



# Behov for indendørs wayfinding og lokalisering på

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hospitalet  
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# Systematic short company update



## HEALTHCARE

- E-Health platform
- Electronic Health Record
- Hospital Logistics



## INTELLIGENCE & NATIONAL SECURITY

- Emergency Centre
- Police vehicles IT
- Case management



## DEFENCE

- Command and Control
- Defence vehicles IT
- Interoperability



## PUBLIC & PRIVATE SECTORS

- Smart Public Sector
- Finance
- Energy



## LIBRARY & LEARNING

- Library systems
- Learning platforms
- Smart Library



Customers in 50+ countries

Partners in 15 countries

94% of all milestones approved and delivered on time

Headquarters in Denmark and offices in Australia, Finland, France, Germany, Singapore, Sweden, New Zealand, the United Kingdom, Romania, United States and the United Arab Emirates

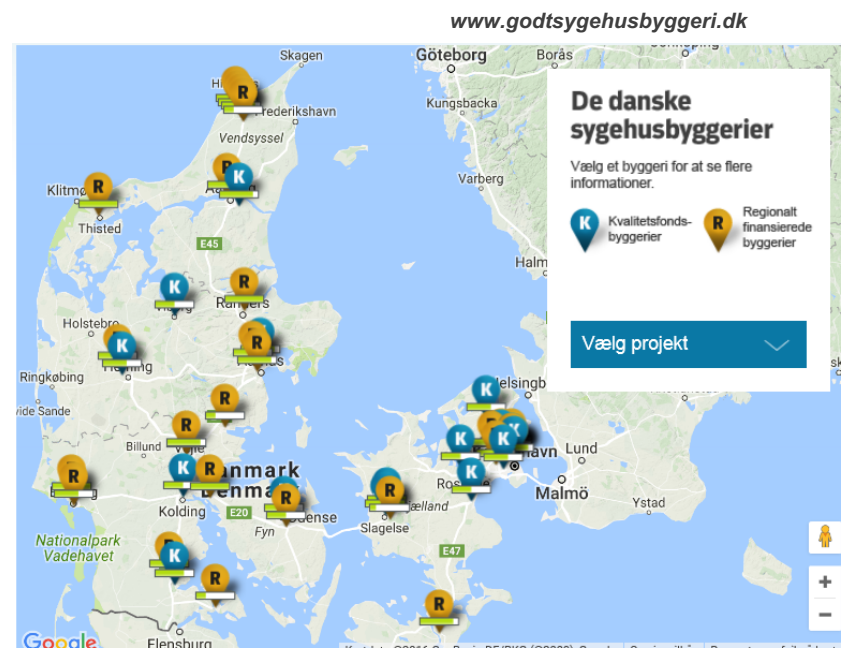


- An attractive, international workplace with highly educated employees
- 940+ employees
- 62% of software developers have a PhD or Master's degree
- 16% of new appointments are former employees re-joining Systematic
- Employees represent 32 nationalities

# Fremtidens udfordring

## Størrelse og kompleksitet vokser

- **Mål**
  - Bedre og mere sammenhængende patientforløb
  - Øget patientsikkerhed
  - Effektivisering og øget kvalitet
  
- **Hvordan**
  - Større enheder
  - Centralisering af funktioner
  - Fleksible og moderne sygehuse
  - Kortere indlæggelsestid => højere flow
  - Bedre udnyttelse af udstyr



Dette stiller store krav til logistikken på de nye og nuværende hospitaler



# Udfordringen – find vej

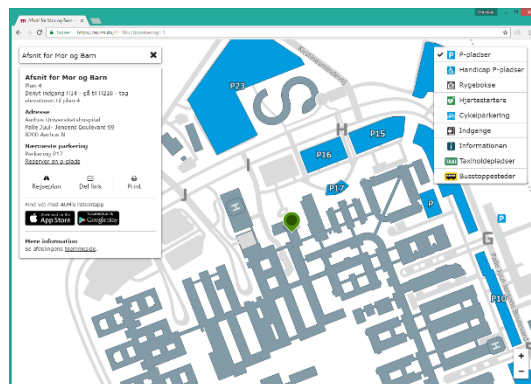
Større og mere komplekse hospitaler betyder..

- Patienter bliver utrygge og dermed stressede
- Patienter farer vild og kommer for sent til aftaler
- Patienter forstyrrer det kliniske personale
- Det kliniske personale bruger tid på at vente på fremmøde
- Patienter går uhensigtsmæssige veje
- Ansatte kan ikke finde lokaler

