

Beyond Simulation: The digital twin as the key to data driven transformation

Your Speakers today



Dragan Gajic

Group CTO

Email: dragan.gajic@nortal.com

Phone: +38163550421



Daniela Riegler

Managing Director of Nortal GmbH (Austria)

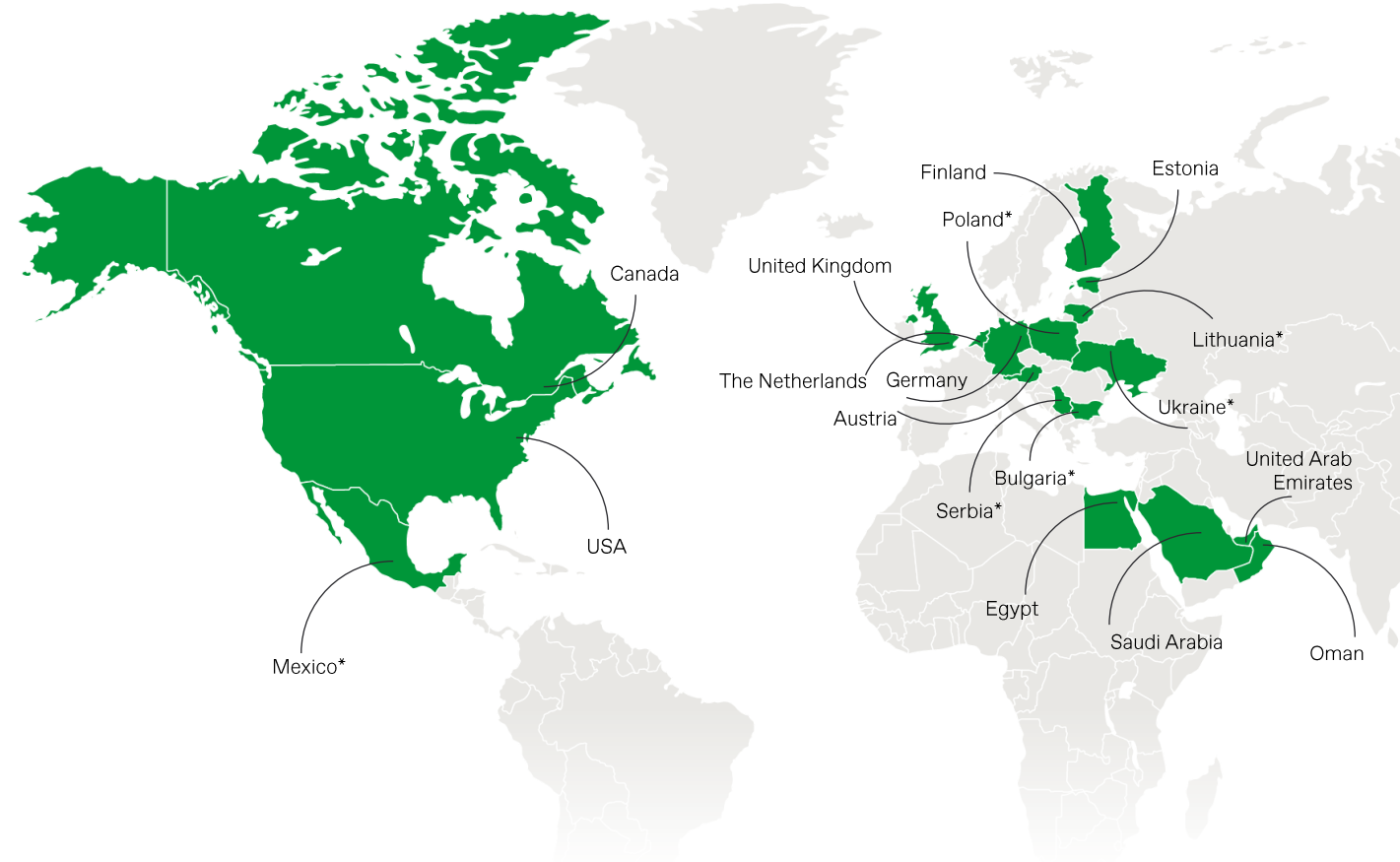
Email: daniela.riegler@nortal.com

Phone: +43 676 4337716

We deliver value across a multitude of different geographies, timescales and ambitions

We are a strategic innovation and technology company with an unparalleled track-record of delivering successful transformation projects for 25 years.

As a valued partner for governments, healthcare institutions, leading businesses, and Fortune 500 companies we deliver value by challenging the status quo and succeeding where legacy firms fail.



\$230M

Revenue globally (2023)

2200+

Experts worldwide (2024)

25

Years of experience

26

offices

We work with:



نيوم NEOM

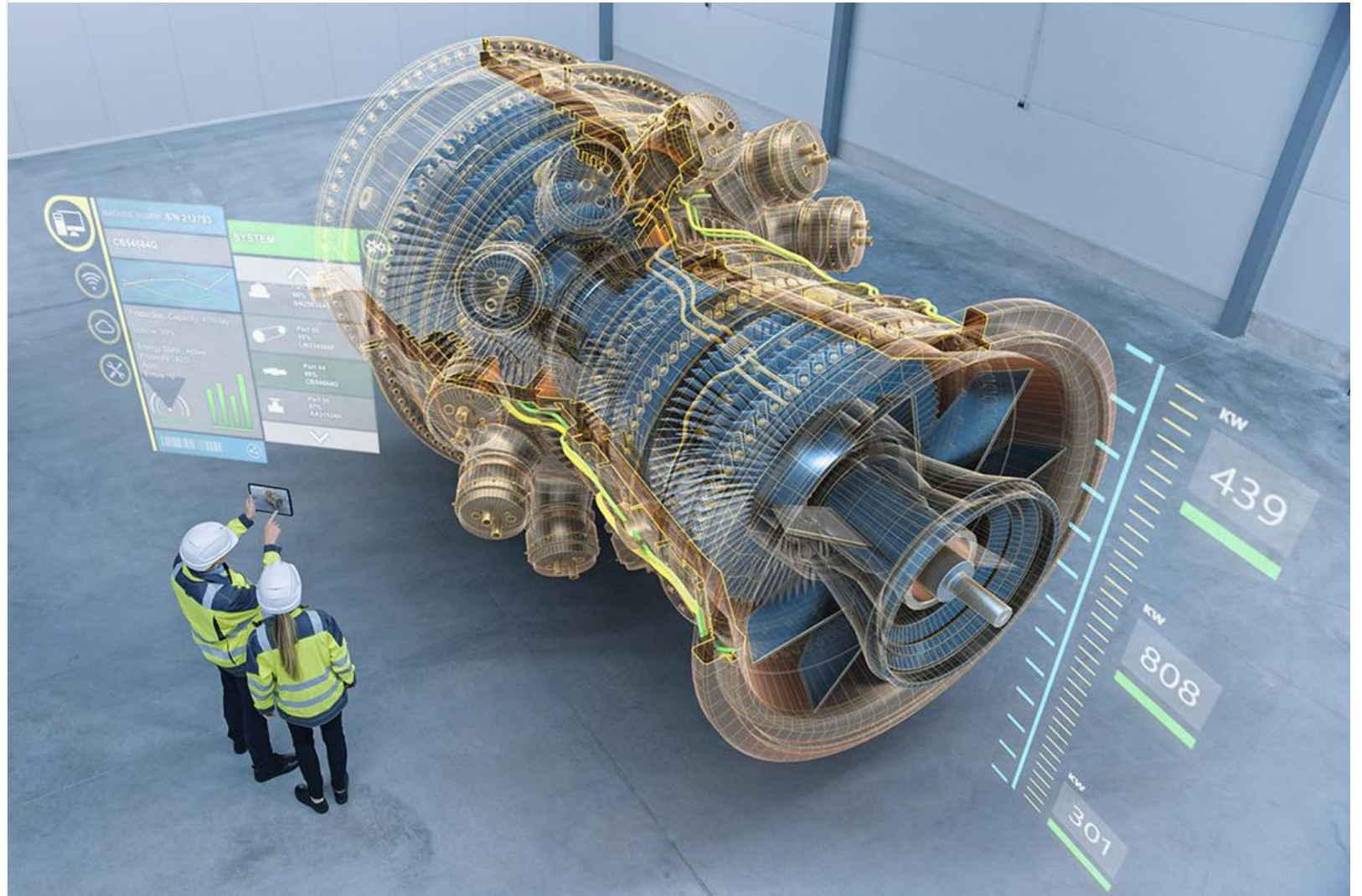


REPUBLIC OF ESTONIA TAX AND CUSTOMS BOARD



There are as many answers as there are respondents, but on a very high-level definition:

“Digital twin is a virtual representation of a physical object or process.”



