



How to translate trends in F&B industry into satisfied stakeholders and profit?

Jean-Marie Bonnier & Chiel Spruit

PRODUCTIE PROCES
AUTOMATISERING

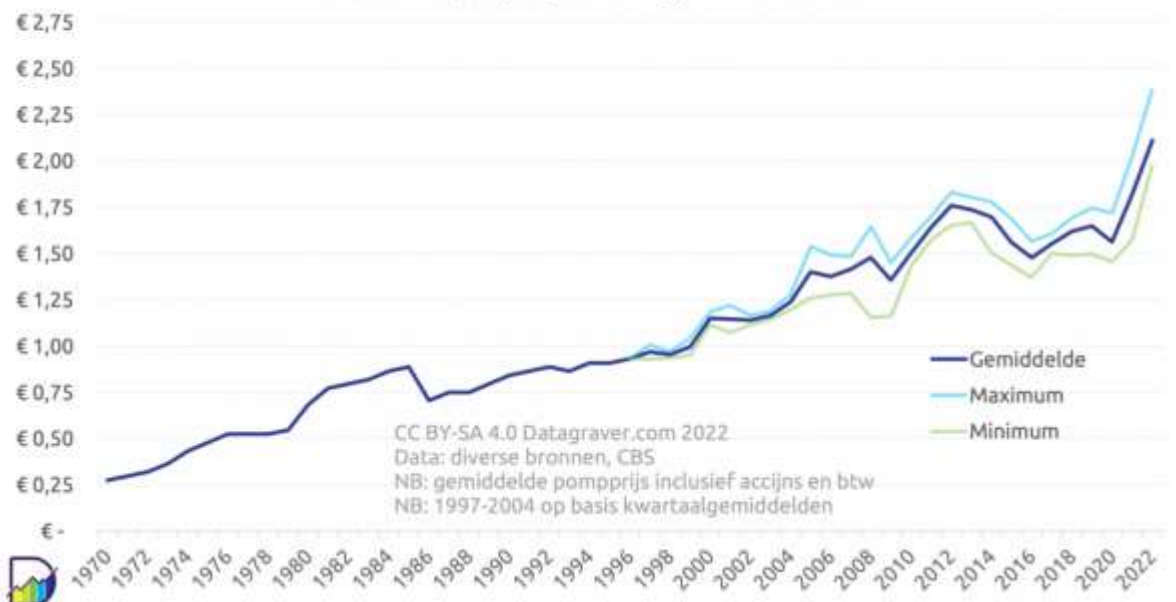
PPA 22



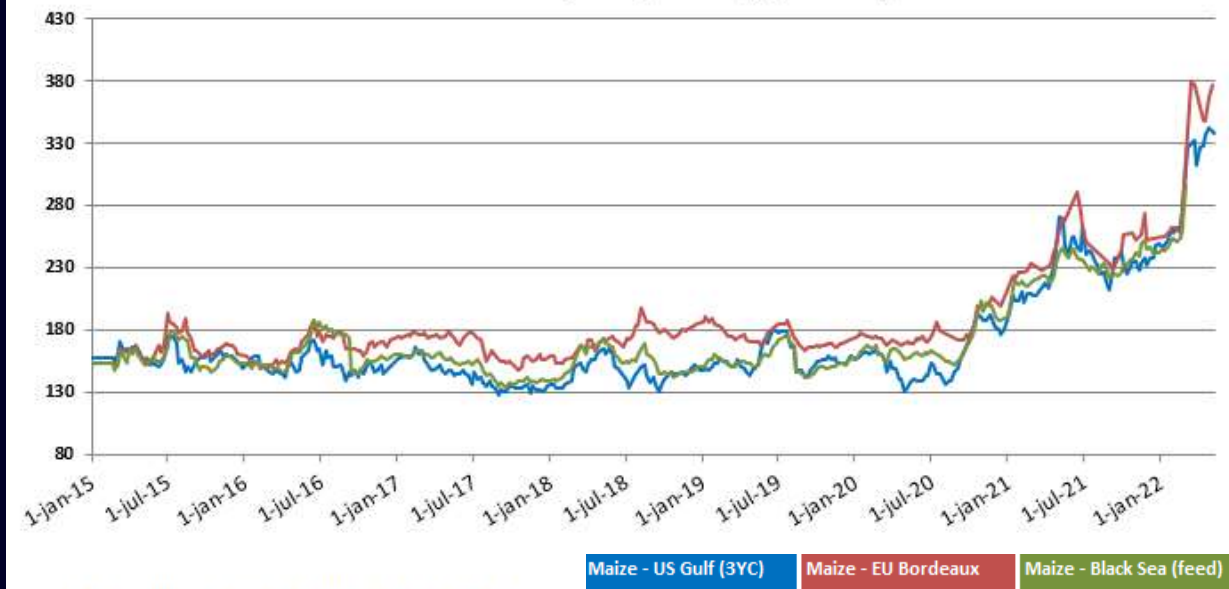
Industrie 4.0 Cyber Security
Industrial Internet of Things Data
Cloud IT/OT Integration

SIEMENS

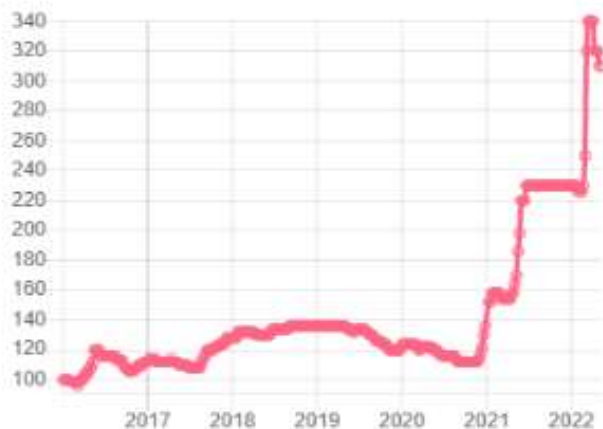
Benzineprijs (Euro95) 1970-2022



World export prices (€/tonne)



Staalprijsindex



India verbiedt export van tarwe, mogelijk invloed op wereldwijde tarweprijs

14 mei 2022 09:07
Laatste update: 1 dag, 21 uur geleden

India heeft de export van tarwe verboden. Een hittegolf heeft de productie beperkt en de binnenlandse prijzen zijn fors gestegen. Daardoor komt de voedselzekerheid in India in gevaar volgens de autoriteiten. Het besluit zou de prijs van tarwe op de wereldmarkt verder kunnen opdrijven.