# Wayfinding – Patienten skal være selvhjulper



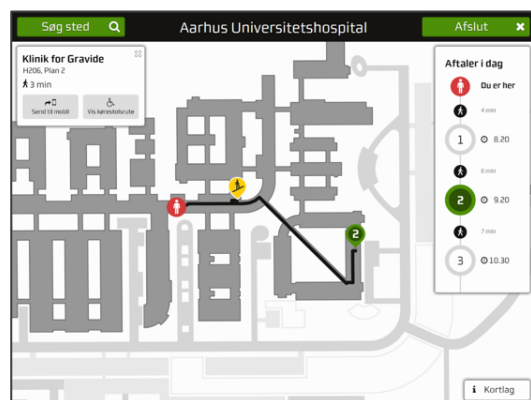
# Løsningskomponenter



Webapp



Mobil app



Stander



P-stander

# Udfordringen – find udstyr og kolleger

De nye hospitaler betyder

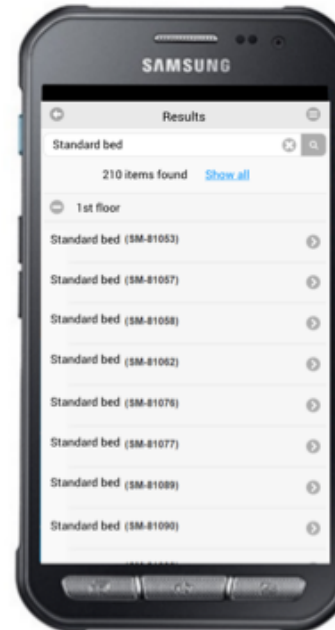
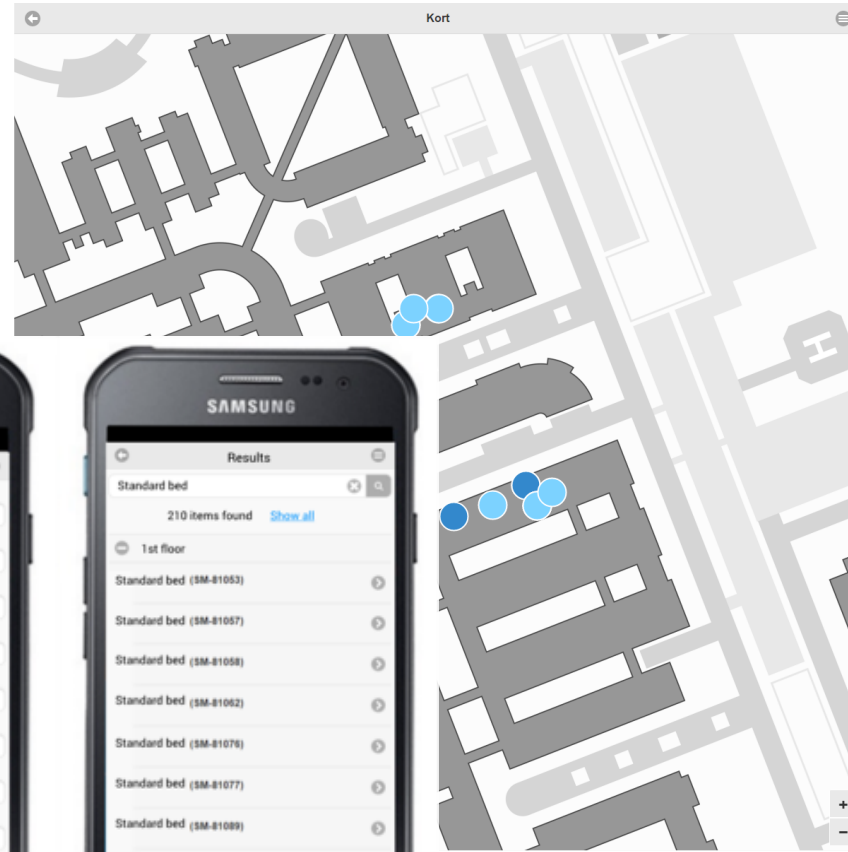
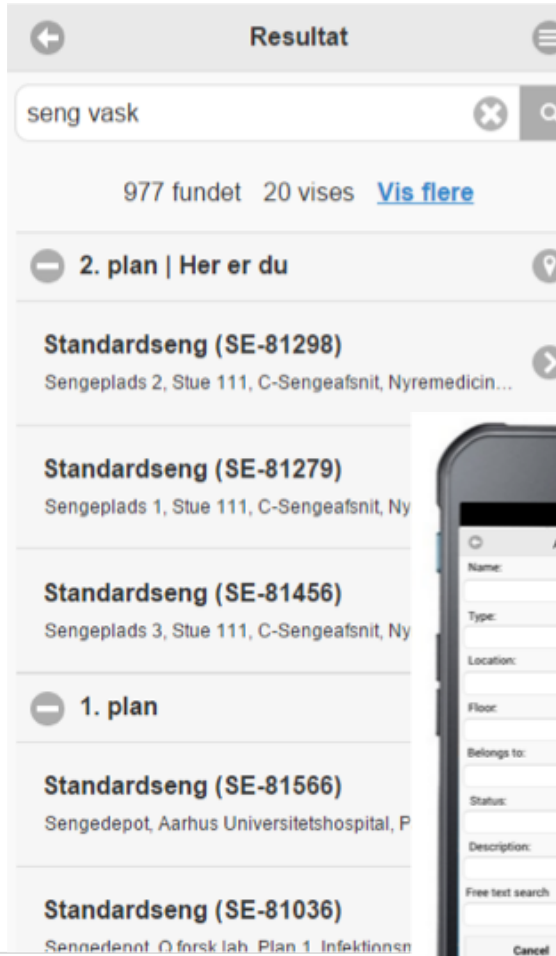
- Færre mængder udstyr til deling
- Større områder at fremfinde udstyr på
- Flere enestuer

=>

- Det kliniske personale bruger tid på at lede efter udstyr
- Personale i patientkontakt bliver forstyrret



# General Search Solution



# Sporing af objekter

The screenshot displays a web application titled "Sporingsdata" for tracking objects. The interface is divided into several sections:

- Objekter (Filters):** A list of selected object types: "Klinisk Udstyr", "Alt Klinisk Udstyr", "Akutbord", and "urn:rm-medusa:136408".
- Interval (Date Range):** Search criteria set from "Fra 07.01.2015 08:00" to "Til 07.09.2015 08:00".
- Søgeresultater (Search Results):** A list of 186 registrations with details for four specific objects:
  - urn:rm-medusa:136407: Omtrent 484 m, Indsamlet over 173 dage
  - urn:rm-medusa:136409: Omtrent 40 m, Indsamlet over 89 dage
  - urn:rm-medusa:136386: Omtrent 730 m, Indsamlet over 137 dage
  - urn:rm-medusa:136408: Omtrent 284 m, Indsamlet over 83 dage
- Map:** A central map showing a complex network of black lines and dots representing the tracked paths of the objects.
- Right Sidebar:** A vertical menu with a "PLAN" view selected, a list of numbers (1-12), and zoom controls (vis, Plan, Rum, arrows, +, -).



Arbejdsgange optimeres på baggrund af facts.



