



DEVELOPMENT OF SPECIFICATIONS FOR THE DESIGN AND IMPLEMENTATION OF A PORT COMMUNITY SYSTEM IN THE MARITIME PORTS OF CONSTANȚA

EM Ports 2025, Results Presentation Meeting
26. March 2025

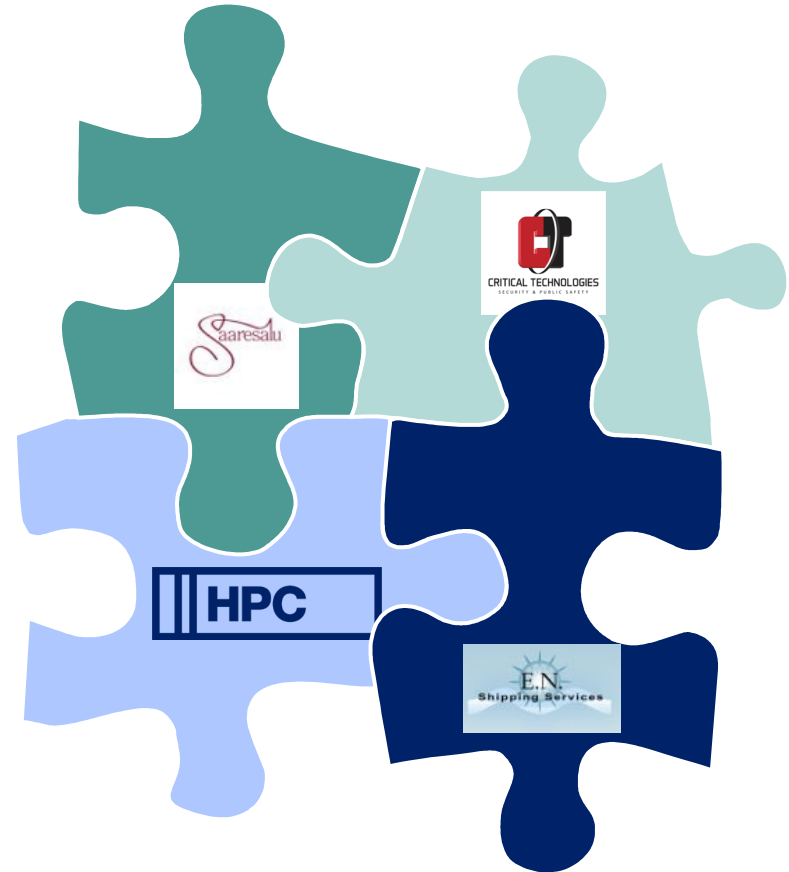
Content

- Introduction
- Roadmap
- Summary of Deliverables
- Way Forward

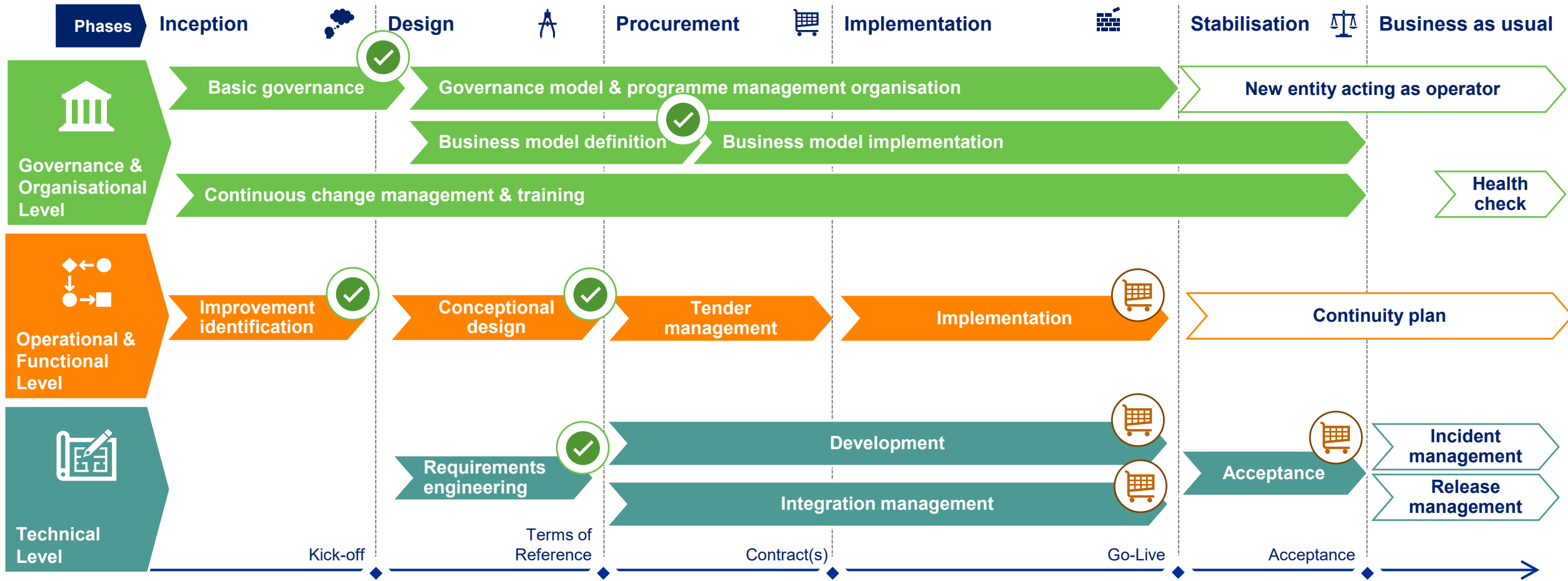
Consultant Consortium

...of Critical Technologies SRL, HPC Hamburg Port Consulting GmbH, EN Shipping OU and Saaresalu OU

- Four companies from three different countries with relevant background experience, technical expertise, and port community environment knowledge
- A team of experts with a high level of expertise acquired through involvement in complex projects for similar beneficiaries
- Having proof of smooth collaboration in the past, makes our prospects of repeating the same in the future even stronger



Digital transformation programme in the port and logistics sector



Deliverable1: Process Analysis

Key results & recommendations

PCS Stakeholder Analysis and As-Is Processes

- Created awareness of existing processes and stakeholder interactions around vessel, cargo and hinterland traffic
- Forum for the stakeholder involvement and collaboration

Pain Points

- Approx. 50% of the pain points can be addressed by implementing the PCS, the rest should be handled separately
- Input for the prioritisation of PCS features

To-Be Business Process Models

- Designed 37 process models, addressing the pain points and desired way of working
- Discussed and reviewed by the port community stakeholders

Deliverable 2: Data Security and Storage

Key results & recommendations

Legislation compliance

