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Lean Rakentamisen Päivät

Keynote
Hans Thomas Holm

Wednesday June 4th 2025

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Going “All In” is More Challenging than it Sounds

- **My Lean Journey (2009-2025)**
- **Top Down or Bottom Up – a Team Effort**
- **Keeping People Onboard**
- **Successes / Failures**
  - **The Academy of Art and Design in Bergen (KHiB)**
  - **Size Matters – From Linear to Exponential**
  - **Functionality Everywhere**
- **Lean in Norway (2025)**
- **Personal Recommendations**
  - **OKR’s & KPI’s**
  - **14/0 Readiness & Logistics**
  - **Simulations & Unfinished tasks**

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My Lean Journey
(2009-2025)

The D-Medica Project
2010-2013

May-Dec 2009

Inspired by St. Olav's Hospital
Trondheim, Norway

LIPS conference
Karlsruhe, Germany

Project planned and
executed using takt

Porsche Consulting's 3-day
Hotel Model seminar

2013 Key Learnings

Takt works well!

Functionality worked less well.

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My Lean Journey
(2009-2025)

The KHiB Project
2013-2017

2014-2015

Lean Process Planning

Systematic Completion (Functionality)

4x Hotel Model Seminars

- Process planning
- Lean Design
- Systematic Completion
- BIM @ KHiB
- Lean Construction

2017 Key Learnings

Systematic Completion is key.

Changing mentality and methodologies takes time!

Include Equipment and logistics early!

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My Lean Journey
(2009-2025)

The Life Science Project
2018-2026

2018-2020

The use of 4 strategies

Geometry + Function + Equipment

Holistic view from the start

- Lean Design
- Systematic Completion
- BIM & MMI
- Lean Construction
- Logistics
- Onboarding scheme

2025 Key Learnings (so far)

Systematic Completion is (still) key.

Size matters! Mega complexity.

The importance of logistics.

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Top Down or Bottom Up

a Team Effort

- **Is LEAN (principles and methodologies) something for ‘us’?**

  Yes!!! The sooner, the better.

- **Bottom Up is good**: Individual drive and motivation

- **Top Down is better**: Strategic company (and/or project) goals and Top Management involvement

- **Team Effort is key**: “All in” increases earning, productivity, and motivation. Main challenge is changing habits and improving.

The chain is not stronger than the weakest link!

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Keeping People Onboard

- **See people and keep promises**
- **Involve people** and – when suitable – invite their families for a visit
- **Engage and inform people**
- **Let people know they are contributing**
- **Let people grow**
- **Let people interact** and find each other by themselves
- **We all have our individual needs and ways**

Are you just moving rocks or are you building a cathedral

Nothing changes if nothing changes

Success: Academy of Art and design in Bergen

KHiB (2013-2017)

- Cost: ~1 bill. NOK (2017)
- Area: 14,800 square meter
- Systematic Completion

- Delivered on time
- 5 mill NOK below budget
- 45 issues remained at handover

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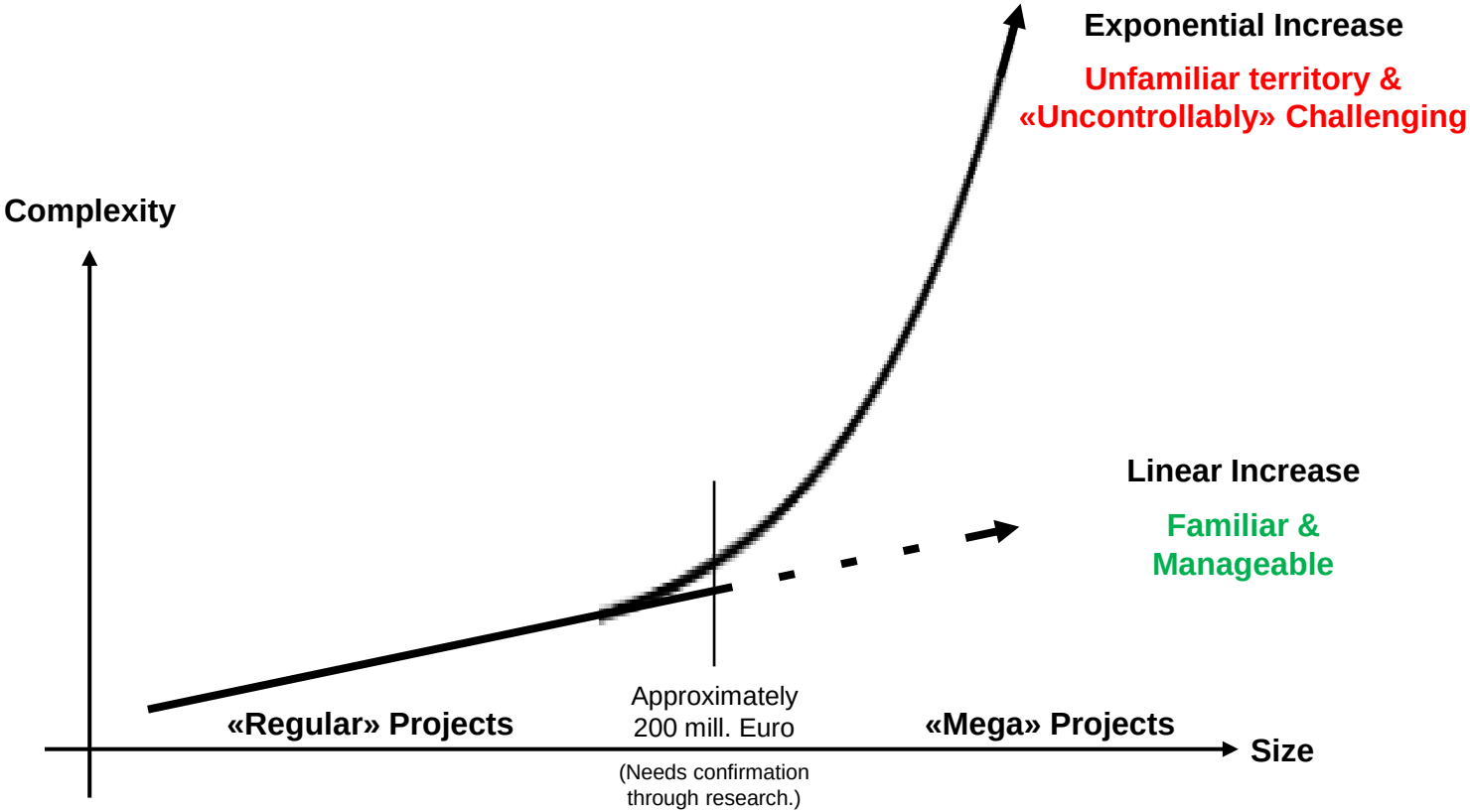
Successes / Failures

Size Matters – From Linear to Exponential



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Regular Projects

OWNER MANAGEMENT

PROJECT MANAGEMENT
- GOALS (OKR's)
- TOOLS (VDC)
- KPI's

PROGRESS MANAGEMENT
- TAKT
- LAST PLANNER
- GANT (?)

