

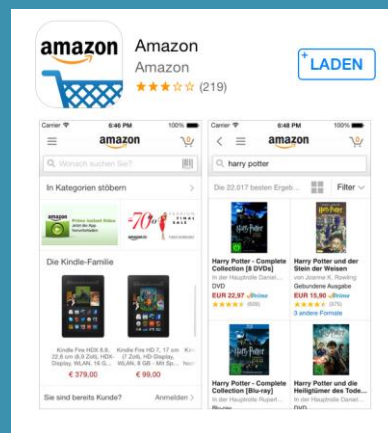
# From product ideation to optimized production

How Digitalization affects the Brewing Industry

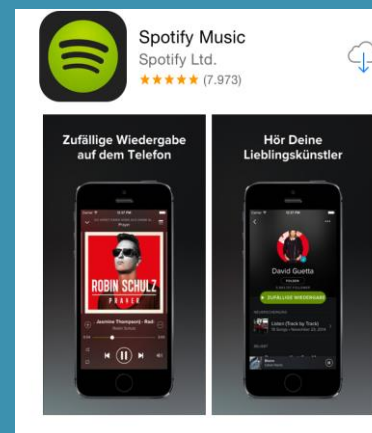


# New business models in the Internet age

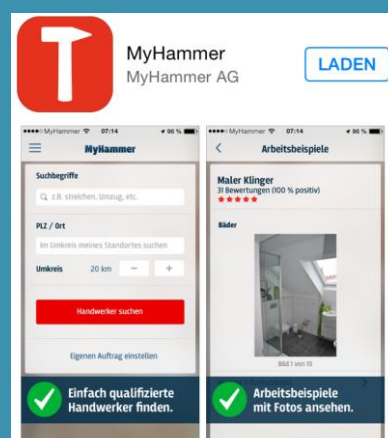
## From bookstore to e-book



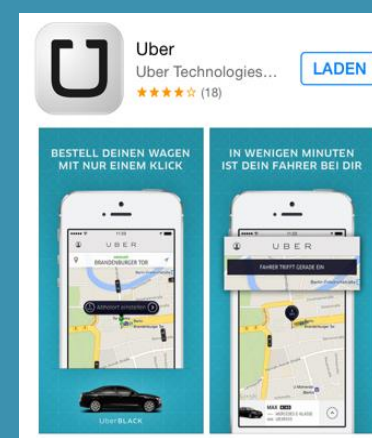
## From record store to streaming



## From yellow pages to marketplace



## From taxi to ride-sharing



## ... and the Brewing Industry?

- Cross Brewery / Region Comparison
- Specification & Formulation Management
- Common IT systems reduce total cost of ownership

Standardization of the  
**Value Chain**



Reduce

**Time to Market**

- Greater ability to follow trends
- Craft and Crafty brands
- Premium Brands

- Reduce manual work end errors
- Enable transformation of data into usable information
- Footprint for Plant functionalities

Integration of  
**Shop Floor and  
Top Floor**



Enterprise

**Manufacturing Intelligence**

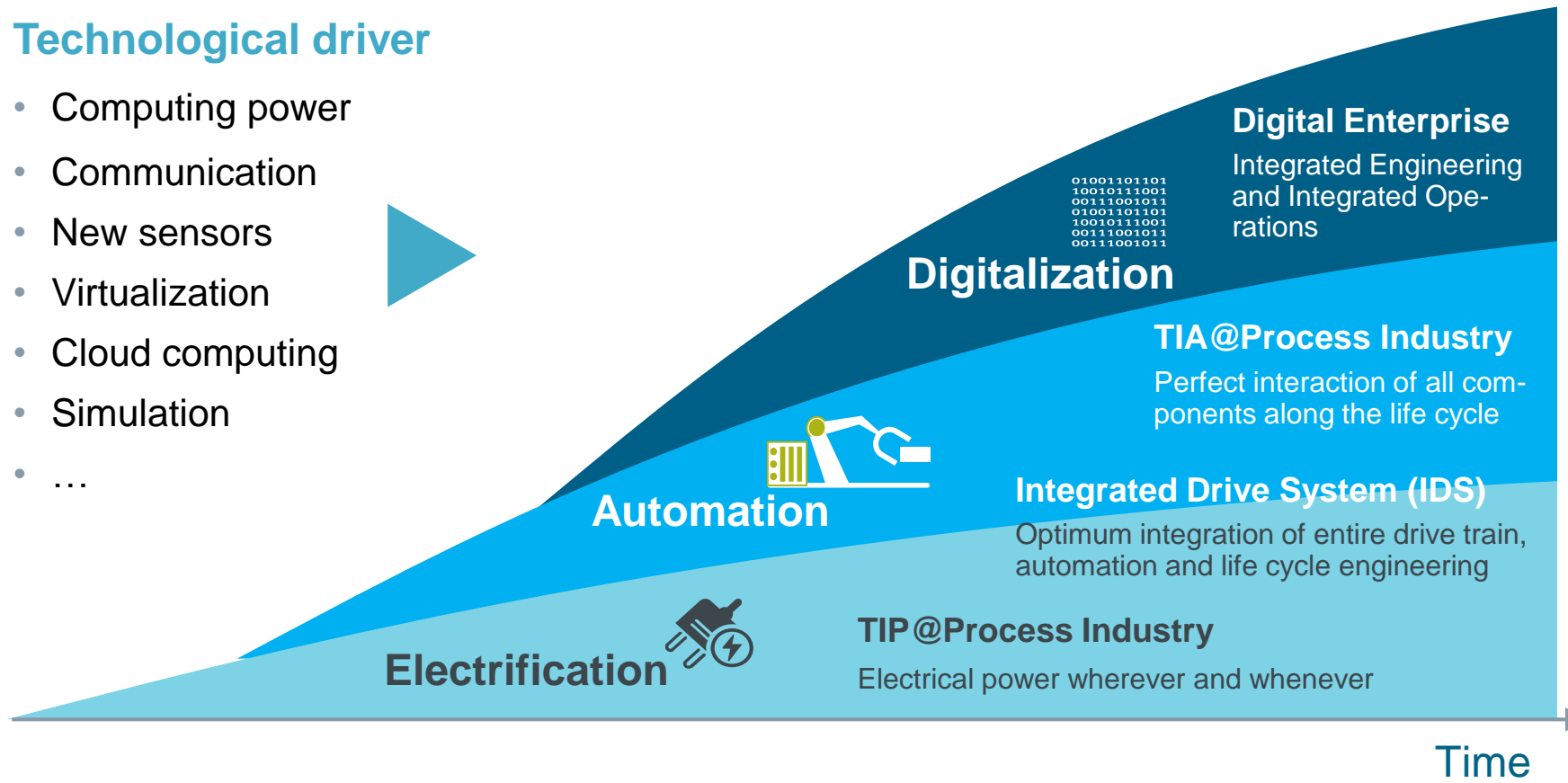
- KPIs and Continuous Improvement
- Drive Cost Reductions
- Enable Mobility for Directors

