Show room (3 rooms +kk) module installation in Tampere, Finland

Insights into YIT´s global research and practises on productivity

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YIT, HOUSING FI & CEE

PRODUKTIVITĀTE BŪVNIECĪBĀ 3RD DEC 2020

We are the largest Finnish and a significant North European construction and development company

Finland
Revenue ~2,500
Personnel ~4,300

Scandinavia
Revenue ~150
Personnel ~200

Russia
Revenue ~300
Personnel ~1,300

Baltic countries
Revenue ~300
Personnel ~1,200

CEE countries
Revenue ~100
Personnel ~300

Restated revenue by geography, EUR million 2019

Revenue

3.4

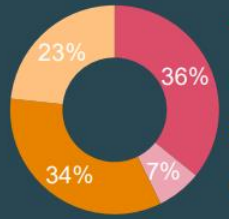
EUR billion in 2019

Adjusted operating profit

166

EUR million in 2019

Revenue by segment



- Housing Finland & CEE
- Housing Russia
- Business premises and Partnership properties
- Infrastructure projects 23%

On July 4, 2019, YIT announced the sale of its Nordic paving and mineral aggregates businesses. The transaction is estimated to be completed during the first or the second quarter of 2020. Figures refer to continuing operations.

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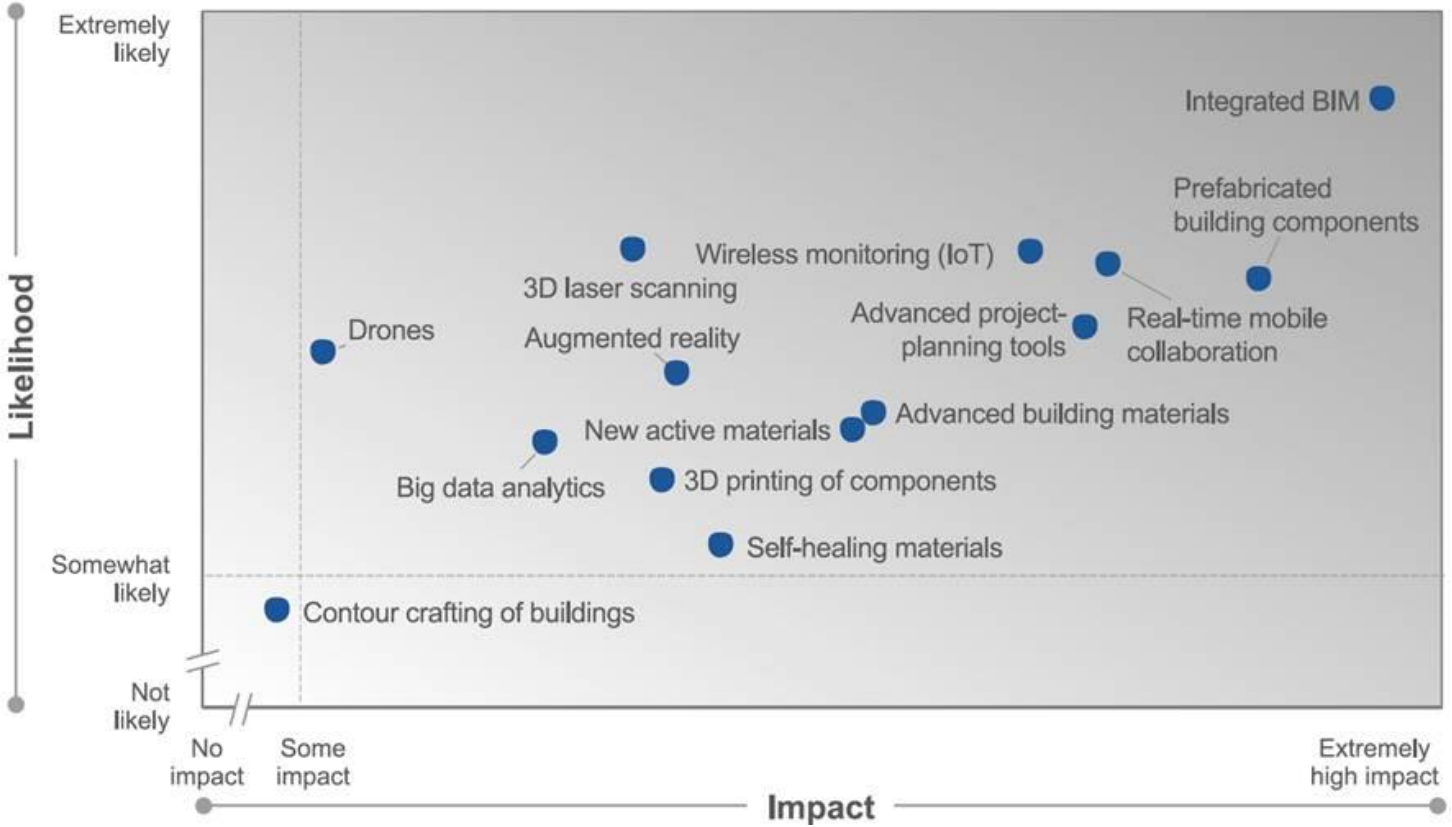
Likelihood of change in construction business and impacts



