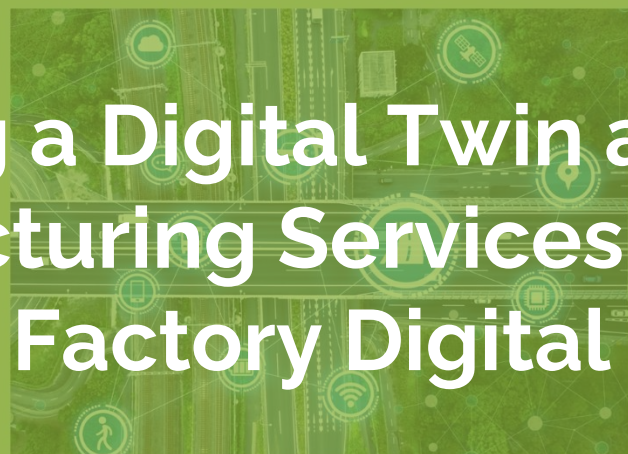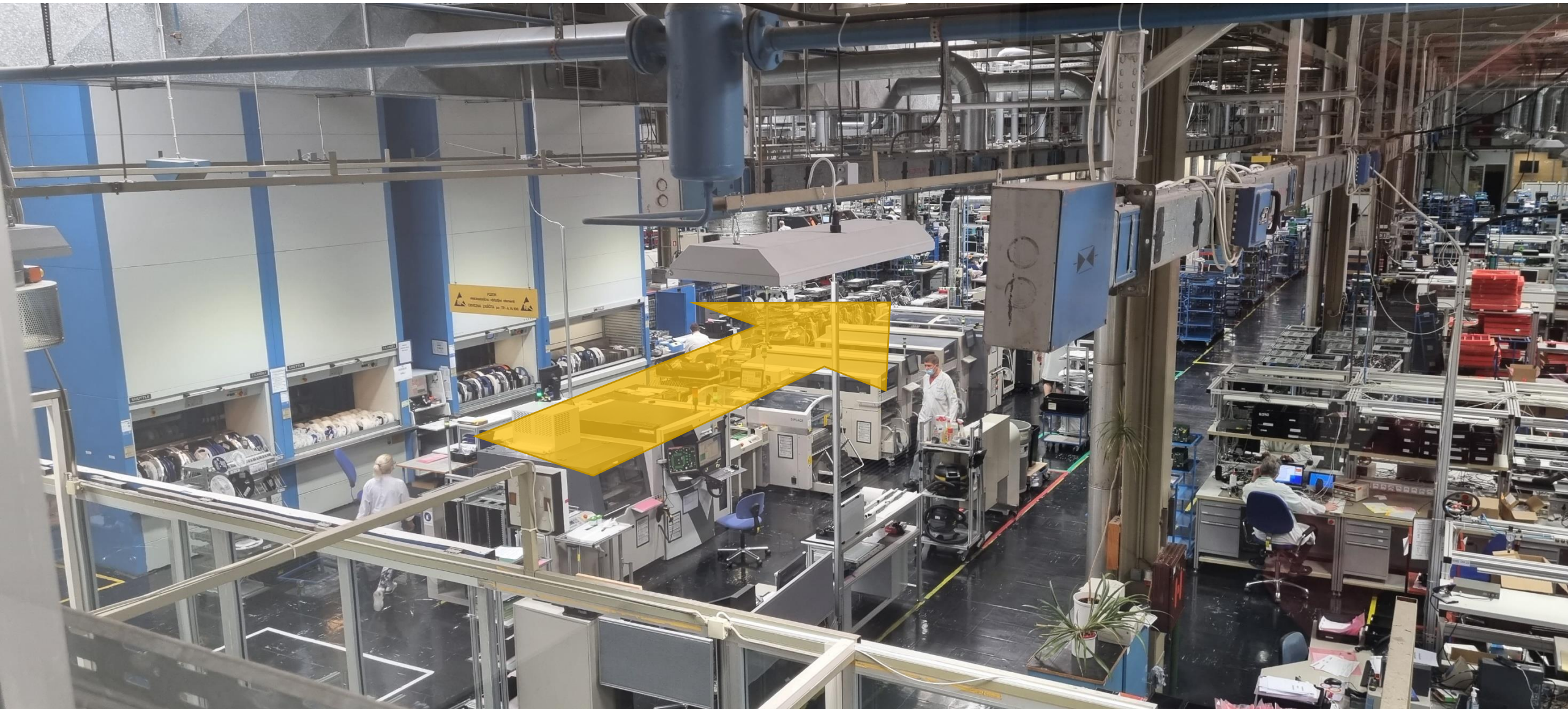**BeeIN**