# “Digitalization is the next level to yield productivity within Food & Beverage”

SIEMENS

## Technological driver

- Computing power
- Communication
- New sensors
- Virtualization
- Cloud computing
- Simulation
- ...

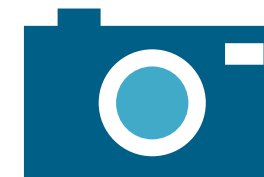
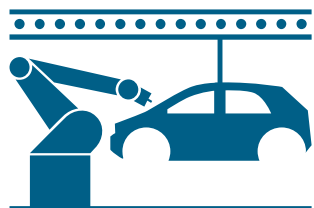
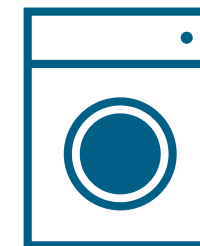
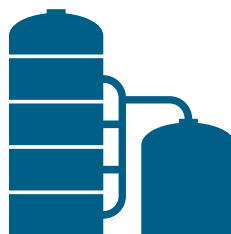
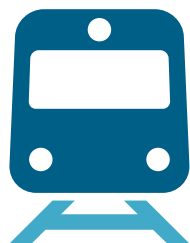


Next level of productivity

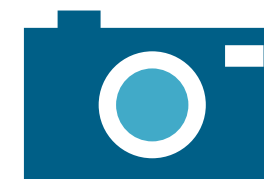
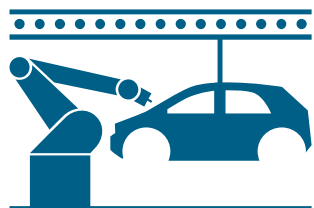
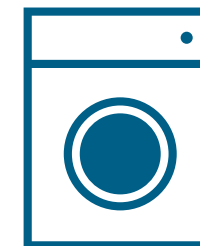
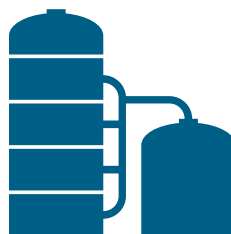
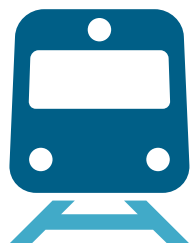


Experienced partner for Automation and Electrification

Pioneer for Digitalization in industry

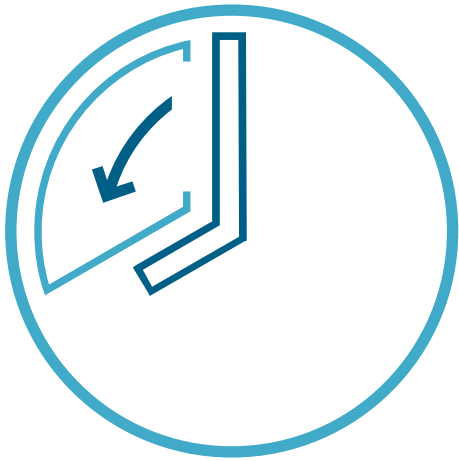


# Looking at Food & Beverage (and Beer Production)...

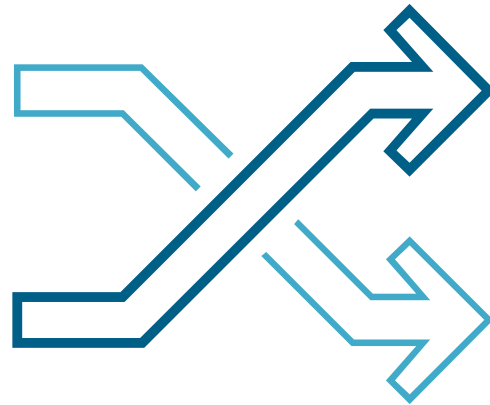


... Breweries need to improve in terms of speed, flexibility, quality and efficiency