The Boston Consulting Group: Shaping the Future of Construction: A Breakthrough in Mindset and Technology

Global study of industrialized housing construction companies

Volumetric modules

(80-95% ready off-site)

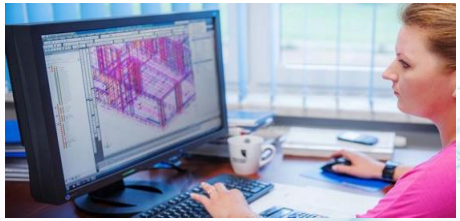
Panels

(60% ready off-site)

Frame material

Product structure	Concrete	Steel	Wood
		VISION MODULAR SYSTEMS UK LTD, UB., Caledonian, Hickory. Building innovation., SEKISUI, Ballast Nedam, SKANSKA, TOYOTA HOME	NORDHUS MODULAR HOUSES, LINDBÄCKS, UNIHOUSE, MOELVEN, KODUMAJA
	PEAB, LAING O'ROURKE, SKANSKA, bam, MARKUČIAI	BROAD GROUP 匠大集团, SEKISUI HOUSE, Hickory. Building innovation.	martinsons, KATERRA

Shorter lead time when site works are done parallel with the works in factory



Module specific BIM design

A0 Design process

A1 Sale of the apartments

Ground works and concrete casting at the work site

B2 Production of the components

B3 Assembly of the module

B4 Internal fittings

C5

C6 Assembly of the modules

C7 Assembling the roof using prefabricated roof modules

C8 Finishing works

2 months

Design process and premarketing

2 months

Apartments go on sale

2 month

Prefabrication parallel with ground works and concrete casting on the work site

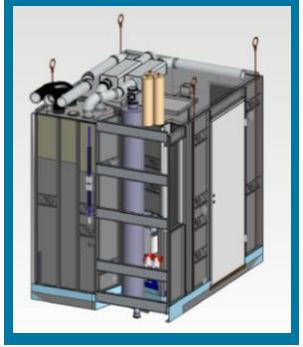
2 months

Assembly and finishing works at the work site

In total approximately 8-9 months

Prefabrication steps in YIT housing

Enablers / Results

1970	1985	1997	2015	2019
Development of concrete elements in Finland	**YIT´s wood panel factory in Hämeenlinna**	**Developer based apartments for consumers**	**Centralized product development**	**BIM and volumetric modules**
BES (BetoniElementti-Standardi). Industry wide open system with standard measures. (Finnish specialty)	*Profitable success in standardised bungalows for YIT´s Hämeenlinna unit.*	*Design management expertise and sales. Product development evolution in unit level.*	*9000 bathroom pods over the years.*	• *BIM in every project* • *1st Module pilot*
				