Smittekilder kan lokaliseres hurtigt



Udstyr kan stå klar til den enkelte undersøgelse



Transport kan optimeres ud fra kapacitet og afstand



Rengøring kan gøres aktivitetsafhængig

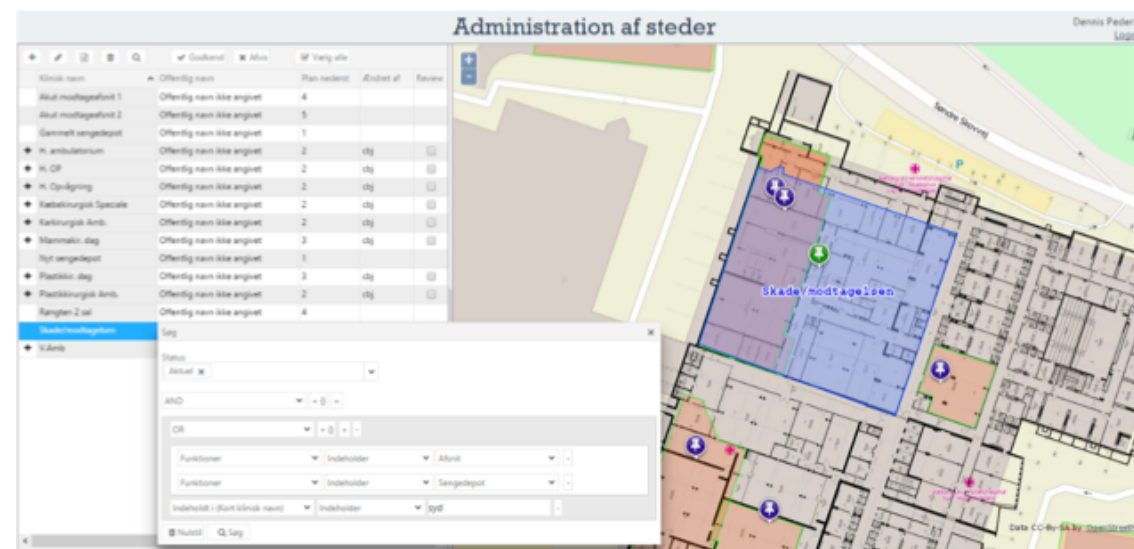


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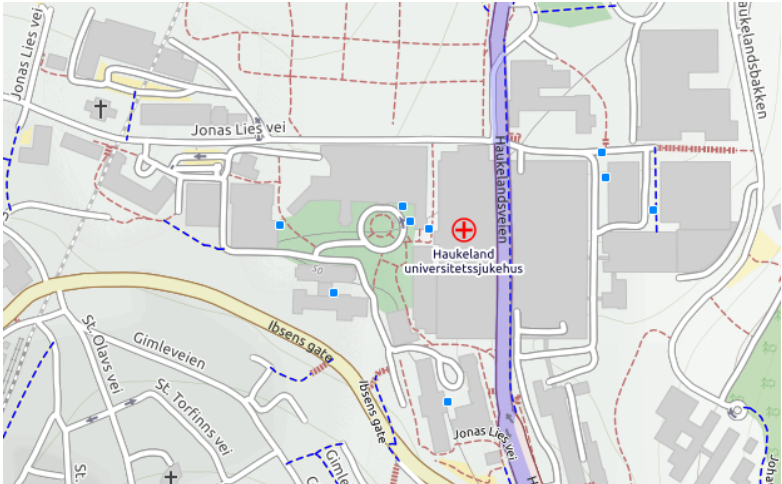
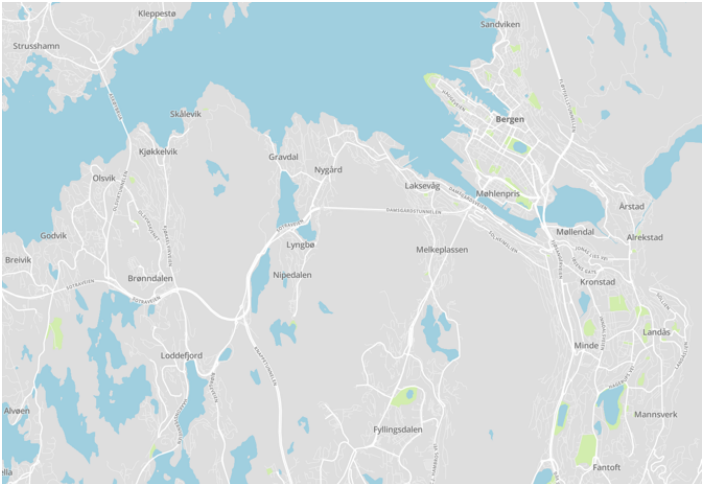
# Men hvad har vi brug for

## Wayfinding, Sporing og lokalisering skal understøttes af....

- Opdaterede steddata
- Velfungerende infrastruktur



# Kortdata



# Steddata

The screenshot displays the 'Location Manager' web application interface. The main area shows a map of a hospital building with numerous blue elevator icons. A detailed popup window is open over one of the icons, providing the following information:

- ID:** urn:pcid:sgln:57980100.3409.0
- Review:** No
- Status:** Aktuel
- Floor:** 3
- Location type:** Rum
- Functions:** Elevator
- Clinical name:** Elevator
- Short clinical name:** Elevator
- Public name:** Public name is not specifi...
- Technical name:** L3.S11
- Bed position:**
- Organisations:**
  - Custom field 1: 3D1F60F6-1C38
  - Custom field 2: 1000
  - Custom field 3:
- This location is situated in:**
  - Locality: Aarhus Universitetshospital
  - Building: H00
  - Floor: Plan 3
  - Space: Område H
  - Section:
  - Room:
- The standard name for this location is:**
  - Full clinical name: H00 Plan 3 Elevator
  - Full short clinical name: H00 P3 Elevator
  - Full public name: H00 Plan 3 Elevator
  - Full technical name: L5

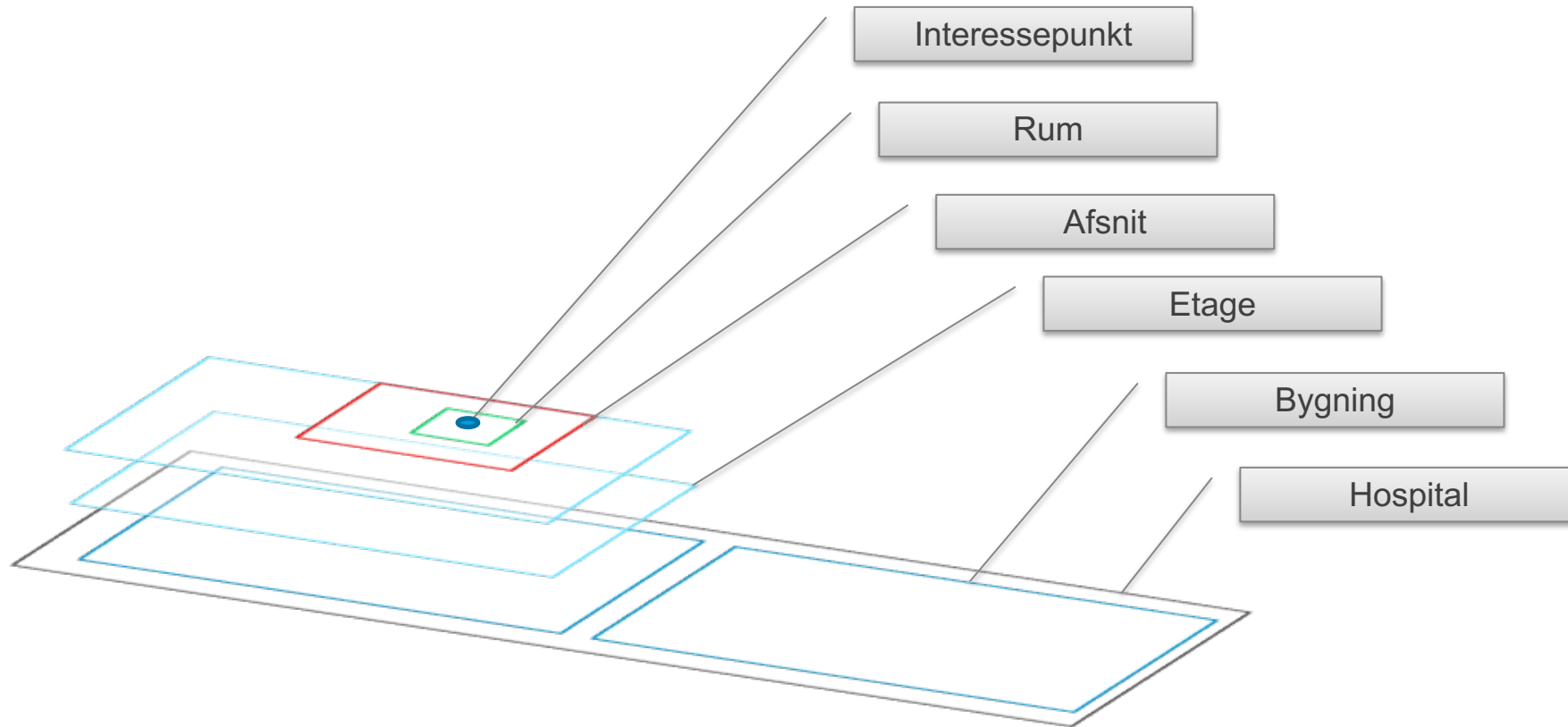
At the bottom of the popup are 'Copy', 'Edit', and 'Close' buttons. The background map shows a complex hospital layout with many similar elevator icons. The application header includes 'Hospitalmap' and 'Auto zoom' controls. The browser address bar shows 'test1.servicelogistics.dk/LocationManager/LocationAdministration#'. The user is identified as 'Test user 1' with a 'Logout' link.