Het Indiase verbod is opmerkelijk, omdat het land eerder nog liep weten op een recordexport van tarwe te rekenen.

De wereldmarkt had het Indiase graan dit jaar goed kunnen gebruiken. Export uit Oekraïne is amper mogelijk door de oorlog in dat land. De Verenigde Staten en Frankrijk kampen met weersomstandigheden die het verbouwen van de belangrijke graansoort bemoeilijken.

Zorgen over tarwe drijven onder andere de prijzen voor brood op. In Nederland waren brood en granen vorige maand bijna 6 procent duurder dan een jaar eerder, blijkt uit cijfers van het Centraal Bureau voor de Statistiek. Maar vooral armere landen en mensen in Afrika en Azië worden zwaar getroffen door de hogere voedselprijzen.



AGRICULTURAL COMMODITY PRICES – March 2022

Agricultural Commodity	EUROPEAN UNION 27			WORLD			
	Monthly average	Annual change	Monthly change	Monthly average	Annual change	Monthly change	
CEREALS ⁽¹⁾	EUR/T	%	%	USD/T	EUR/T	%	%
Soft wheat	384	64.6%	39.6%	445 ⁽²⁾	404	62.6%	32.9%
Durum wheat	440 ⁽⁵⁾	57.8%	-1.5%	486 ⁽³⁾	441	77.0%	25.9%
Maize	369	61.3%	42.5%	334	303	35.7%	14.7%
Barley	376	74.2%	42.1%	390	354	62.0%	30.5%
MEAT							
Beef	4,987	33.3%	6.6%	6,249	5,671	32.4%	0.6%
Pork	1,697	12.1%	28.3%	2,273 ⁽⁶⁾	2,062 ⁽⁶⁾	16.1%	19.8%
Poultry	2,423	25.0%	7.5%	3,202	2,906	72.0%	15.5%
DAIRY							
Butter	6,279	61.5%	5.7%	6,925	6,285	21.0%	5.7%
Cheese	3,704	20.3%	1.9%	6,167	5,596	40.2%	6.2%
SMP	3,888	59.9%	8.0%	4,550	4,129	33.6%	7.3%
WMP	4,837	54.7%	7.0%	4,629	4,201	12.7%	4.6%
OILSEEDS							
Soya beans	:	:	:	720 ⁽⁵⁾	653	23.7%	7.6%
Rapeseed	925 ⁽⁵⁾	77.8%	30.6%	:	:	:	:
SUGAR							
White sugar	441 ⁽⁴⁾	13.1%	1.6%	536 ⁽⁵⁾	486	18.8%	8.3%
RICE (milled)							
Japonica	1,195	70.7%	3.0%	1,260 ⁽⁵⁾	1,143	32.3%	2.2%
Indica	810	9.5%	2.5%	398 ⁽⁵⁾	361	-20.5%	-1.0%

Digital is pushing innovation in the CPG Industry

Shopping in 2027 – Expect to see 8 big changes

1. Personalized shopping experience
 2. Far less retail jobs due to automation
 3. Fast automated check out
 4. Routine household purchases automated
 5. Move away from huge stores
 6. Online shopping up from 10% to 50%
 7. Many new small companies through AM
 8. VR/Digitalization changes shop experience
-



Digital is transforming the CPG Industry

Personalizing products & services



Coca-Cola enables custom formulations from your smartphone

M&M's enables personalized products



Mondelez enables personalized packaging

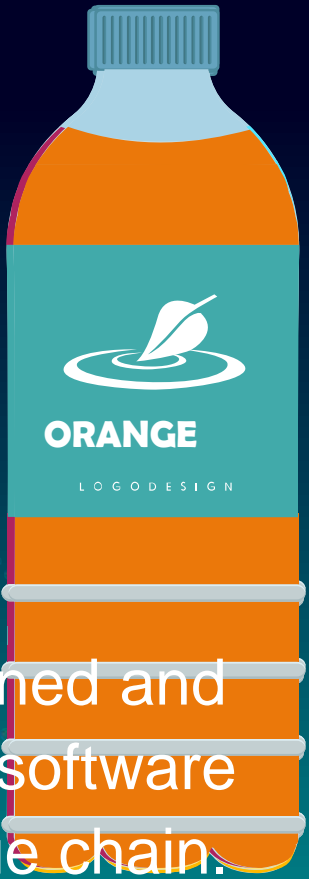
BluRhapsody enables custom 3D printed pasta