- PCS is designed to be compliant with relevant Romanian and EU legislation related to data security, cyber security and personal data protection (GDPR).

Standards compliance

- PCS is compliant with current cyber security standards at application and infrastructure level.
- PCS is designed to be compliant with current principles of achieving IT security.

Information Security Approach Methodology

- PCS will follow at least the following 3 dimensions:
 - Identify specific requirements for interoperability with existing security infrastructure and services at the time of application development to be included in PCS,
 - Identify specific functional and technical requirements for IT security (application level),
 - Identify specific requirements for alignment between functional safety and IT security (application level).

Deliverable 3: Governance Model

Option 1

Key results & recommendations

Governance Model Option 1 suggested

- Port of Constanta will be the owner of the PCS.
- Development of the PCS platform and its operations are internalised in CN APM.

Port IT Service in the Centre of the PCS Development

- Exploiting the resources of the Port IT Service. Currently 14 people full time.
- Additional staff contributing full time or part time needs to be hired or contracted.

Stakeholder Engagement

- The involvement of port users and industry experts ensures that the system meets the real-world needs of the port community.

Risk Mitigation and Program Management

- In-house management provides greater oversight and flexibility to address any challenges promptly.

Long-Term Value

- By retaining in-house expertise and aligning the system with the port's strategy, the PCS can become a sustainable competitive advantage for years to come.