SSE/XXXXXXXXYY/ZZZZ \$Revision: 1.2\$

# Identifikation af steder

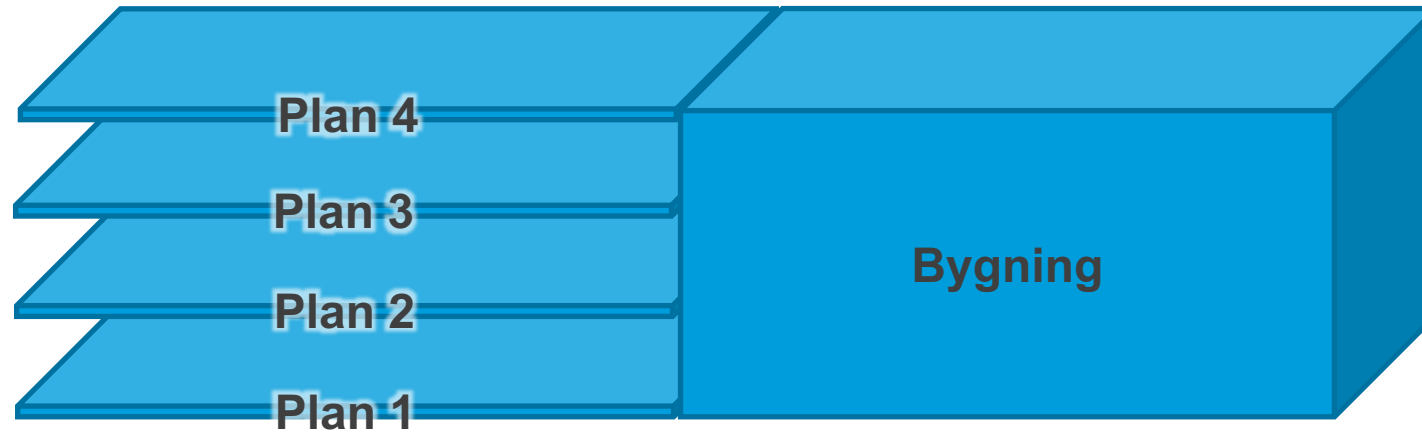


# Sted hierarki

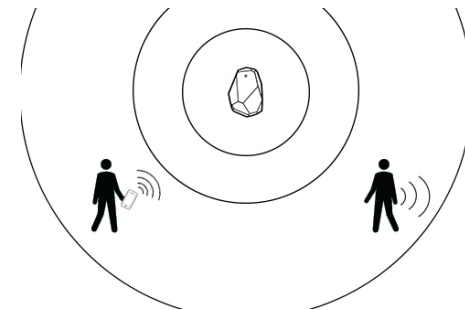
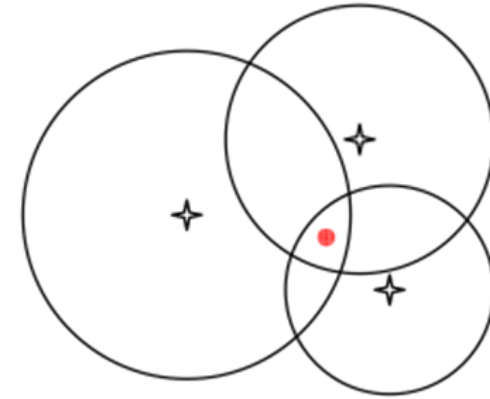
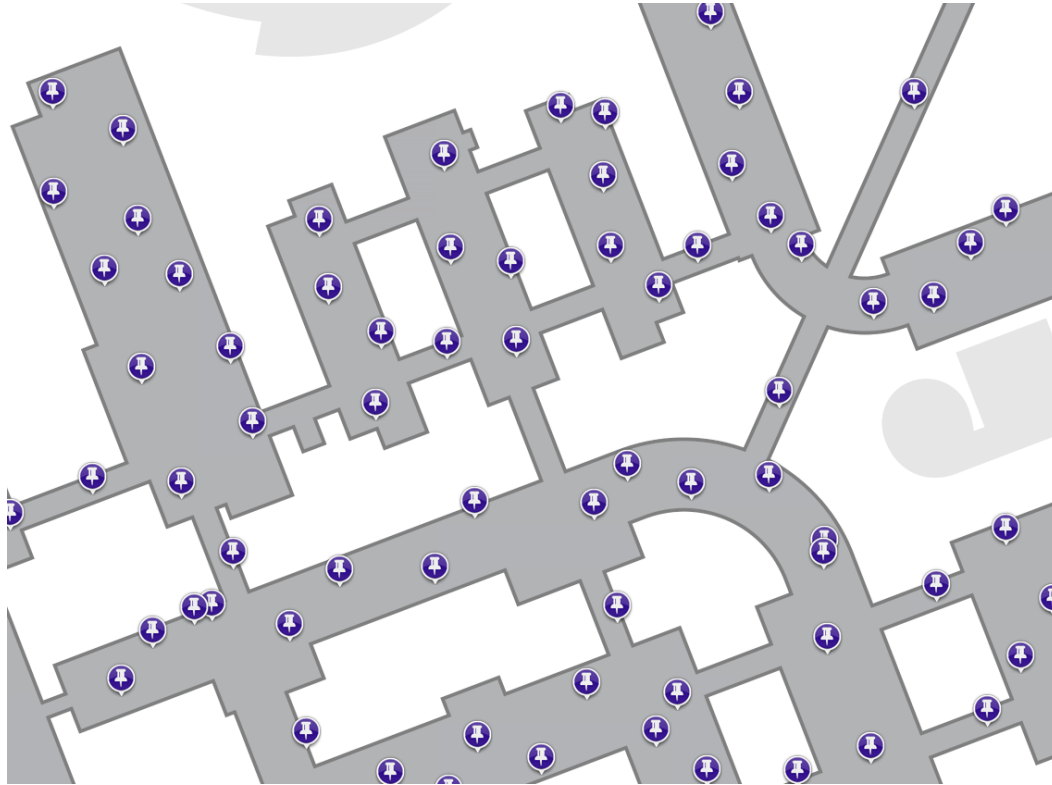




