VII Simpósio Internacional de Excelência em Produção
Soluções Smart para a Indústria

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Logo da Empresa

Unrestricted

Digitalization changes everything

Customer benefits and Industry trends

Efficiency

- Resource and energy efficiency
- Demanded product/quantity
- …

Flexibility

- Individualized mass production
- Volatile markets
- …

Quality

- Closed-loop quality
- Traceability
- …

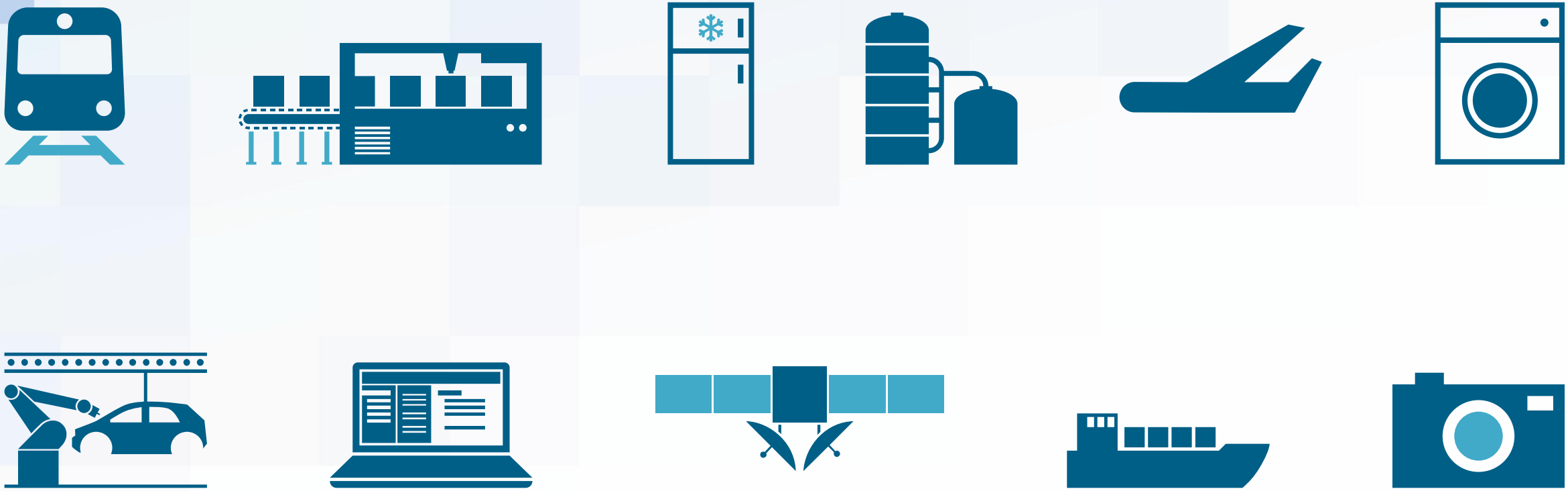
Time-to-market

- Fast innovation
- More complex products
- Lifecycle Management
- …

Security

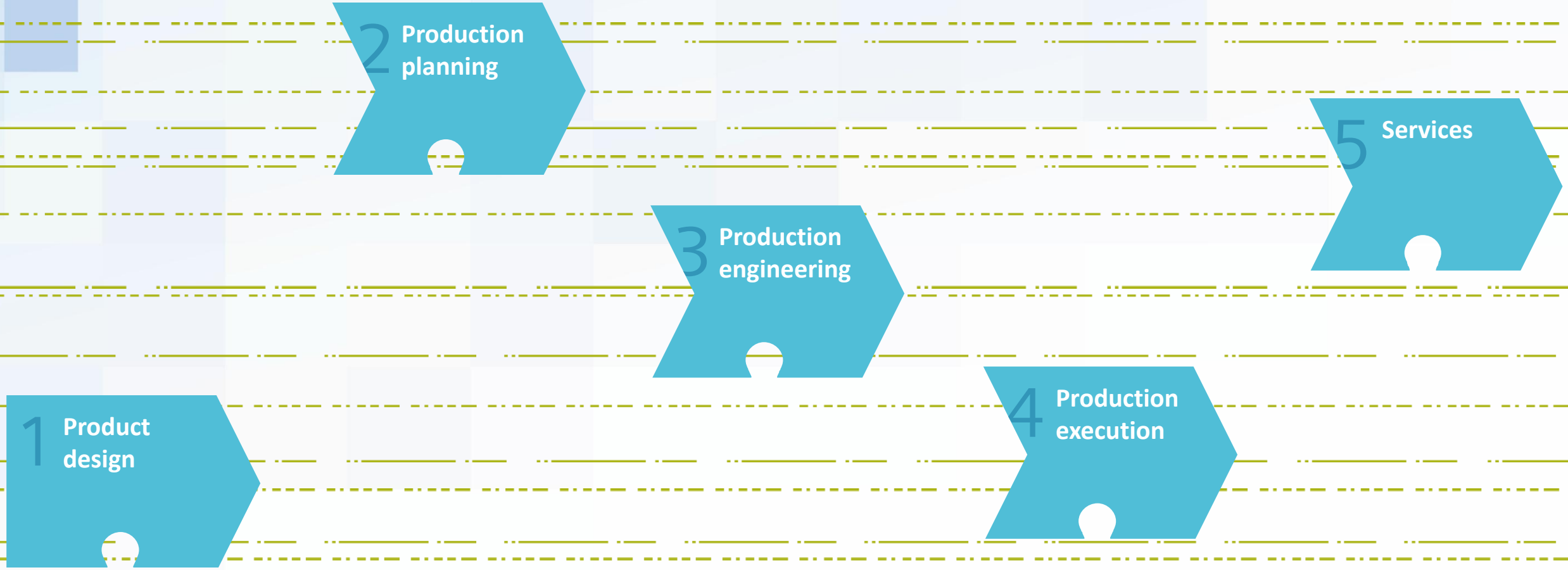
HSSE – Health & Safety | Environment | Regulations/Standard | …