Deliverable 4: Financial and Economic Analysis

Financial Analysis

- Two analysis options with different targets and input parameters requested
- Evaluation shows insufficient financial feasibility from a private sector perspective
- Results support suggested governance option

Economic Analysis

- Includes perspectives of stakeholders, government and wider society
- Results show very positive benefit-cost ratio
- Significant time savings due to digitalisation and less bureaucracy; less GHG

Decision Matrix

	Positive Economic Evaluation	Negative Economic Evaluation
Positive Financial Evaluation	Private sector realisation.	Private sector realisation feasible, yet not recommended (substantial negative externalities).
Negative Financial Evaluation	Project realisation by state or with state support (subsidies or PPP) recommended.	No project realisation.

Deliverable 5: Technical and Functional Specifications

Key results & recommendations

PCS infrastructure

- Private cloud
- Geographically distributed

PCS functional specification

- Tailor-made to the needs of Constanta port community stakeholders
- Vessel, cargo and hinterland coverage

PCS implementation

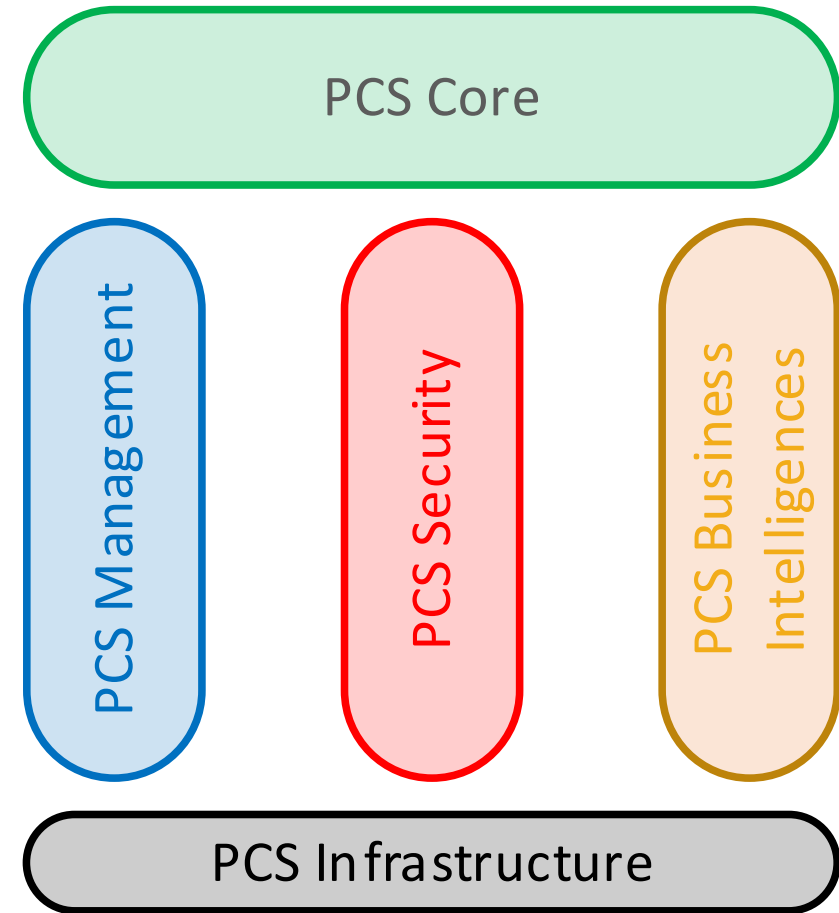
- Gradual / incremental development approach
- Start small and grow smart

PCS operation after Go-Live

- Two operational centers located close to data centers
- Operational and maintenance teams