Digital twin is not a single platform or solution. It is a composable architecture, providing capabilities to fulfill various use cases

DS.AI Data Acquisition & Ingestion	DS.SG Synthetic Data Generation	IR.ET Enterprise System Integration	IC.SR Search	IC.PR Prediction		UX.BV Basic Visualization	UX.DB Dashboards
DS.ST Data Streaming	DS.ON Ontology Management	IR.EG Eng. System Integration	IC.CC Command & Control	IC.AI Artificial Intelligence		UX.AV Advanced Visualization	UX.CI Continuous Intelligence
DS.TR Data Transformation	DS.RP Digital Twin (DT) Model Repository	IR.IO OT/IoT System Integration	IC.OS Orchestration	IC.PS Prescriptive Recommendations		UX.RM Real-time Monitoring	UX.BI Business Intelligence
DS.CX Data Contextualization	DS.IR DT Instance Repository	IR.DT Digital Twin Integration	IC.AL Alerts & Notifications	IC.FL Federated Learning	IC.BR Business Rules	UX.ER Entity Relationship Visualization	UX.BP BPM & Workflow
DS.BP Batch Processing	DS.DS Domain Specific Data Management	IR.CL Collab Platform Integration	IC.RP Reporting	IC.SM Simulation	IC.DL Distributed Ledger & Smart Contracts	UX.XR Extended Reality (AV/VR/MR)	UX.GE Gaming Engine Visualization
DS.RT Real-time Processing	DS.SA Data Storage & Archive Services	IR.AS API Services	IC.AA Data Analysis & Analytics	IC.MA Mathematical Analytics	IC.CS Composition	UX.GM Gamification	UX.3R 3D Rendering
DS.AS Asynchronous Integration	DS.SR Simulation Model Repository	MG.DM Device Management	MG.EL Event Logging	TW.EC Data Encryption	TW.SC Security	TW.SF Safety	TW.RP Responsibility
DS.AG Data Aggregation	DS.AR AI Model Repository	MG.SM System Monitoring	MG.DG Data Governance	TW.DS Device Security	TW.PR Privacy	TW.RL Reliability	TW.RS Resilience

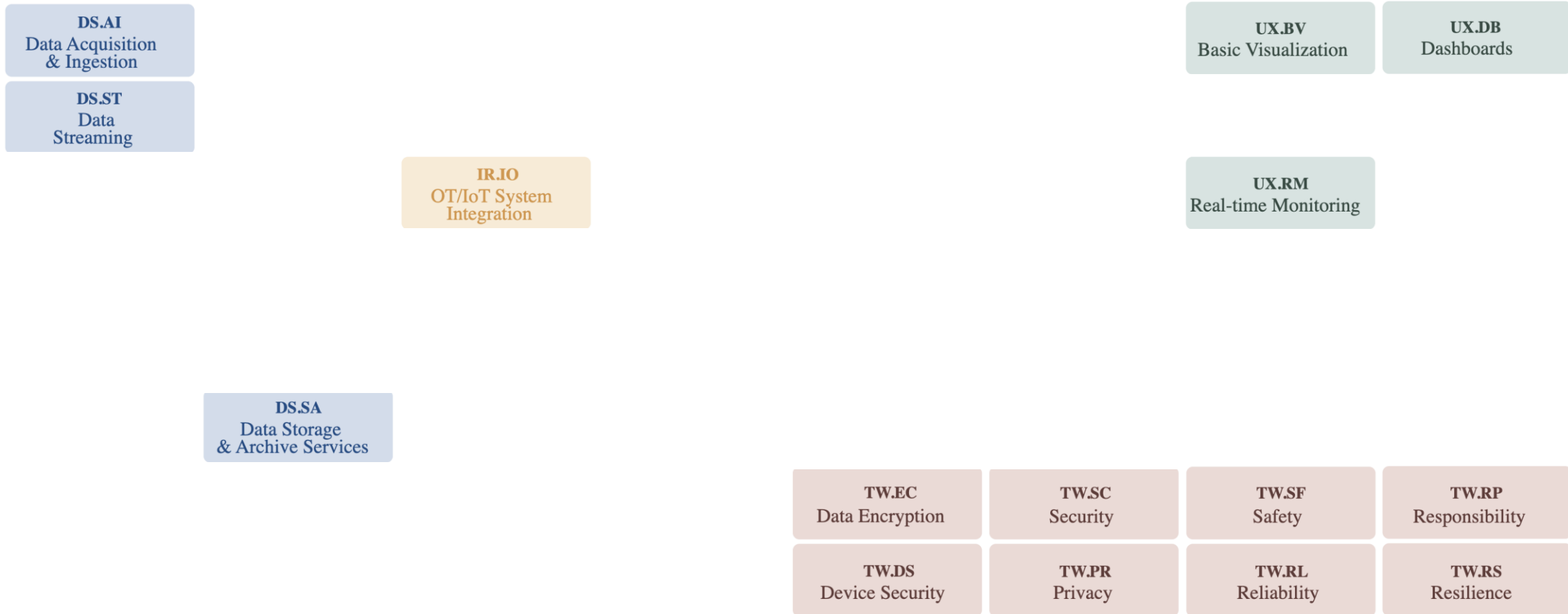
How to get started?

Each roadmap is built based on the first-wave use case requirements, but certain phases are typical in the beginning.

