

# Bruk av åpen\_BIM på byggeplassen (og hvordan etablere den)

## buildingSMART Norge 2013-04-25

Kjell Ivar Bakkmoen

Fagansvarlig BIM – Nytt østfoldsykehus  
Spesialrådgiver BIM støtte - Helse Sør-Øst

# Nytt østfoldsykehus Kalnes



# Nytt østfoldsykehus Kalnes - Fakta

- **Kalnes**

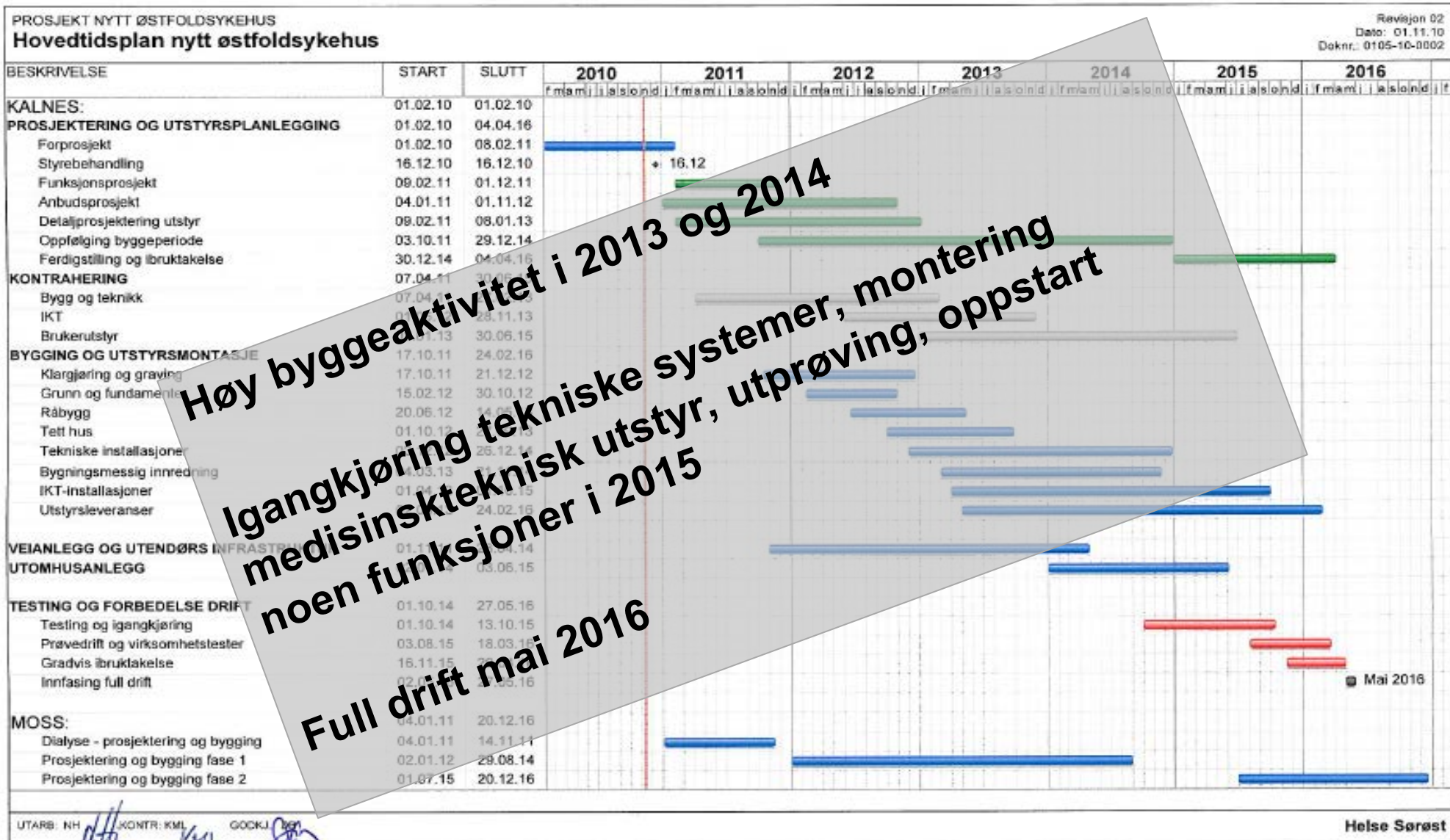
- 82 500 m<sup>2</sup> bruttoareal
- 3 150 funksjonsrom
- 500 tekniske rom
- 620 korridorer etc.

- |                                 |                    |
|---------------------------------|--------------------|
| – 1 000 typer utstyr            | 10 000 forekomster |
| – 400 typer løst inventar       | 10 000 forekomster |
| – 2 000 typer fast inventar     | 15 000 forekomster |
| – 1 500 typer VVS/data/lab etc. | 10 000 forekomster |

- **Kostnad** (P50-prisnivå februar 2010)

- Prosjektkostnad 5 090 MNOK inkl. utstyr og mva.
- Entreprisekostnad 2 450 MNOK eks. mva.