SIEMENS



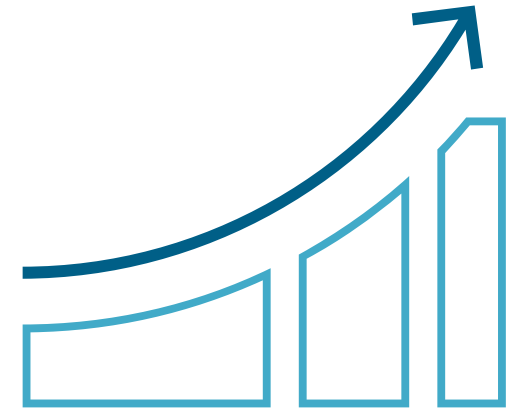
Speed



Flexibility



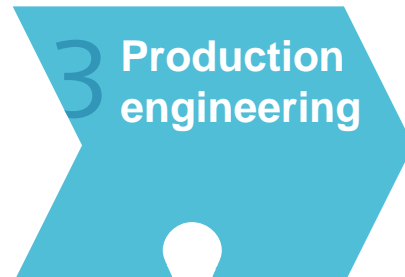
Quality



Efficiency

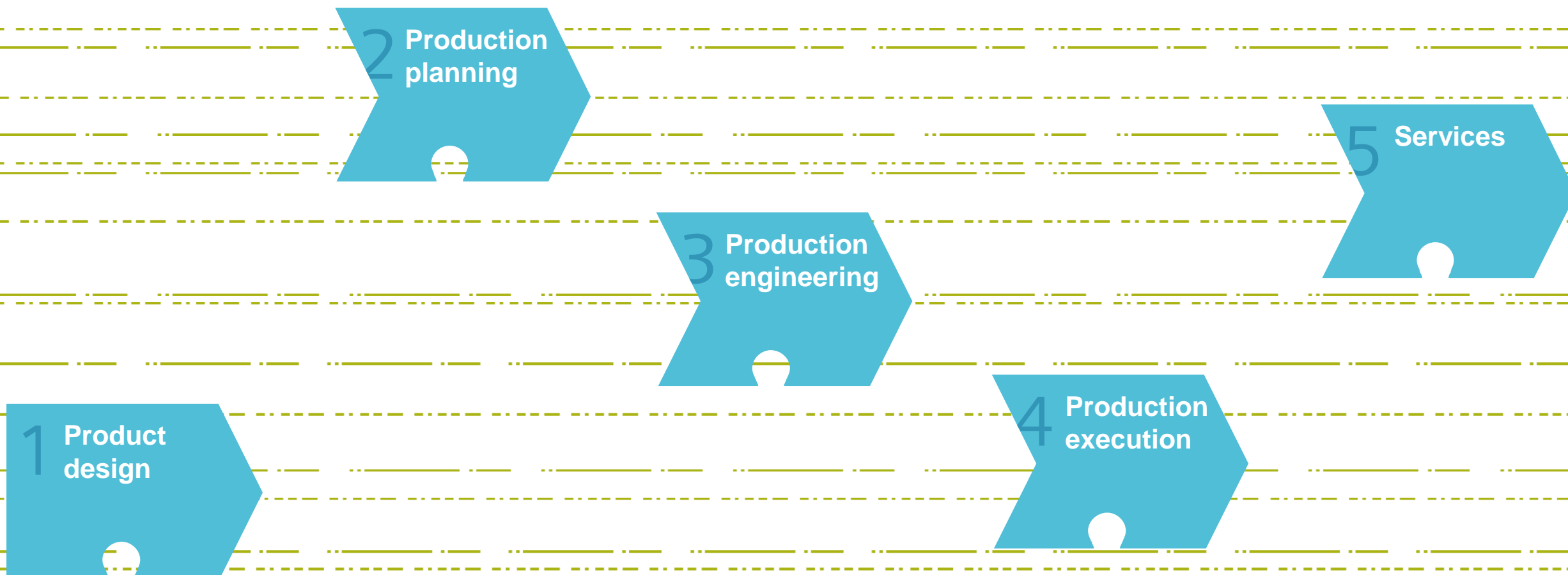
**Simply focusing on the automation aspect  
of production is not enough**