Valid for all kind of industries…



Simply focusing in more automation is not enough

It is necessary to integrate and digitalize the entire value chain



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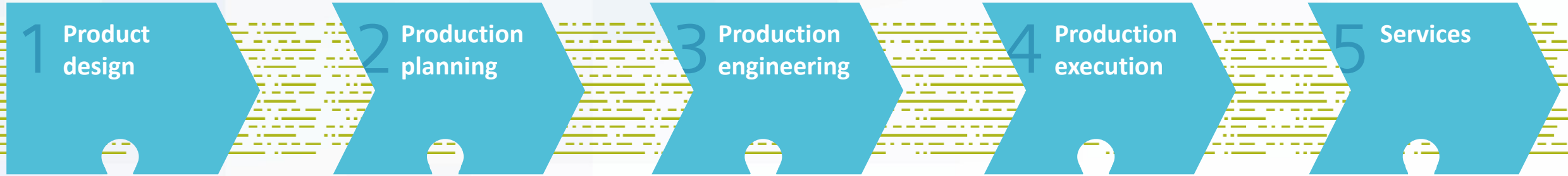
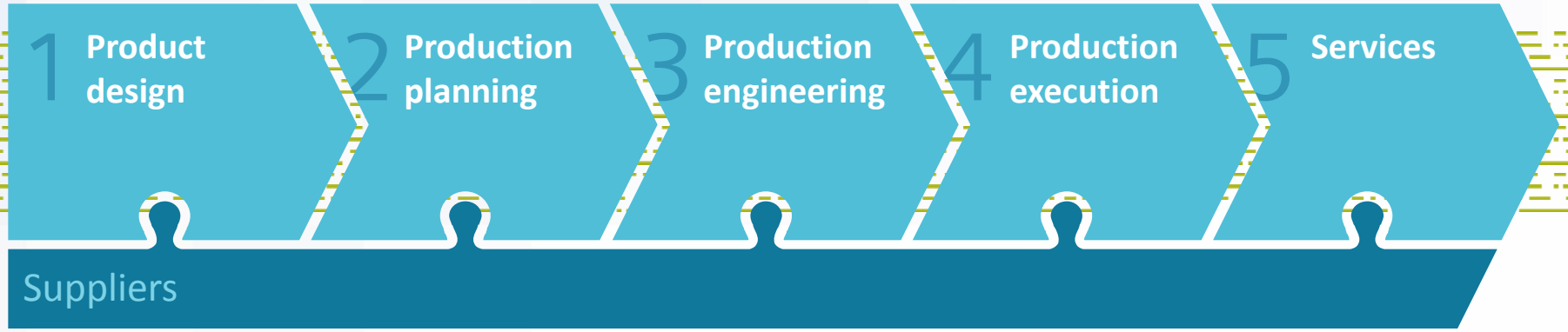
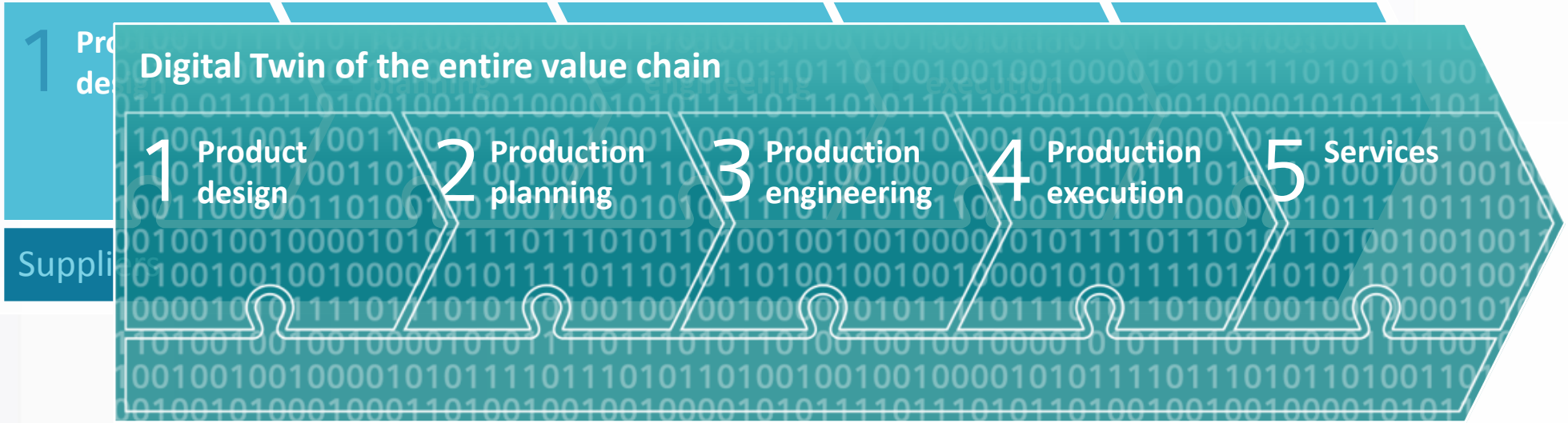