SIMULATIONS & MOCK UPS

CHANGE MANAGEMENT

FINANCES incl.
- BONUS/PENALTY
- INCENTIVES
- RISKS
- UNCERTAINTIES

STRATEGIES:
- CONTRACT
- FUNCTION (SYST. COMPL.)
- GEOMETRY (LEAN)
- EQUIPMENT
- DIGITALIZATION
- LOGISTICS
- OTHER

PEOPLE & CULTURE
- ONBOARDING
- COMMUNICATION
- TRANSPARENCY

PHASES
- DESIGN
- COUNTDOWN
- CONSTRUCTION
- TESTING
- HANDOVER

HANDOVER MANAGEMENT

PROCUREMENT

SAFETY HSQ&E

CONTINUOUS IMPROVEMENT

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Mega Projects

OWNER MANAGEMENT

PROJECT MANAGEMENT
- GOALS (OKR's)
- TOOLS (VDC)
- KPI's

FINANCES incl.
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PROCUREMENT

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CONTINUOUS IMPROVEMENT

PROGRESS MANAGEMENT
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SAFETY HSQ&E

SIMULATIONS & MOCK UPS

CHANGE MANAGEMENT

HANDOVER MANAGEMENT

Life Science in Oslo
(2018-2026)

Budget approx. 13 bill. NOK Additionally, user equipment > 2 bill. NOK	Area 97,450 m^2 BTA Footprint 19,000 m^2
7 Parallel Turnkey Contracts w/ Target sum	Handovers Easter/Summer/Christmas 2026

Kred: Ratio & KVANT-1

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Life Science in Oslo

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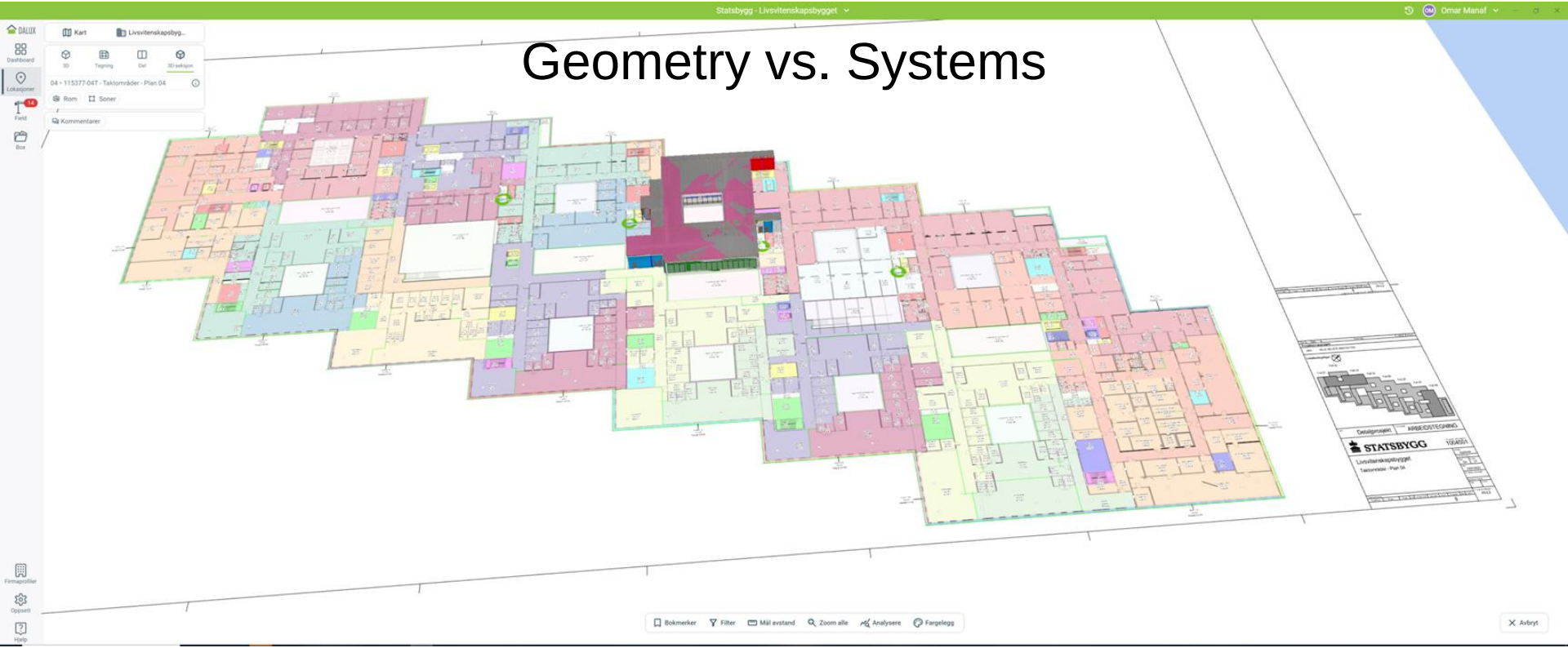
Successes / Failures