**SIEMENS**

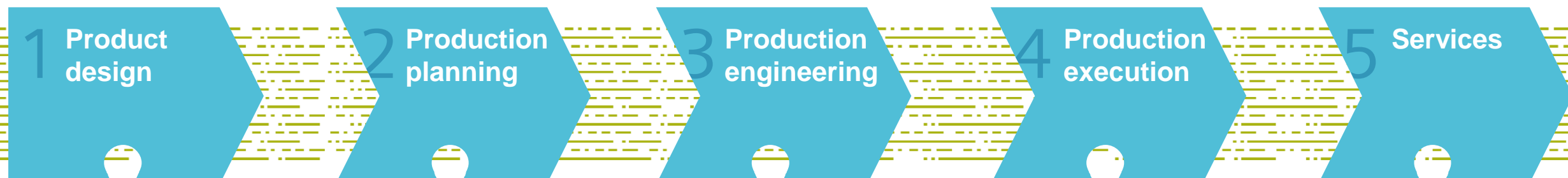




It is necessary to integrate and digitalize the entire value chain

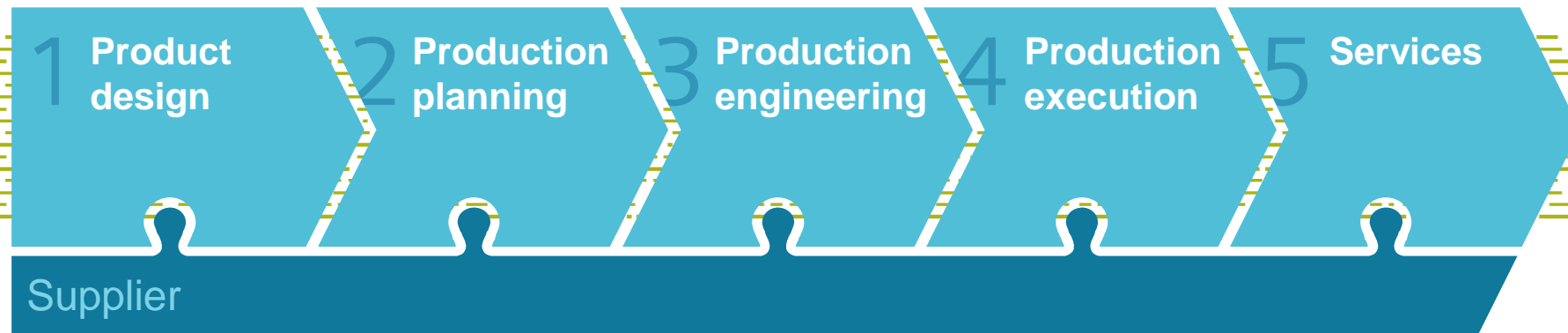


**It is necessary to integrate and digitalize the entire value chain**

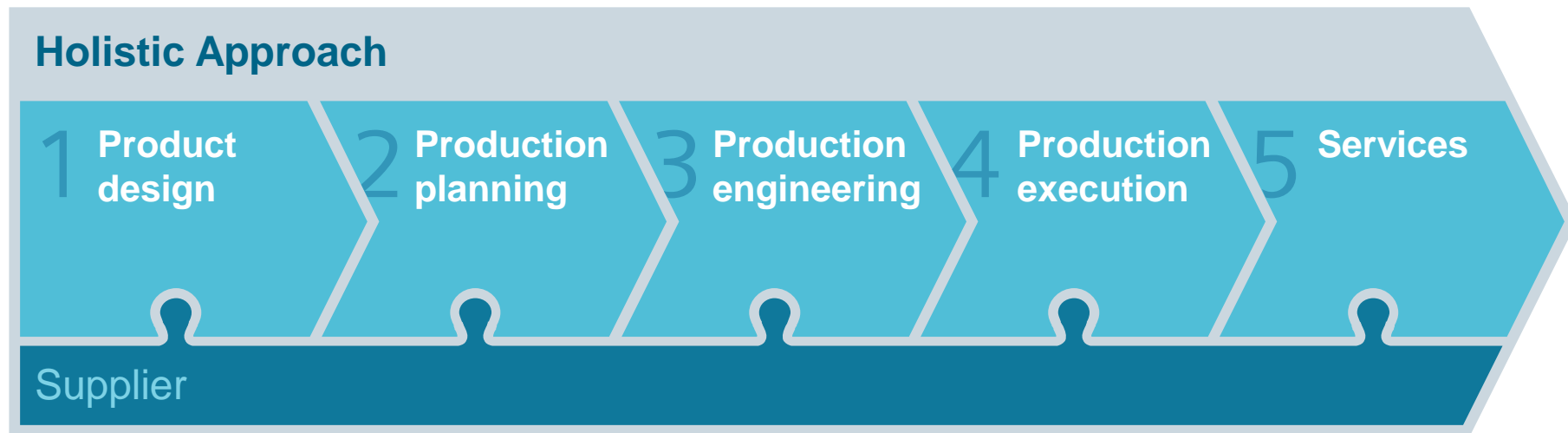


# The holistic approach

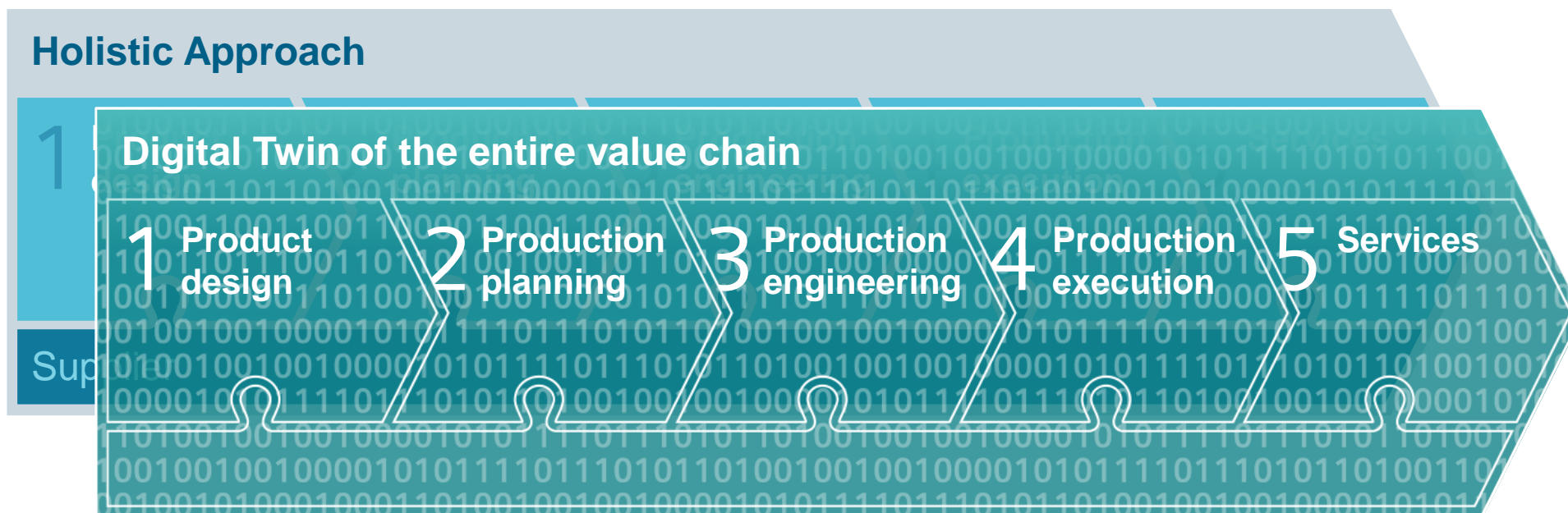
SIEMENS



# The holistic approach



# The holistic approach





# Digital Enterprise Software Suite – The Siemens answer to Industrie 4.0 requirements

**SIEMENS**

## PLM Software Portfolio

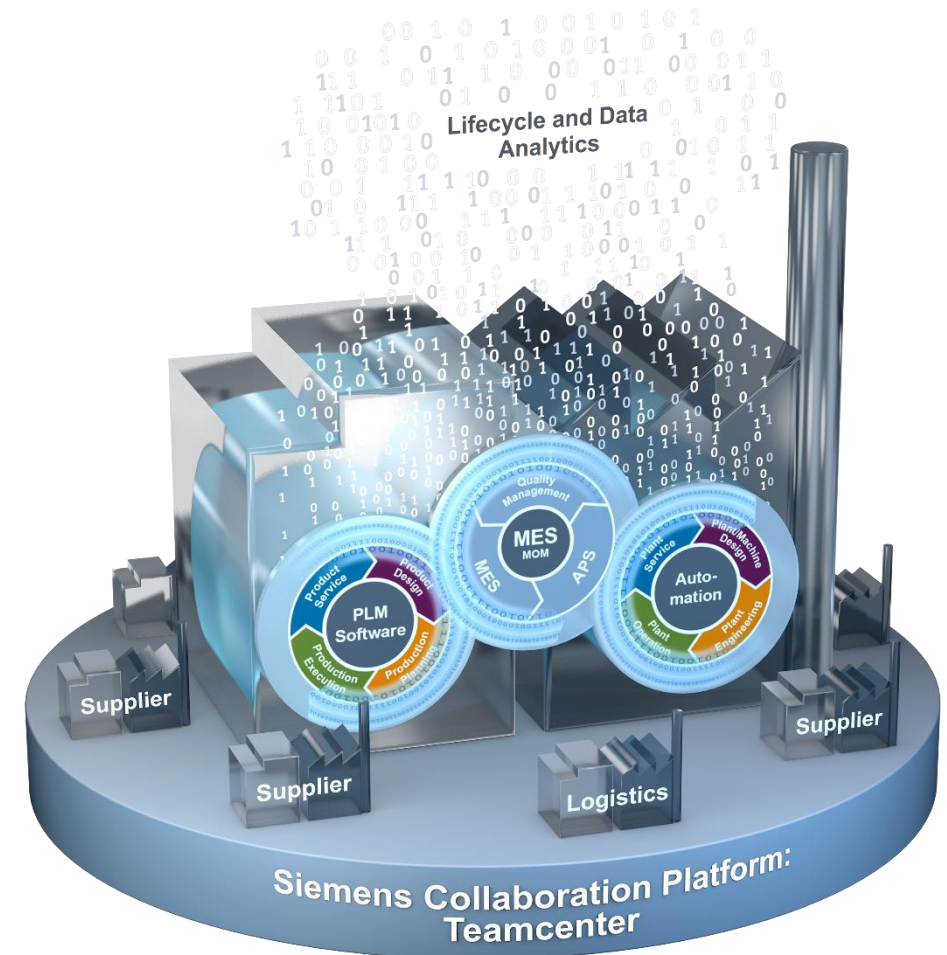
- Product Ideation, Exploration and Definition
- Process Development and Evaluation