The holistic approach



Holistic approach

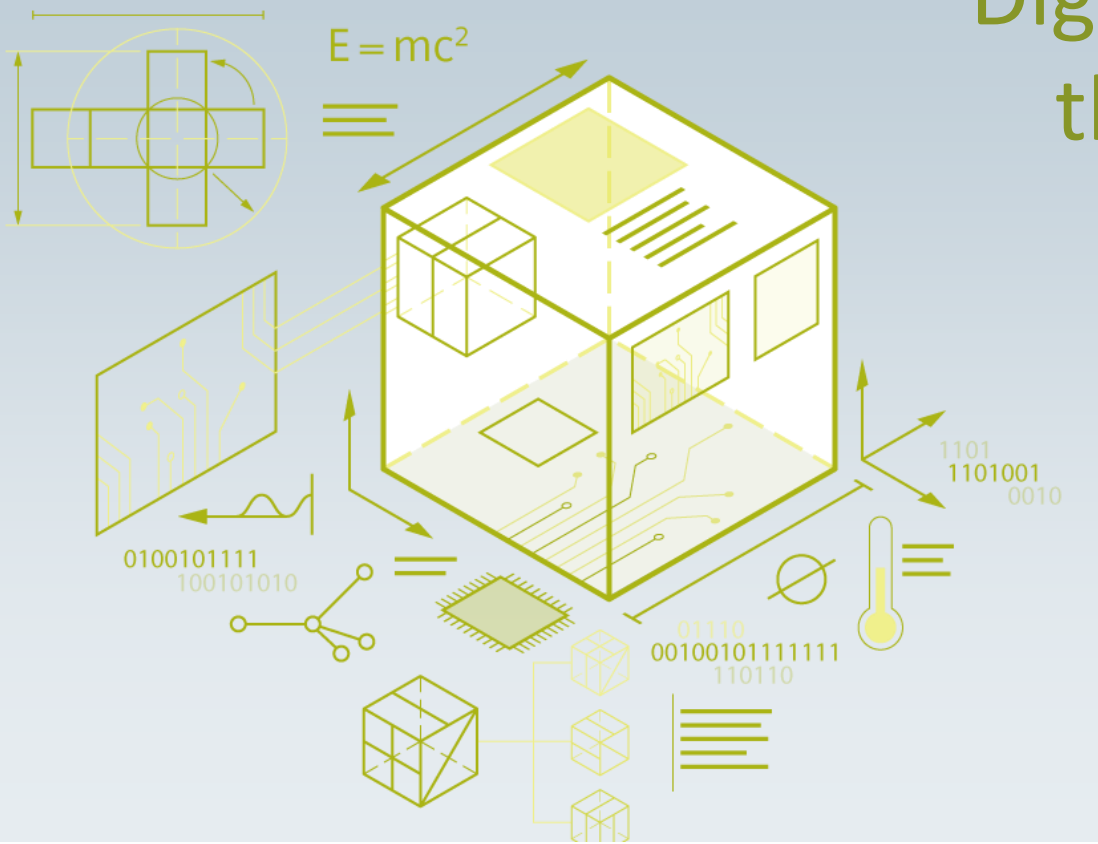


1 **Product design**

2

Suppliers

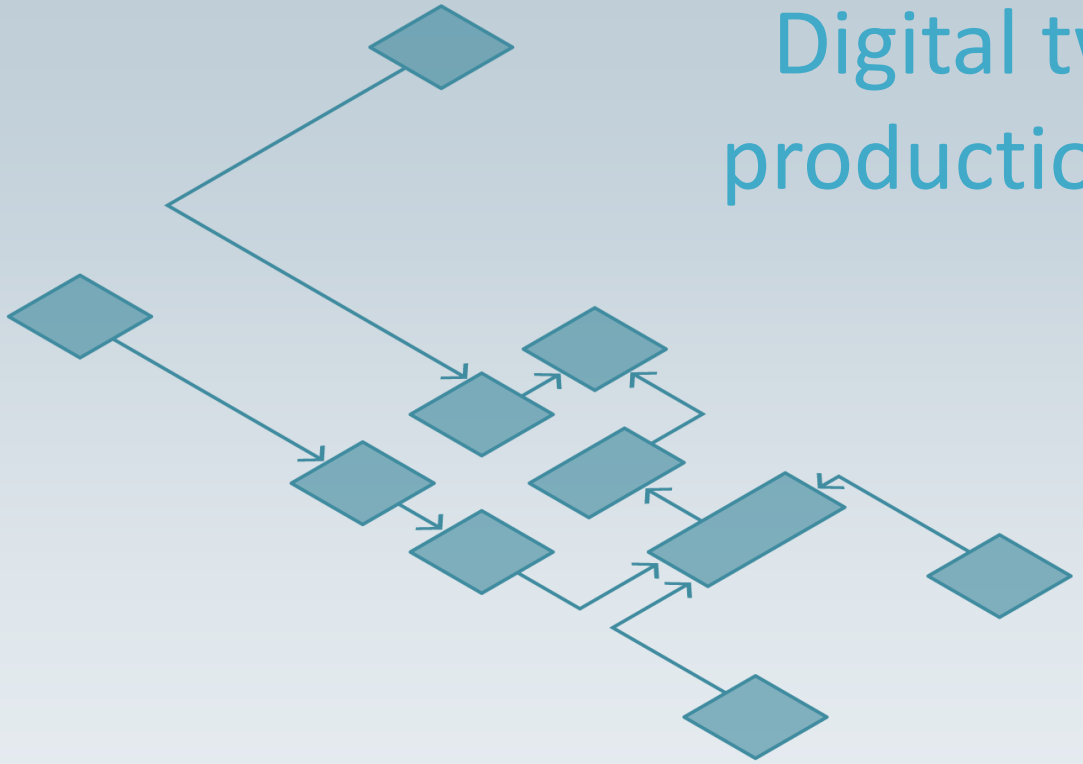
Digital twin of the product



Extending the Digital Twin to cover plant and process

2 Production planning