YIT´s experiences with bathroom pods

Decreasing the amount of work on-site

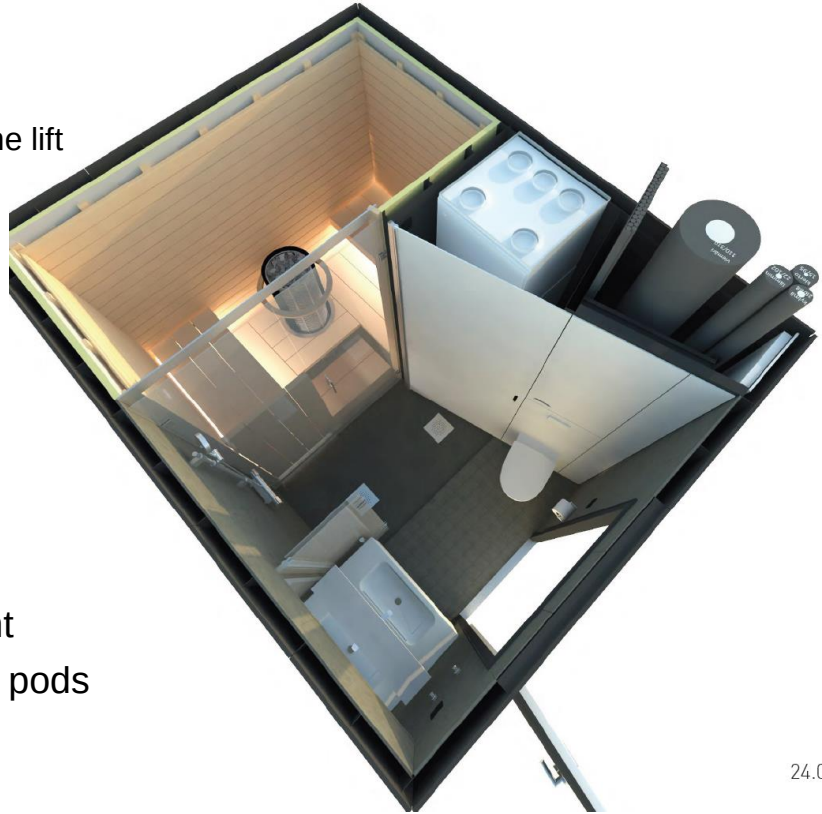
- Approximately 50% of the apartments interior work comes with the one lift
- Most of the technical instruments are installed in the factory
- Work safety point of view (less work on-site)