## Integrated Automation Portfolio

- Integrated engineering and runtime for controllers, distributed I/O, HMI, drives, motion control and motors
- Industrial Safety and Security

## MOM Software Portfolio

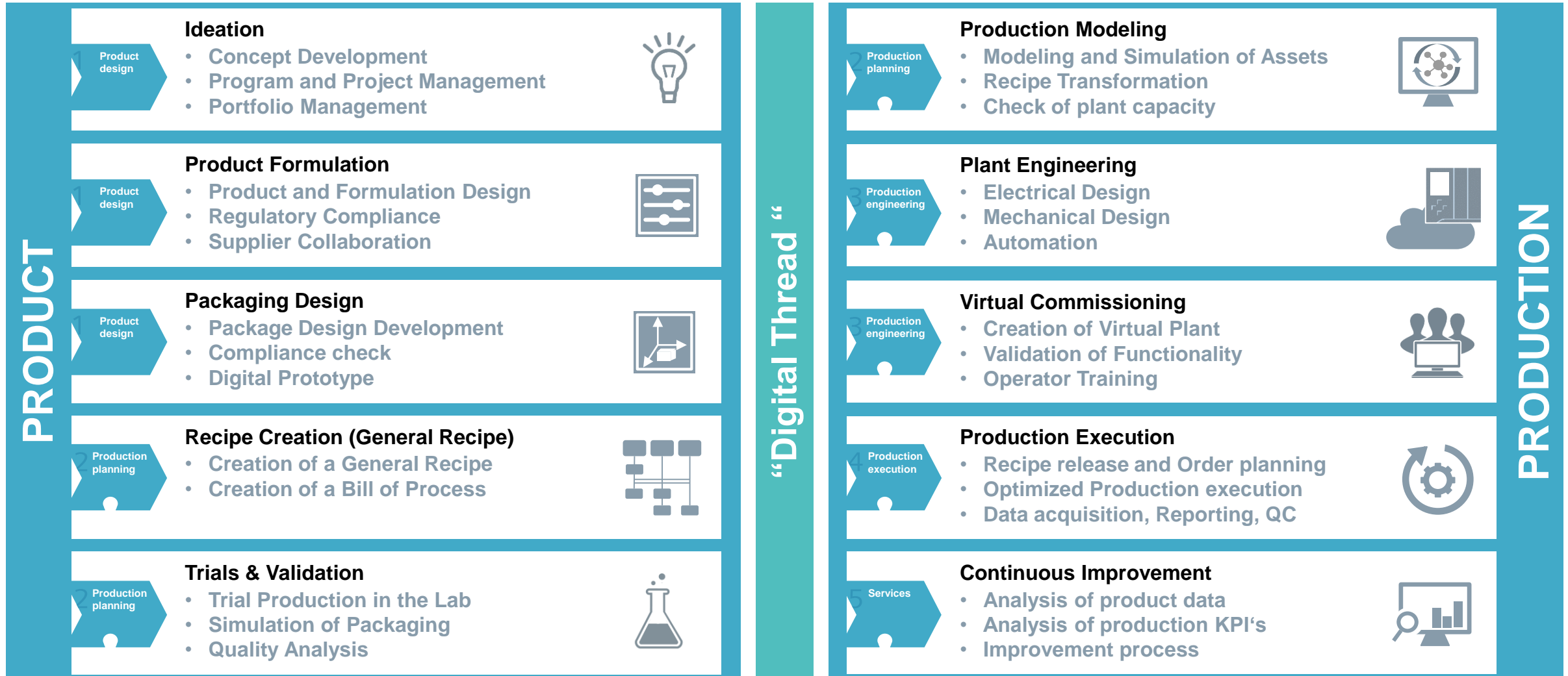
- Manufacturing Execution
- Planning & Scheduling
- Quality Management
- Manufacturing Intelligence
- SCADA / HMI / DCS