# Nytt østfoldsykehus Kalnes - Fakta



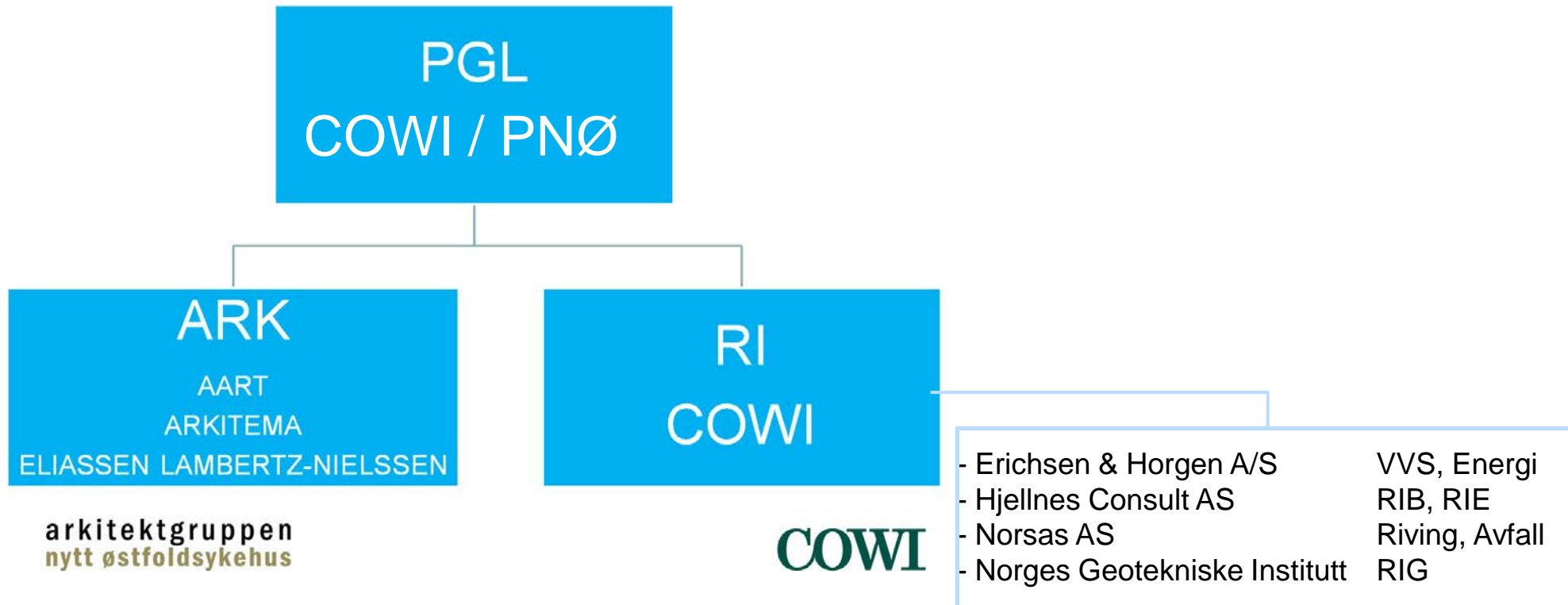
Høy byggeaktivitet i 2013 og 2014  
 Igangkjøring tekniske systemer, montering medisinsk utstyr, utprøving, oppstart noen funksjoner i 2015  
 Full drift mai 2016

# Sentralt styringsdokument

- BIM brukes aktivt i prosjekteringsarbeidet for å oppnå **bedre oppgaveforståelse, prosjektering, koordinering, kommunikasjon og kvalitetssikring** i prosjektet og ikke bare til tegningsproduksjon.
- **alle faser** av prosjektet, både når det gjelder **ansattmedvirkning, prosjektering og dokument- og tegningsproduksjon**.
- gjennom bruk av BIM **effektiviserer arbeidsprosessene, både i prosjekterings-, gjennomførings- og driftsfasen**.
- bedre basis for overlevering av **FDVU-data** til driftsorganisasjonen.
- basis for **grensesnittsplanlegging og kontroll**.
- **åpenBIM-formatet IFC**, avvik fra dette skal aktivt begrunnes.
- bidra til å **øke kompetansen om BIM generelt**,
- **overføringsverdi til andre prosjekter** i det regionale helseforetaket.

# Nytt østfoldsykehus - Kontrakt rådgiverteam

Som en konsekvens av strategien ble det stilt tilsvarende krav om BIM i kontrakten med rådgiverne / rådgivernes ytelsesbeskrivelse



# Prosjekteringsgruppens modelleringsverktøy

- ARK - REVIT Architecture
- RIB - REVIT Structure
- RIE - Revit MEP med CQ tools/Naviate (fra ACA+MagiCAD)
- RIV - Revit MEP med MagiCAD (fra ACA+MagiCAD)
- AKU - Revit + Cowi tilpasning (fra ACA+COWI meny)
- RIBr - Revit + Cowi tilpasning (fra ACA+COWI meny)
- Utomhus - Autodesk Civil
  