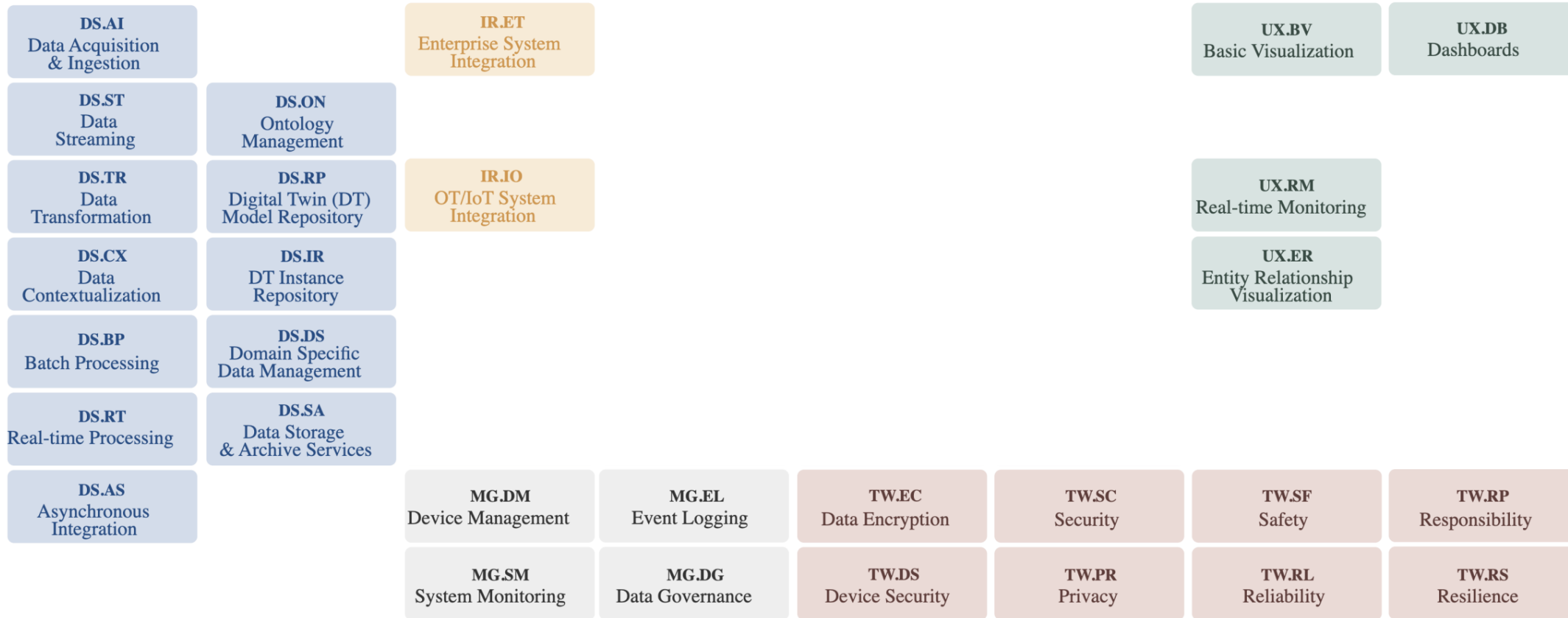
Phased Roadmap

- 1 IT/OT Integration, Historical and Real-time Dashboards
- 2 Data modelling and contextualization
- 3 Reporting, explorative analytics and alarming
- 4 Predictive Analytics
- 5 Command & Control
- 6 Simulation

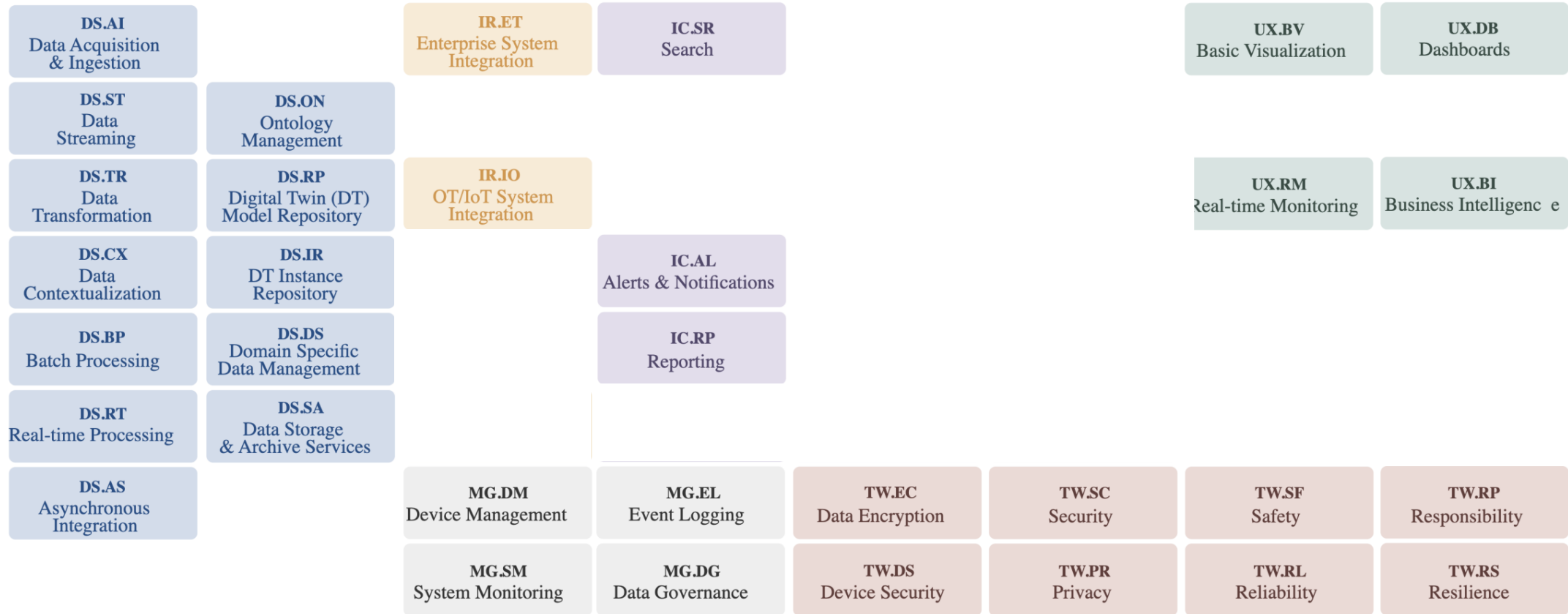
IT/OT Integration, Historical and Real-time Dashboards