Product Development and Innovation in CPG Industry Many Facets & Challenges

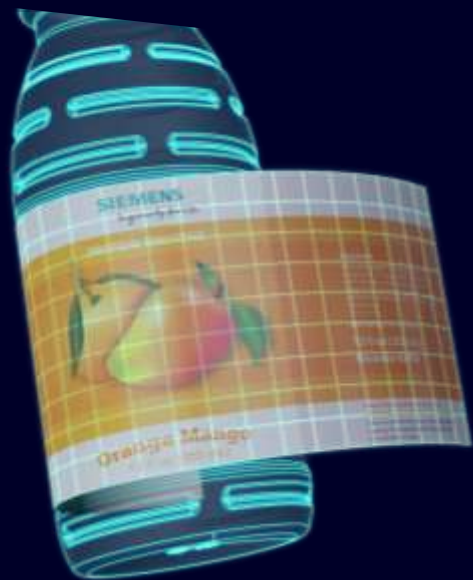
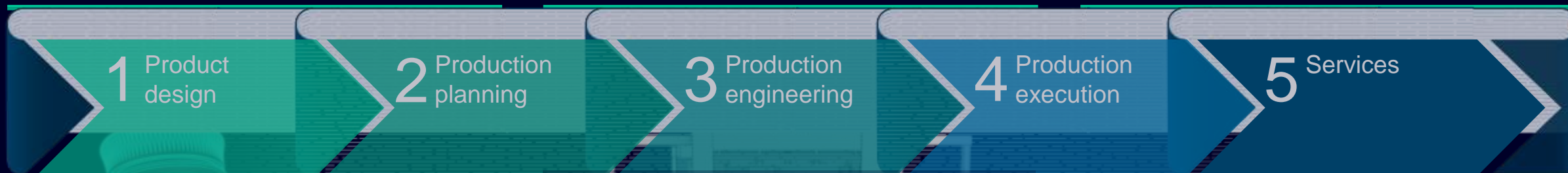


- SUPPLY CHAIN
- INVENTORY
- SUPPLY CHAIN
- INVENTORY
- STORAGE
- ASSET
- SAFETY
- MANUFACTURING OPERATIONS
- EQUIPMENT
- ARTWORK
- PACKAGE TESTING
- REGULATORY COMPLIANCE
- SAFETY
- SPECIFICATIONS
- ARTWORK
- MATERIAL TESTING
- LABEL CONTENTS
- PROGRESS
- MATERIAL TESTING
- MASTER RECIPE
- REGULATORY COMPLIANCE
- FORMULAS
- INGREDIENTS
- QUALITY CONTROL
- INGREDIENTS
- RAW MATERIAL



Keeping all these aspects aligned and synchronized requires a solid software platform across the entire value chain.

What is our Special Sauce? Digital Twin



Digital Twin of Product

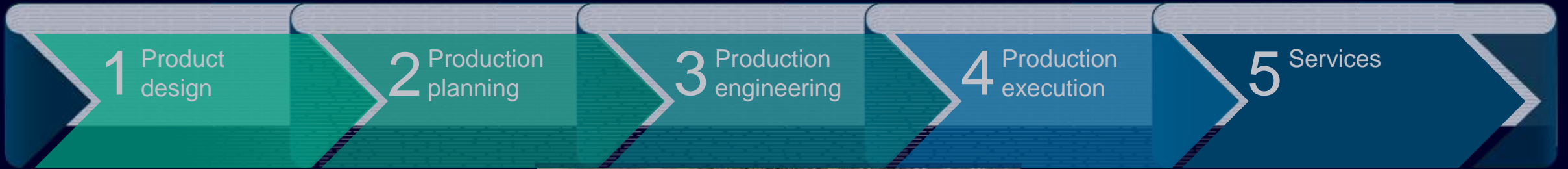


Digital Twin of Production
Holistic Digital Twin

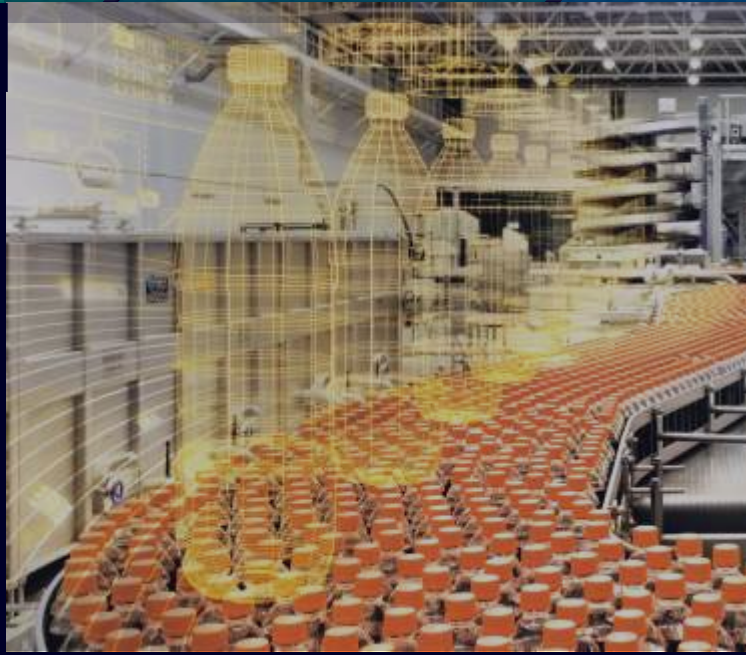


Digital Twin of Performance

What is our Special Sauce? Digital Twin



Gain **foresight** by simulating products, people, processes and resources interacting in the virtual world

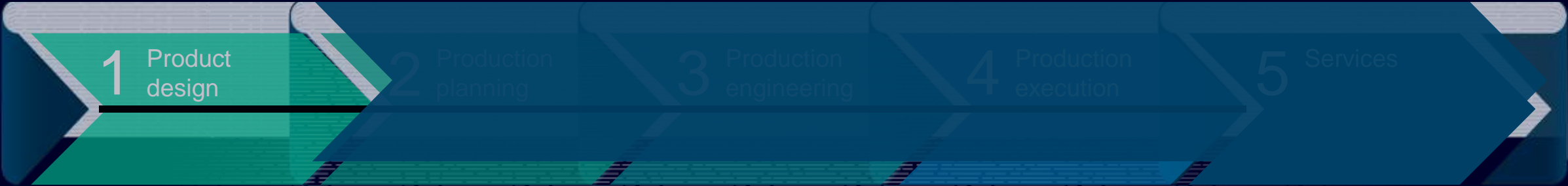


Gain **insight** by matching real-world performance to our predictions so we can drive continuous improvement