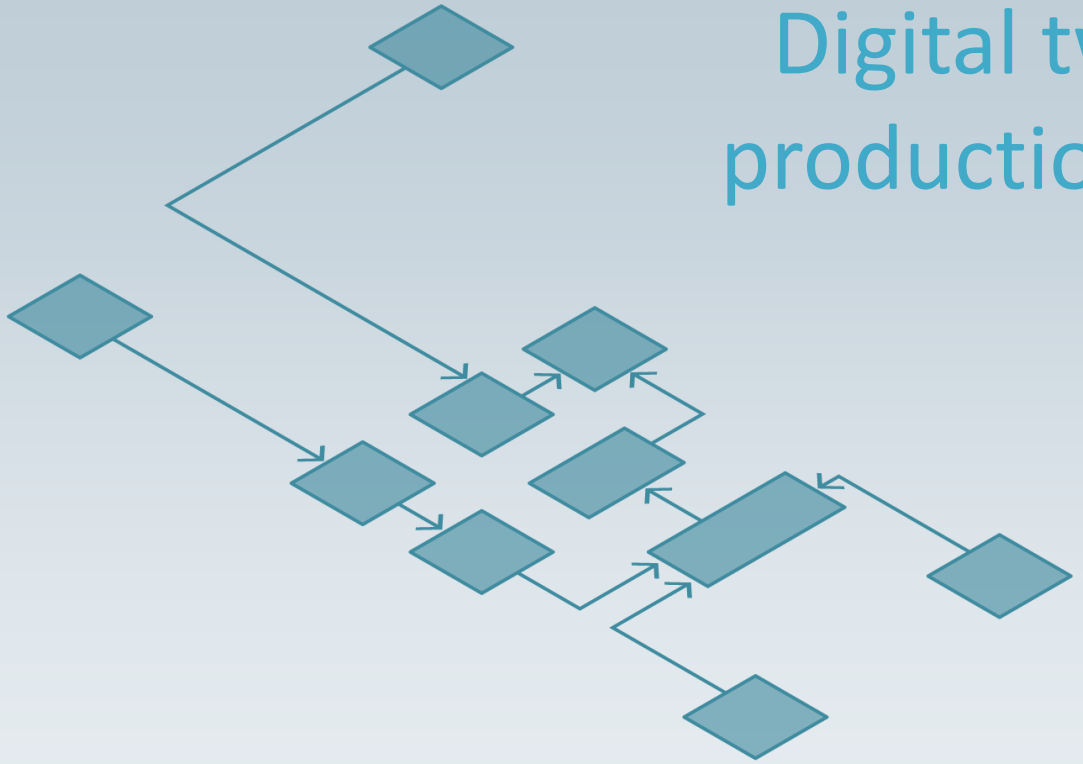
3



Digital twin of the production process

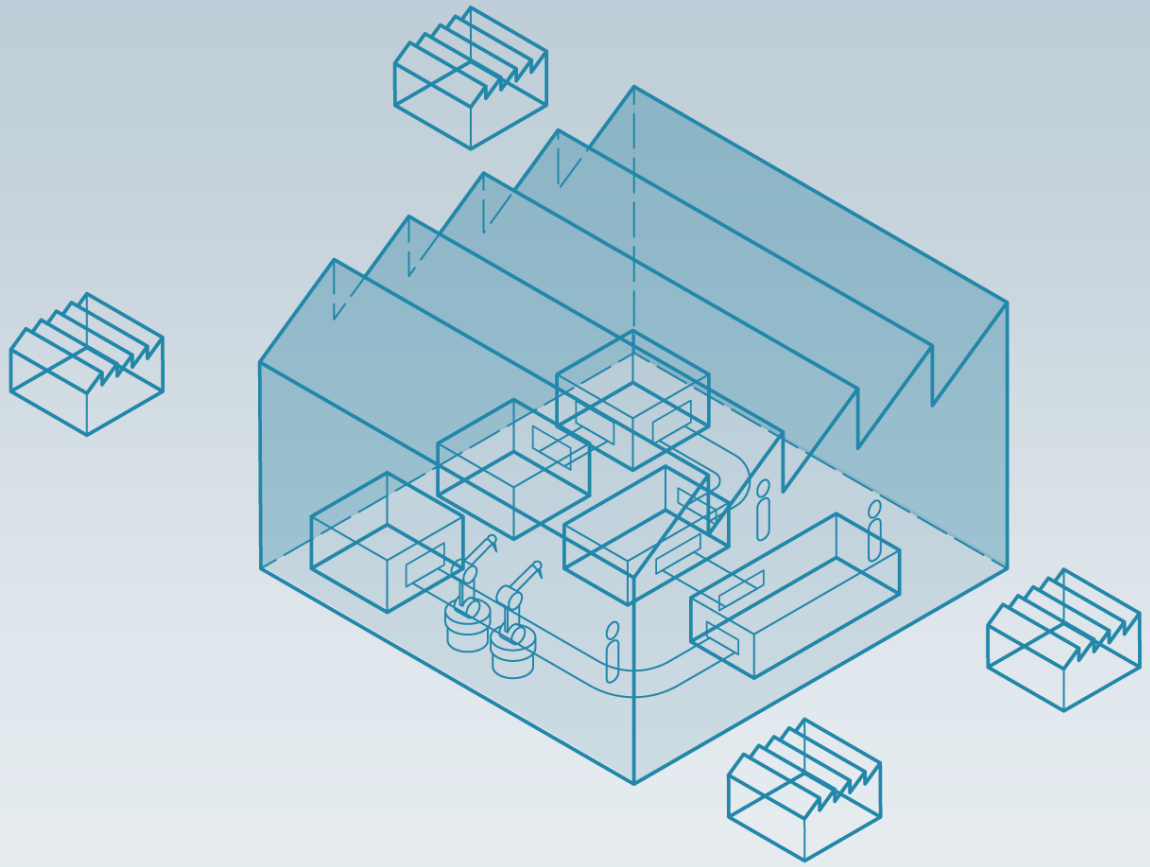
2 **Production planning** 3

Digital twin of the production process



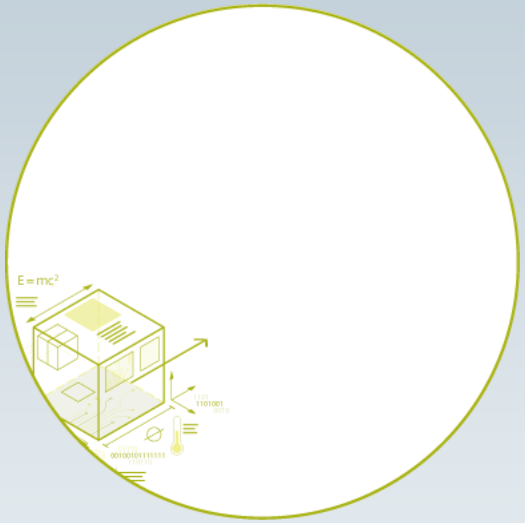
Integrated Mechatronics Engineering for Automation