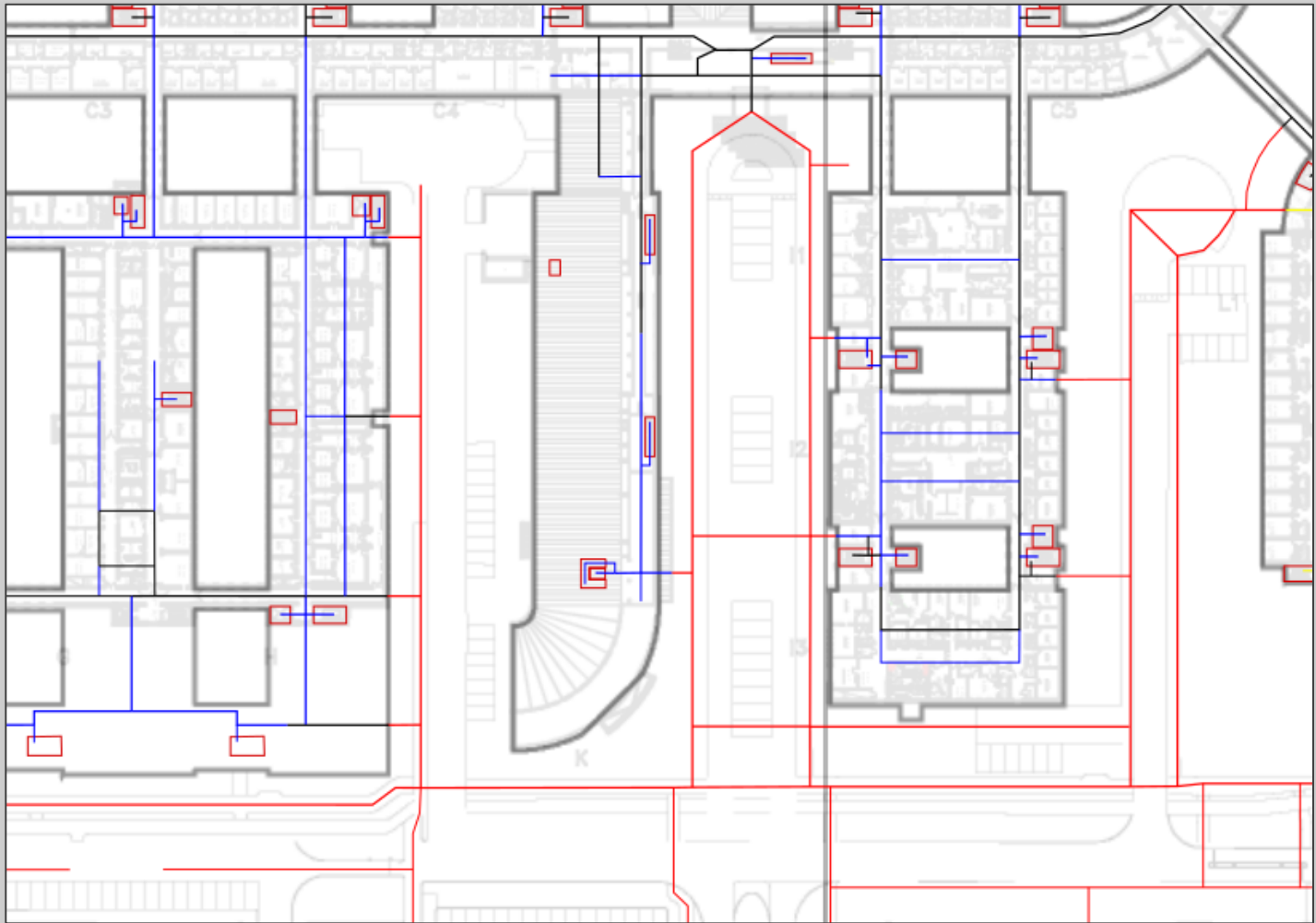
# Plan



# Positionering



# Rutedata



# Overblik

## Applikationer



## Integrationssystemer

Lokationsservice

Ruteservice

Søgeservice

Kortservice



## Kildedata

BIM

Udstyrskatalog

Medarbejderkatalog

RFID



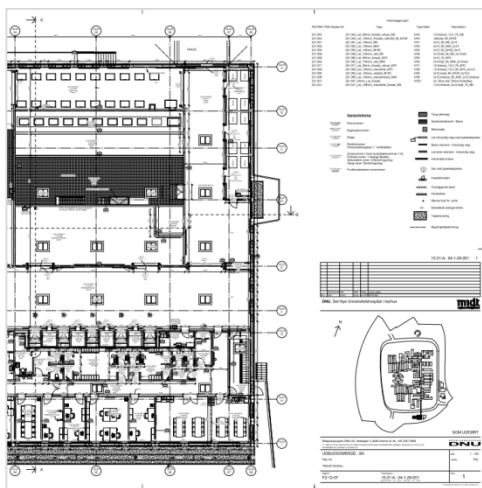
# Datamanagement



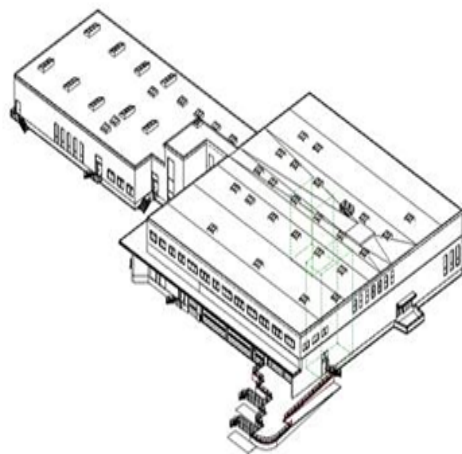
“Det er let at skabe data, men det er svært at have mange rigtige data”

- Hvikle data...?
- Er det valide data og hvem har ansvaret ?
- Hvor ofte skal dataene opdateres?
- Osv...

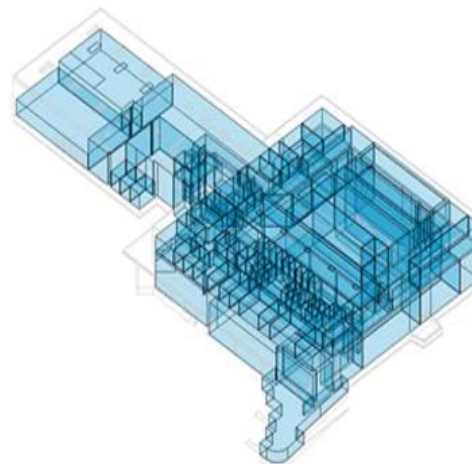
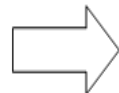
## Tegninger og BIM = Kildedata fra ét Kildesystem