Functionality Everywhere



Geometry vs. Systems

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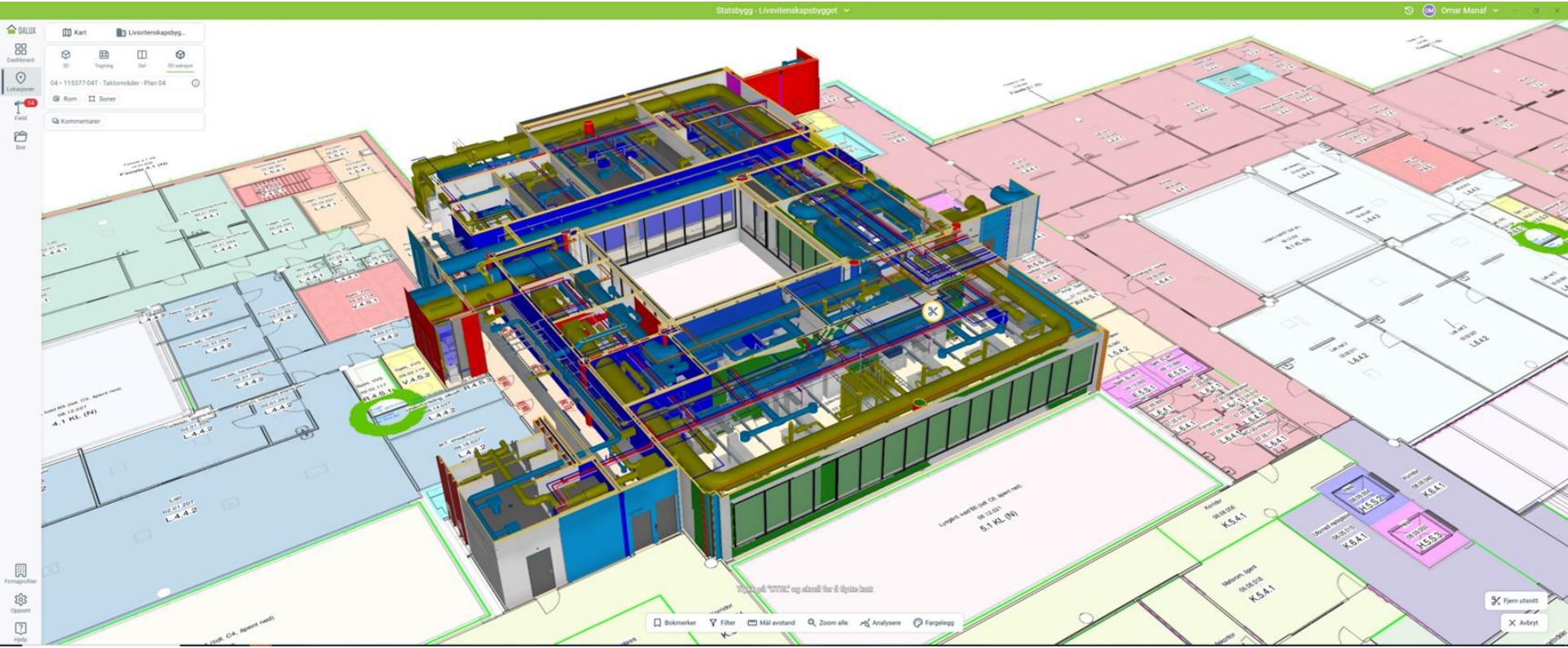
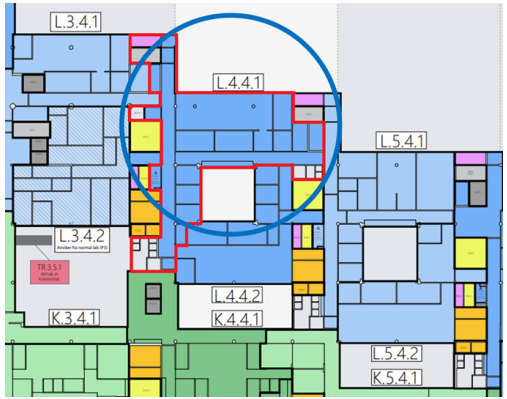
Geometry vs. Systems