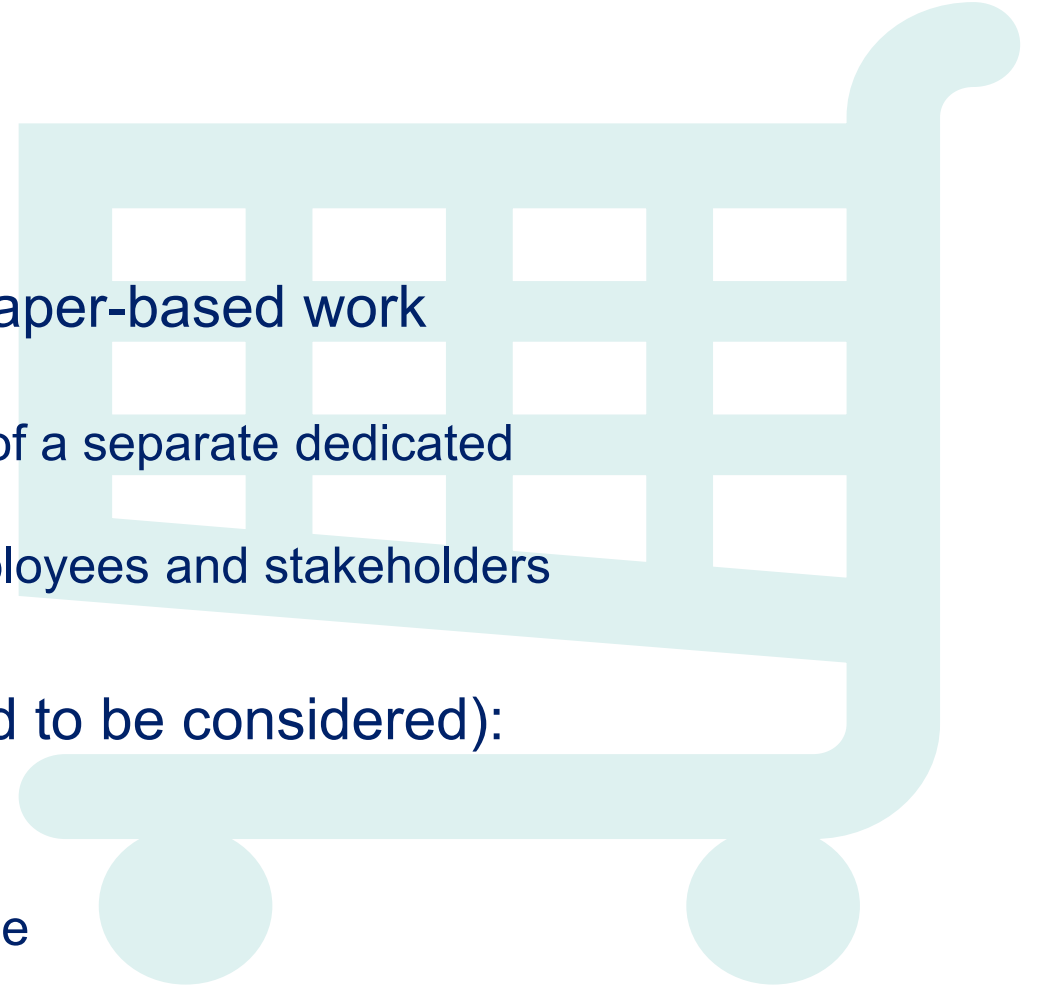
PCS High-level Architecture

- PCS Core – specialized applications, implements business logics
- PCS Security – secure data manipulation and assure system integrity
- PCS Business Intelligence – provide business insights for tactical and strategical system evolution
- PCS Management – support for system management and maintenance
- PCS Infrastructure – supporting applications and IT&C infrastructure