Tegning



BIM Bygnings  
Model



Konvertering  
og export af  
Kildedata



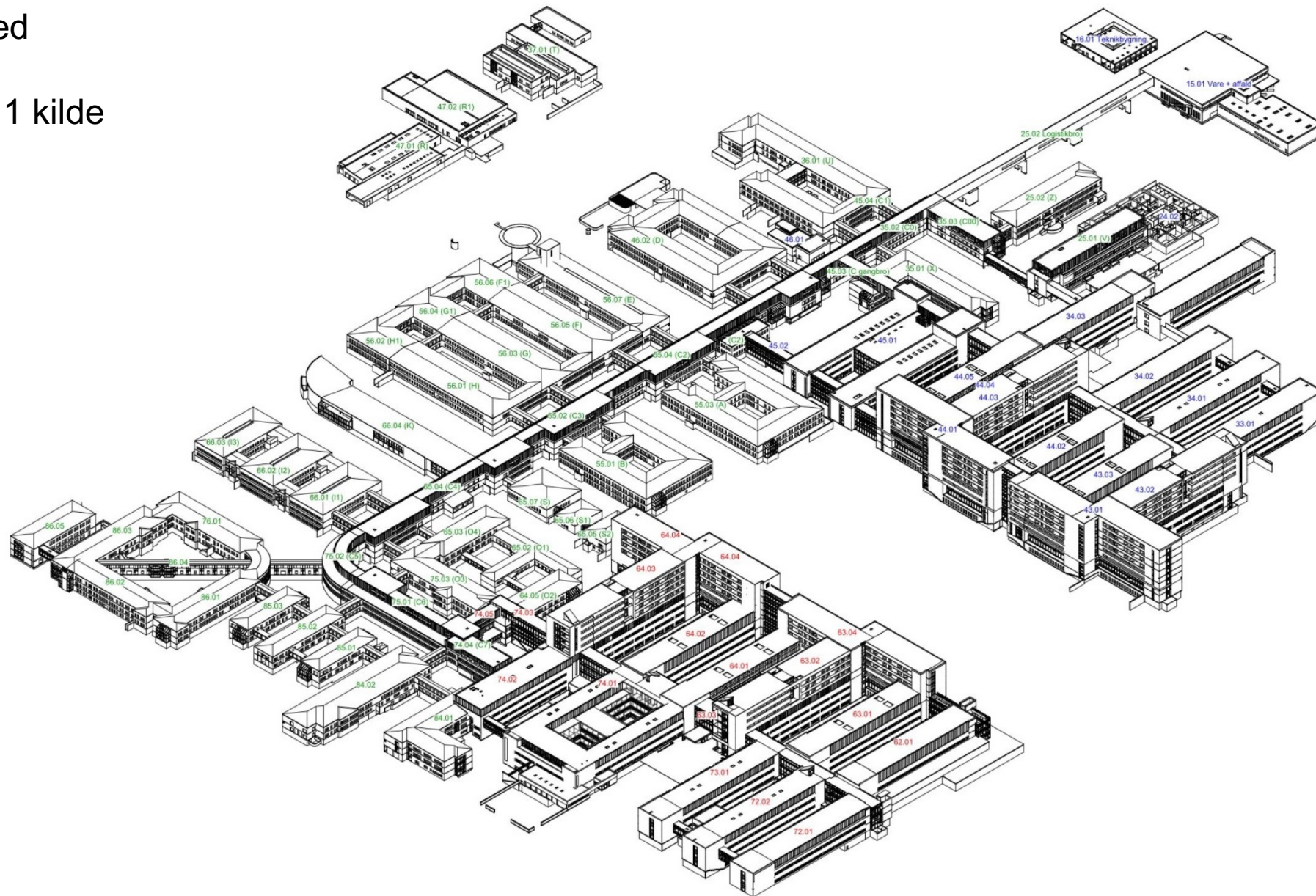
Stedsdatabase/  
Lokationdatabase

# BIM modenhed

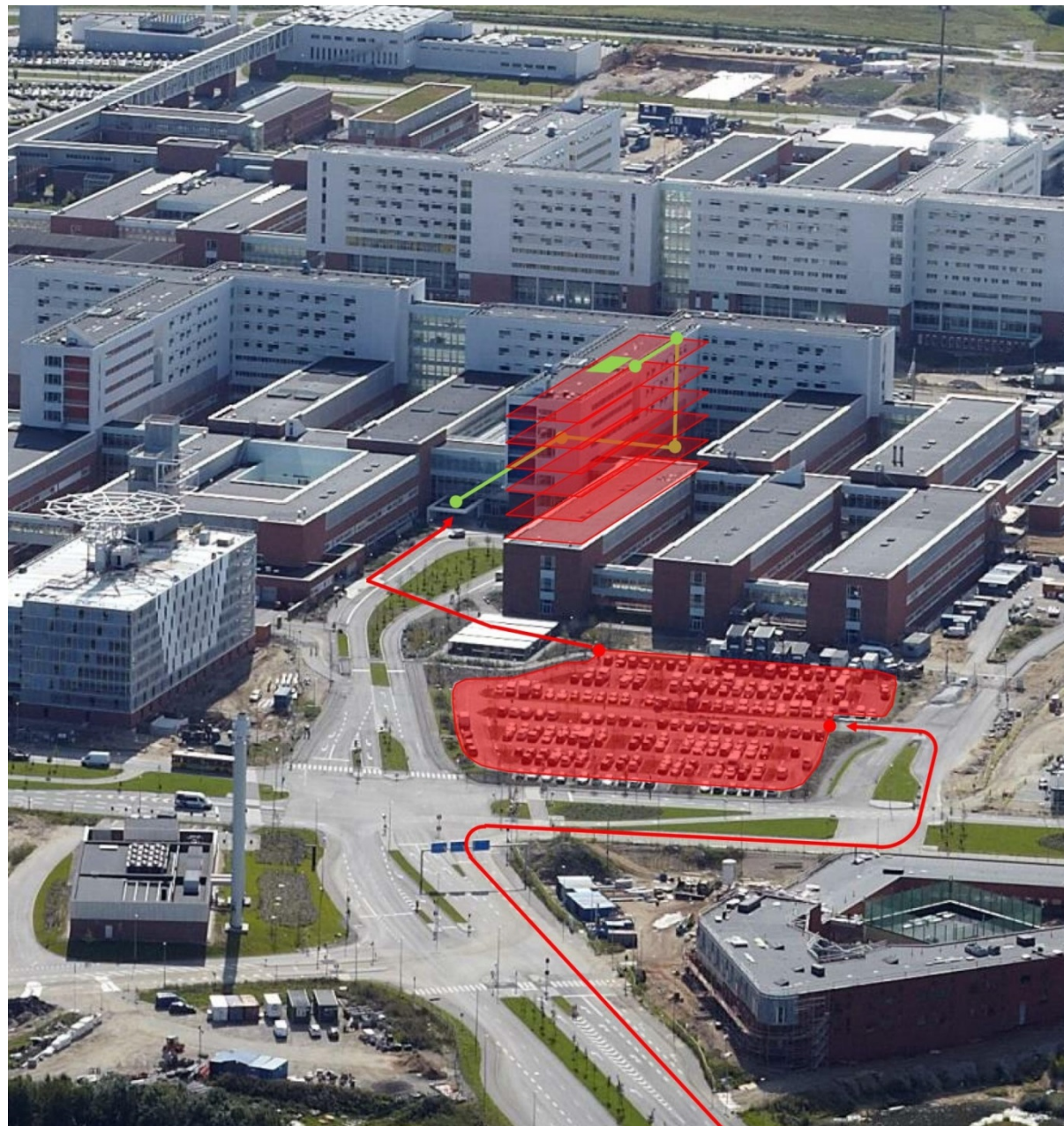