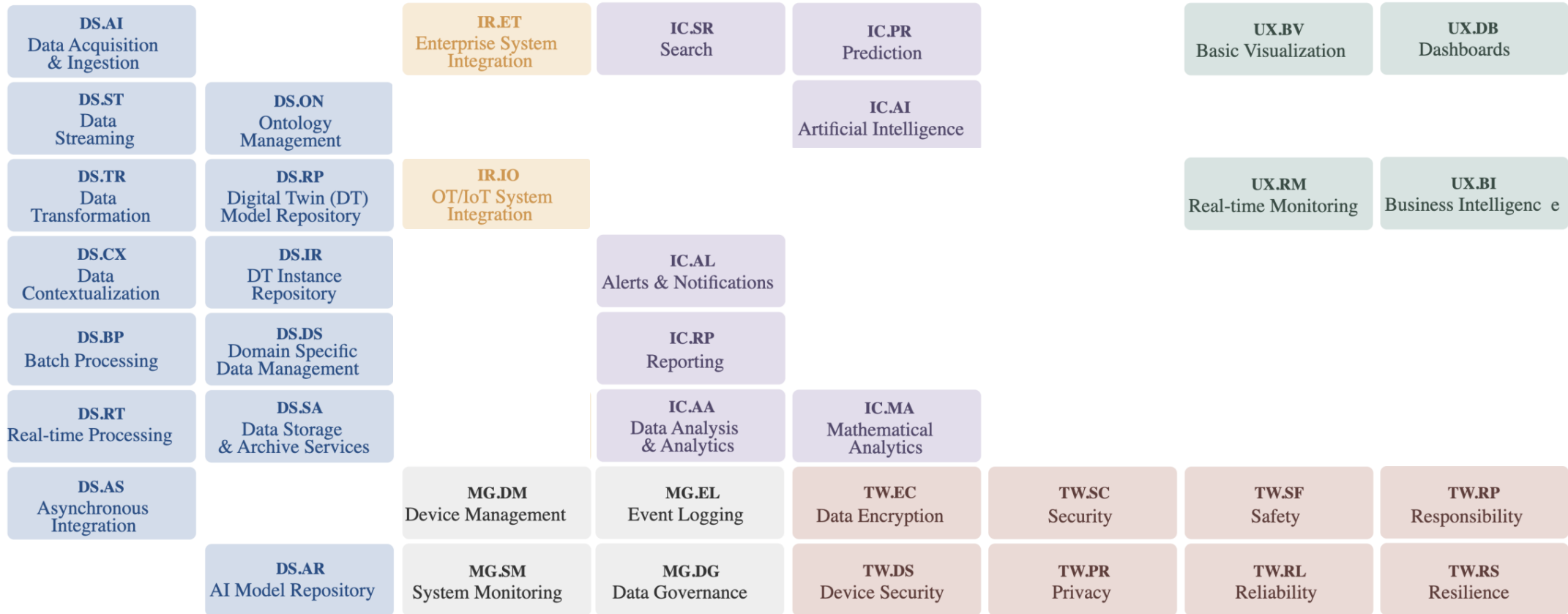
Data modelling and contextualization



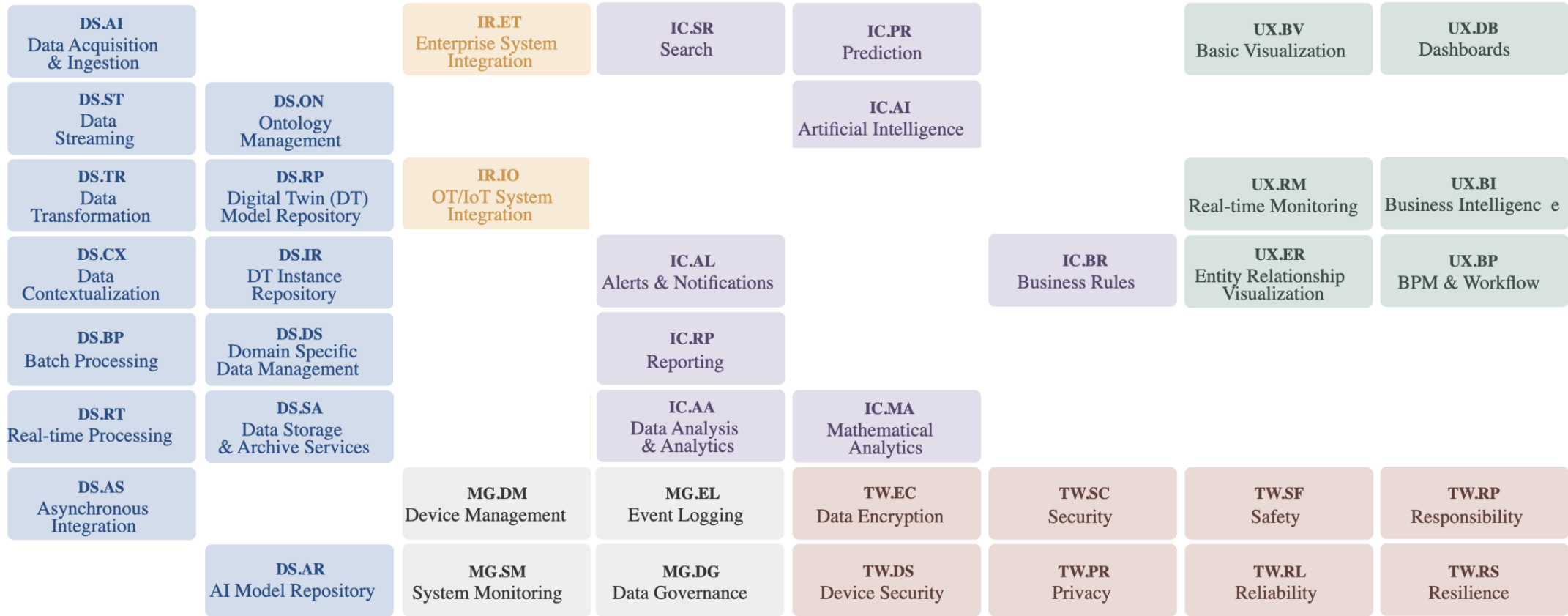
Reporting, explorative analytics and alerting