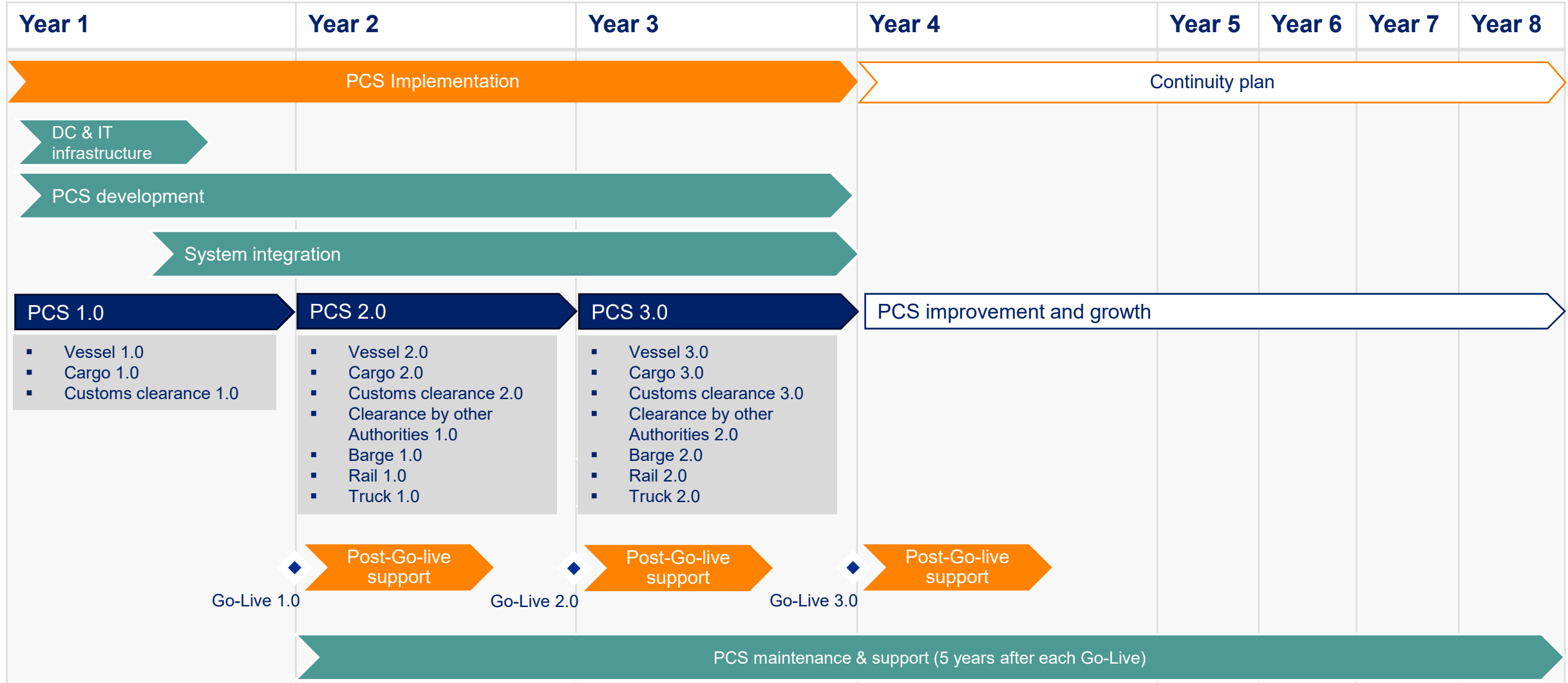


Deliverable 6: Specifications for PCS Implementation (ToR)