- KS - Solibri
- Fremdrift - Safran -> MS Project + Naviswork

# Nytt østfoldsykehus – Utveksling av data

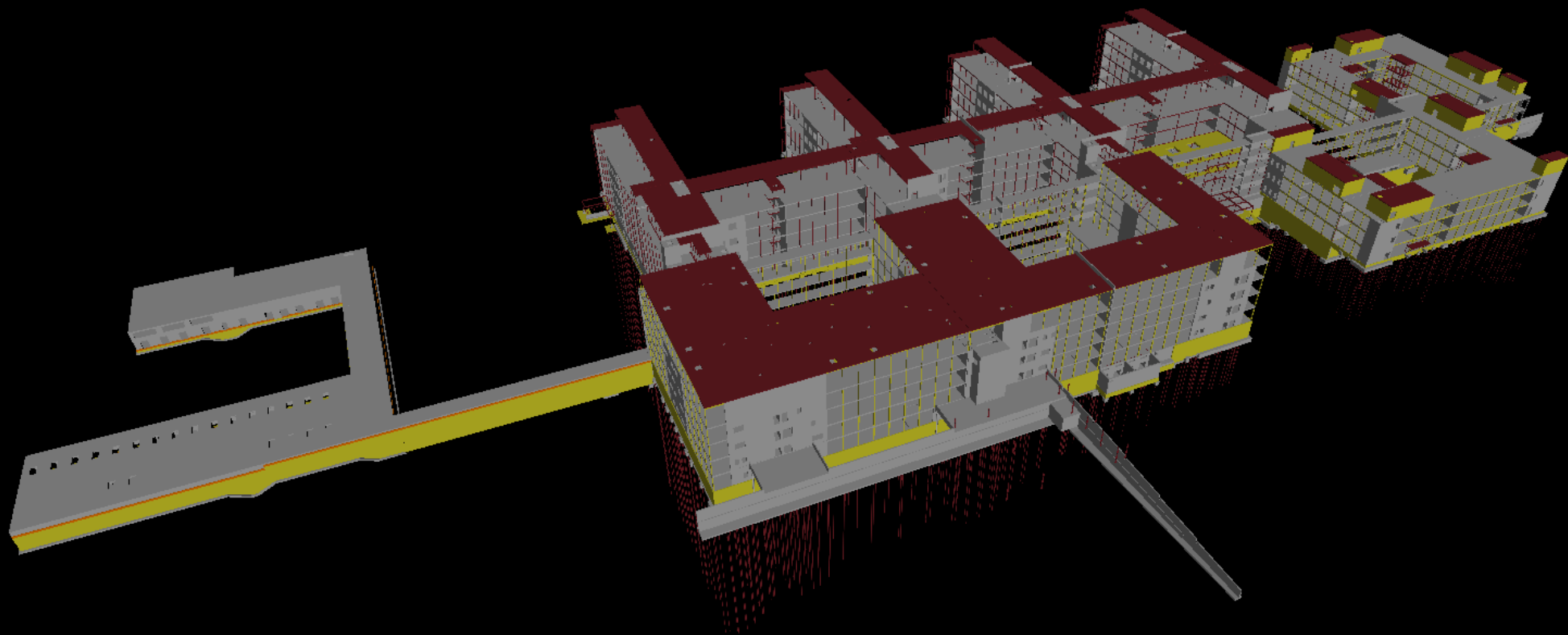
- Modellen tilgjengelig på standardisert IFC format.
- Åpen BIM
- Hver disiplin eksporterer sine fagmodeller til IFC hver uke
- Byggherren (PNØ) setter sammen fagmodellene til én felles modell som lagres i Solibri format og
- legges ut på Byggeweb tilgjengelig for PG, byggherren og entreprenørene



# Nytt østfoldsykehus – Eksport til Ifc

- REVIT Architecture                      Revit, Naviate
- REVIT Structure                          Revit
- Revit MEP / Naviate RIE                Revit MEP, Naviate
- Revit MEP / MagiCAD                  Revit MEP, Magicad, Naviate

# 4D simulering



# Mest om å etablere åpen BIM

- Komplette modell
- TFM nummer og slikt kjedelig
- dRofus og TIDA
- Egenskapsfelt for fremdrift

Bygning	Fil	2012						2013									
		Juni	Juli	Aug	Sept	Okt	Nov	Des	Jan	Febr	Mars	April	Mai	Juni	Juli	Aug	Sept
00 Felles	RIB 200 ?? Grunn og fundamenter	[Green]															
00 Felles	??? Terrengmodell for graving (landXML)	[Green]															
00 Felles	??? Utvendig VA ?????	[Green]															
		[Green]															
01 Servicel	ARK 230 Yttervegger, tett hus	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
01 Servicel	ARK 240 Innvendig	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
01 Servicel	ARK 270 Innredning og rom	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
01 Servicel	RIB 200 Råbygg	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
01 Servicel	RIE E000 Elektro	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
01 Servicel	RIV V000 Generell VVS	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
01 Servicel	RIV U2V300 Kulvert	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
01 Servicel	RIV V311 Bunn- og drensledninger	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
03 Sengeb	ARK 230 Yttervegger, tett hus	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
03 Sengeb	ARK 240 Innvendig	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
03 Sengeb	ARK 270 Innredning og rom	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
03 Sengeb	RIB 200 Råbygg	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
03 Sengeb	RIE E000 Elektro	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
03 Sengeb	RIV V000 Generell VVS	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
03 Sengeb	RIV U2V300 Kulvert	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
03 Sengeb	RIV V311 Bunn- og drensledninger	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
04 Psykiatr	ARK 230 Yttervegger, tett hus	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
04 Psykiatr	ARK 240 Innvendig	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
04 Psykiatr	ARK 270 Innredning og rom	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
04 Psykiatr	RIB 200 Råbygg	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
04 Psykiatr	RIE E000 Elektro	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
04 Psykiatr	RIV V000 Generell VVS	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
04 Psykiatr	RIV U2V300 Kulvert	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
04 Psykiatr	RIV V311 Bunn- og drensledninger	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
08 Behand	ARK 230 Yttervegger, tett hus	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
08 Behand	ARK 240 Innvendig	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
08 Behand	ARK 270 Innredning og rom	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
08 Behand	RIB 200 Råbygg	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
08 Behand	RIE E000 Elektro	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
08 Behand	RIV V000 Generell VVS	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]	[Light Blue]
08 Behand	RIV U2V300 Kulvert	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
08 Behand	RIV V311 Bunn- og drensledninger	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]	[Green]
10 Trappet	RIB 200 Råbygg	????															
	Før anbud, modell er uferdig og fordeles ikke																
	Mellom anbudsutsending og byggestart, status 'H' godkjent for anbud. Modell fordeles fra anbudsutsending. Modell brukes til å bli kjent med bygget																
	Byggestart, byggorganisasjon / entreprenør gjør kontroller på modell, og bruker modell til planlegging av arbeid																
	Bygging, status 'G' godkjent for bygging																