# The product and production life cycle – digital representation

# The “Digital Beer Production” – Holistic Approach from Ideation to the Finished Product

SIEMENS



# The “Digital Beer Production” – Holistic Approach from Ideation to the Finished Product

SIEMENS

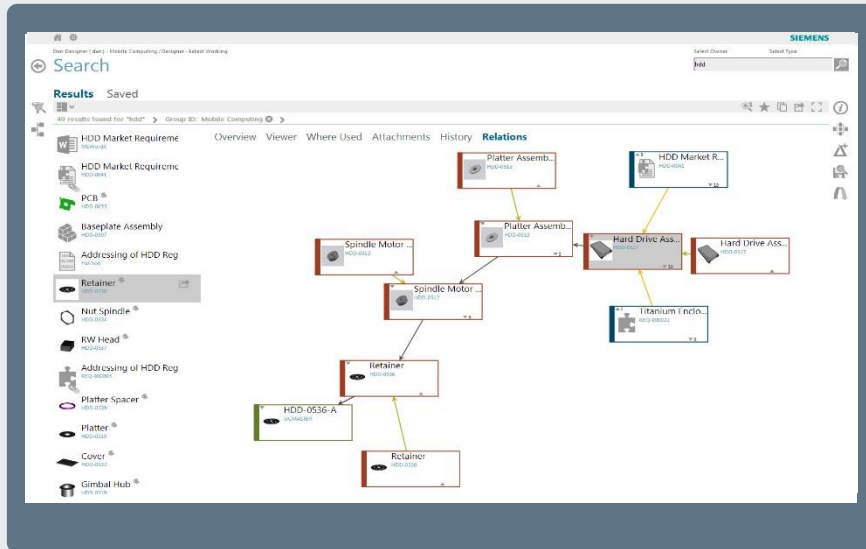
1 Product design

2 Production planning

3 Production engineering

4 Production execution

5 Services



- Optimize your product data and processes to improve collaboration and increase productivity
- A collaborative data platform is an essential tool for reaching this target
- All data and process definitions are available 24/7 – wherever you are
- Data and processes are always up to date – no risk to use deprecated information

# An example – creating and introducing a new product

SIEMENS



**... We need to  
create a new  
beverage for the  
event...**

- Which kind of beverage do we need?
- What's the audience at this event?
- How should the beverage taste?
- What about the brand and the product name?
- What about the cost and the price?
- Which quantity do we expect to sell?
- Where can we produce?
- What about the logistics?
- ...



# An example – creating and introducing a new product

SIEMENS

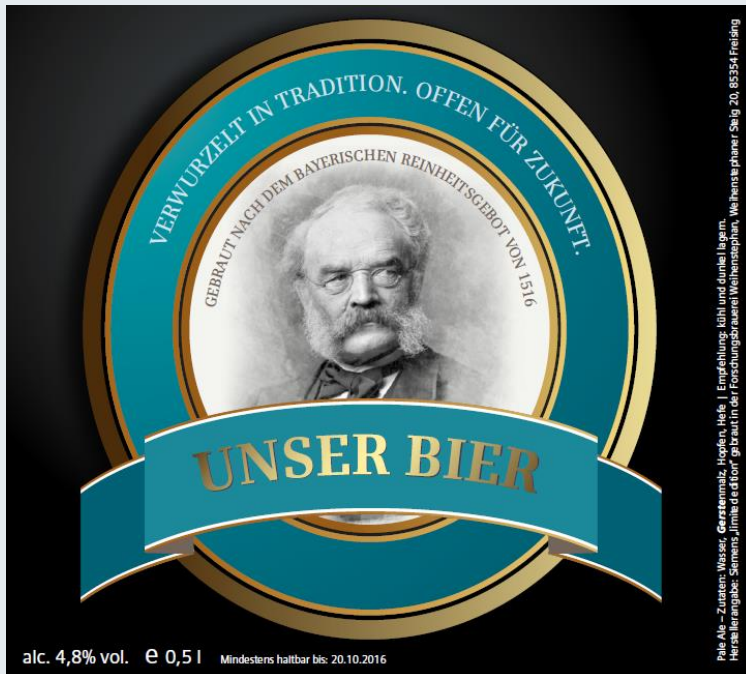
1 Product  
design

2 Production  
planning

3 Production  
engineering

4 Production  
execution

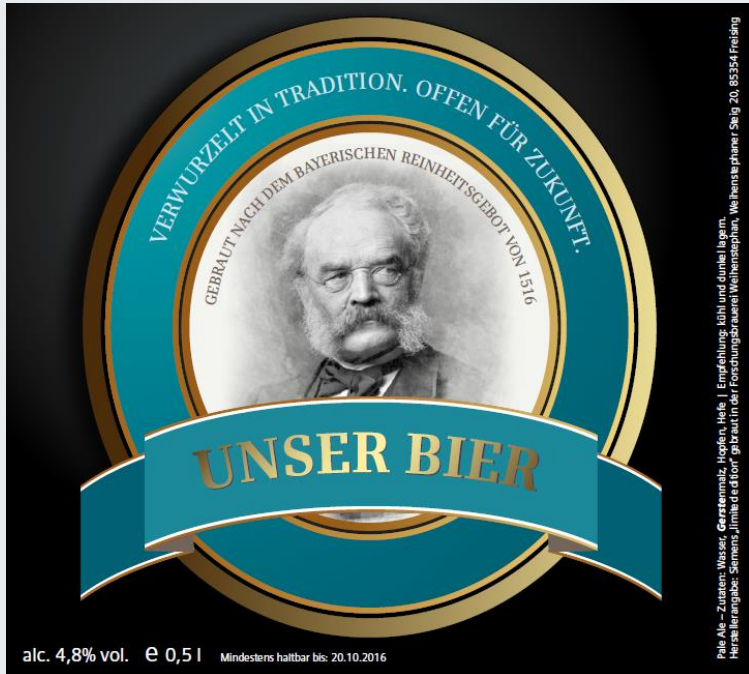
5 Services



- Ok, let's make a beer
- Let's look at the “market” and define the target group
- What about the taste?
  - Which raw material do we need?
  - Is there a basic recipe top be re-used?
  - Which quality gates do we apply?
- Label design – how should it look like?
- Which regulatory information needs to go onto the label?