Ca.70 filer -> 1 kilde

80%

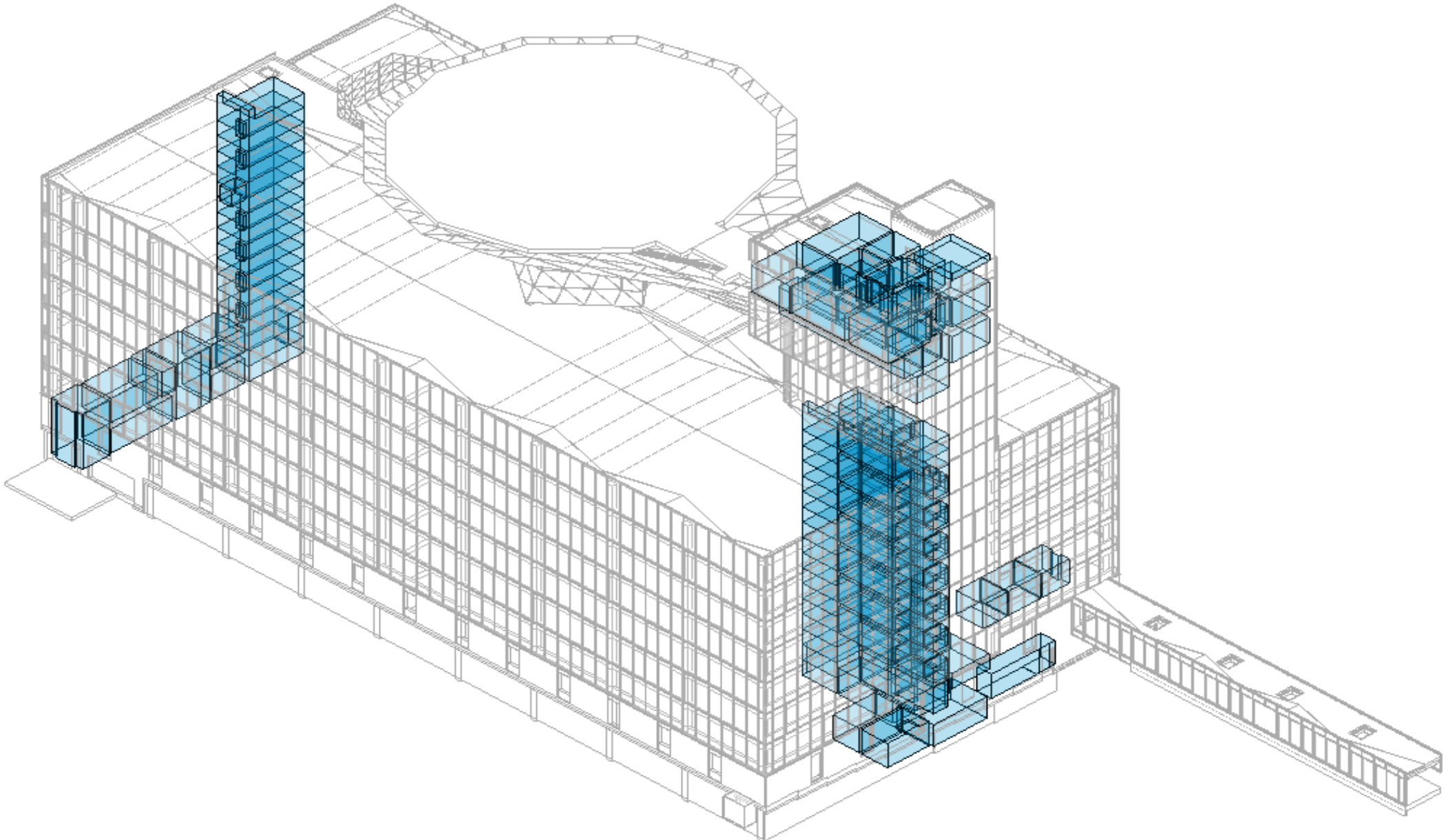
400.000m<sup>2</sup>



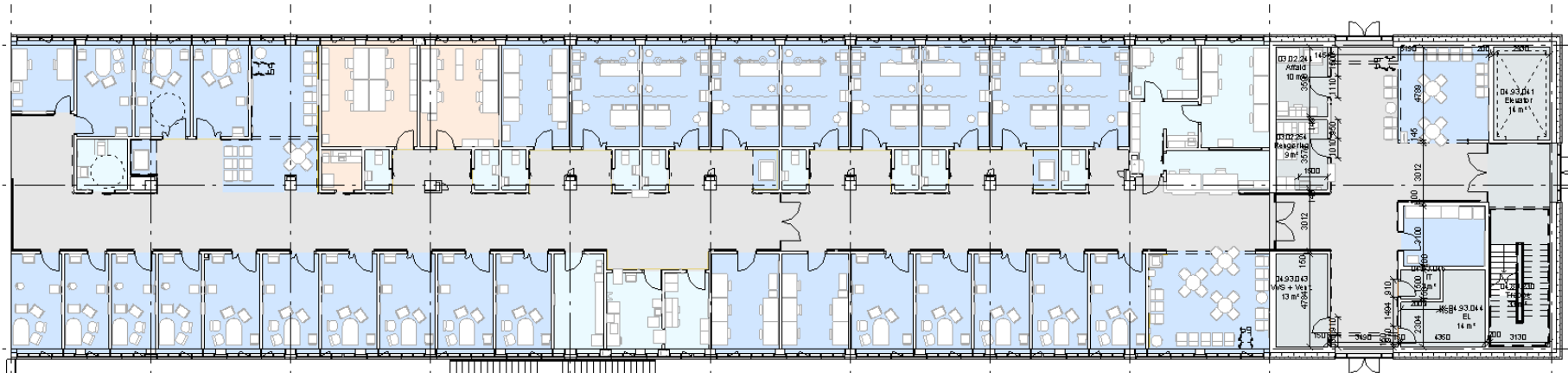
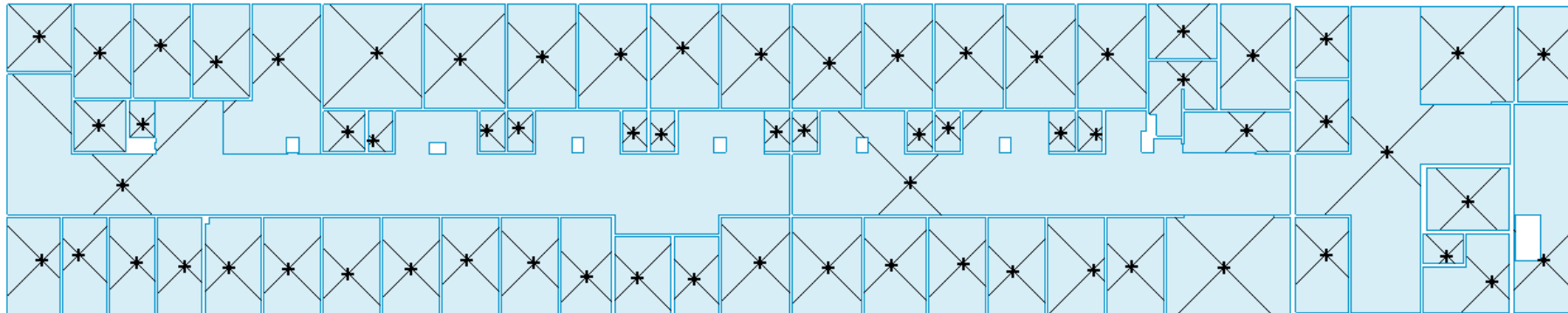
De bagved liggende  
data