SMART INDUSTRY 2021

Building a Digital Twin at the Iskratel Electronic Manufacturing Services plant, as part of a Smart Factory Digital Transformation
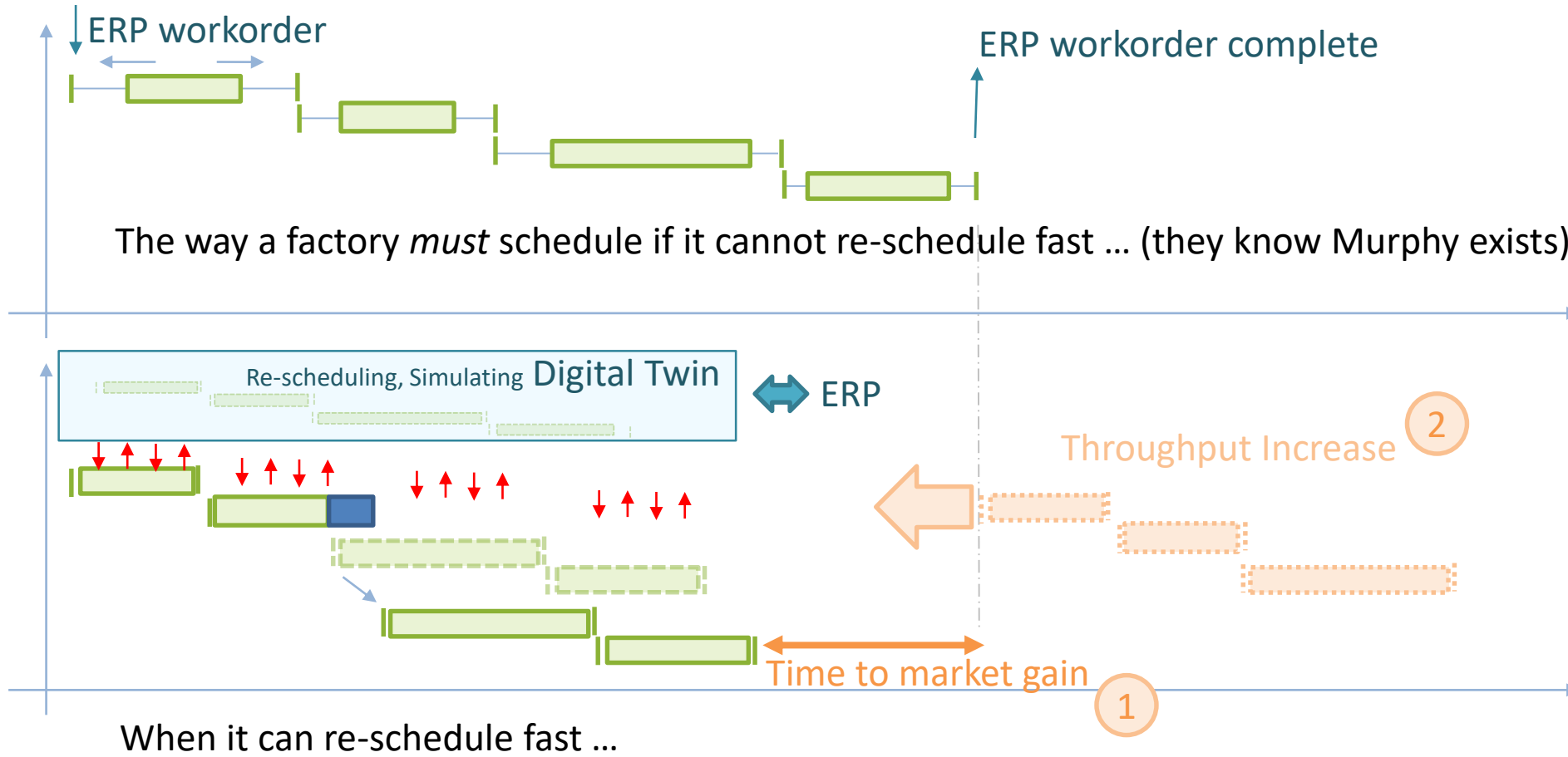
Iskratel EMS combines automated SMD lines...