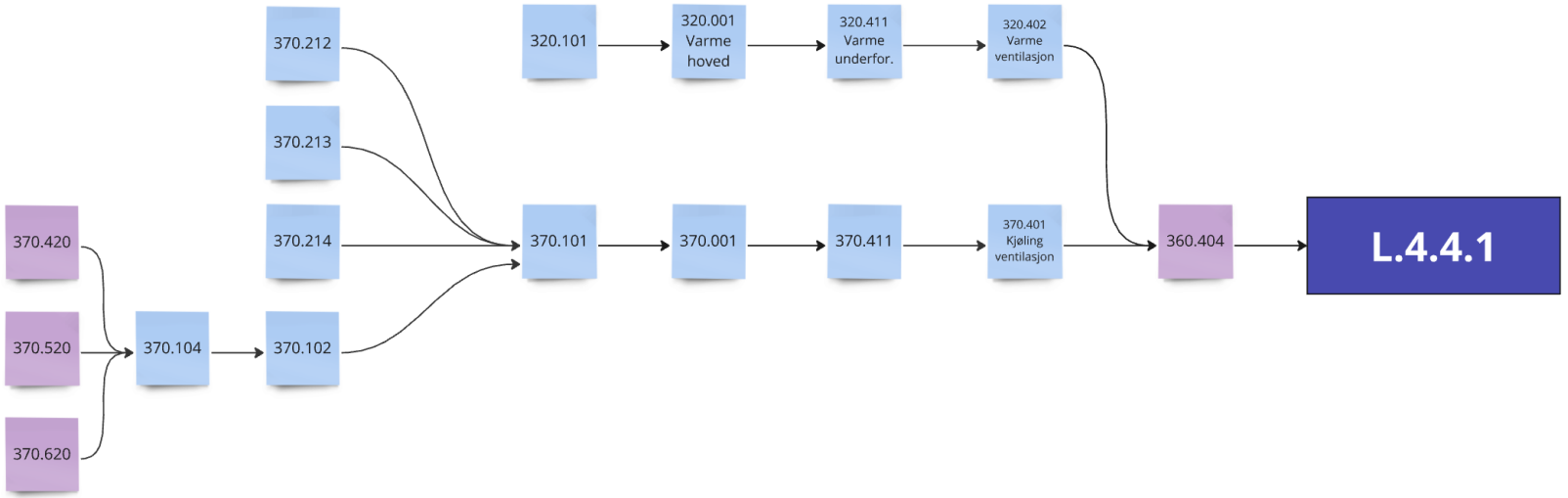


Geometry vs. Systems: Example

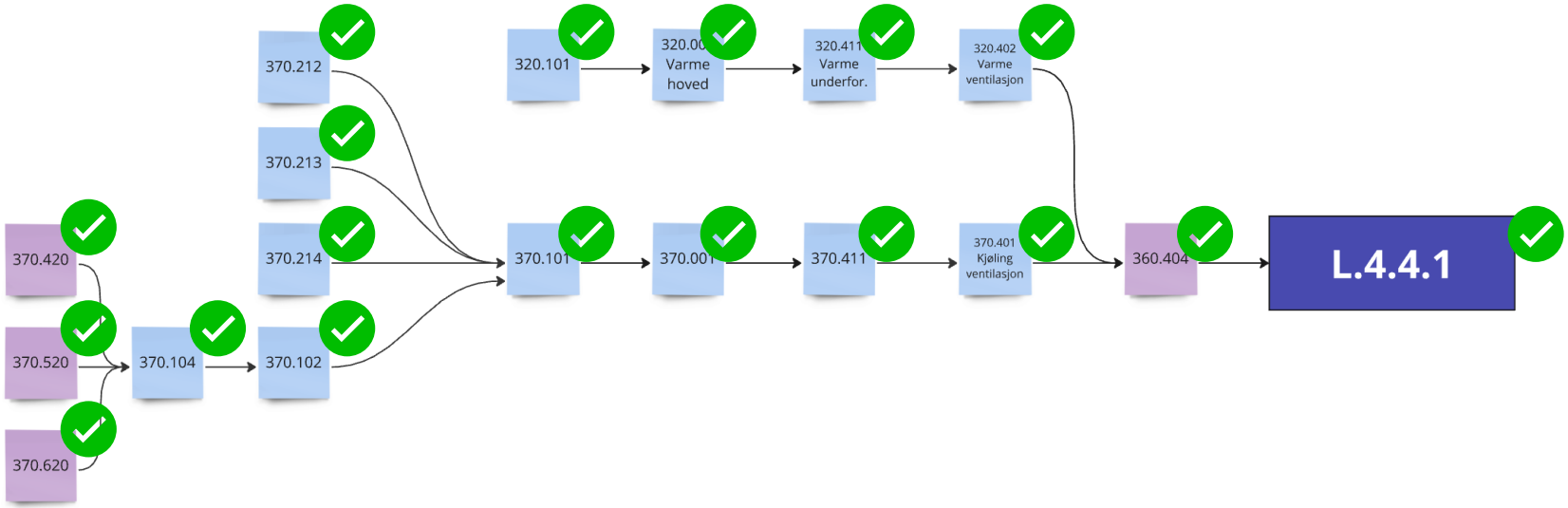
Which systems have to be ready from K301 (pipes) so that K302 (ventilation) can provide air at the right temperature to takt area L.4.4.1?



Geometry vs. Systems: Example



Geometry vs. Systems: Example



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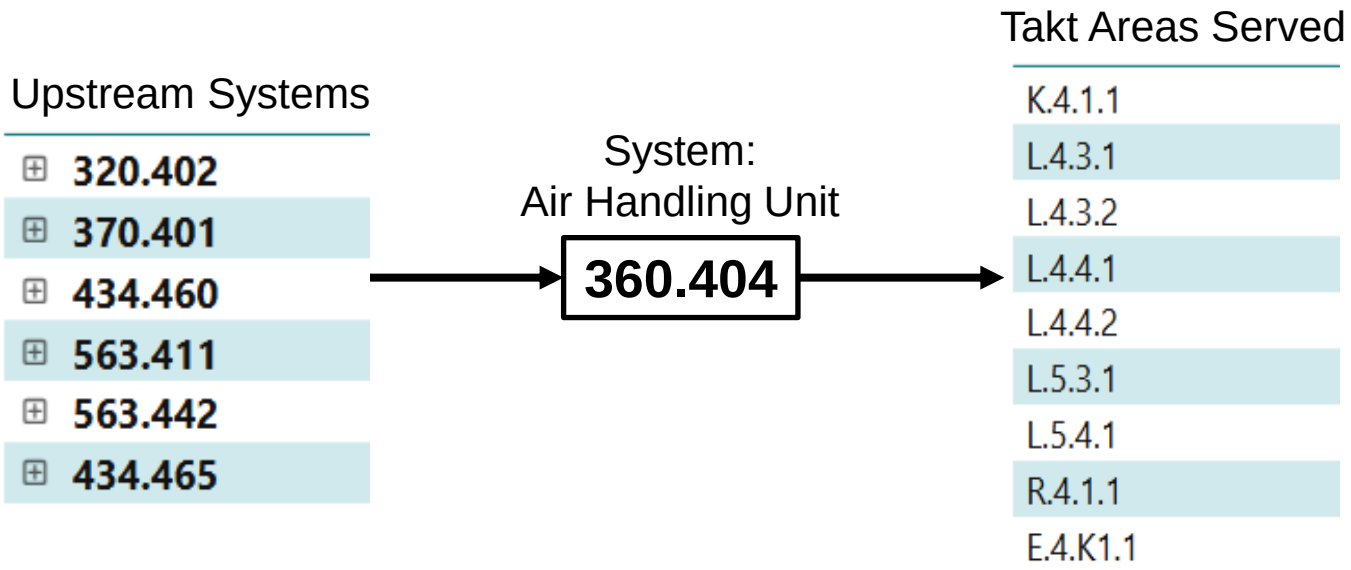
System dependencies

Example



Creating transparency in a structured way in an overwhelming amount of data.
Then illustrating, visualizing, and coordinating it well.