**Forventningskrise**




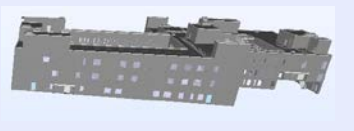




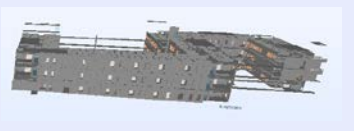

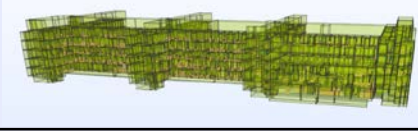
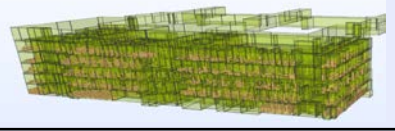
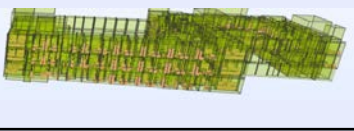

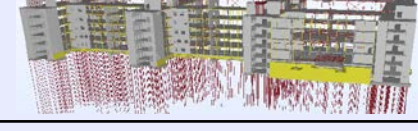
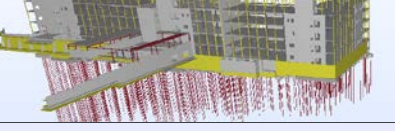
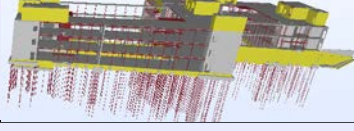

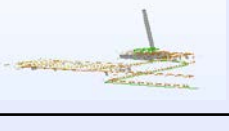
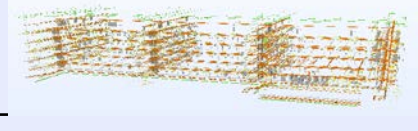
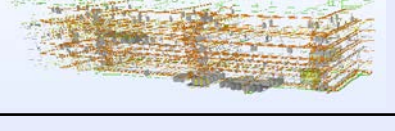
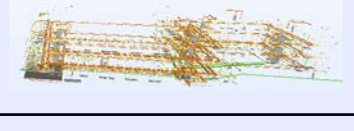
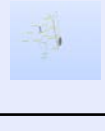
Bygning	Fil	2012						2013									
		Juni	Juli	Aug	Sept	Okt	Nov	Des	Jan	Febr	Mars	April	Mai	Juni	Juli	Aug	Sept
00 Felles	RIB 200 ?? Grunn og fundamenter	[Green bar]															
00 Felles	??? Terrengmodell for graving (landXML)	[Green bar]															
00 Felles	??? Utvendig VA ?????	[Green bar]															
01 Servicel	ARK 230 Yttervegger, tett hus	[Green bar]															
01 Servicel	ARK 240 Innvendig	[Green bar]															
01 Servicel	ARK 270 Innredning og rom	[Green bar]															
01 Servicel	RIB 200 Råbygg	[Green bar]															
01 Servicel	RIE E000 Elektro	[Green bar]															
01 Servicel	RIV V000 Generell VVS	[Green bar]															
01 Servicel	RIV U2V300 Kulvert	[Green bar]															
01 Servicel	RIV V311 Bunn- og drensledninger	[Green bar]															
03 Sengeb	ARK 230 Yttervegger, tett hus	[Green bar]															
03 Sengeb	ARK 240 Innvendig	[Green bar]															
03 Sengeb	ARK 270 Innredning og rom	[Green bar]															
03 Sengeb	RIB 200 Råbygg	[Green bar]															
03 Sengeb	RIE E000 Elektro	[Green bar]															
03 Sengeb	RIV V000 Generell VVS	[Green bar]															
03 Sengeb	RIV U2V300 Kulvert	[Green bar]															
03 Sengeb	RIV V311 Bunn- og drensledninger	[Green bar]															
04 Psykiatr	ARK 230 Yttervegger, tett hus	[Green bar]															
04 Psykiatr	ARK 240 Innvendig	[Green bar]															
04 Psykiatr	ARK 270 Innredning og rom	[Green bar]															
04 Psykiatr	RIB 200 Råbygg	[Green bar]															
04 Psykiatr	RIE E000 Elektro	[Green bar]															
04 Psykiatr	RIV V000 Generell VVS	[Green bar]															
04 Psykiatr	RIV U2V300 Kulvert	[Green bar]															
04 Psykiatr	RIV V311 Bunn- og drensledninger	[Green bar]															
08 Behand	ARK 230 Yttervegger, tett hus	[Green bar]															
08 Behand	ARK 240 Innvendig	[Green bar]															
08 Behand	ARK 270 Innredning og rom	[Green bar]															
08 Behand	RIB 200 Råbygg	[Green bar]															
08 Behand	RIE E000 Elektro	[Green bar]															
08 Behand	RIV V000 Generell VVS	[Green bar]															
08 Behand	RIV U2V300 Kulvert	[Green bar]															
08 Behand	RIV V311 Bunn- og drensledninger	[Green bar]															
10 Trappet	RIB 200 Råbygg	????															