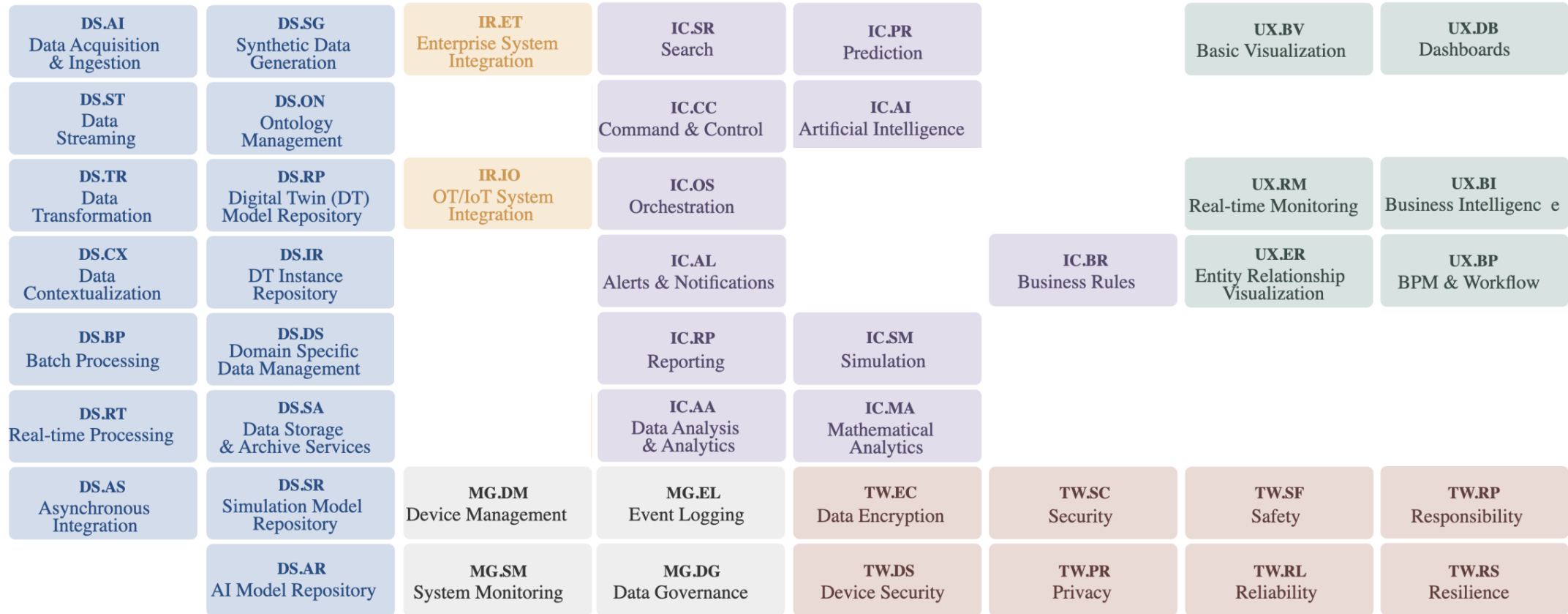
Predictive Analytics

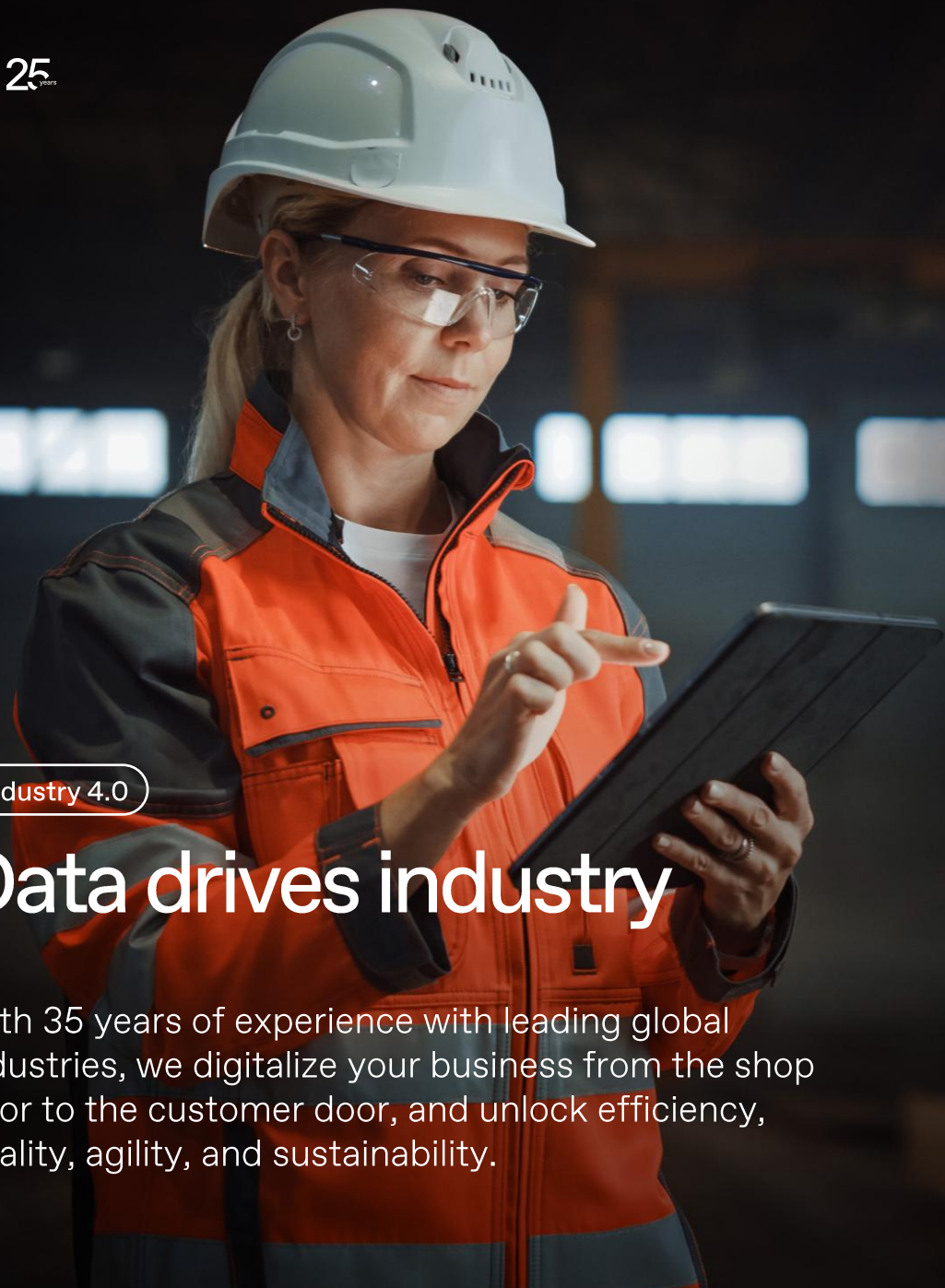


Command and Control



Simulation





Industry 4.0

Data drives industry

With 35 years of experience with leading global industries, we digitalize your business from the shop floor to the customer door, and unlock efficiency, quality, agility, and sustainability.

- Digital Twins
- IT/OT Convergence
- Open ecosystem thinking
- Real-time data
- Intelligent SCADA
- Edge computing
- Conversational AI
- Sustainability

Leading the way in data-driven business

Digitalized business means employing data to improve quality and production, reduce waste, and allow data to flow seamlessly from shop floor to top floor. We are forerunners in leveraging operational and information technology through hybrid cloud- and data-driven solutions in manufacturing, logistics, and construction.

Digital twins - Merging the physical and digital worlds

The physical world is being digitized into a cyber-physical system. Objects have digital twins, virtual representations of themselves, which contain the same information as their physical manifestations.

- Manufacturing
- Infrastructure and Construction
- Transportation and Logistics


Example – Port of Tallinn: a journey to a smart and environmentally friendly harbour located all over Estonia



PORT OF TALLINN
The Port of Good News



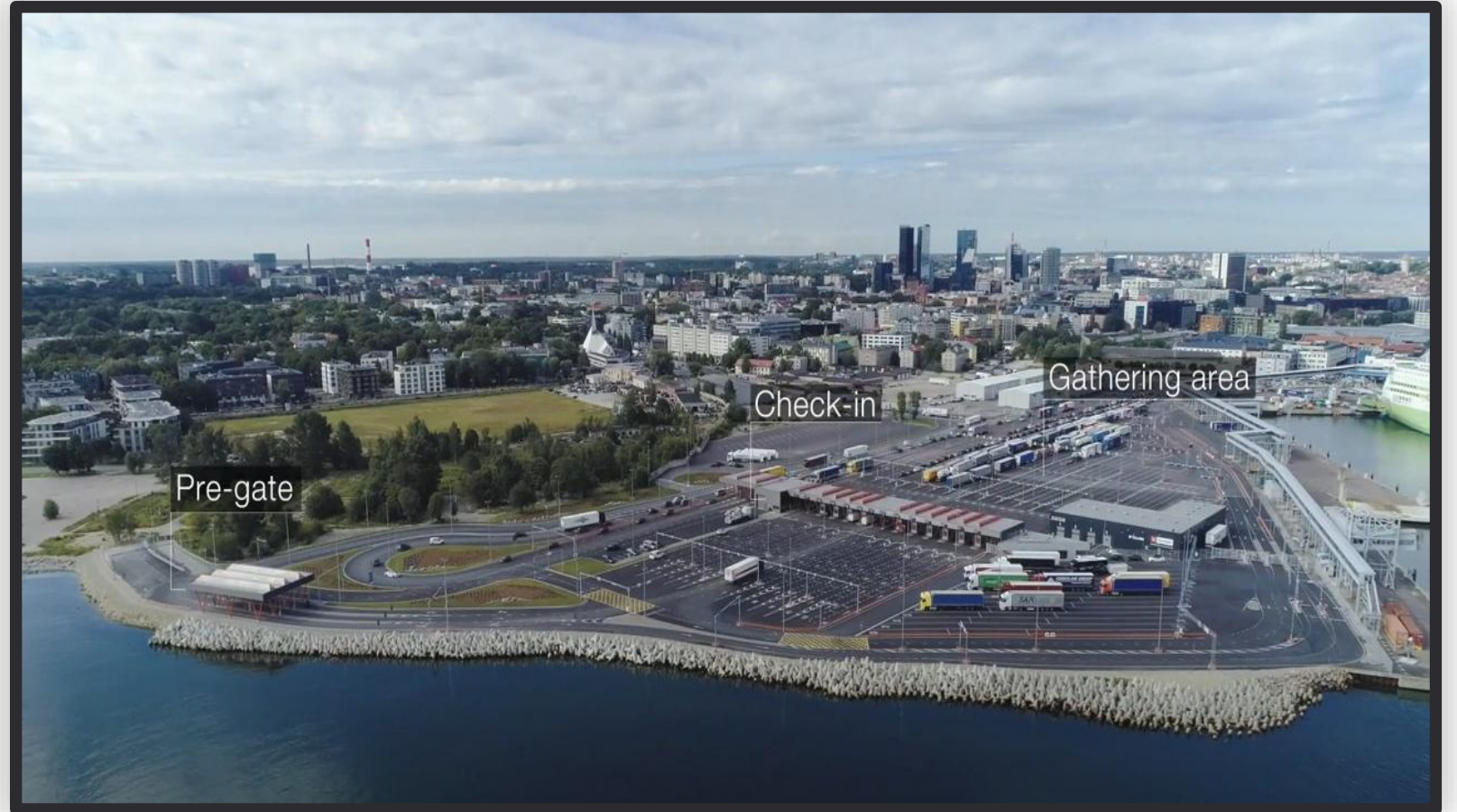
Port of Tallinn:
Valdo Kalm
Chairman of the Management Board / CEO