... with manual THT lines to produce electronics

The Pain: What is the Optimal Scheduling?

ERP workorder

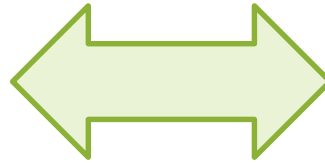ERP workorder complete

The way a factory *must* schedule if it cannot re-schedule fast ... (they know Murphy exists)

Re-scheduling, Simulating Digital Twin ⟷ ERP

Throughput Increase ②

Time to market gain ①

When it can re-schedule fast ...

The Solution in a nutshell

Building a Digital Twin for Augmented Manual + Automated Assembly Processes

BeeIN

INPUTS → Physical Process → OUTPUTS
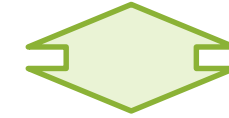
↕ 5G Platform
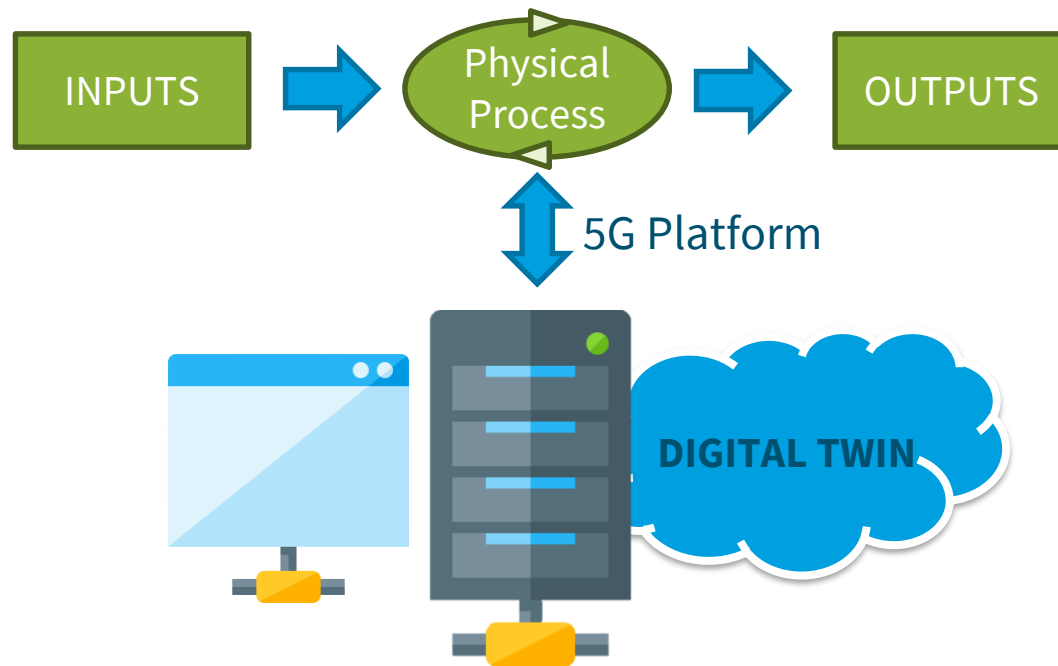
DIGITAL TWIN

The digital twin's purpose is to provide real-time routing and optimization of the production plan and resources, such as workers, machines, tools, equipment, …
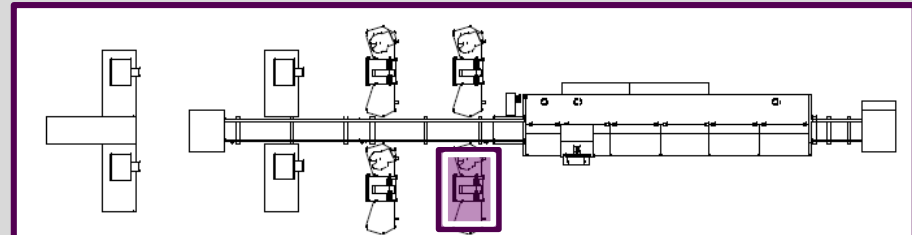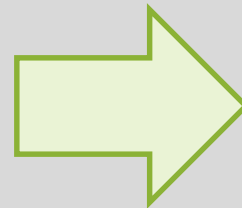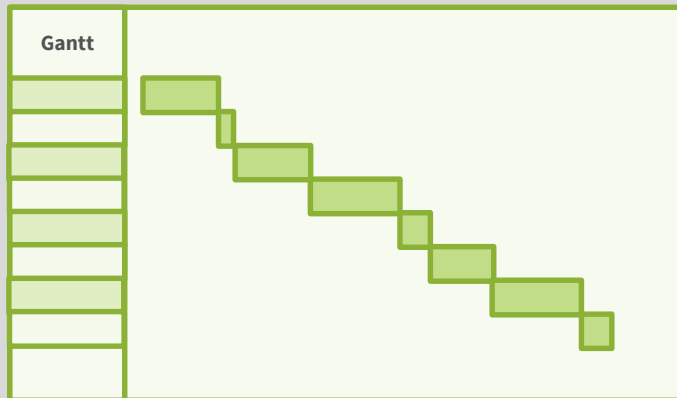
Scheduling optimization workflow