**Ukentlig TMK møte**




















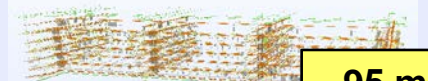



- [Red bar] Før anbud, modell er uferdig og fordeles ikke
- [Light blue bar] Mellom anbudsutsending og byggestart, status 'H' godkjent for anbud. Modell fordeles fra anbudsutsending. Modell brukes til å bli kjent med bygget
- [Light green bar] Byggestart, byggorganisasjon / entreprenør gjør kontroller på modell, og bruker modell til planlegging av arbeid
- [Dark green bar] Bygging, status 'G' godkjent for bygging

# PNØ

## Modellfiler ARK, RIB, RIE

<b>A230 Tett hus</b>					
<b>A240 Innvendig</b>					
<b>A270 Innredning</b>					
<b>B200 Råbygg</b>					
<b>E300 Elektro</b>					
<b>X200 Råbygg</b>		<b>Kynningsrud</b>	<b>Metacon</b>	<b>Kynningsrud</b>	
<b>X230 Tett hus</b>		<b>Husvik</b>	<b>Husvik</b>		

## Modellfiler ARK, RIB, RIE

A230 Tett hus	 8 mb	 114 mb	 46 mb	 55 mb	 2 mb
A240 Innvendig	 10 mb	 372 mb	 83 mb	 71 mb	
A270 Innredning	 7 mb	 85 mb	 127 mb	 26 mb	
B200 Råbygg	 4 mb	 146 mb	 18 mb	 70 mb	 1 mb
E300 Elektro	 18 mb	 95 mb	 42 mb	 55 mb	 1 mb
X200 Råbygg		Kynningsrud 107 mb	Metacon 15 mb	Kynningsrud 14 mb	
X230 Tett hus		0 mb	0 mb		




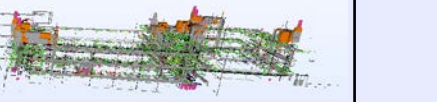


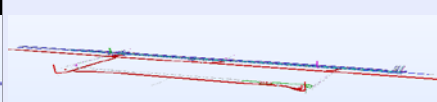
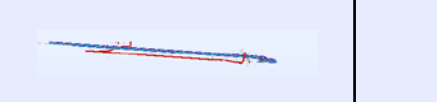












## Modellfiler ARK, RIB, RIE

A230 Tett hus	 8 mb	 114 mb	 46 mb	 55 mb	 2 mb
A240 Innvendig	 10 mb	 372 mb	 83 mb	 71 mb	
A270 Innredning	 7 mb	 85 mb	 127 mb	 26 mb	
B200 Råbygg	 4 mb	 <b>1592 mb</b>	 18 mb	 70 mb	 1 mb
E300 Elektro	 18 mb	 95 mb	 42 mb	 55 mb	 1 mb
X200 Råbygg		Kynningsrud 107 mb	Metacon 15 mb	Kynningsrud 14 mb	
X230 Tett hus		0 mb	0 mb		

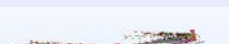
























# PNØ
























## Modellfiler RIV

V300 Vann, avløp, varme					
V300 Kulvert U2					
V311 Bunnledning					
V330 Sprinkler					
V340 Gass & trykkluft					
V360 Luftbehandling					
V360 Luftbehandling 4.-5. etasje	 Eleiko				

## Modellfiler RIV




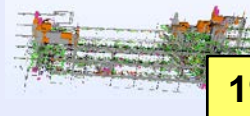


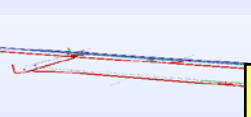
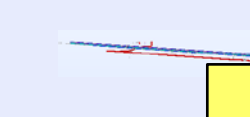


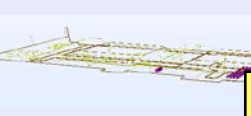
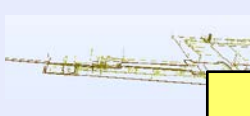




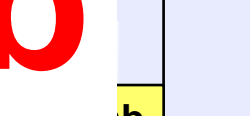


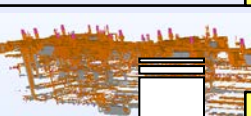


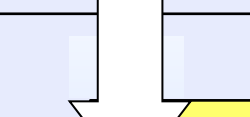



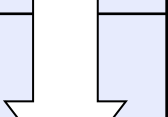
V300 Vann, avløp, varme	 156 mb	 630 mb	 333 mb	 190 mb	
V300 Kulvert U2	 12 mb	 11 mb	 12 mb	 12 mb	0 mb
V311 Bunnledning	 4 mb	 17 mb	 13 mb	 14 mb	
V330 Sprinkler	 0 mb	 138 mb	 112 mb	 36 mb	
V340 Gass & trykkluft	 0 mb	 85 mb	 40 mb		
V360 Luftbehandling		 494 mb	 612 mb		
V360 Luftbehandling 4.-5. etasje	 Elei 12 mb		 161 mb		

## Modellfiler RIV

V300 Vann, avløp, varme	 156 mb	 630 mb	 333 mb	 190 mb	
V300 Kulvert U2	 12 mb	 11 mb	 12 mb	 12 mb	0 mb
V311 Bunnledning	 4 mb	 17 mb	 13 mb	 14 mb	
V330 Sprinkler	 0 mb		 112 mb	 36 mb	
V340 Gass & trykkluft	 0 mb		 40 mb		
V360 Luftbehandling		 494 mb	 612 mb		
V360 Luftbehandling 4.-5. etasje	 Eleil 12 mb		 161 mb		

**3094 mb**

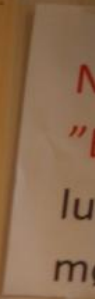
## Modellfiler RIV

V300 Vann, avløp, varme	 156 mb	 630 mb	 333 mb	 190 mb	
V300 Kulvert U2	 12 mb	 11 mb	 12 mb	 12 mb	0 mb
V311 Bunnledning	 4 mb	 17 mb	 13 mb	 14 mb	
V330 Sprinkler	 0 mb	<b>4686 mb</b>		 36 mb	
V340 Gass & trykkluft	 0 mb			 30 mb	 10 mb
V360 Luftbehandling		 494 mb	 612 mb		
V360 Luftbehandling 4.-5. etasje	 Elei 2 mb		 161 mb		
	<b>231 mb</b>	<b>2 294 mb</b>	<b>1 614 mb</b>	<b>543 mb</b>	<b>4 mb</b>

