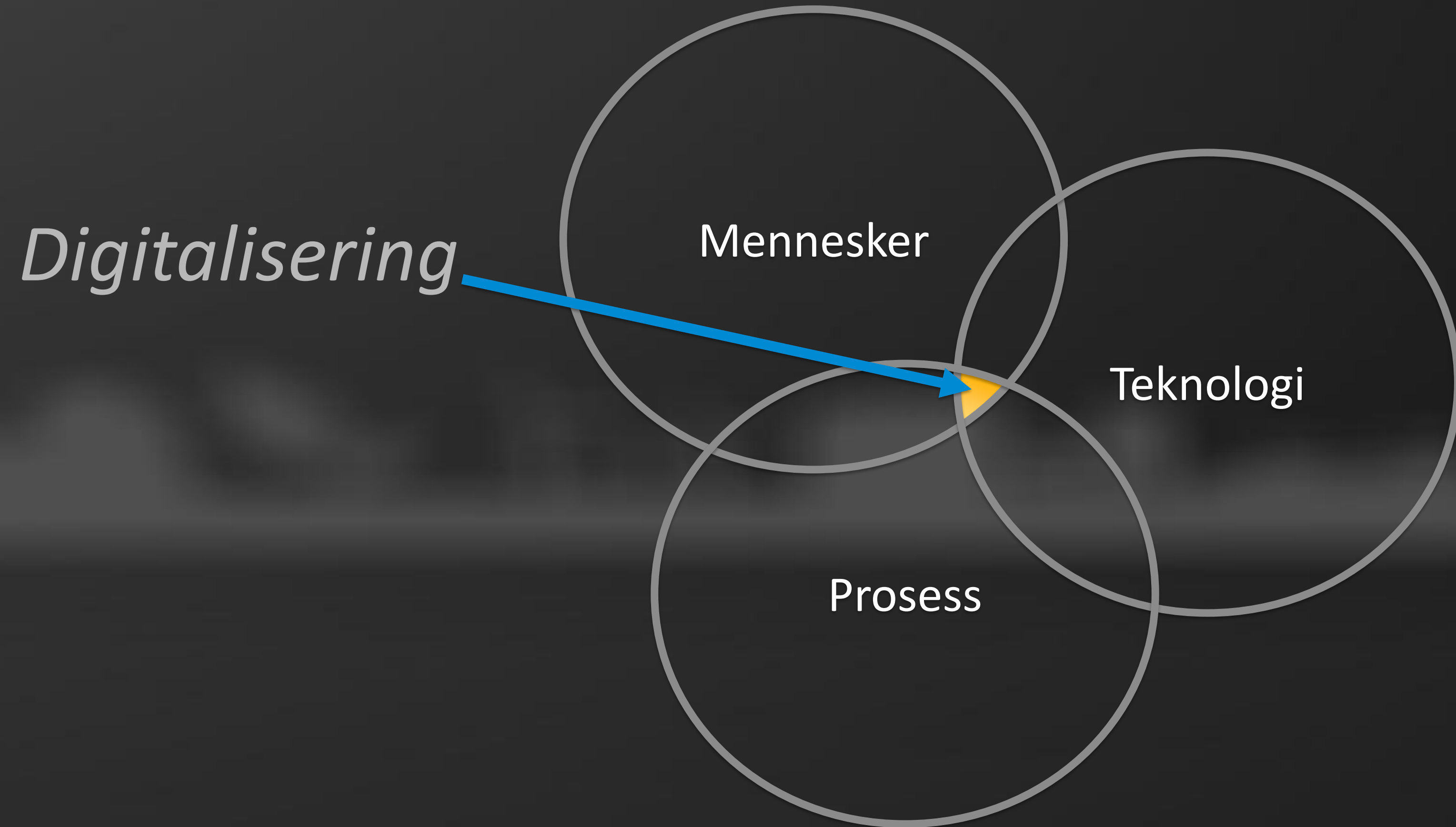


Planleggings- og prosjekteringsprosess



Hvorfor tegningsløst





Takk for meg!
Herman B. Smith – hbs@multiconsult.no