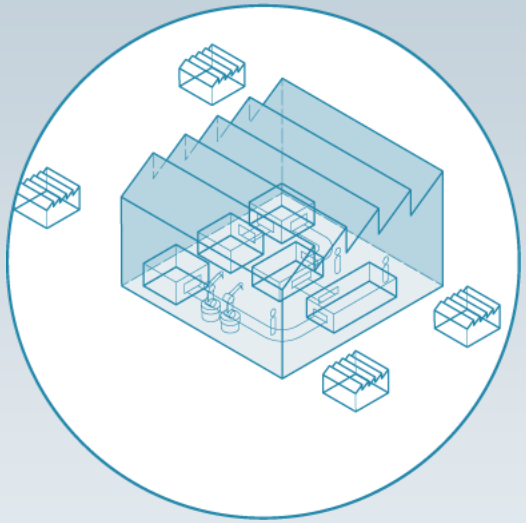
3 **Production engineering** 4



Integrating technical domain into one data model

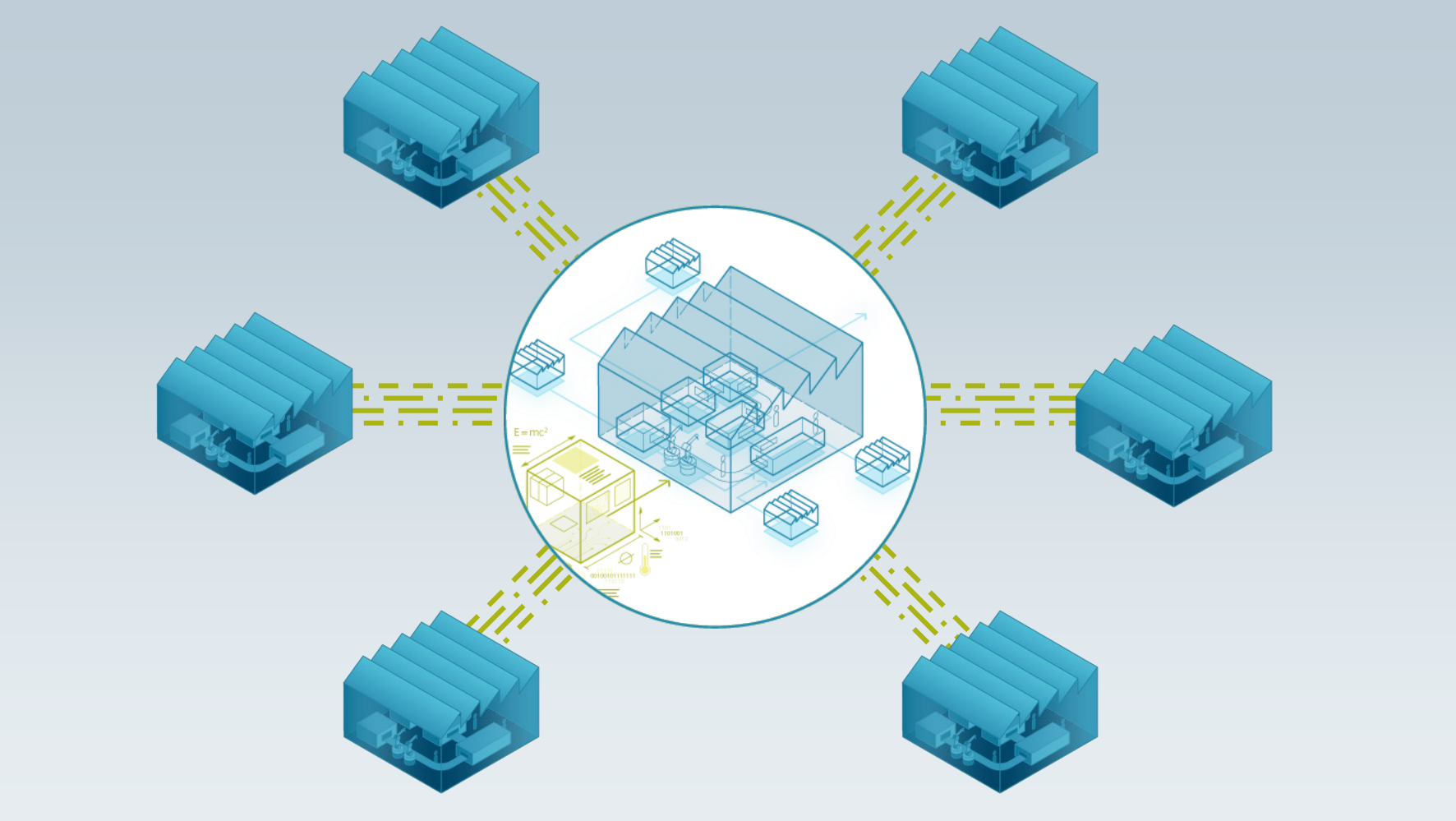
3 **Production engineering** 4





Publishing the optimized digital twin to all stakeholders through collaboration platform Teamcenter