# BIM rom

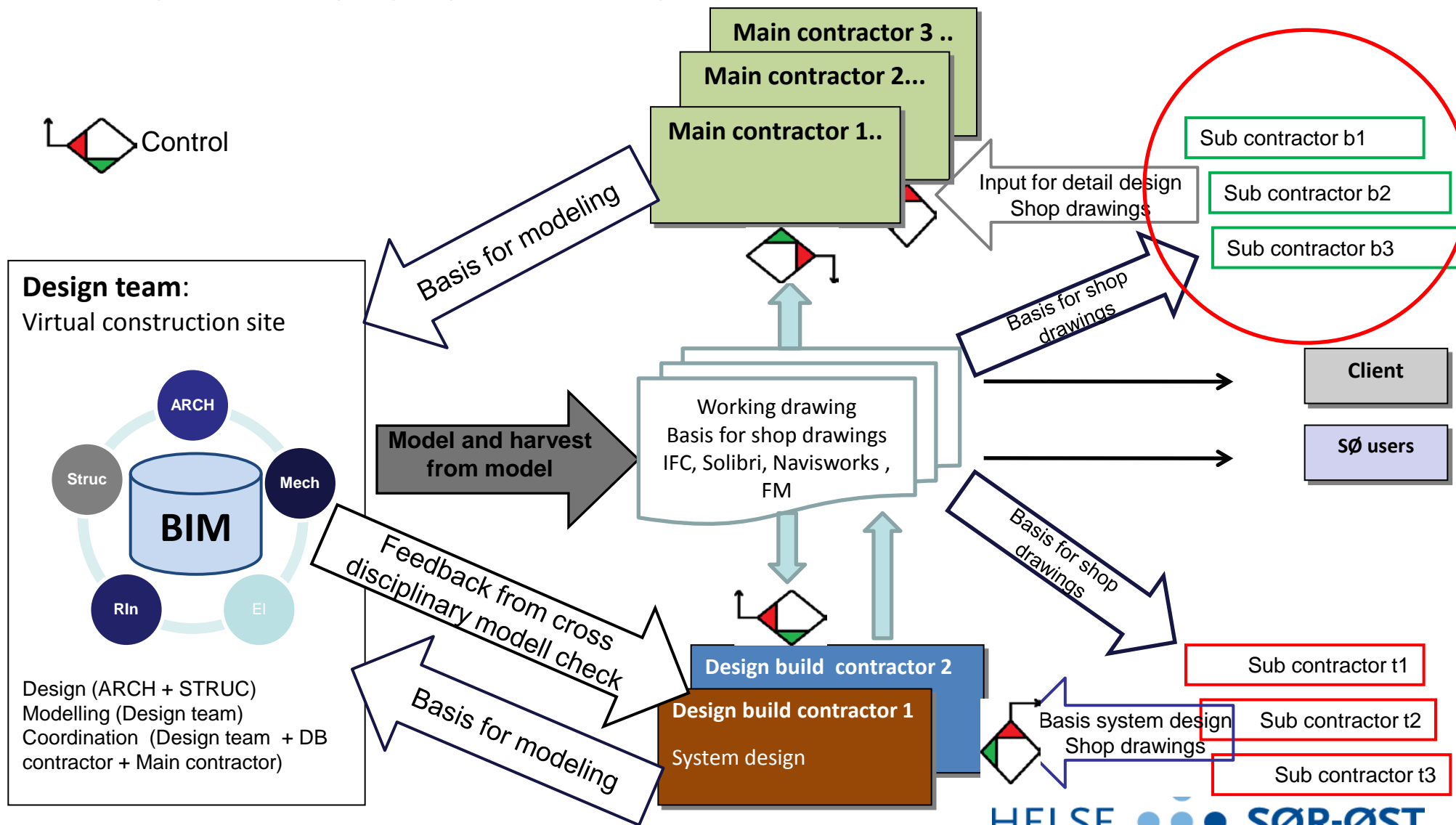


# BIM rom



# Kontrakt entreprenørene – byggefasen

Prinsipp for flyt av informasjon mellom byggherre prosjekteringsgruppe og entreprenører for prosjektering, modellering, koordinering, tegningsproduksjon og kontroll