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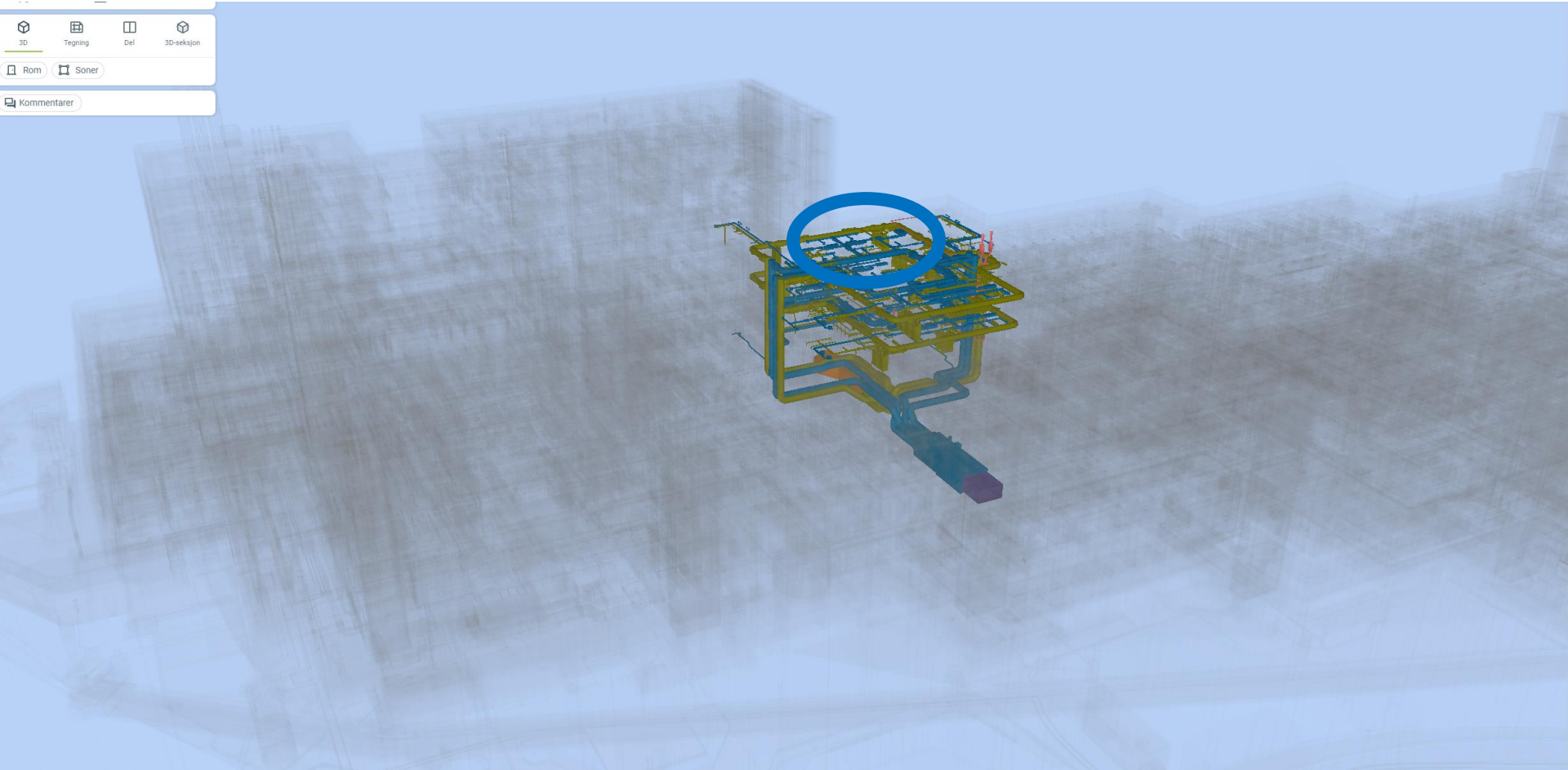
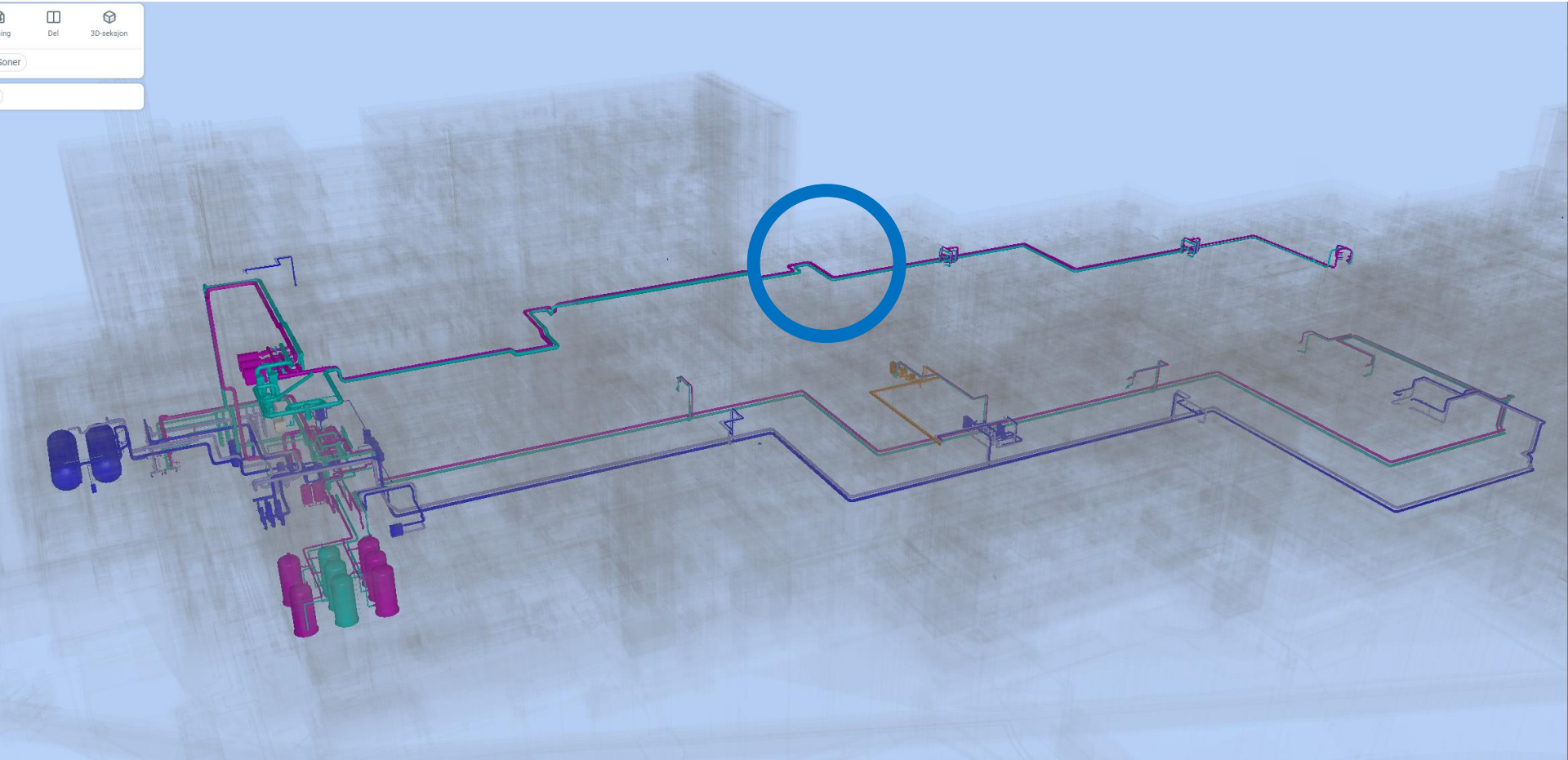
Systems on site