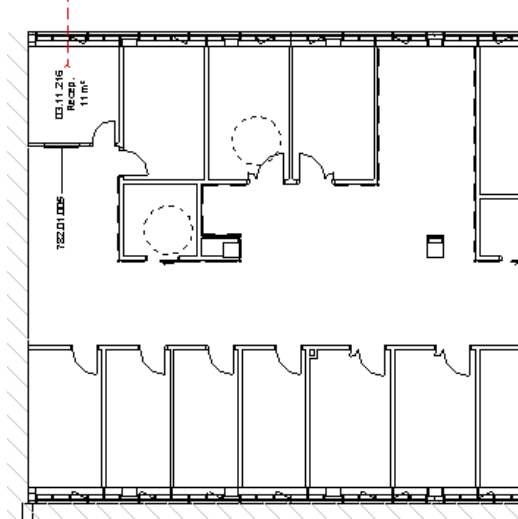
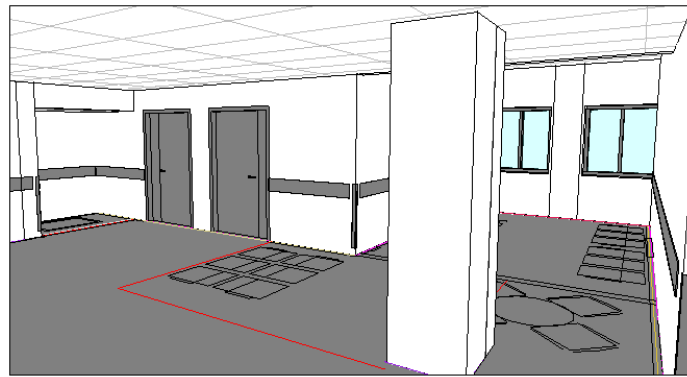
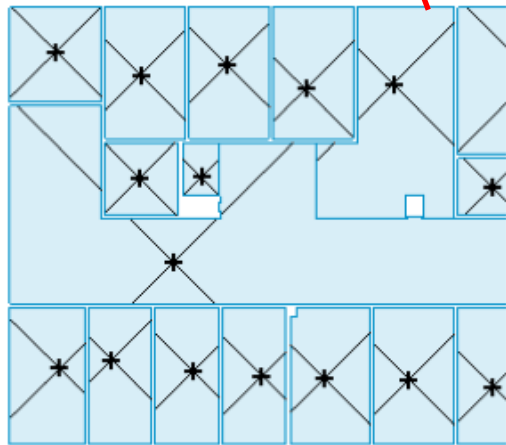
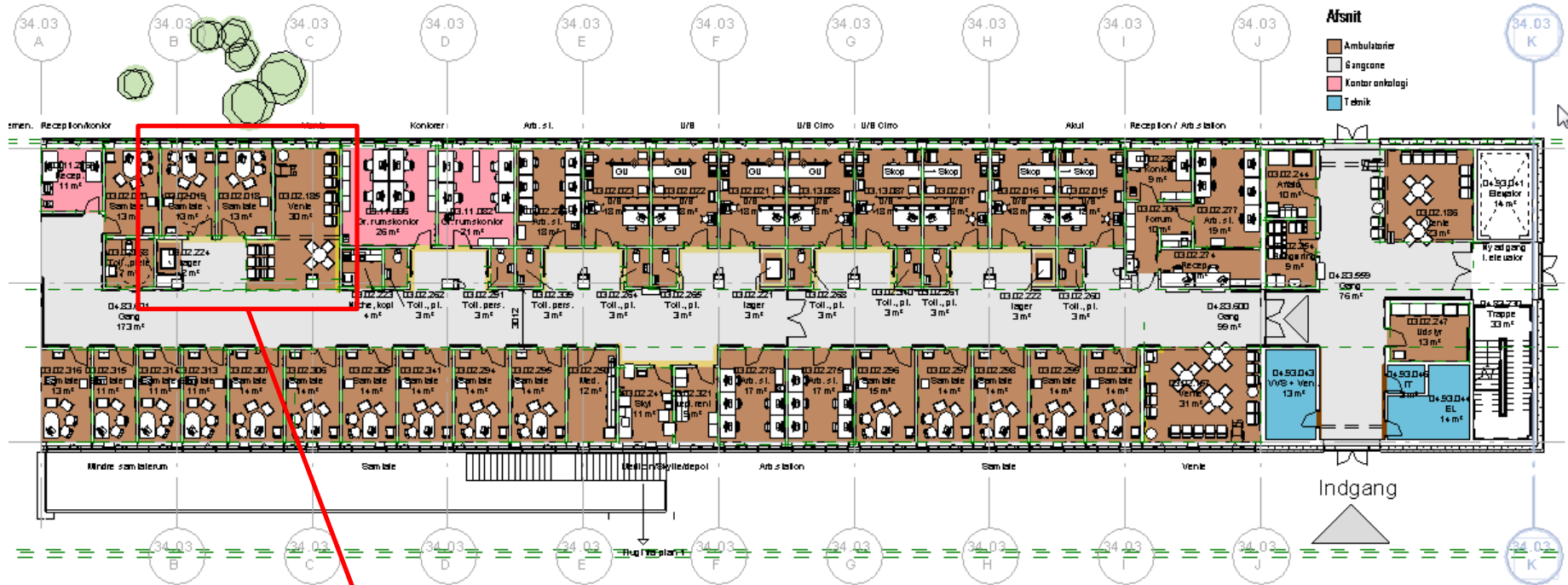






# Dataset - Zoning





## Rum information

– som projektereret

Og parametre....

+ Zoner...

Vedligehold

Symetrisk >< Aysmetrisk

Rooms (1) Edit Type	
<b>Constraints</b>	
Level	Niveau 02
Upper Limit	Niveau 02
Limit Offset	2000.0
Base Offset	0.0
<b>Graphics</b>	
Mørklægning iht. dRofus	
<b>Text</b>	
Afsnit	Teknik
Udbudsområde	
Rumtype	birum
Brugergruppe	
<b>Dimensions</b>	
Area	Not Enclosed
Perimeter	Not Enclosed
Unbounded Height	2000.0
Volume	Not Enclosed
Computation Height	1200.0
<b>Identity Data</b>	
Workset	Workset1
Number	YYY
Name	Gang forrum
Comments	
Occupancy	
Department	
Base Finish	
Ceiling Finish	
Wall Finish	
Floor Finish	
Occupant	
Afdeling	
SKS Room Nr	
RG-DNU TIDA System Nr Floo...	
Identification SJ	
Afsnit m. ONK kontortyper LH...	
Rumdisponering	
Edited by	SOSA
<b>Phasing</b>	
Phase	New Construction
<b>Other</b>	
Building number	
Geographical Room No	
Funktionel tilhørighed	
Program Area	
Delfunktion	
Brugergruppe udstyr	
FF akut, samlede funktioner	
Projektforslag, FF akut	

Rooms (1) Edit Type	
<b>Constraints</b>	
Level	Niveau 02
Upper Limit	Niveau 02
Limit Offset	2000.0
Base Offset	0.0
<b>Graphics</b>	
Mørklægning iht. dRofus	
<b>Text</b>	
Afsnit	Teknik
Udbudsområde	
Rumtype	birum
Brugergruppe	
<b>Dimensions</b>	
Area	Not Enclosed
Perimeter	Not Enclosed
Unbounded Height	2000.0
Volume	Not Enclosed
Computation Height	1200.0
<b>Identity Data</b>	
Workset	Workset1
Number	YYY
Name	Gang forrum
Comments	
Occupancy	
Department	
Base Finish	
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Wall Finish	
Floor Finish	
Occupant	
Afdeling	
SKS Room Nr	
RG-DNU TIDA System Nr Floo...	
Identification SJ	
Afsnit m. ONK kontortyper LH...	
Rumdisponering	
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<b>Phasing</b>	
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Brugergruppe udstyr	
FF akut, samlede funktioner	
Projektforslag, FF akut	

# Datamanagement



“Det er let at skabe data, men det er svært at have mange rigtige data”

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- Er det valide data og hvem har ansvaret ?
- Hvor ofte skal dataene opdateres?
- Osv...



# SPØRGSMÅL?