Holistic Digital Twin

Digitalization in the CPG industry

Product Design



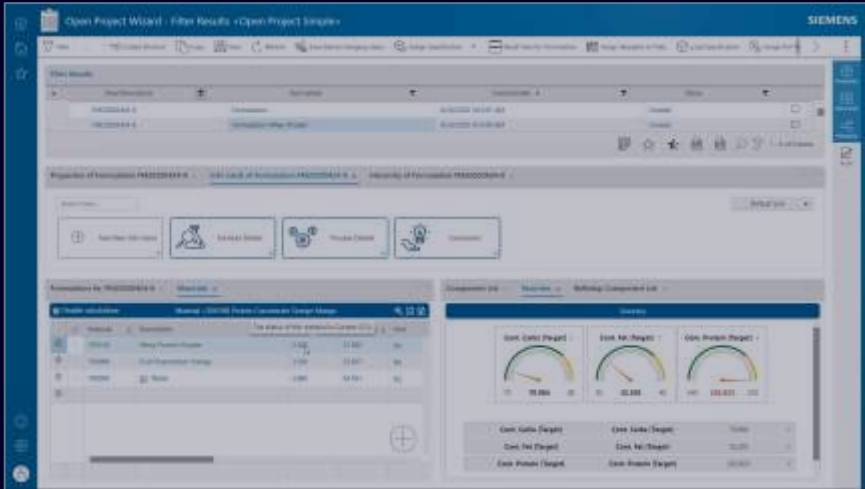
Formula Design

Product and formula design

Regulatory compliance

Supplier collaboration

Trials, sampling & testing



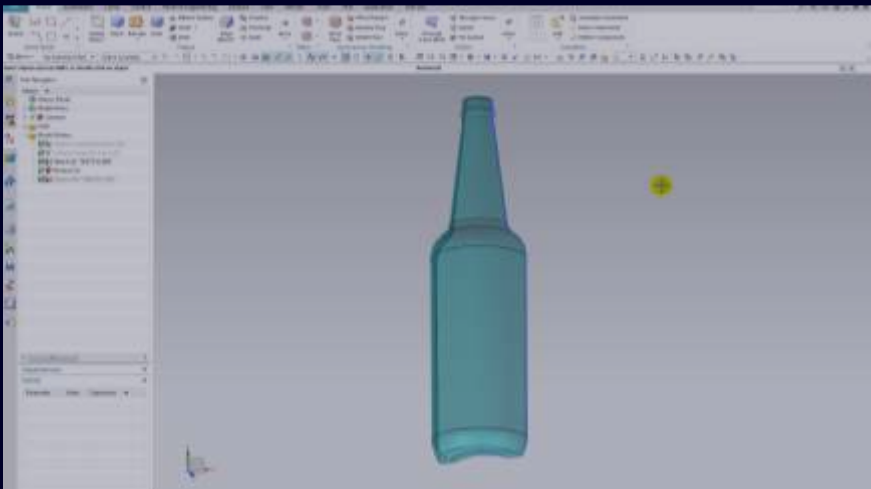
Package Design

Artwork development

Package design

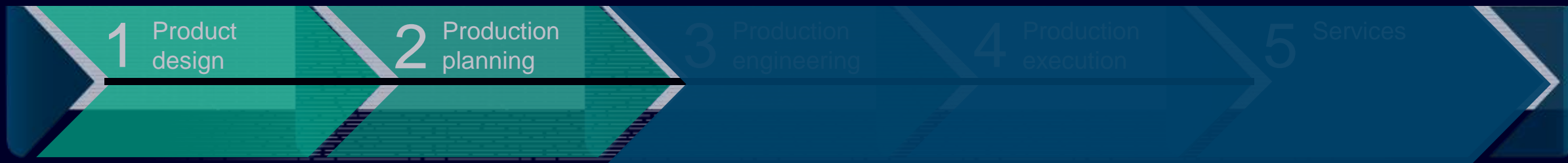
Simulation & digital prototyping

Label design and compliance



Digitalization in the CPG industry

Production Planning



Modeling & simulating the production facility

Creation of general recipe

Trial runs

Modeling the production facility

Capacity simulation of the plant



Planning the filling & packaging line

Creation of the bill of process