Shortening the construction time

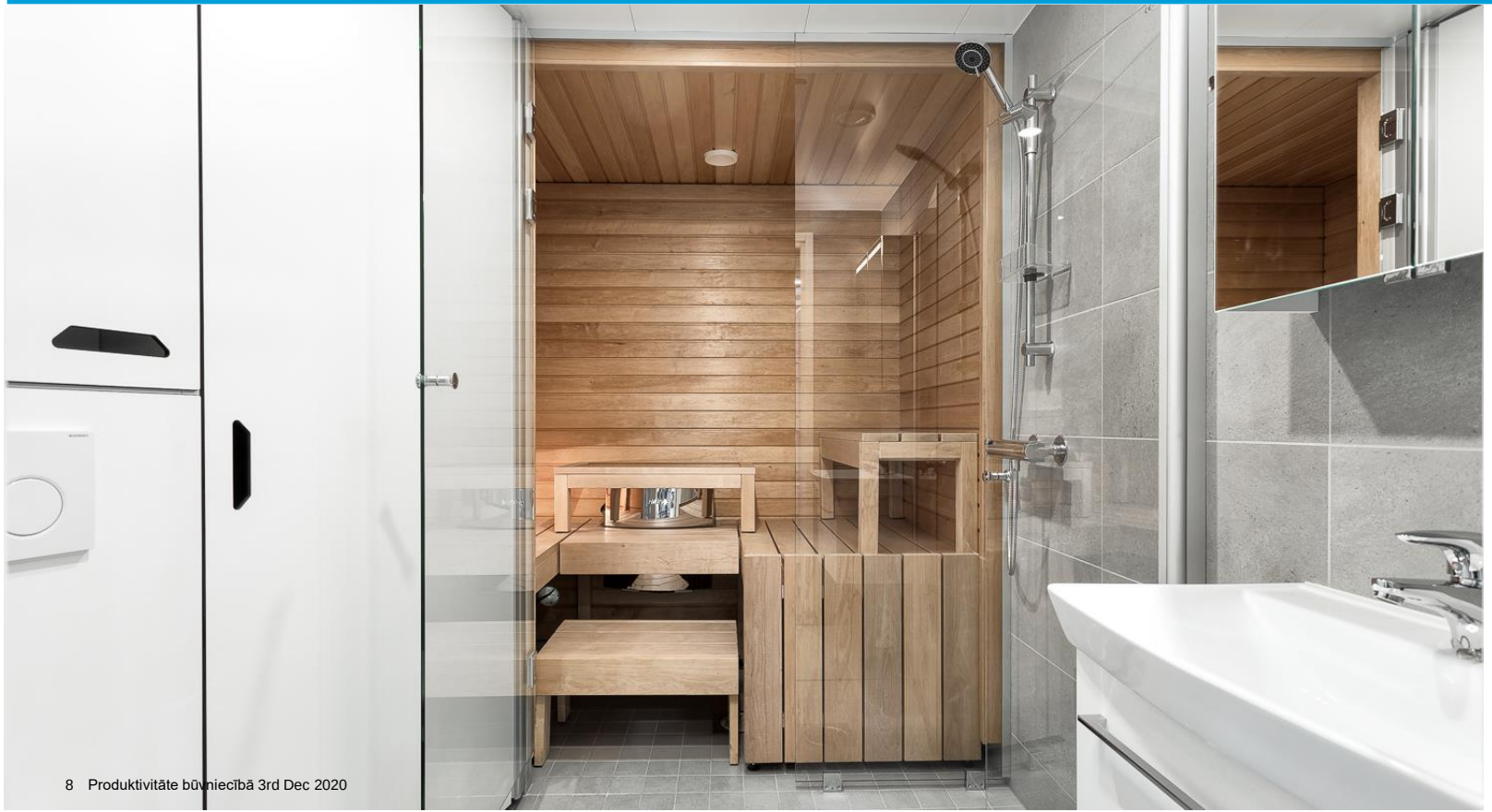
- Bathroom pods shorten the construction time by 2 monts