Screenshot of Production Management System

Station THT4

Work Order DN20210257

Operation – 180 Assemble Holders

Interruptions

Other…

02.09.2021 08:23:30

Process Delays

No reported delays

Operation Timing

Planned Start:

8:16

Planned End:

8:20

Planned time:

hour	min	sec
00	04	30

Used time:

hour	min	sec
00	07	30

Work instruction

Step 22

Delay 3 min

Complete operation

Zooming out:
Enterprise / Solution Architecture

Systems Thinking – Achieve Global Optima
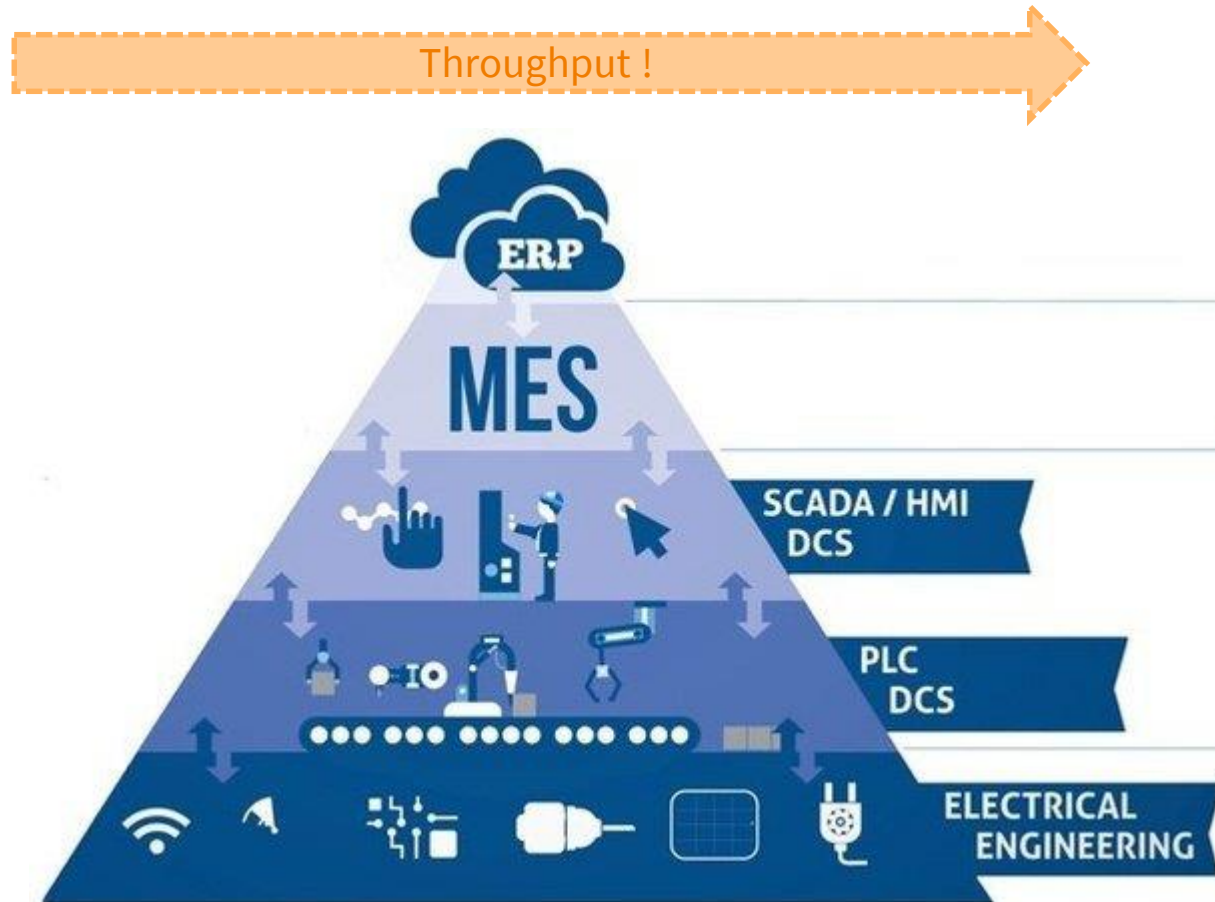
Are the layers
interconnected?