Collaborative line design

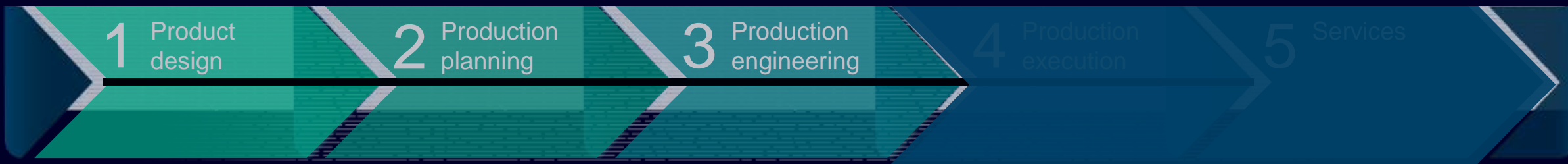
Simulation of critical process steps

Simulation and bottleneck elimination



Digitalization in the CPG industry

Production Engineering

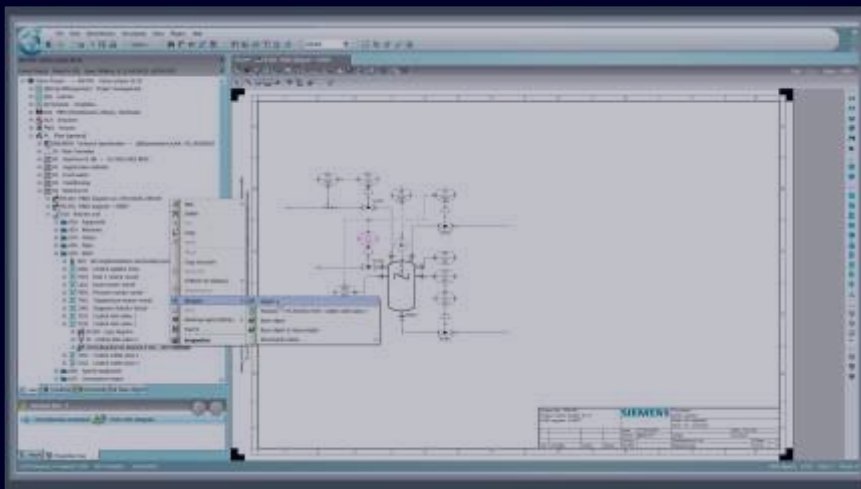


Automation design of the process

Plant design

Electrical design

Automation engineering



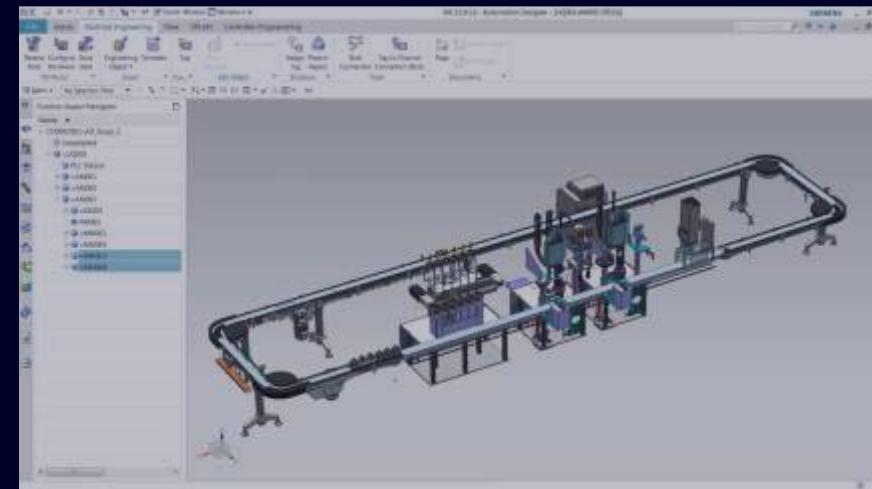
Machine design

Mechatronics integration

Automation engineering

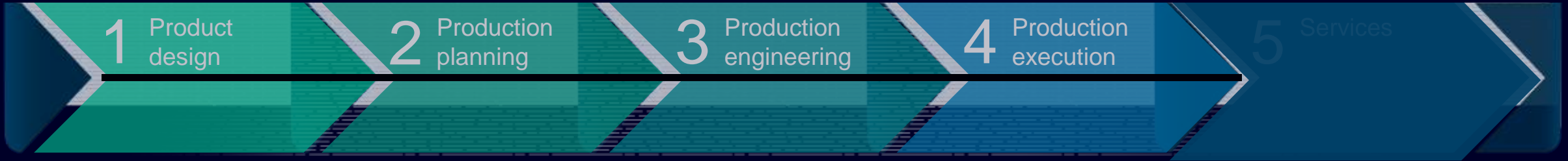
Virtual Commissioning

Automation design of the filling & packaging line



Digitalization in the CPG industry

Production Execution



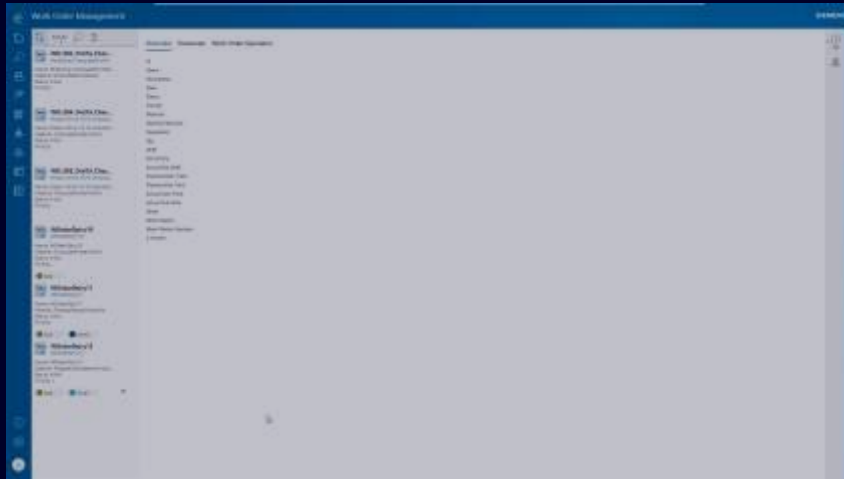
Order execution & integrated quality control