Example Ventilation System



Example Heating/Cooling System



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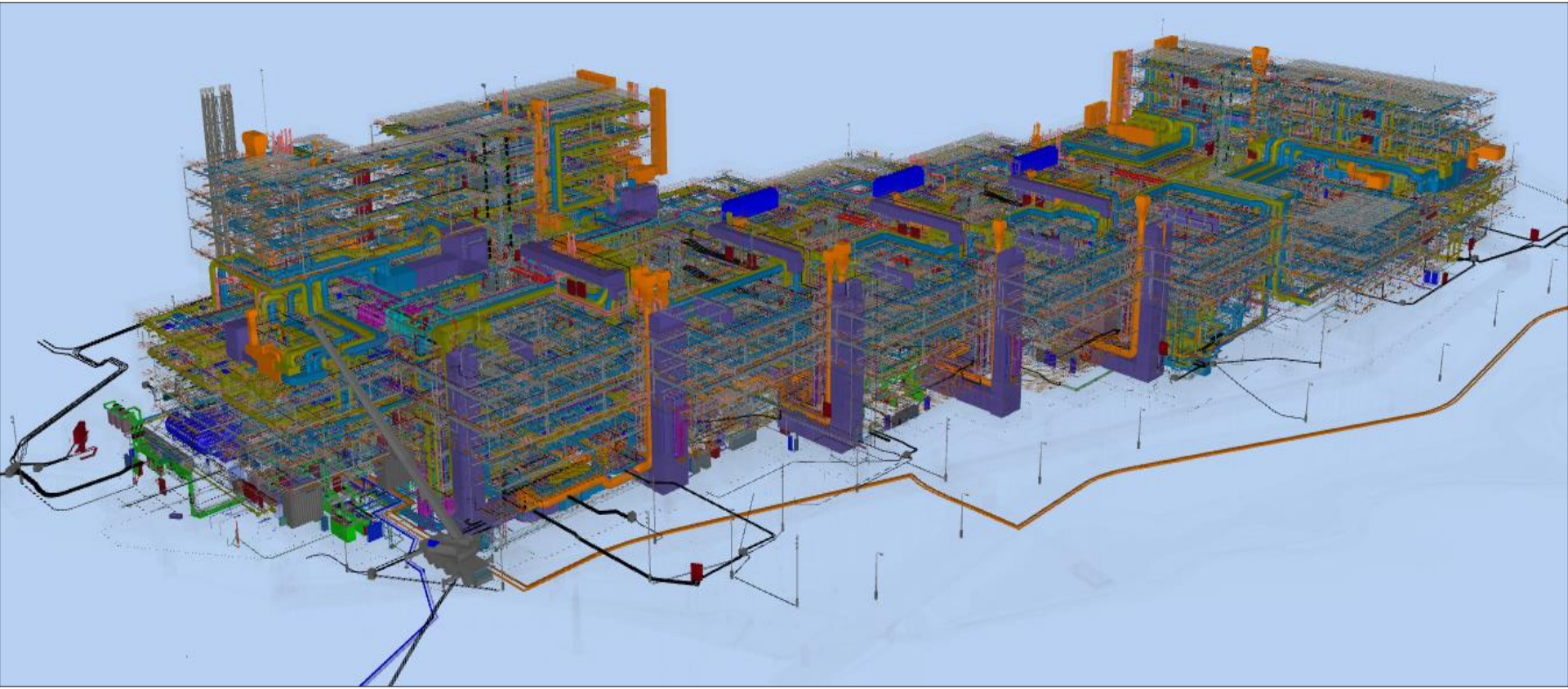
Life Science is a Complex Giant Machine



Close to 3,000 technical systems

One of Norway's Largest single Buildings

Taktarea R.K3.1
Week 05-2025

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Lean in Norway (2025)

- **Main drivers: Contract Requirements / Individual initiatives**
  - Contractors in general have had a more passive approach
  - To be better and more productive don’t seem to be drivers
- **Owners can dictate requirements and influence the industry**
- **Development happens mainly in projects**

Source: Lean Communications, Oslo, Norway

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Lean in Norway (2025)

- **Main pushers: Public Owners**
- **Forsvarsbygg** (defense constructions)
  “More defense ability for the money”
  - All projects to be carried out with an emphasis on flow
  - The flow principle is a requirement to all contractors
  - Owner contributes with lean resources
- **Bane Nor** (railways)
  - Requires VDC of all contractors and suppliers
- Municipalities little involved – so far

Source: Lean Communications, Oslo, Norway

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Personal Recommendations
OKR's & KPI's

Mega project challenges

- Many companies with differing objectives are involved in one project
- Objectives are rarely aligned in the best interest of the project ("me first")

Suggestions to solutions

- *'One for all - All for one'* contracts
  with common requirements and incentives incl. bonus/malus
- Measuring and visualizing what matters

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Personal Recommendations

OKR’s & KPI’s

- Making everyone aware and involved
- Cascading objectives and key results throughout the organization

OKR = Objective & Key Results

- Objective = The What = What we are trying to accomplish
- Key Results = The How = How we’ll prove we’ve gotten there

KPI = Key Performance Index

- Measurements tracking how you’re doing periodically

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Personal Recommendations

OKR's & KPI's

- Making everyone aware and involved
- Cascading objectives and key results throughout the organization

PROJECT		
Objective 1 – Economy	Deliver within or lower than budgets	< 400 mill. Euro
Objective 2 – Quality	Deliver according to program	< 100 issues at handover
Objective 3 – Time	Deliver on or before deadline	Handover Dec. 1st 2026
Objective 4 – SH&E	Continuous motivated and healthy team	0 fatal accidents
Objective 5 – Energy	Deliver a ZEB & Plus House	0 / + 4 MWh
Objective 6 – Etc.	xxx	xxx