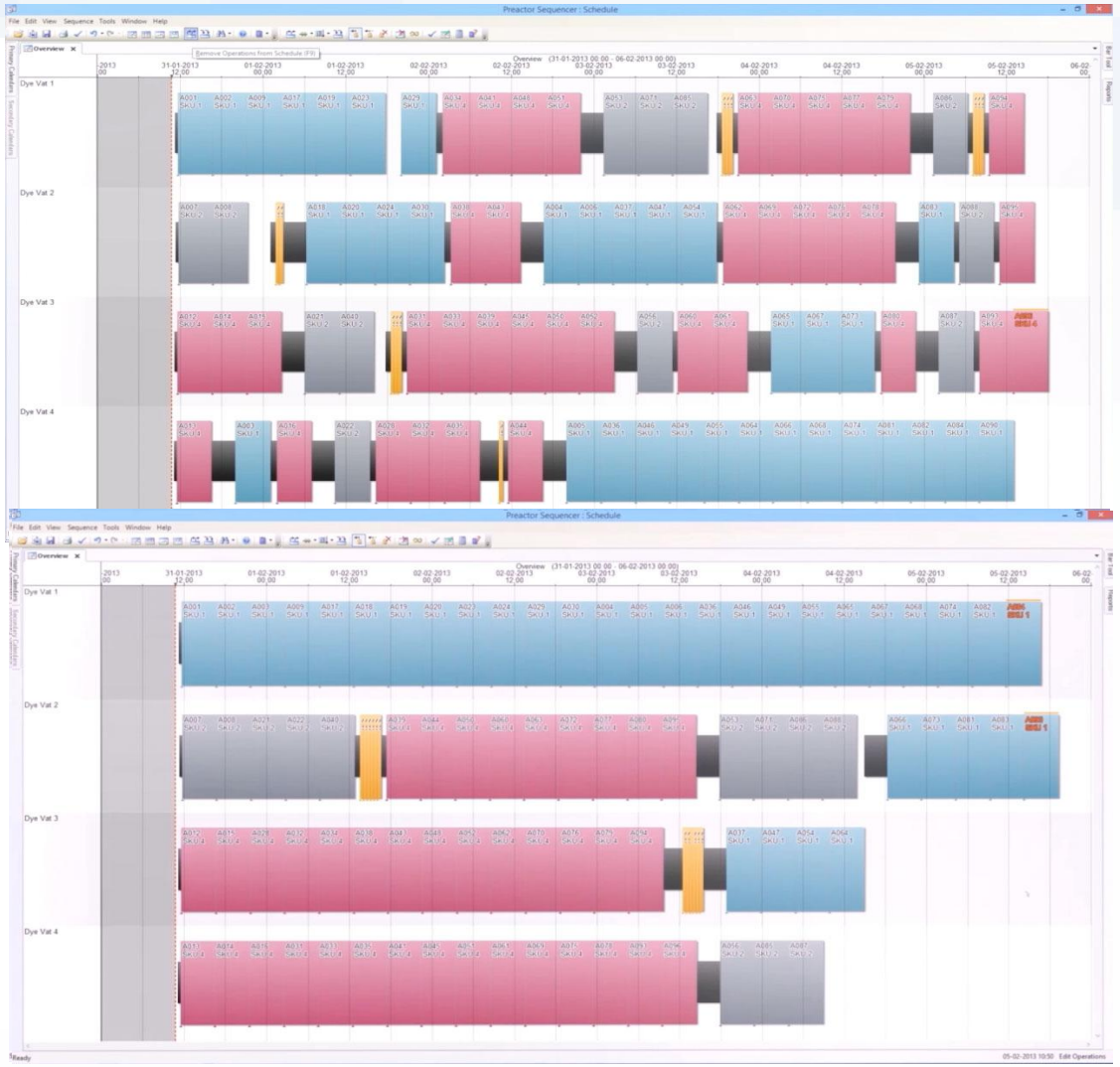
3 Production engineering 4



MES and TIA coordinate the manufacture of individualized products

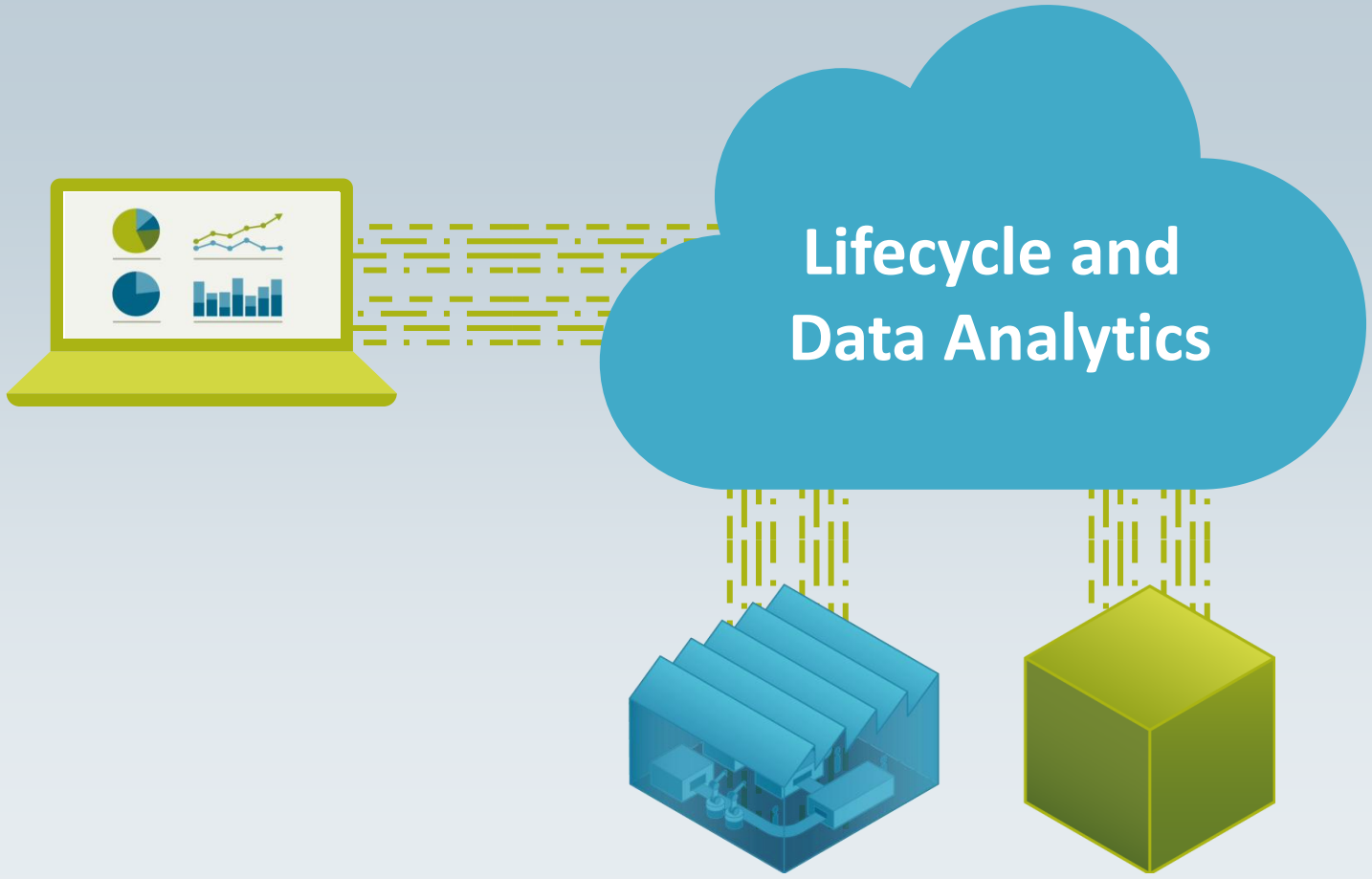
4 Production execution

5



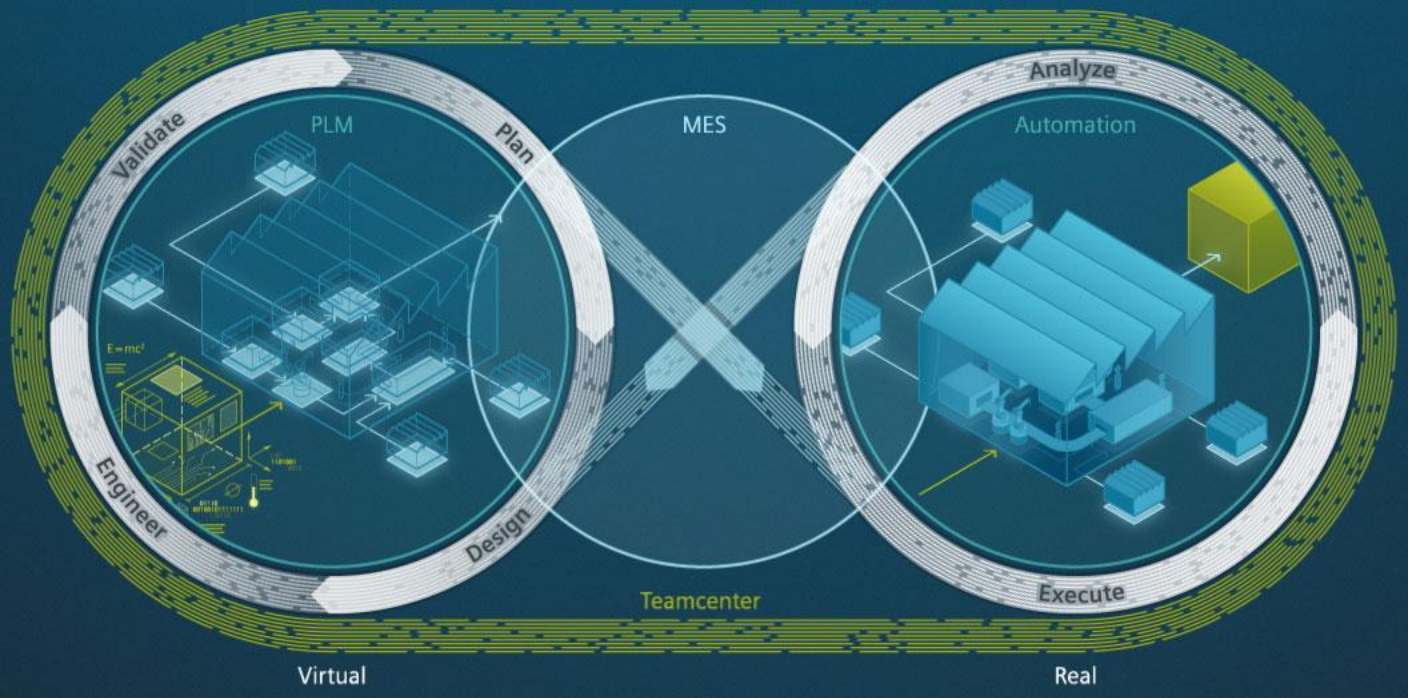
Predictive lifecycle analytics

5 Services