 [Watch the Impact Case Smart Port Solution, Part of Tallinn](#)

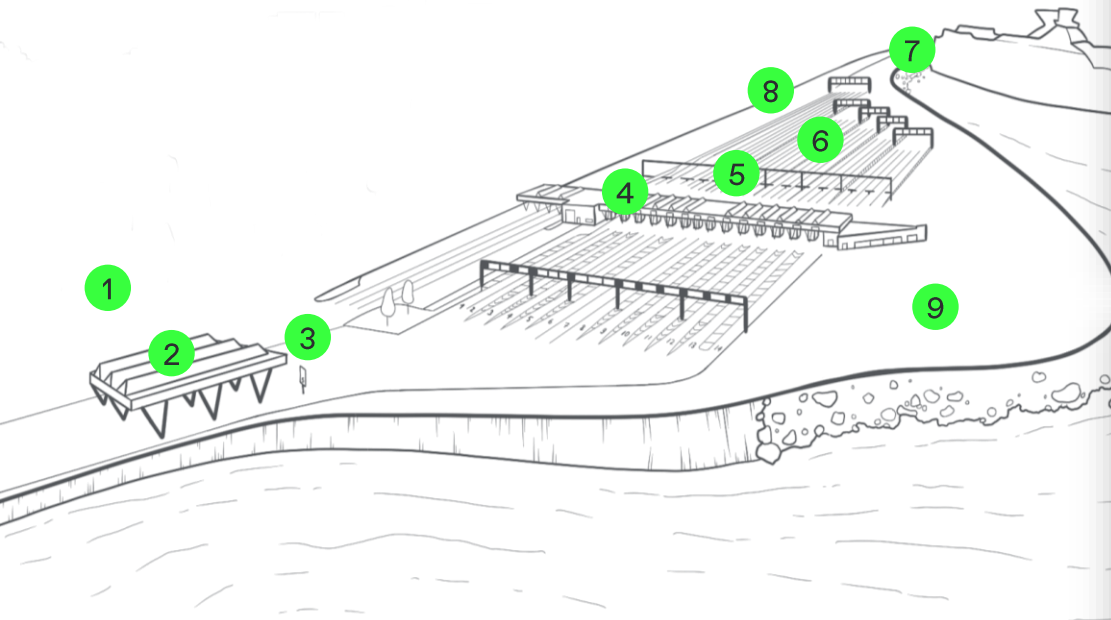
Smart Port solution at Port of Tallinn



LPR/ANPR Smart Port Solution in Tallinn, Estonia



The Smart Port solution provides a holistic view of terminal operations to support every team's unique needs.



1. Before the departure

Prepare the terminal area for departure through customized templates for dynamic terminal management.



2. Pre-gate

Identify vehicles and gather all relevant data to enable automatic and intelligent pre-loading (check-in and traffic mgmt.) and loading processes.



3. First driving directions

Get the travelers attention and start the smooth, efficient and safe traffic guidance experience with personalized directions.



4. Check-in area

Provide access to the restricted loading gathering area and direct drivers to the correct lane for loading.



5. Lock area

Provides orderly and safe passage to the correct marshalling area lane for drivers.



6. Marshalling area

Gather all vehicles per loading allocation types and prepare for loading.



7. Loading

Load vehicles onto the ferries in an efficient, safe and clear manner.



8. Unloading

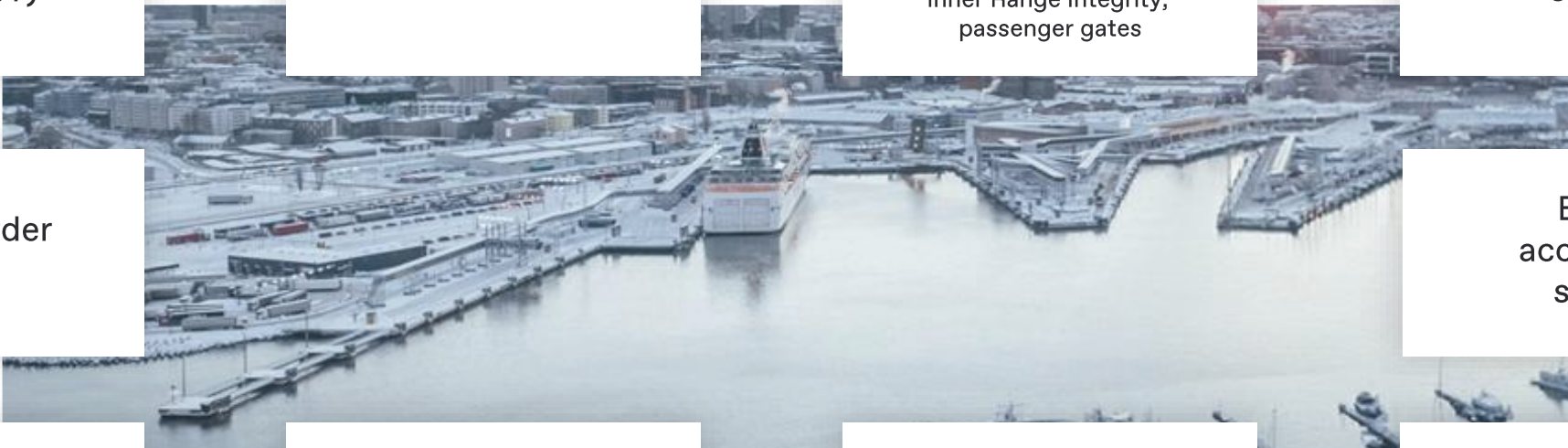
Guide vehicles out of the vessel and out from the terminal with automatically controlled LED screens



9. Custom solutions

Build revenue adding or customer experience improving features on top of the standard process.

The solution includes ready-made APIs for ship operators, port area operators, and for government institutions



Port operator systems (5+)

SMS gateway
Twilio, Telia, ...

Third Party Access Control Systems
Inner Range Integrity, passenger gates

BI system

Police & Border Guard

ERP & accounting system

Booking & POS systems (4)