Order download & scheduling

Reporting & quality execution

Order execution

Traceability



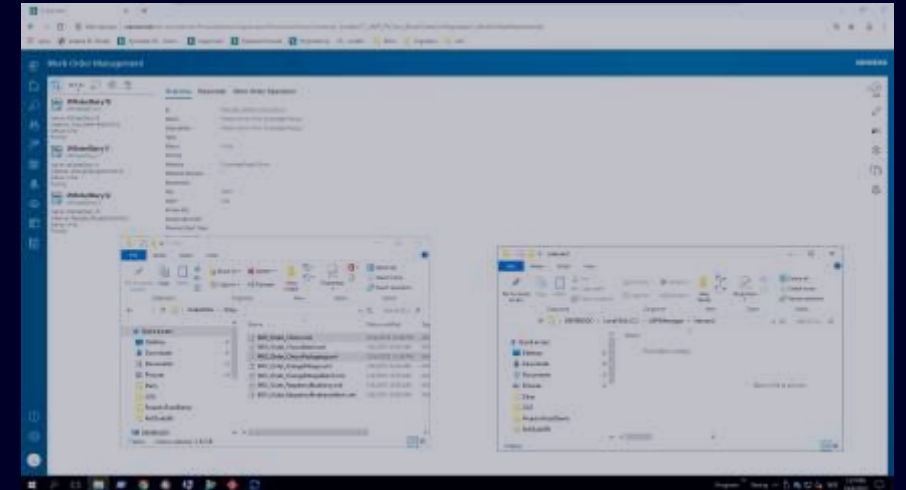
Order download & scheduling

Order download & scheduling

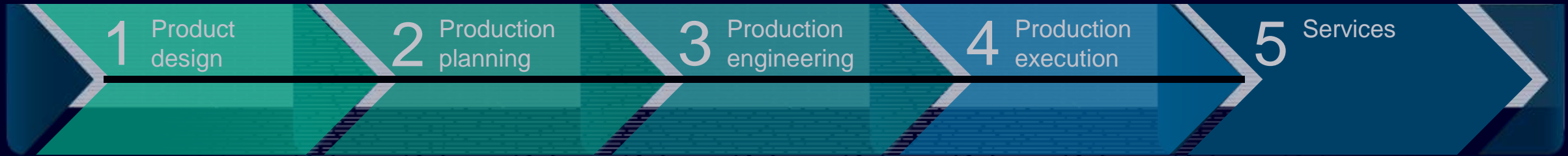
Reporting & quality execution

Line management & execution

Traceability



Digitalization in the CPG industry Services



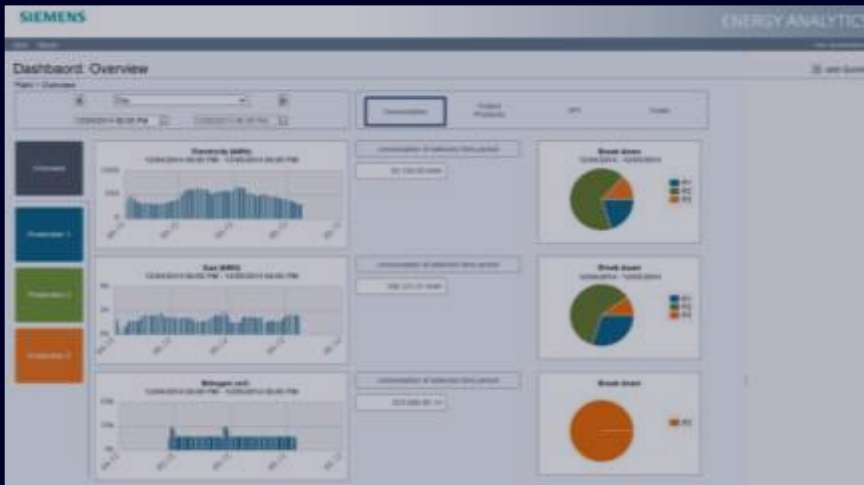
Mindsphere Energy Analytics

Energy
Analytics

Smart
Condition
Monitoring

Security
Services

Drive Train
Analytics



Mindsphere Smart Condition Monitoring

Energy
Analytics

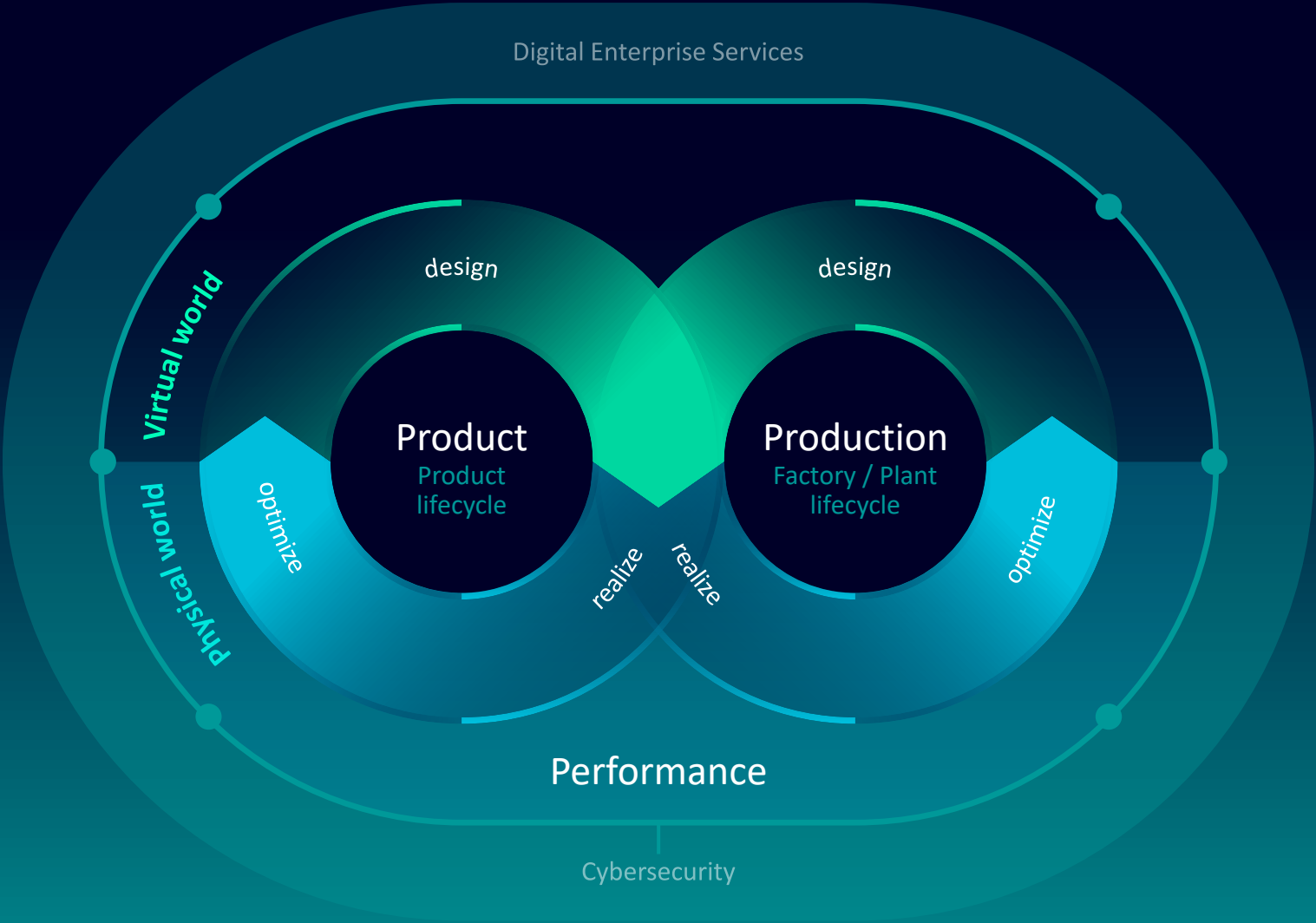
Smart
Condition
Monitoring

Security
Services

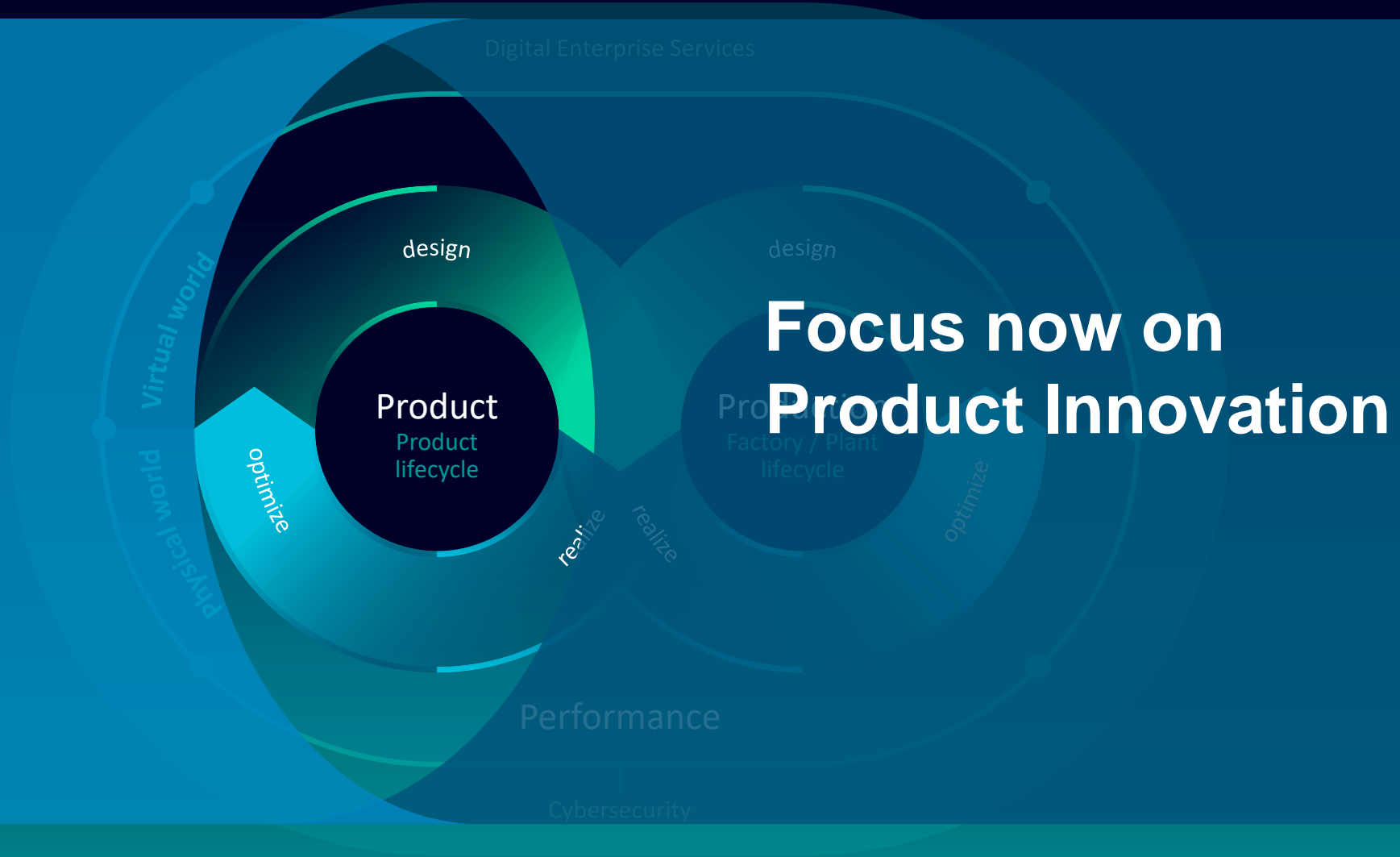
Drive Train
Analytics



Comprehensive Digital Twin integrating product, production, and performance in CPG Industries



Comprehensive Digital Twin integrating product, production, and performance in CPG Industries



Product Development and Innovation in CPG Industry

Five Foundational Pillars

Program Lifecycle Management

- Achieve full transparency
- Fact based decisions considering detail data
- Re-use intellectual property

Formulated Product Design

- Reduce product development time
- Requirements based development process
- Regulatory Compliance

Laboratory Information Management

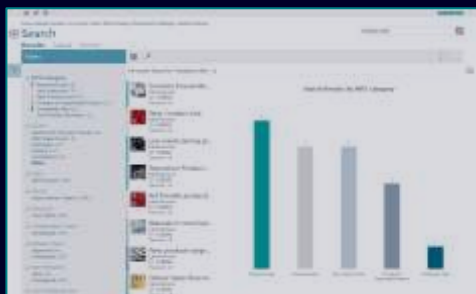
- Increase Lab efficiency and enhance real-time management
- Automated guidance of lab scientists

Package Design and Simulation

- Put your thoughts to (digital) paper
- Benefit from leading-edge modelling and simulation capabilities