Closed Loop Manufacturing

SIEMENS



Case 1: Digital Twin do Produto

OBJETIVOS

Integrar engenharias de desenvolvimento e produto

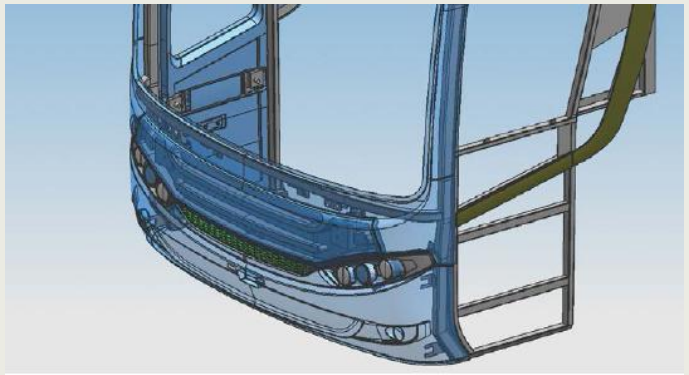
Otimizar o fluxo de trabalho

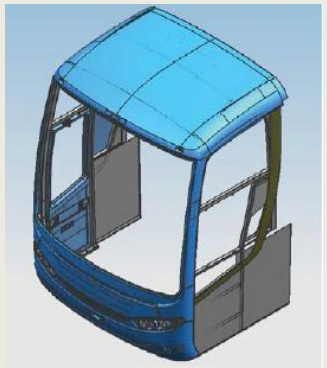
Diminuir o retrabalho e a perda de informações entre todas as engenharias