Some possible (and creative) examples

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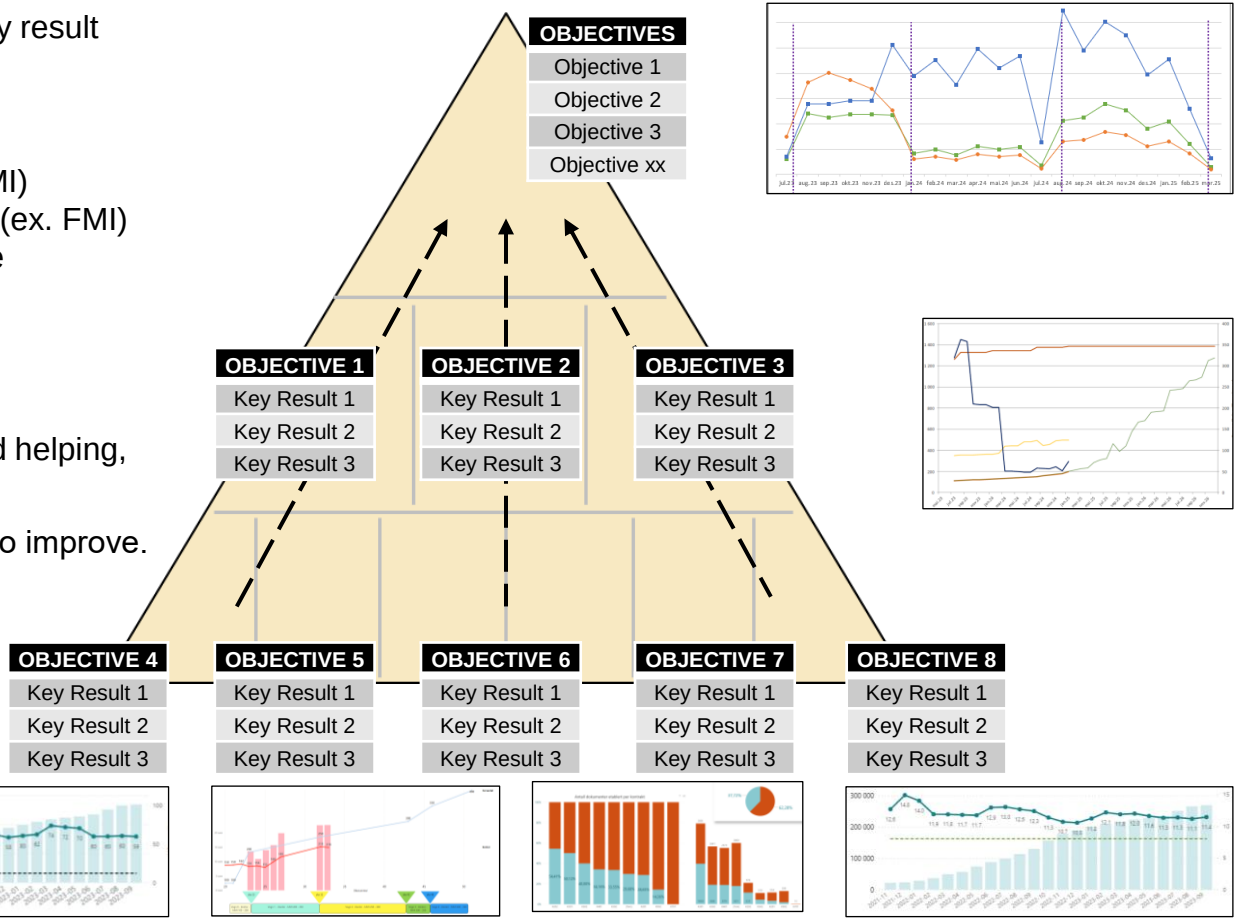
From OKR's to KPI's

Steering projects using key result targets, for example, on:

- Safety
- Improvements
- Design process (ex. MMI)
- Systematic Completion (ex. FMI)
- Construction / Schedule
- Quality
- Cost
- Satisfaction / Culture

Metrics are for guiding and helping, NOT punishing!

Without them, it's difficult to improve.



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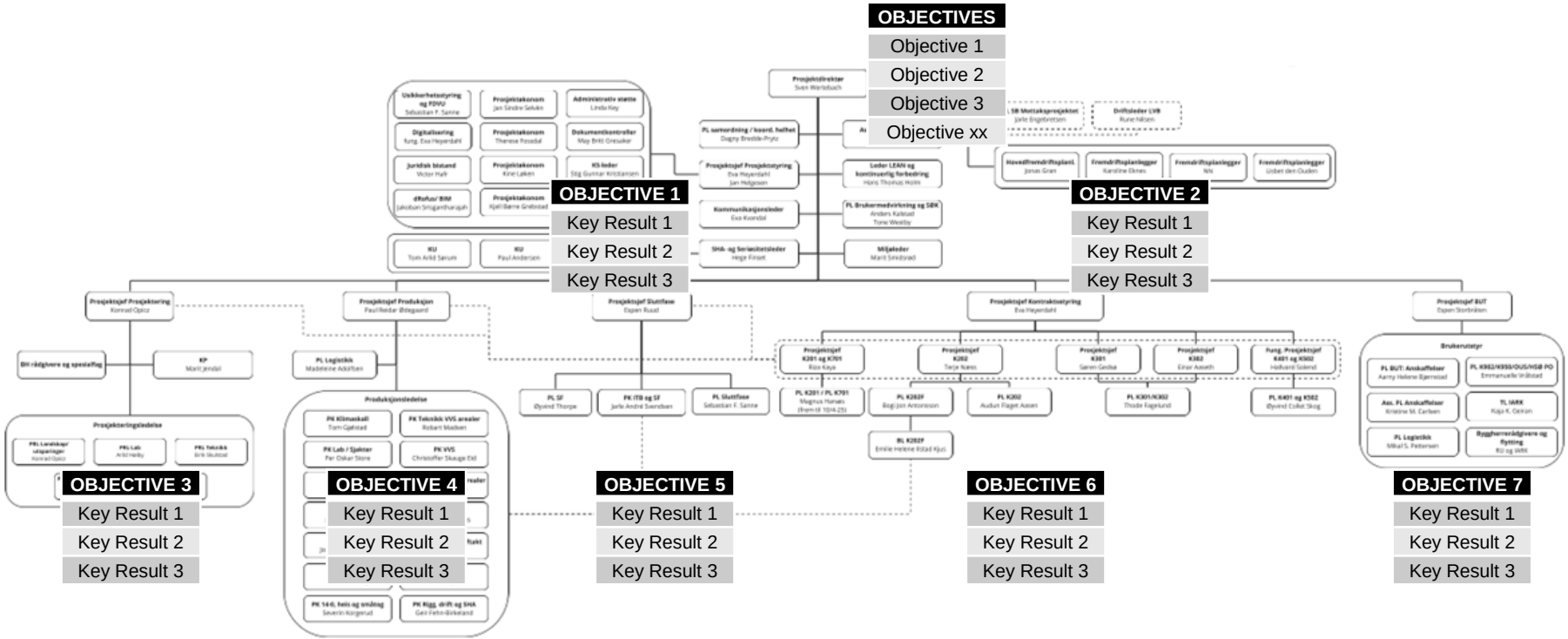
Personal Recommendations