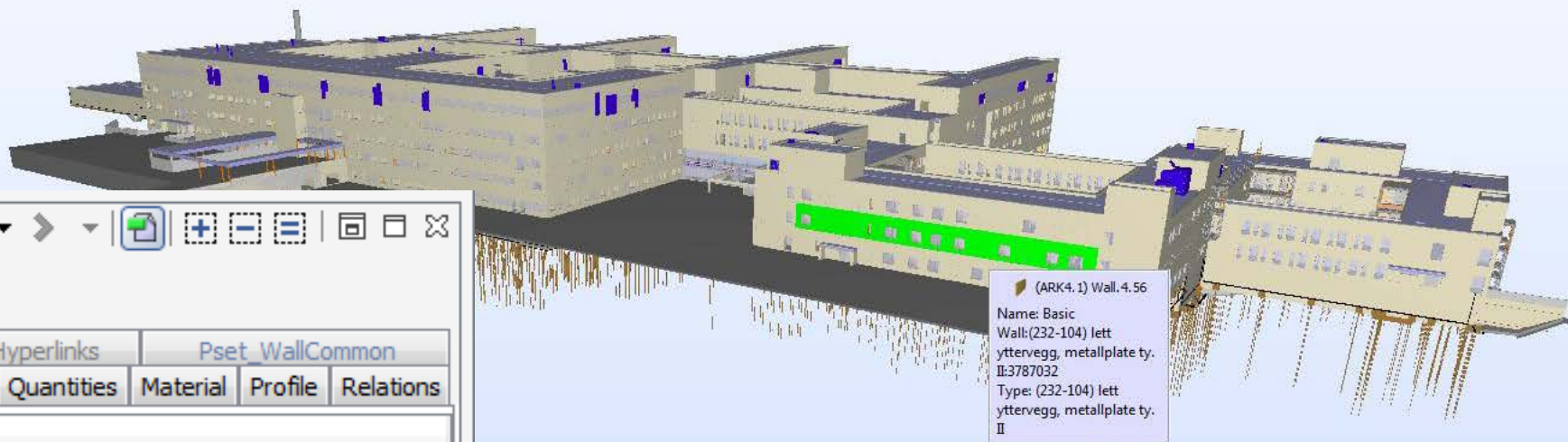


# Entreprenørene – Graving





# Entreprenørene – Forstå prosjektet



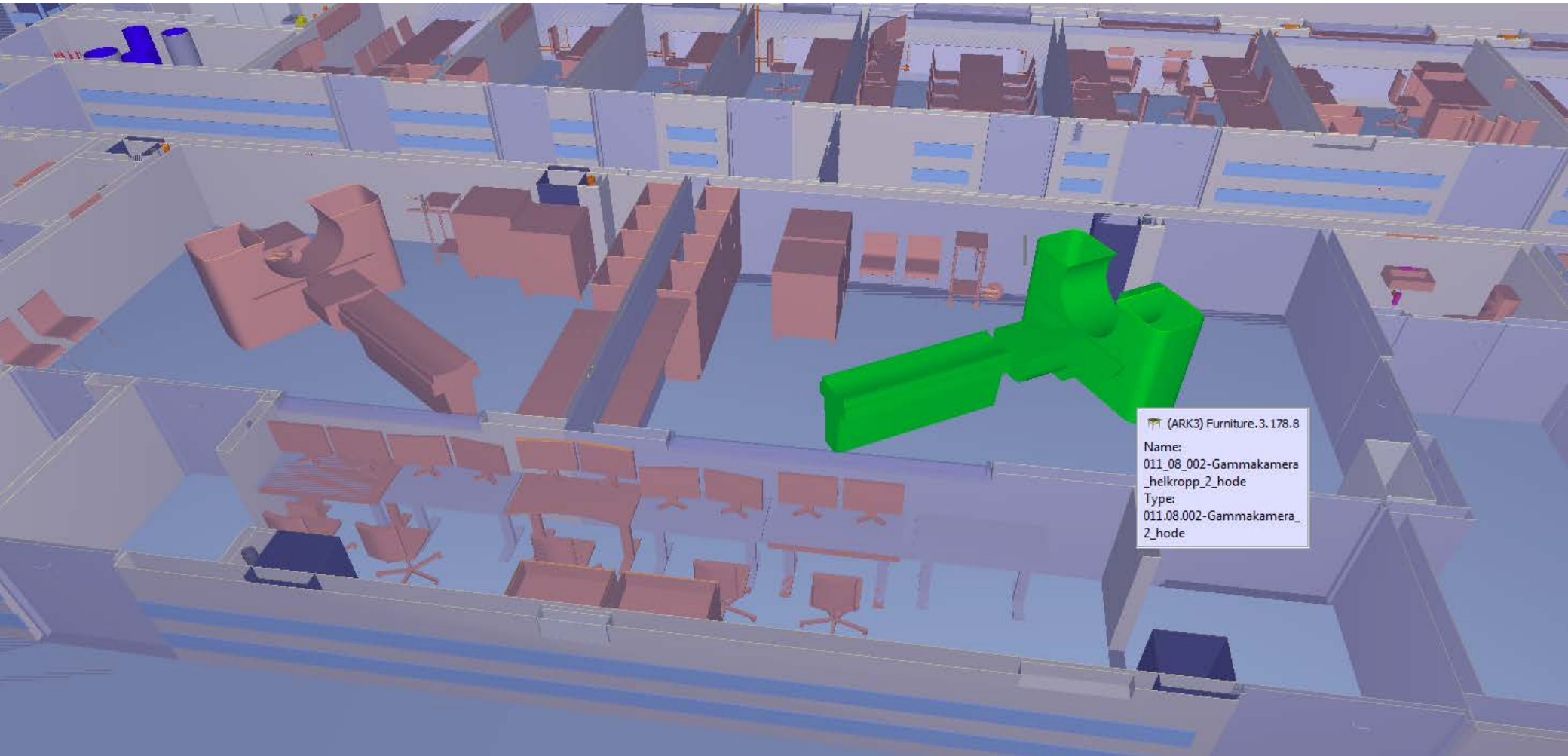
**Info** (Navigation icons)

(ARK4.1) Wall. 4.56

Classification	Hyperlinks	Pset_WallCommon			
Identification	Location	Quantities	Material	Profile	Relations
Property	Value				
Model	(ARK4.1) 1050404000A230X000				
Discipline	Architecture				
Name	Basic Wall:(232-104) lett yttervegg, metallpla...				
Type	(232-104) lett yttervegg, metallplate ty. II				
Material	Metall ty. 2 25 mm, Justerbart bæresystem 1...				
Layer	A-WALL				
Geometry	Solid				
Building Envelope	True				
GUID	1NAZBDomnC6gfCFymH7IB3				
BATID	3787032				

