



TECHNICAL STRATEGIES AND POLICY RECOMMENDATIONS FOR DIGITALIZATION OF SMALL PORTS IN THE PACIFIC ISLAND COUNTRIES

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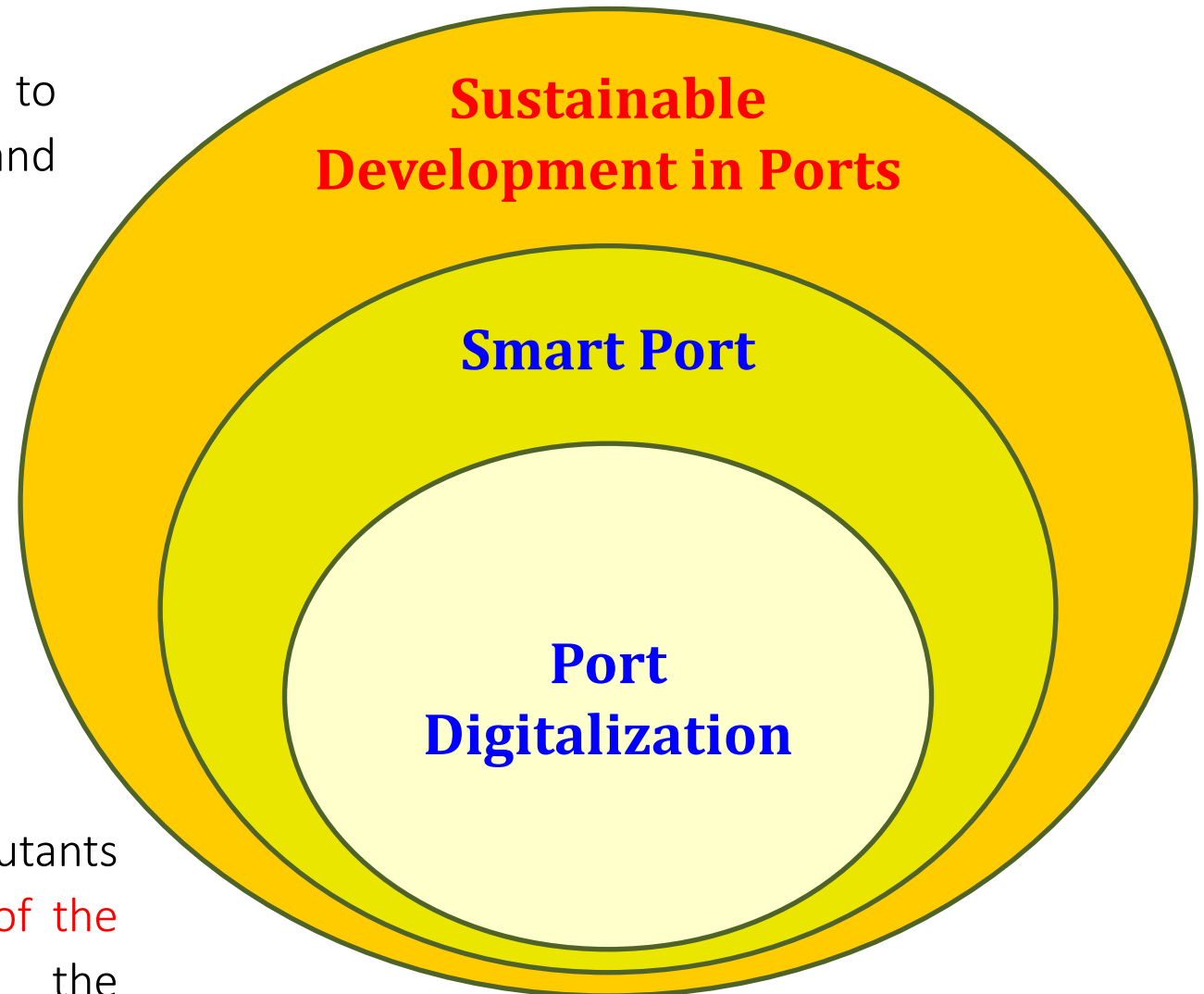
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I. Introduction



What is Port digitalization?