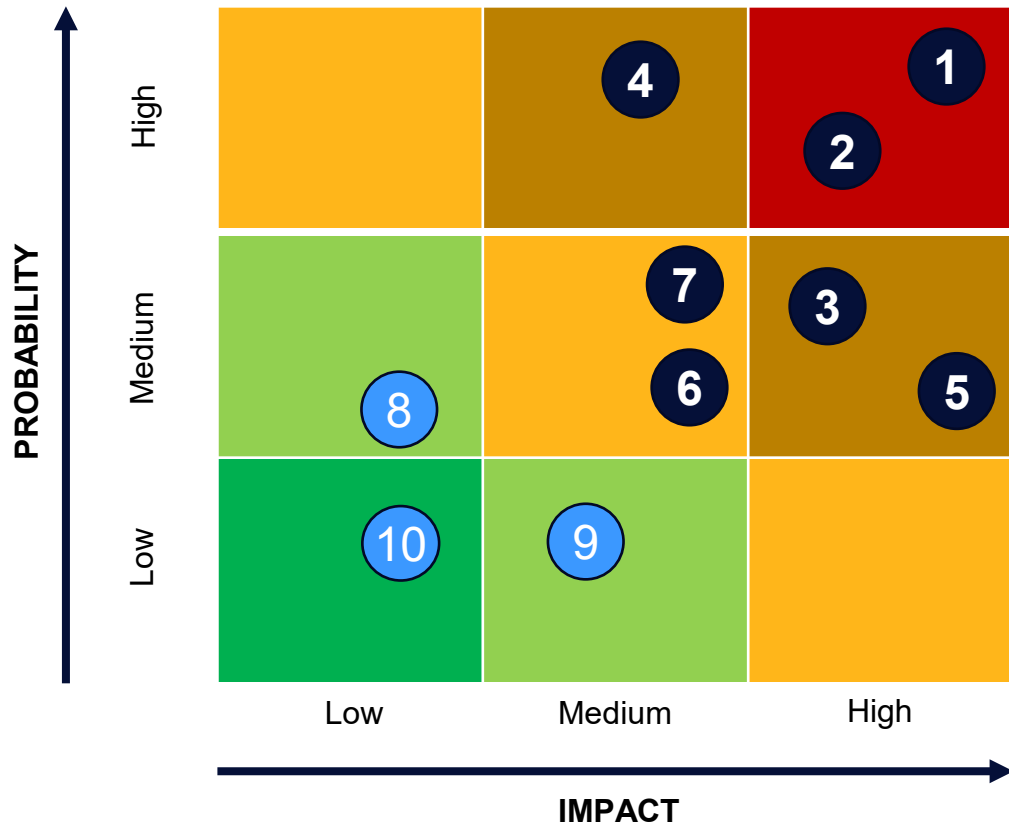
- Software development
- Hardware deployment
- Building two Data Centres
- Change management: the transformation from paper-based work environment to digital work environment
 - Stakeholder involvement – suggesting the creation of a separate dedicated Programme Management team
 - Knowledge transfer and user training: both port employees and stakeholders
 - Must be well planned and continuous
- Project implementation time (port resources need to be considered):
 - Implementation: three years
 - Maintenance & support: five years
 - Plus preceding finance sourcing and tendering phase



PCS Implementation Approach



Deliverable 7: Risk Analysis and Impact Assessment



Risk #	Risk description
1	Stakeholder resistance to change Mitigation option: user engagement, communication, highlight benefits, targeted training, incentivise early adoption
2	Legal and regulatory challenges Mitigation option: legal review, collaborate with authorities, ensure data privacy, advocate for regulation updates
3	Disruptions in PCS development/implementation Mitigation option: robust program management, dedicated change management team, proactive risk management, manage expectations, contingency budget
4	System integration challenges Mitigation option: assess existing systems, select vendor with integration expertise, allocate resources, standardised integration protocol
5	Data migration errors Mitigation option: data migration strategy with data cleansing/validation, data quality checks, rollback plan, utilise data migration tools
6	Cybersecurity threats Mitigation option: security risk assessment, implement robust cybersecurity measures, regular system updates, staff training, incident response plan
7	Project delays Mitigation option: Realistic project schedule, project management tools, proactive risk management, communication plan, contingency budget

Way Forward



1

2

3

4

5

6

Review
and accept
Consultant's
Deliverables

Prepare the
governance
for PCS

Identify
sources of
financing

Tender
for the PCS
implemen-
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Implemen-
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Operations

Heiner Bachmann

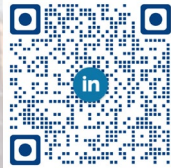
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Way Forward – Port of Constanta