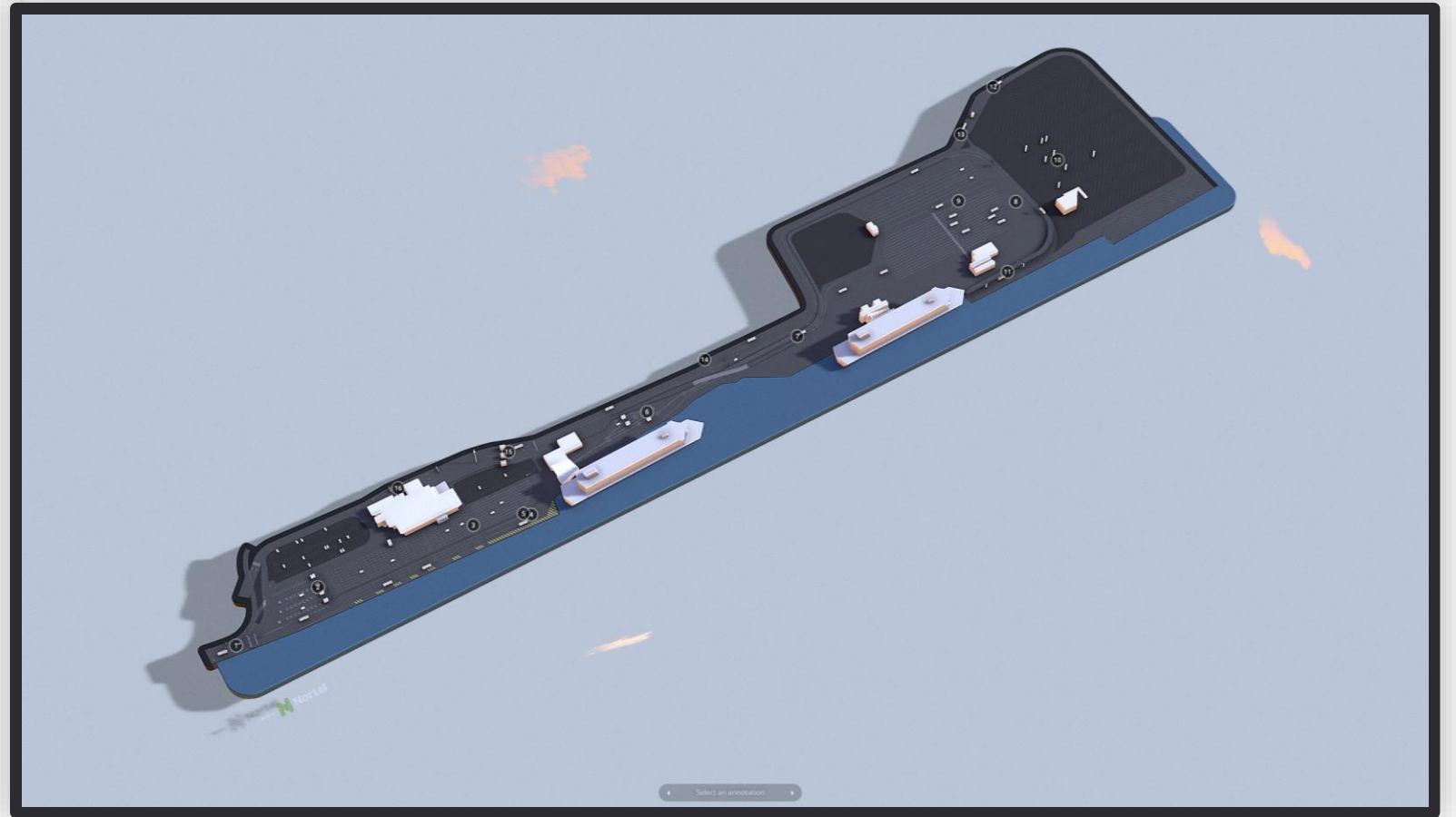
National registries
vehicles, population, business,...

Tax and Customs Authority

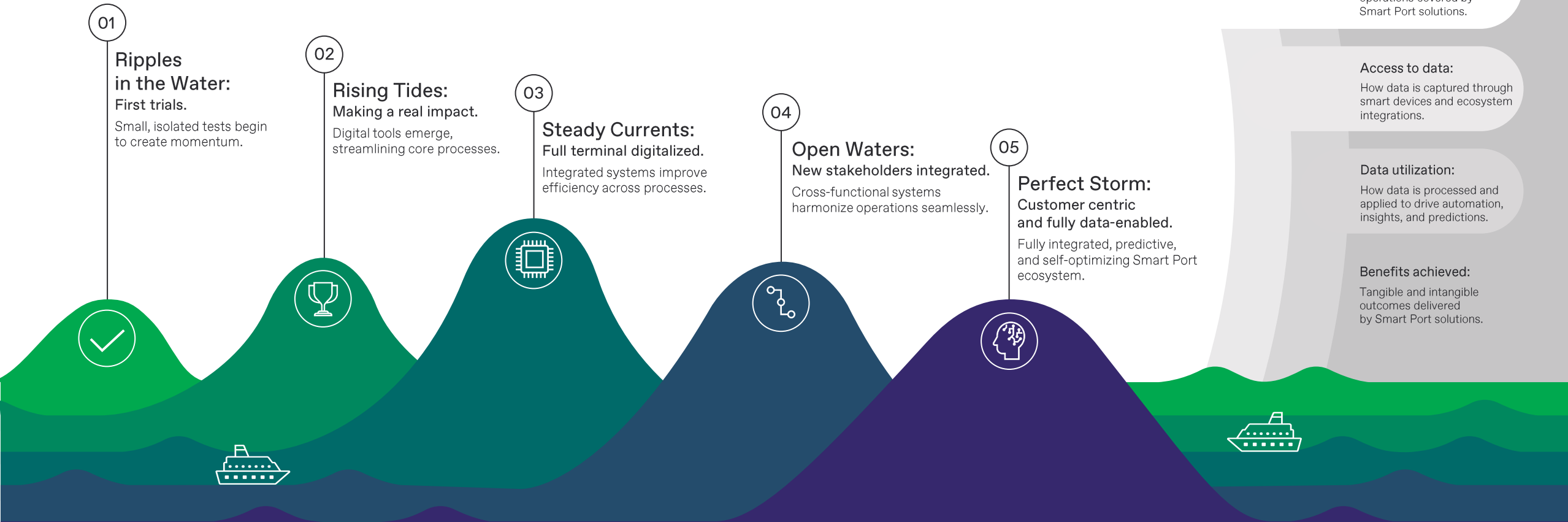
Payment solutions
credit card, mobile

Smart Port in action

 Smart Port in action

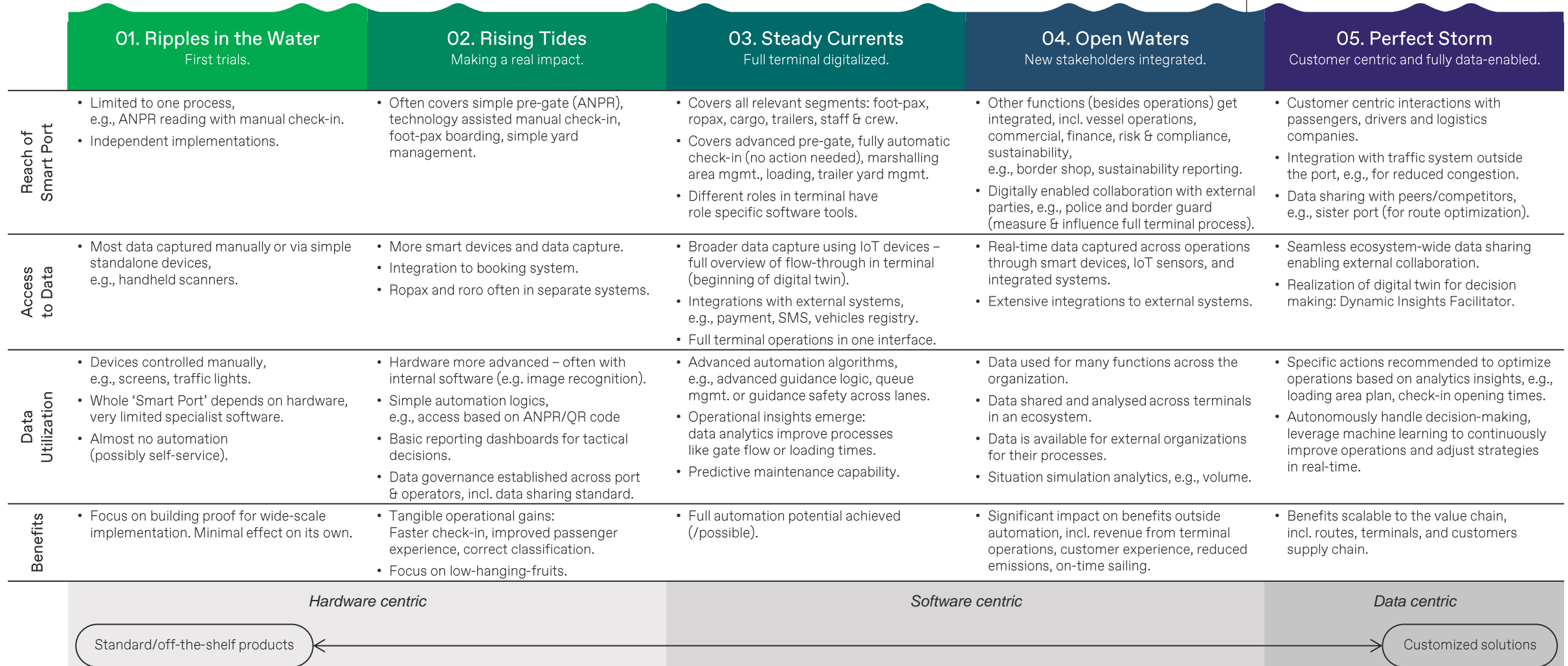


The maturity model helps ferry terminals understand the voyage from first tests to an advanced Smart Port.