Quality and functionality

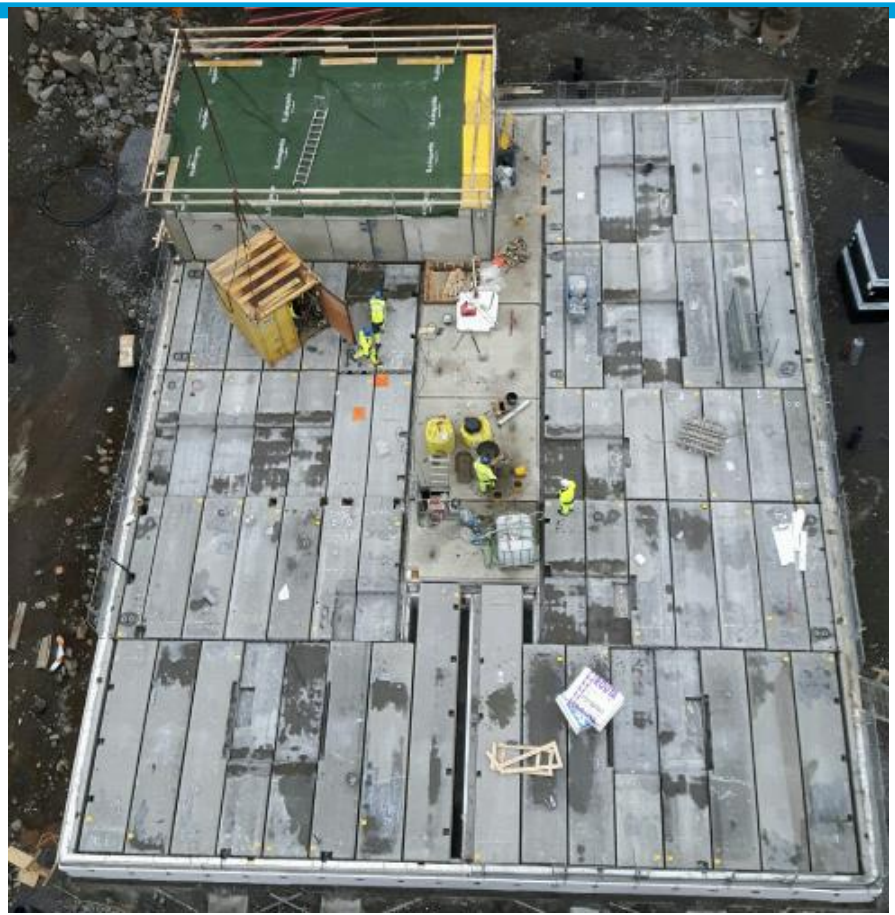
- Fine tuned functionality and large procurement volume
- Work is done in series, in warm, dry and well-lit environment
- YIT has built already more than 8000 homes with bathroom pods