# An example – creating and introducing a new product

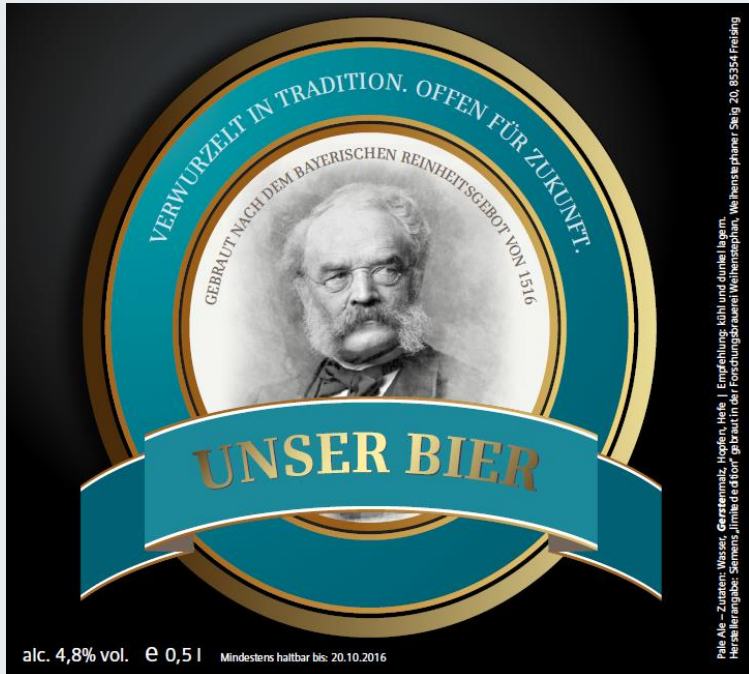
SIEMENS



- Create the recipe – what can be re-used?
- How to transform this into the production systems?
  - Which standards can be applied?
  - How will it appear to the operator?
  - Are there any specific work instructions?
- Do we have enough capacity in the desired plant?
  - Tanks occupation
  - Filling & Packaging

# An example – creating and introducing a new product

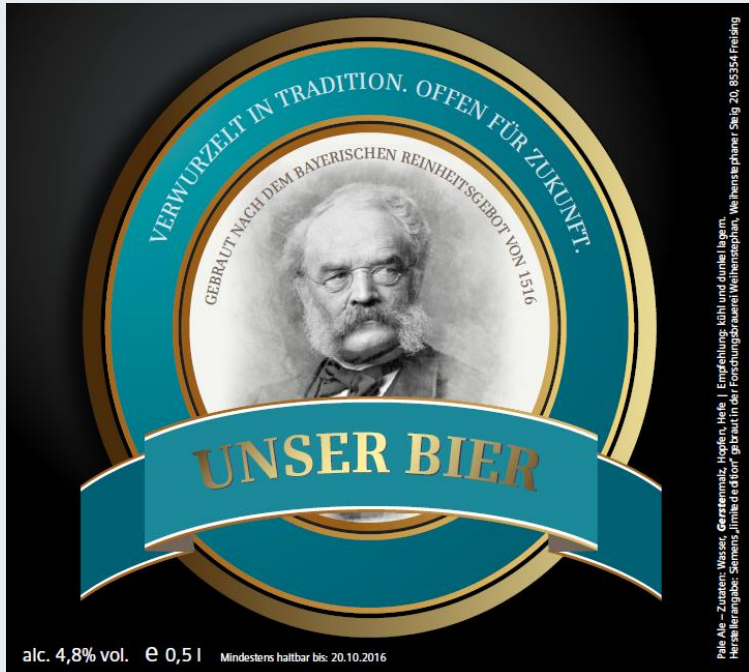
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- How can we efficiently engineer our production assets?
- How can we re-use data coming from the simulation models and ensure the correct capacity and workflows?
- Is there any possibility to enable a collaboration of different engineering teams across the globe?
- Can we test and validate the assets before they are shipped?
- What about the operator training? Can it be done based on virtual systems?

# An example – creating and introducing a new product

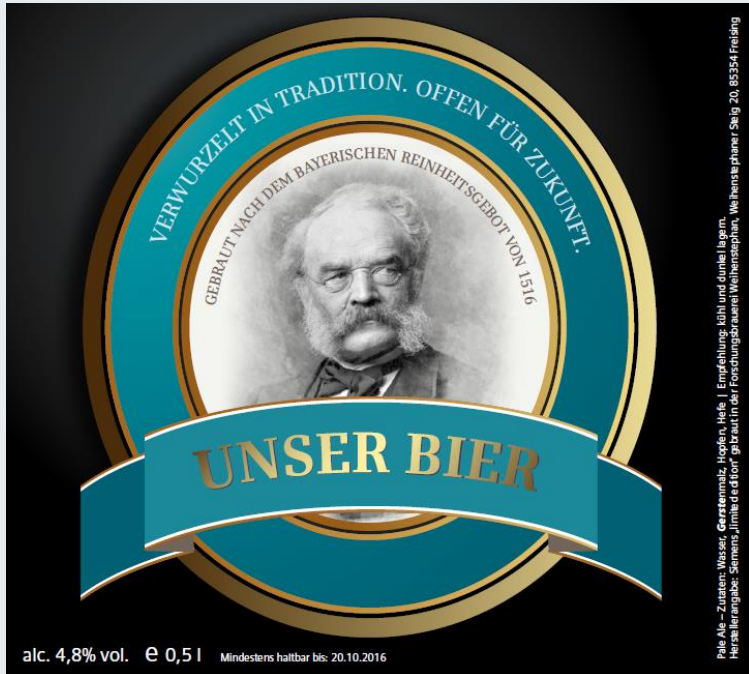
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- Ok, we are fine. Let's start the production of our beer
- How do we realize the connection between business and production, and create a production order?
- Which information needs to be transferred between business and production systems?
- Do we need a possibility for tracking & tracing?
- How do we contextualize our production data and create meaningful reports?
- How can we improve the next production batch?

# An example – creating and introducing a new product

SIEMENS



- Nice. Our beer is really good. We have additional request for new production runs.
  - What can be improved?
  - How did we do cost-wise? Is there any plant which can produce the same quality at lower costs?
- How can we ensure to always have enough capacity for our beer?
- In case we want to ship the beer to another country: what information needs to be changed on the label?
- In case we want to change the recipe: what is re-usable?