Can the system
(MES) simulate?

BeeIN *digital and green, DSP operator*

BeeIN
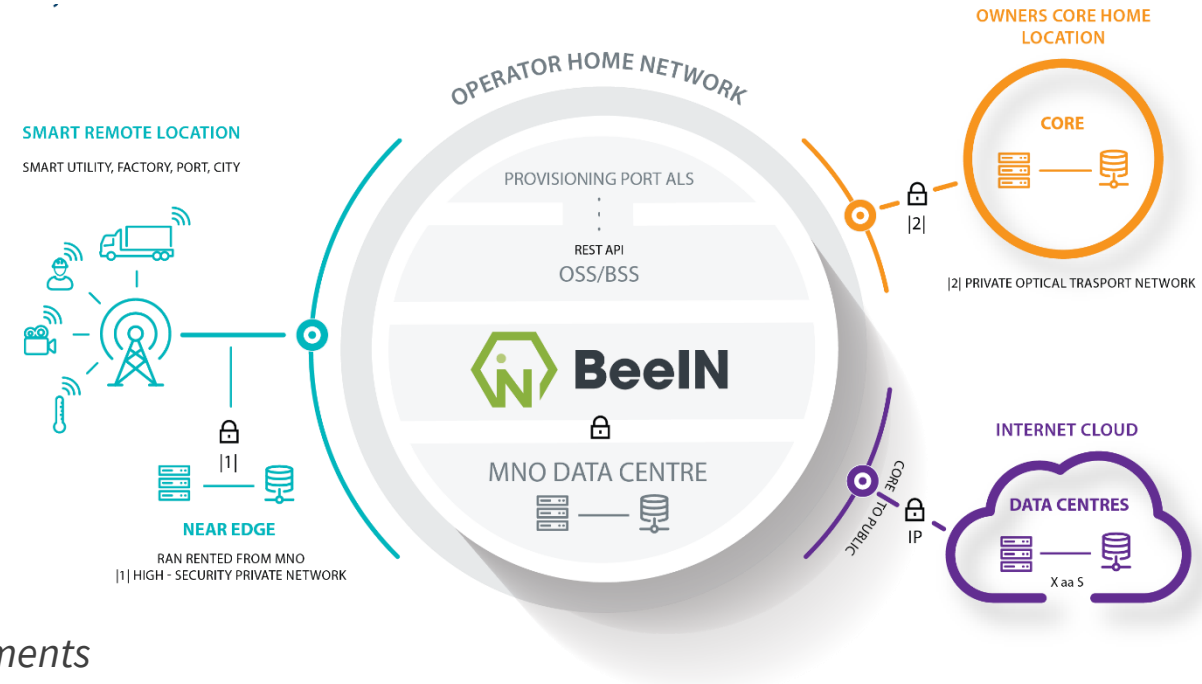
Our company in a nutshell

S&t

Part of S&T family
Strong tradition
in industry-grade
System Integration

SLA

Role of Digital Operator
Provide comprehensive
IT/OT/ICT infrastructure
With *Service Level Agreements*

P,L&M

Focus on the sustainable future of (only) 3 Industry Verticals
Electric **P**ower – **L**ogistics and Smart **M**anufacturing

SMART REMOTE LOCATION

SMART UTILITY, FACTORY, PORT, CITY

OPERATOR HOME NETWORK

PROVISIONING PORT ALS

REST API
OSS/BSS

BeeIN

MNO DATA CENTRE

NEAR EDGE

RAN RENTED FROM MNO
|1| HIGH - SECURITY PRIVATE NETWORK

OWNERS CORE HOME LOCATION

CORE

|2|

|2| PRIVATE OPTICAL TRASPORT NETWORK

INTERNET CLOUD

DATA CENTRES

X aa S

CORE TO PUBLIC
IP

Thank You

BeeIN