YIT´s own bathroom pod catalogue: Fine tuning features with prototypes



Hollow core slabs in place before the joints and bathrooms

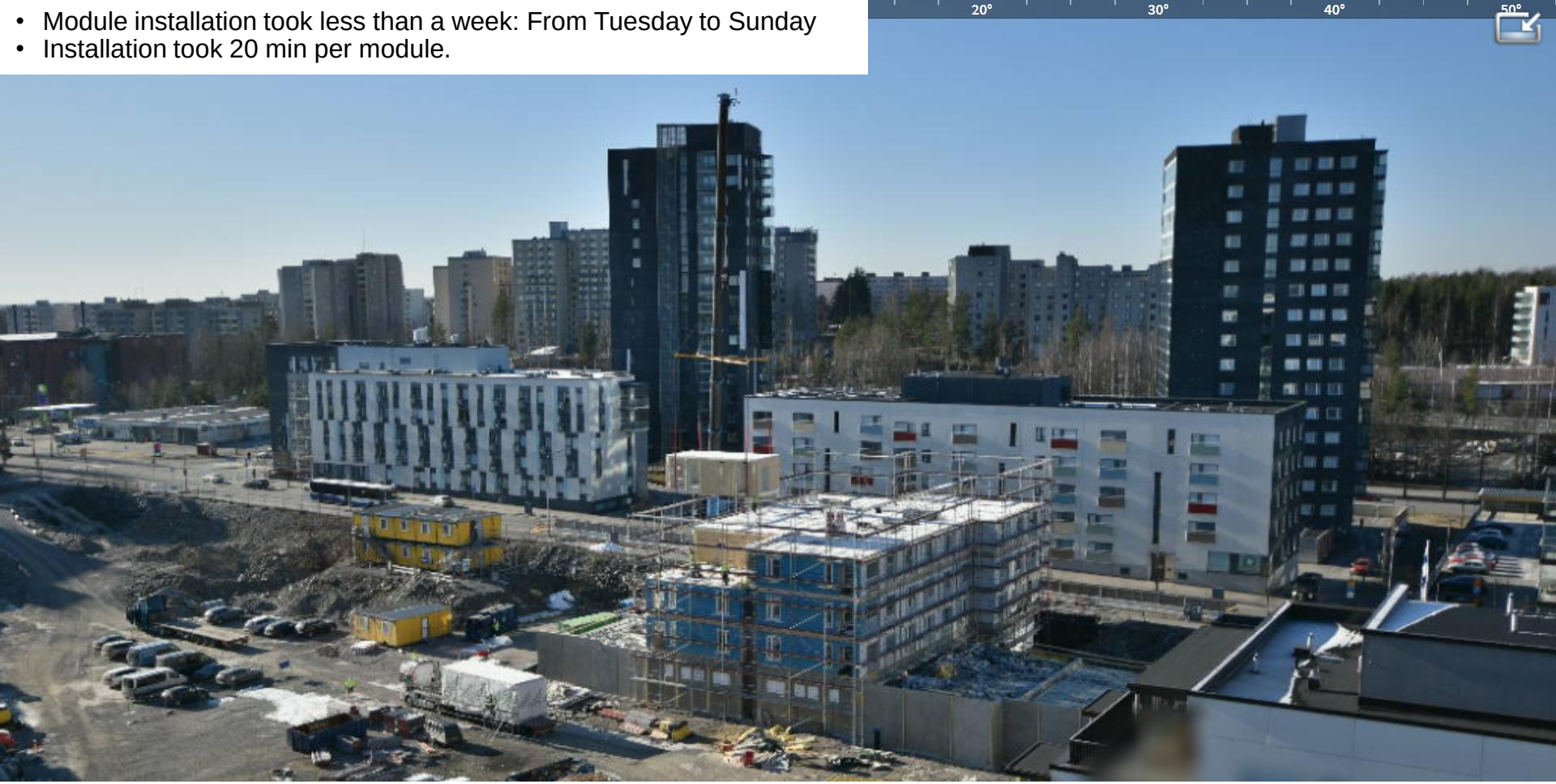


Sealed bathroom pods being installed to the building frame

YIT´s volumetric module pilot: Tampereen Tohtori

- Designed for rental purposes. 63 apartments (1 and 3 rooms apartments)
- Construction time 4kk. Module assembly in week 9 2020.

- Module installation took less than a week: From Tuesday to Sunday
- Installation took 20 min per module.



Lean and Takt time production

Lean principles

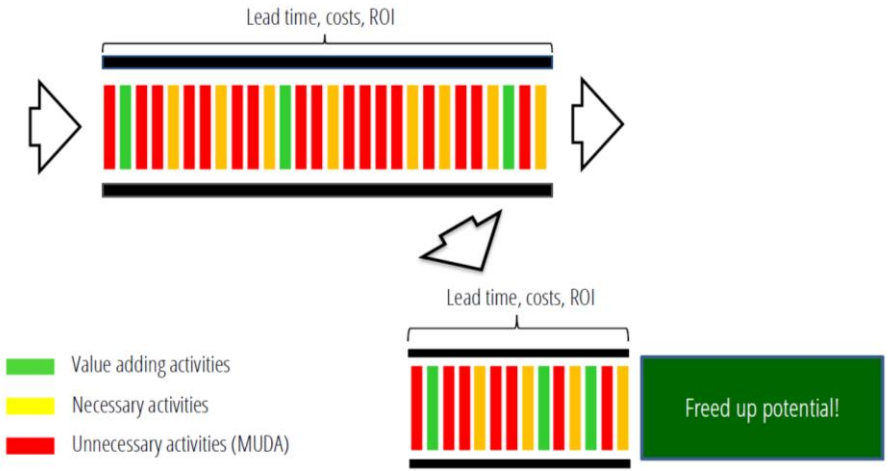
- Identify and remove “waste” (unnecessary activities)
- Improve the flow of work and material

Dividing work and spaces to smaller parts

- Half a day specific planning instead of week
- Half of an apartment instead of whole floor
- Right resources and materials in right place at the right time

Takt time driven logistics supporting

- No extra material in the floor levels



Summary: How to improve productivity?

1. **BIM** → From theory in to practice
2. **Better preplanning** → Optimising work and site
3. **Takt time production** → Shortened construction time
4. **Prefabrication** → Improved speed and quality

Together
we can
do it.