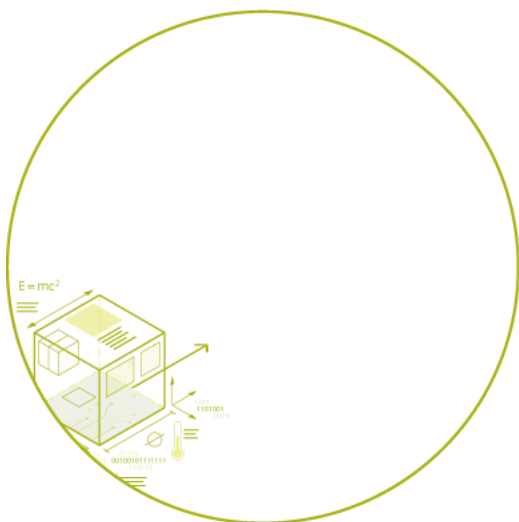


# Can all this be done manually?

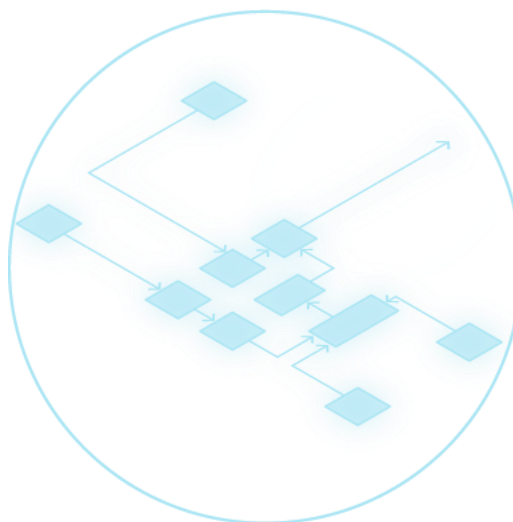
Most likely not...

# Integration in one unique data model shows the advantages of digitalization

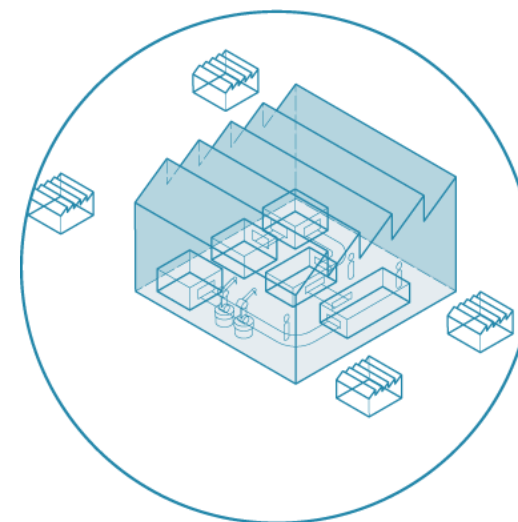
## Digital twin of the product



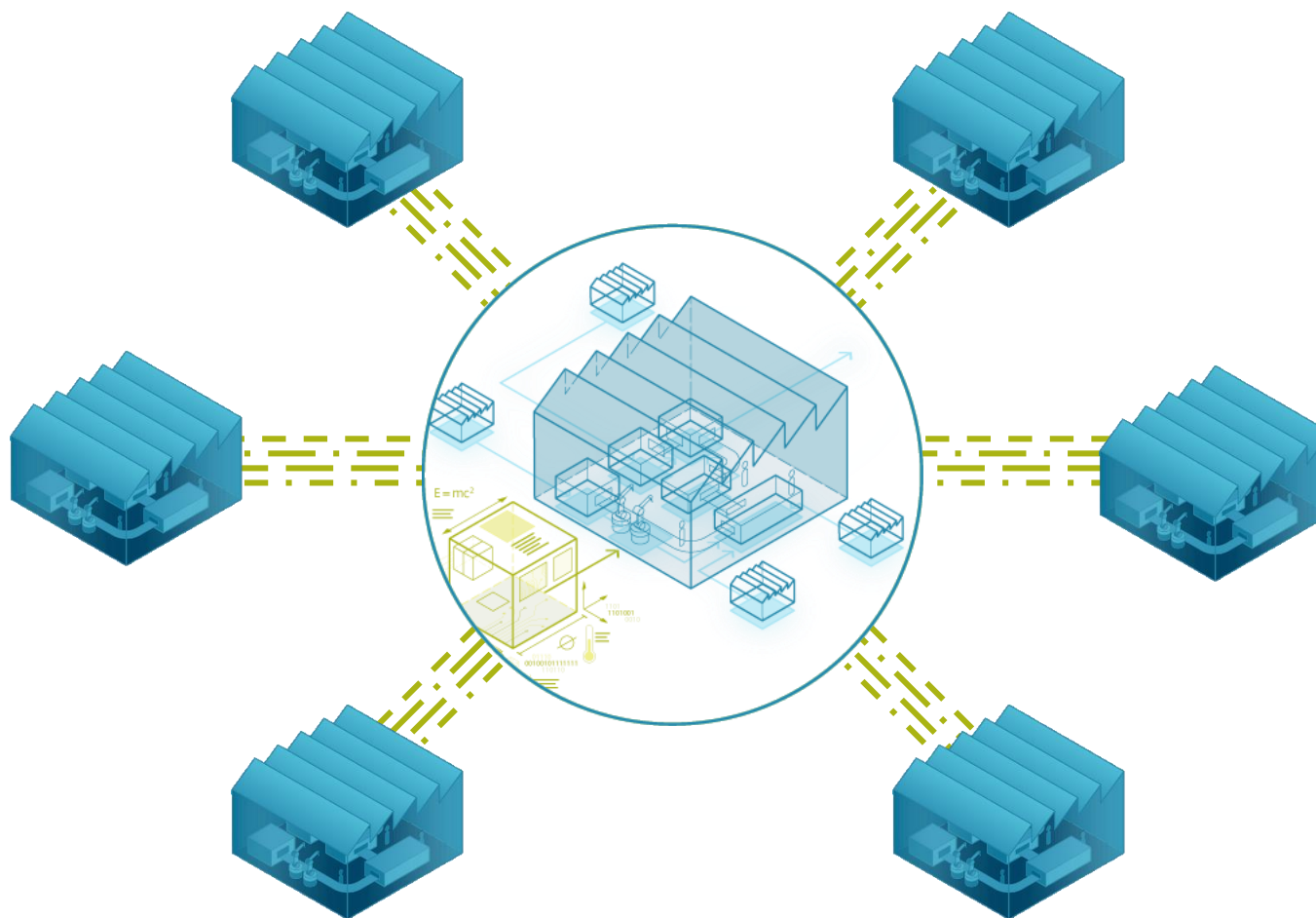
## Digital twin of the process




## Digital twin of the plant




# Integration in one unique data model shows the advantages of digitalization





Look carefully at this CEO  
caught in an Industrial  
Revolution



No rabbits were harmed in  
the making of this film...

Thank you for your attention



**Christian Maurer**

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