RESULTADOS

Redução do tempo de desenvolvimento de projetos de ***2 anos para 8 meses***

Redução de **70%** nos erros de engenharia





Case 2: Digital Twin do Produto

OBJETIVOS

Redução do tempo de colocação do produto no mercado

Redução de custos

Desenvolvimento de novos produtos

RESULTADOS

Redução do tempo de desenvolvimento de projetos de *2 anos para 8 meses*

Redução de 70% nos erros de engenharia

Case 3: Virtual commissioning

OBJETIVOS

Aumentar a competitividade dos serviços oferecidos

Melhorar a margem de projetos realizados

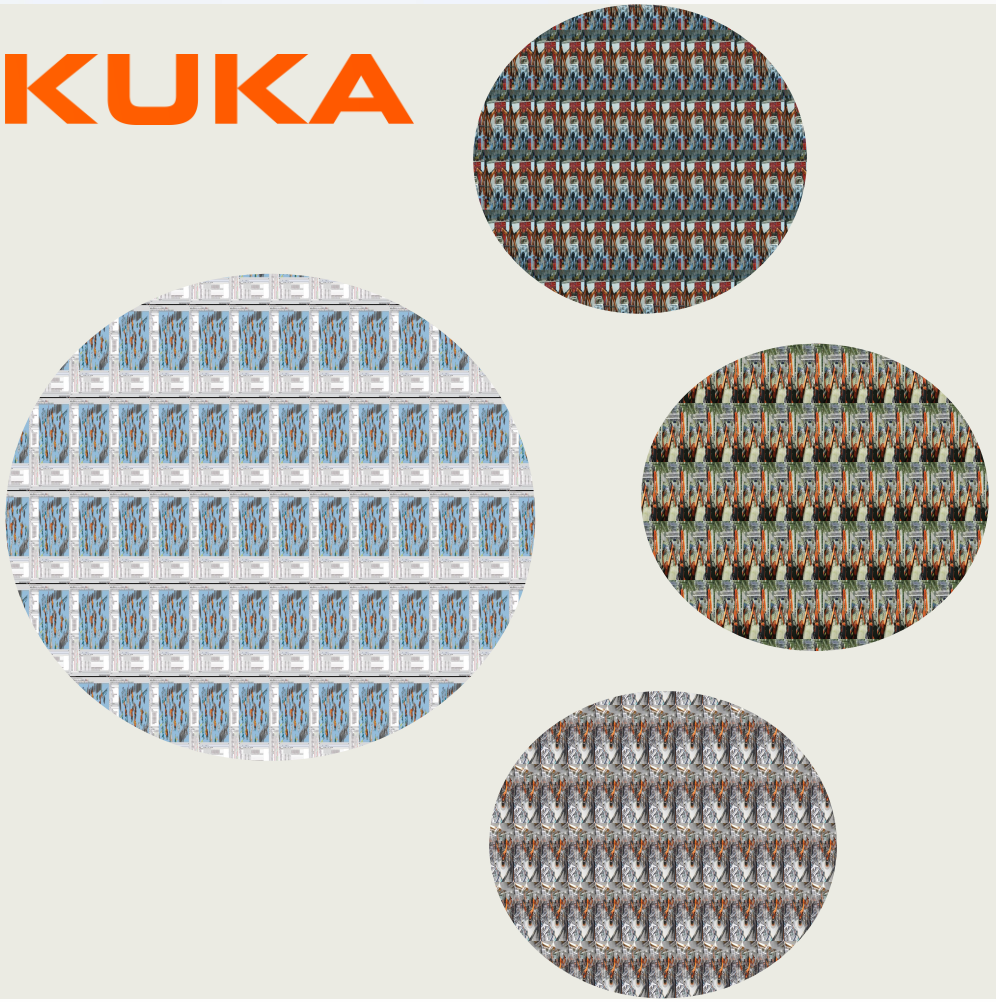
RESULTADOS

Redução de 66% de tempo de comissionamento

Redução de 43% do número de pessoas

98% das células de trabalho robóticas prontas antes de irem para o chão de fábrica

KUKA



Developed by Siemens, OEMs, end customers and App developers

MindApps

- Asset transparency and analytical insights, e.g. predictive maintenance
- Subscription based pricing model
- Fleet management

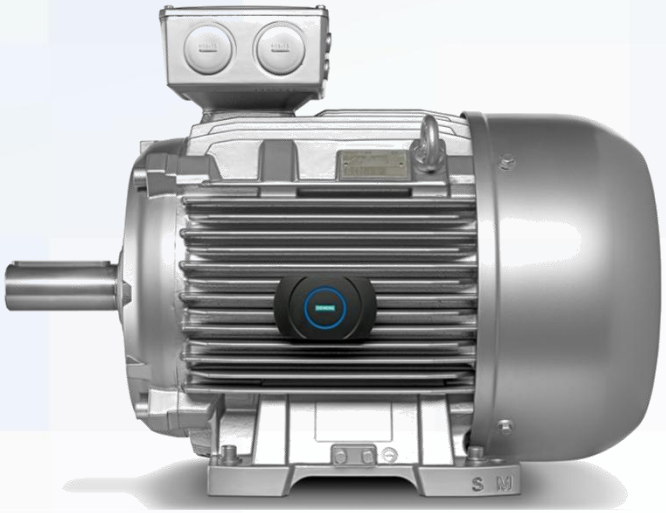
MindSphere

- Open interface for development of customer specific apps (MindApps)
- Various cloud infrastructures: Public, private or on-premise

MindConnect

- Open standards (e.g. OPC UA) for connectivity (also to 3rd party products)
- Plug and play connection of Siemens products

Case 4: IoT and Mindsphere



Smart Motors – connected to MindSphere

- Integrated vibration, magnetic flux and temperature sensors
- Reduce down times to increase fleet and plant availability and reliability
- Optimize operation efficiency
- Maintenance and servicing activities for early planning and optimization