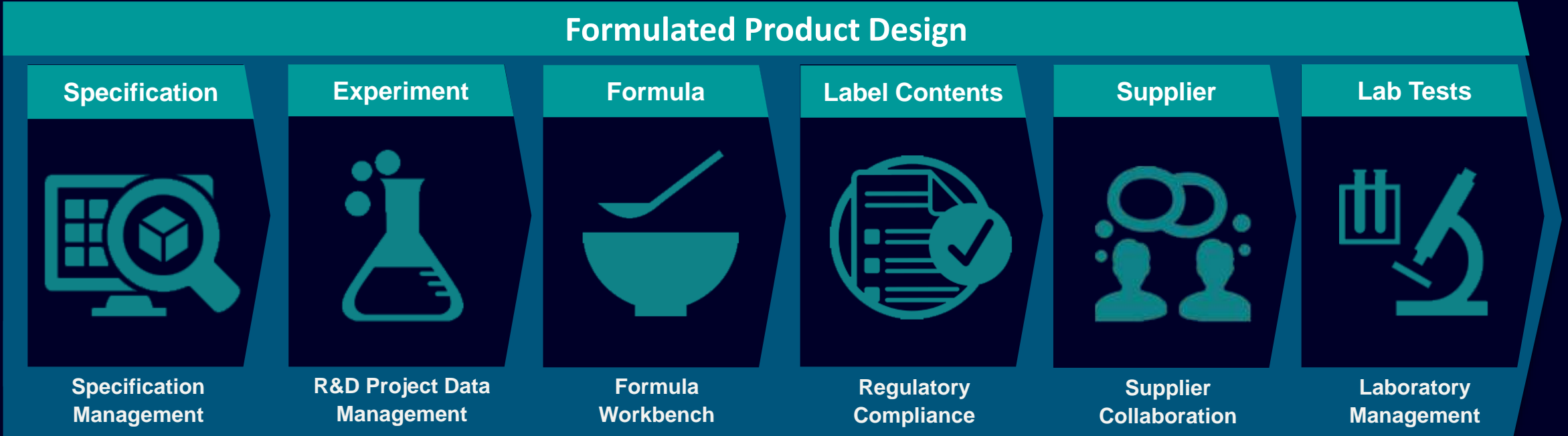
Artwork Development

- Collaboration Platform
- Intelligent Repository
- Provide contextual Information



Collaboration Platform

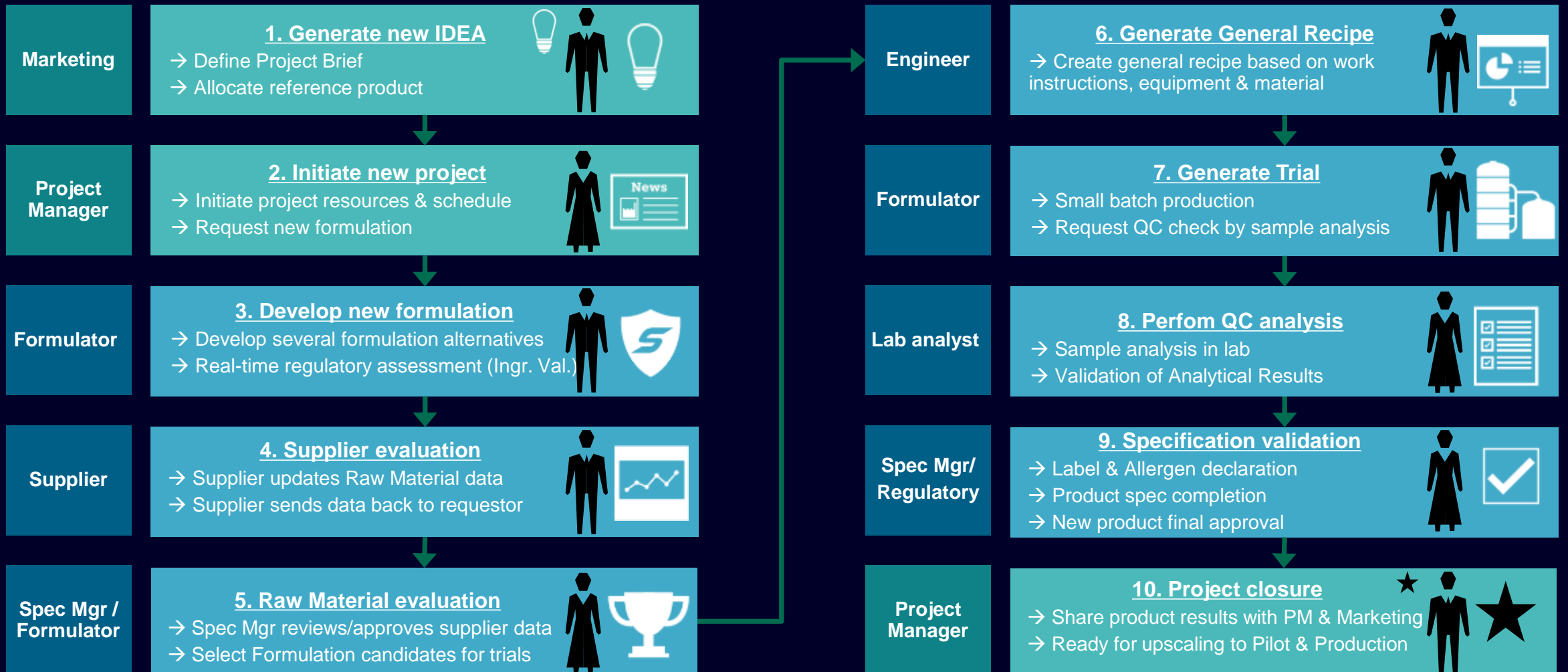
Formulated Product Design Components



- **Integrated Product Design Process**
- **Collaborative R&D**
- **Regulatory Compliance**

Centralized PLM & Knowledge Management Platform – streamlined development process
Avoid/reduce redevelopment of product design process – R&D cost reduction
Avoid recall or Product non-conformity by real-time compliance product check in R&D

Driving Innovation Efficiency in CPG Industry: Storyboard



Translate trends into profit & be able to invest in your future!



High quality demand



High-cost pressure



Fast changing consumer demands



Global and regional regulatory compliancy



Increasing variety of products and recipes



Global setup – Distributed plants

■ Want to chat about New Product Development?

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