OKR's & KPI's



Literature tip: Measure What Matters by John Doerr
https://www.whatmatters.com/okrs-explained

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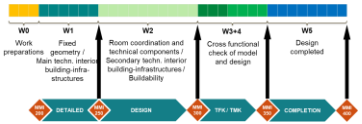
Personal Recommendations

14/0 Readiness & Logistics

Design
incl. Systematic Completion and User Equipment



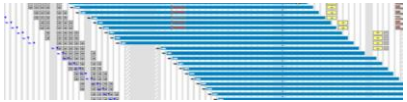
14/0 Readiness
Preparing ready for construction

Countdown Process 14-10-6-4-1

FULL TRAIN	FULL TRAIN	8 WAGGONS	2 LEVELS 1 FIELD	EACH WAGGON
14 WEEKS PRIOR	10 WEEKS PRIOR	6 WEEKS PRIOR	4 WEEKS PRIOR	1 WEEK PRIOR
Contractors go through production material.	Check deviations from W14 meeting. Check descriptions of train / waggon.	Check dependencies. Prepare for construction delivery.	Check ready for construction (look ahead). Check model takt area by takt area.	Check ready for construction. Takt area ready to start. Work flow

Construction
incl. Systematic Completion and User Equipment

Takt Plan & Takt Areas

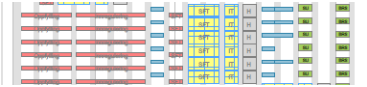


8/0 Readiness
Ready for testing

Countdown Process 8-4-1

6 WEEKS PRIOR	4 WEEKS PRIOR	1 WEEK PRIOR
Check dependencies. Prepare for construction delivery.	Check ready for construction (look ahead). Check model takt area by takt area.	Check ready for construction. Takt area ready to start. Work flow

End Phase Testing



Ensuring to have:

- ‘To do’ checklists
- Continuous improvement system in place
- 100% check out rate
- Logistical status (materials + objects in / waste out)

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Personal Recommendations

Simulations & Unfinished tasks

- **Avoid remaining works!**

  Ensure that tasks are fully finished by end of agreed time period:
  comprises quality check and quality assessment when checking out

- **Keep the construction site tidy and clean!**

  Frequent cleaning. The cleaner and more organized – the better.
  Improves general well being, reduces waste, and delivers higher quality.

- **Simulations, Mockups and Procedural Tests?**

  Do them more often: gives valuable insights, helps avoiding mistakes, and saves time

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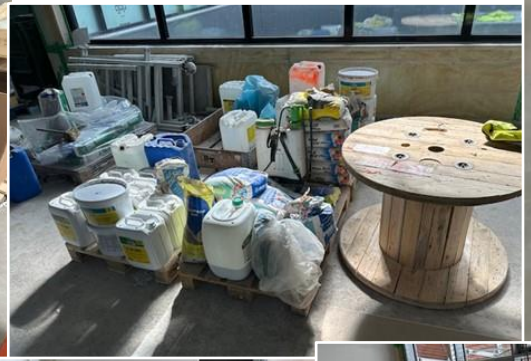
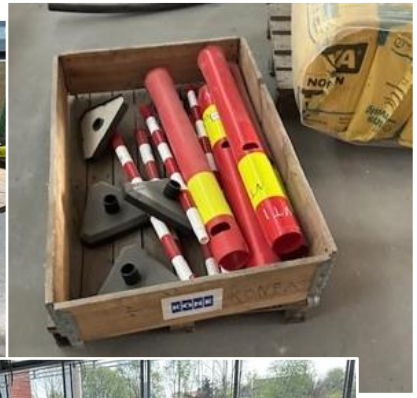
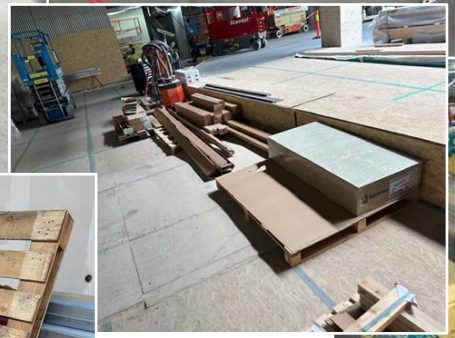
Logistics – when not followed up well







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Which would you prefer?

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Mentality

Commitment

Long-term Visions

Institutional memory…

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Thanks for your attention

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Linked In

Dec. 2014: Awarded Statsbygg's Innovation price
"Introduction of Lean principles in Statsbygg's construction projects"

Oct. 2017: Awarded "*Bygg 21"* for Best Practice

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Statsbygg	2007 –	
The road of LEAN projects	2010 –	#1 D-Medica, #2 KHiB, #3 Life Science
Torino winter Olympics	2004 – 2006	TOROC transportation
Lillehammer winter Olympics	1992 – 1994	LOOC transportation
Misc. Project Management	1991 –	

MSc	Chalmers Tekniska Högskola	1991
	Karlsruhe Technische Hochschule	1987
Christian August vidg.sk. / Halden		1982

5 languages

(* 1964)

D-Medica

KHiB