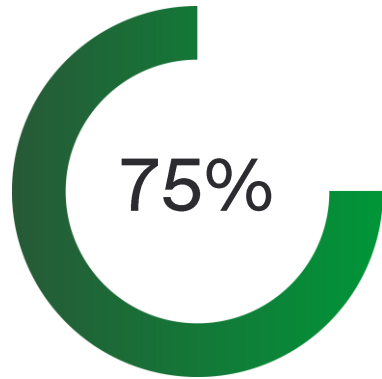


Waves of Innovation: The full overview

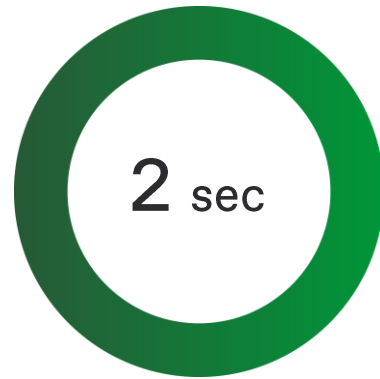
Example: Port of Tallinn



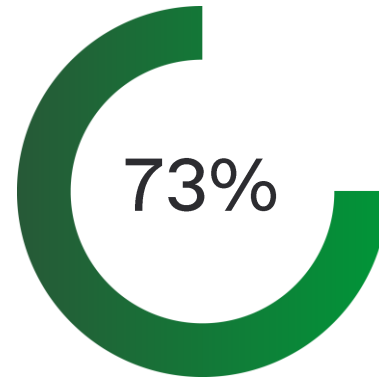
Business value of Nortal's solution*



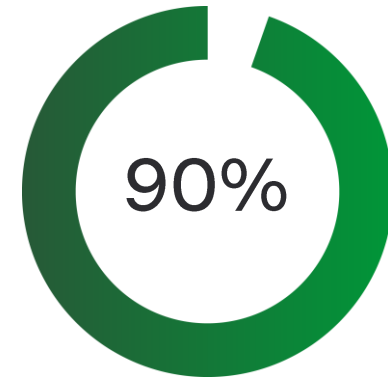
Staff required during check-in decreased by 75%



Near real-time pass-through in express lanes



Customer NPS increased from 40% to 73%



90% of employees happy with the ease & use of system

* Example results from Port of Tallinn

Optimizing RoRo Terminal Operations: Leveraging digital twins, data, and analytics for efficiency



Advanced data analytics for RoRo terminals can bring about far-ranging benefits in and out of the terminals.

Let's explore the benefits of digital twins – operational efficiency through advanced analytics.

Terminal operations

- Manual effort
- Safety & security in port
- Employee experience
- Less CO2

Vessel operations

- Faster turnaround – slower sailing (cost & CO2)
- Better utilization of vessel capacity
- Improved safety on board

Logistics chain optimization

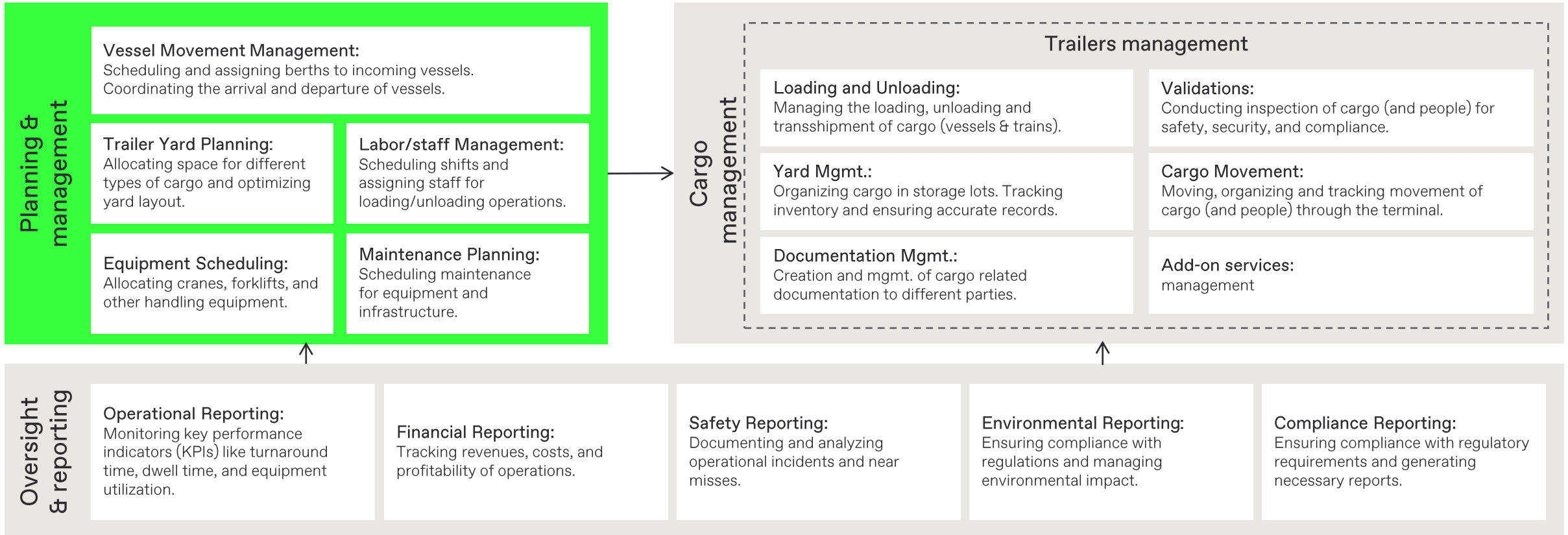
- Better integration with DFDS logistics
- Strategic optimization of route & terminal network

Customer experience

- Optimization of customer logistics chain
- Better experience through digital products & data
- Better experience from smooth terminal and logistics operations

The 'planning and management' capability area in a trailer yard is the prime target for being supported by a Dynamic Insights Facilitator.

RoRo Terminal Capability Model



Our vision for ferry ports

Even though a big step for many: it is a good idea to consider early what the future aspiration of your terminal operations will be.

Principles for Smart Port:

Data captured at every touch point to optimize and improve through predictive analytics

Seamless customer experience where all **unnecessary actions have been removed**

Positive upside for passengers through **personalized offers** and services

Sustainability & safety reinforced through smart technologies.

Download our Future Vision:
a comprehensive tech map



The opportunity to redesign your future is now.

Your frictions and frustrations are our insights and inspirations.

Let's discuss!



Nortal is a trusted strategic partner for governments, healthcare institutions, leading businesses, and Fortune 500 companies. Having 26 offices in Europe, in the GCC, and in North America, we are close to our customers while backed by a vast global talent pool. Our seamless teams help our customers to transform and future-proof their organizations by building world-changing solutions with the right technologies.

© 2025 Nortal - all rights reserved.

Proprietary and confidential. Do not distribute without written permission.

nortal.com

The background of the right side of the slide is an abstract, dynamic composition of glowing, curved lines in shades of blue and green. The lines create a sense of motion and depth, resembling a futuristic landscape or a data visualization. The colors transition from a deep blue at the bottom to a bright cyan at the top.

25 years of shaping
the future