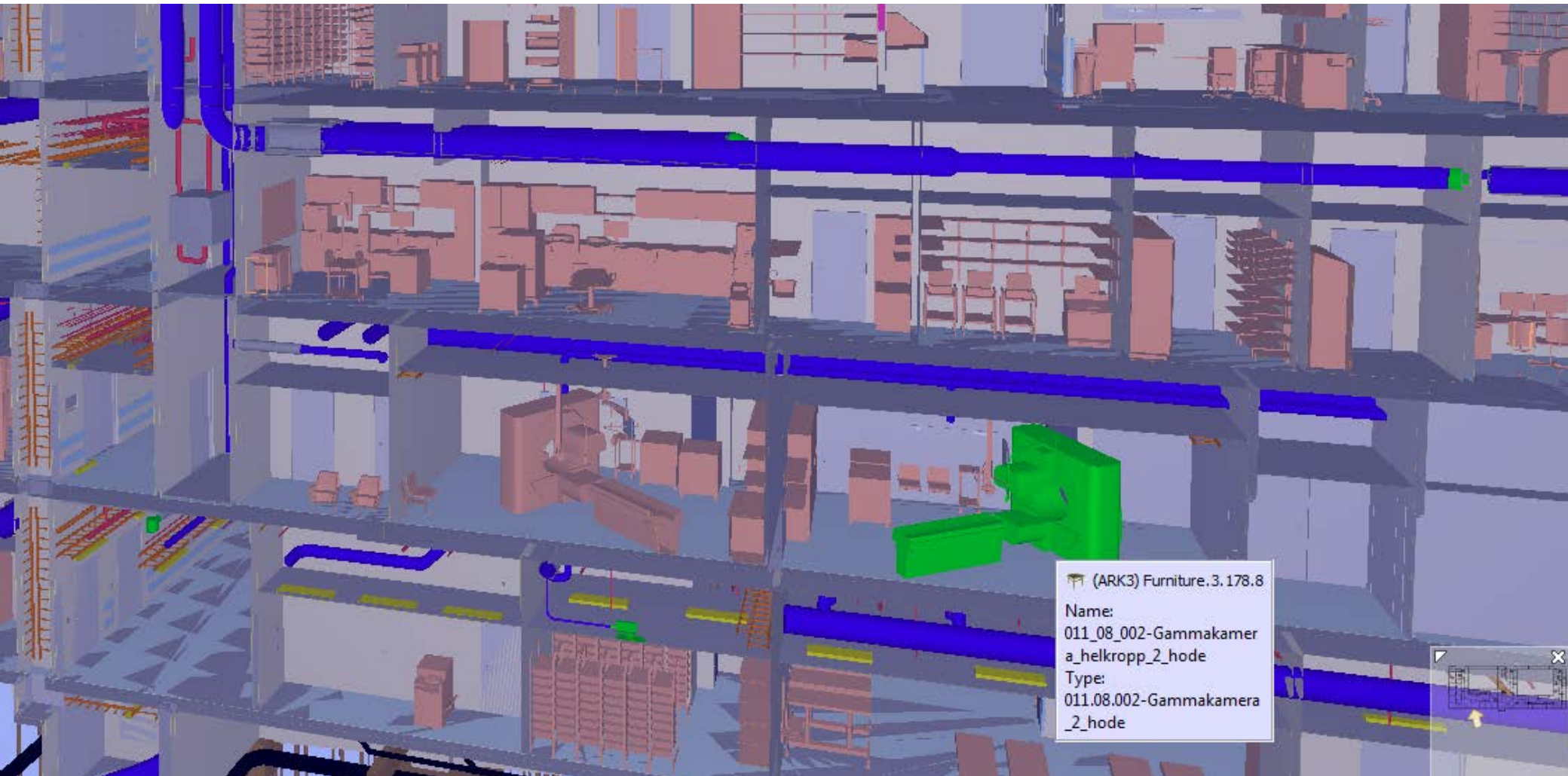
(ARK4.1) Wall. 4.56  
Name: Basic  
Wall:(232-104) lett  
yttervegg, metallplate ty.  
II:3787032  
Type: (232-104) lett  
yttervegg, metallplate ty.  
II

# Entreprenørene – Forstå prosjektet



(ARK3) Furniture.3.178.8  
Name:  
011.08.002-Gammakamera  
\_helkropp\_2\_hode  
Type:  
011.08.002-Gammakamera\_  
\_2\_hode

# Entreprenørene – Forstå prosjektet



# Entreprenørene – Forstå prosjektet

**Kommunikasjon om mengder**

**Rapportering fremdrift ??**

(ARK3) Furniture.3.178.8  
Name:  
011\_08\_002-Gammakamera  
a\_helkropp\_2\_hode  
Type:  
011.08.002-Gammakamera  
\_2\_hode

# Åpen BIM på (nett)brett



Bilde SWECO fra nye Ahus

# Oppfølging og fremdriftsstyring via nett

dRofus:Mangelsystem / Startside - Windows Internet Explorer

https://www.drofus.no/mangler/

Kjell Bakkmoen (ostfold)

**MANGELSYSTEM / STARTSIDE**

Startside | Ny mangel | Liste | Søk/Filter | Hjelp | Logg ut

Id/nr:

VELKOMMEN KJELL BAKKMOEN  
Sist innlogget: torsdag, 21. februar 2013, 22:56

ALLE KONTRAKTER:

- Til godkjenning: 0
- Frist utløpt: 2
- Annen entreprise: 0

Kontrakt:	Nye:	Frist utløpt:	Ikke godkjent:	Observert:	Under arbeid:	Til godkjenning:	Annen entreprise:	Godkjent:
2401 - Bygningsmessig innredning Behandlingsbygg	1	1	0	0	0	0	0	0
2402 - Bygningsmessig innredning Sengebygg	1	1	0	0	0	0	0	0

[Vis alle](#)

# Åpen BIM på (nett)brett

## Oppfølging og fremdriftsstyring

- Nettbrett ut på byggeplass
- Utprøving av BIMfield
- Utvikling med:
  - Rapportering problemstillinger
  - Rapportering fremdrift
  
- Demo