1



2



3



4



5



6

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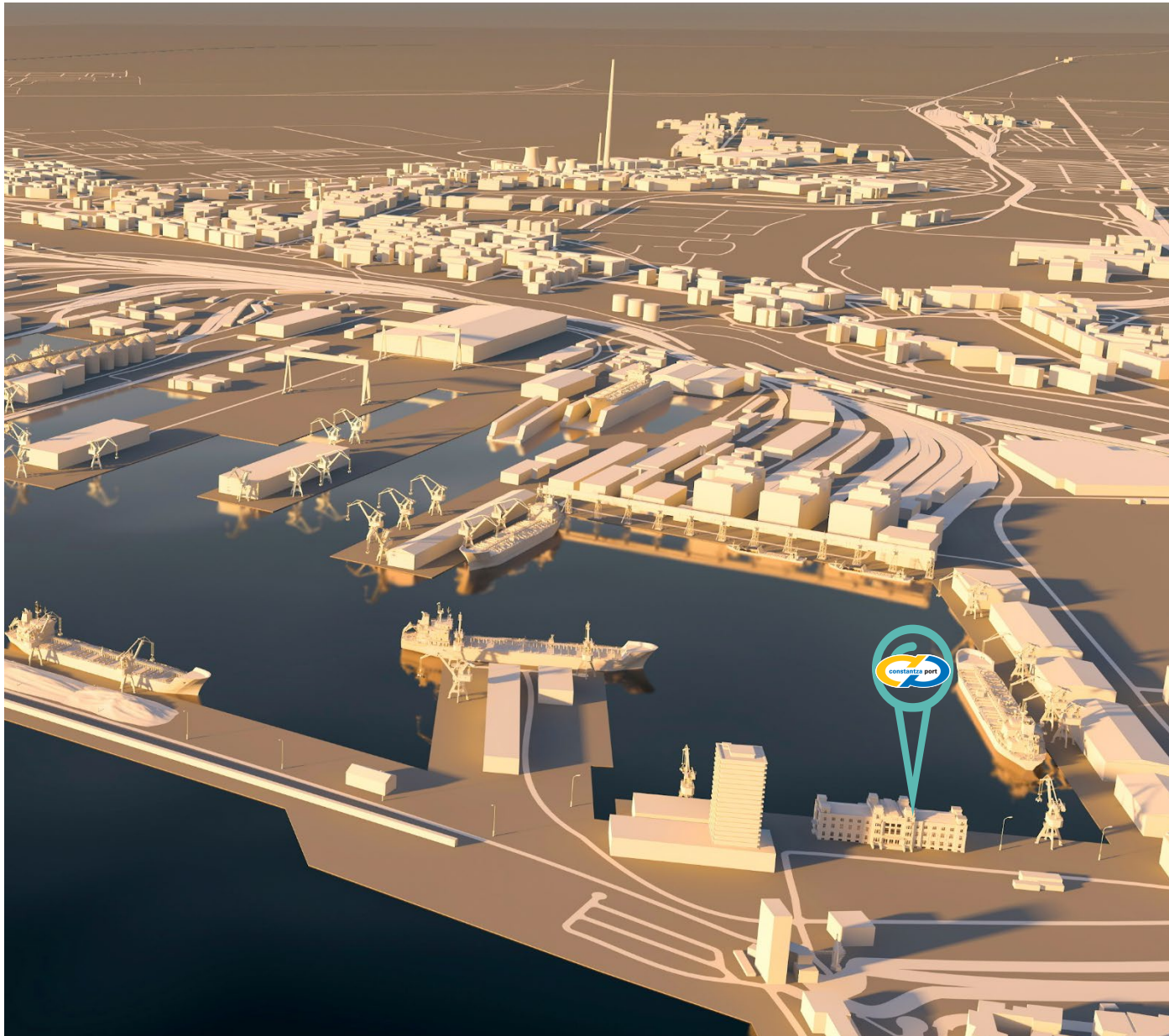
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Operations

STATUS

- all the necessary permits for the civil works of the datacenter were obtained
- we are now submitting the documents to the Technical and Economical Council of the Port of Constanta for approval
- next, we will submit the documents to the Ministry of Transport and Infrastructure for approval
- in the meantime, the funds will be identified (almost certain we will apply to the Transport Programme 2021-2027 – Priority 7: Development of naval and intermodal transport)
- contracting services to elaborate the financing request and support documents
- tendering as soon as possible after all these prerequisites are met (July-August 2025)



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