- **Port digitalization**
 - involves adopting digital technologies to enhance the efficiency, transparency, and competitiveness of ports
- **Smart port**
 - can be considered to mean ports that autonomously process port operations and optimize logistics flow by applying new and the advanced technologies
- **Sustainable development in ports**
 - Introducing regulations on various pollutants such as IMO 2020, the **sustainability of the port** is being recognized as the competitiveness of the port



I. Introduction



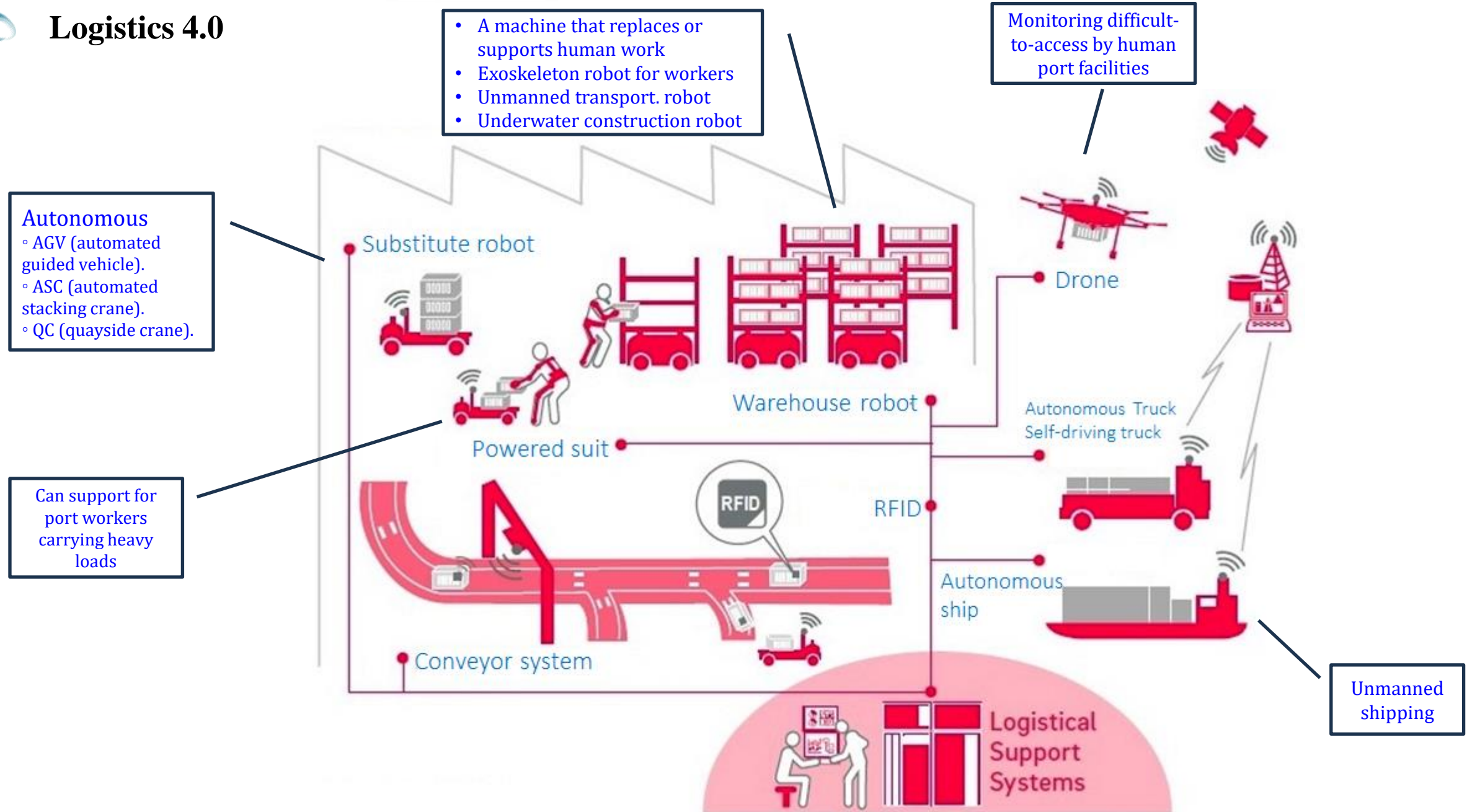
Background

- Importance of Maritime transport in global trade
 - Ships are Responsible for moving approximately **90%** of the world's trade (by IMO and Clarkson annual report)
 - Changing globally: Complexity of trade and transport flow ↑, considering environment ↑
- Today, what happening in maritime domain
 - vessel sizes and cargo volumes have surged upwards
 - Needs to strengthen the competitiveness of seaport
 - A dramatic innovation with business model (service) as well as technology
- challenges
 - Lack of efficiency in port operations and on-demand port service
 - Lack of interoperability with other transport means
 - Environmental impacts: ship and port wastes, oil waste and sewage, etc. CO₂ emission
 - Weakness of physical and cyber port security

I. Introduction



Logistics 4.0

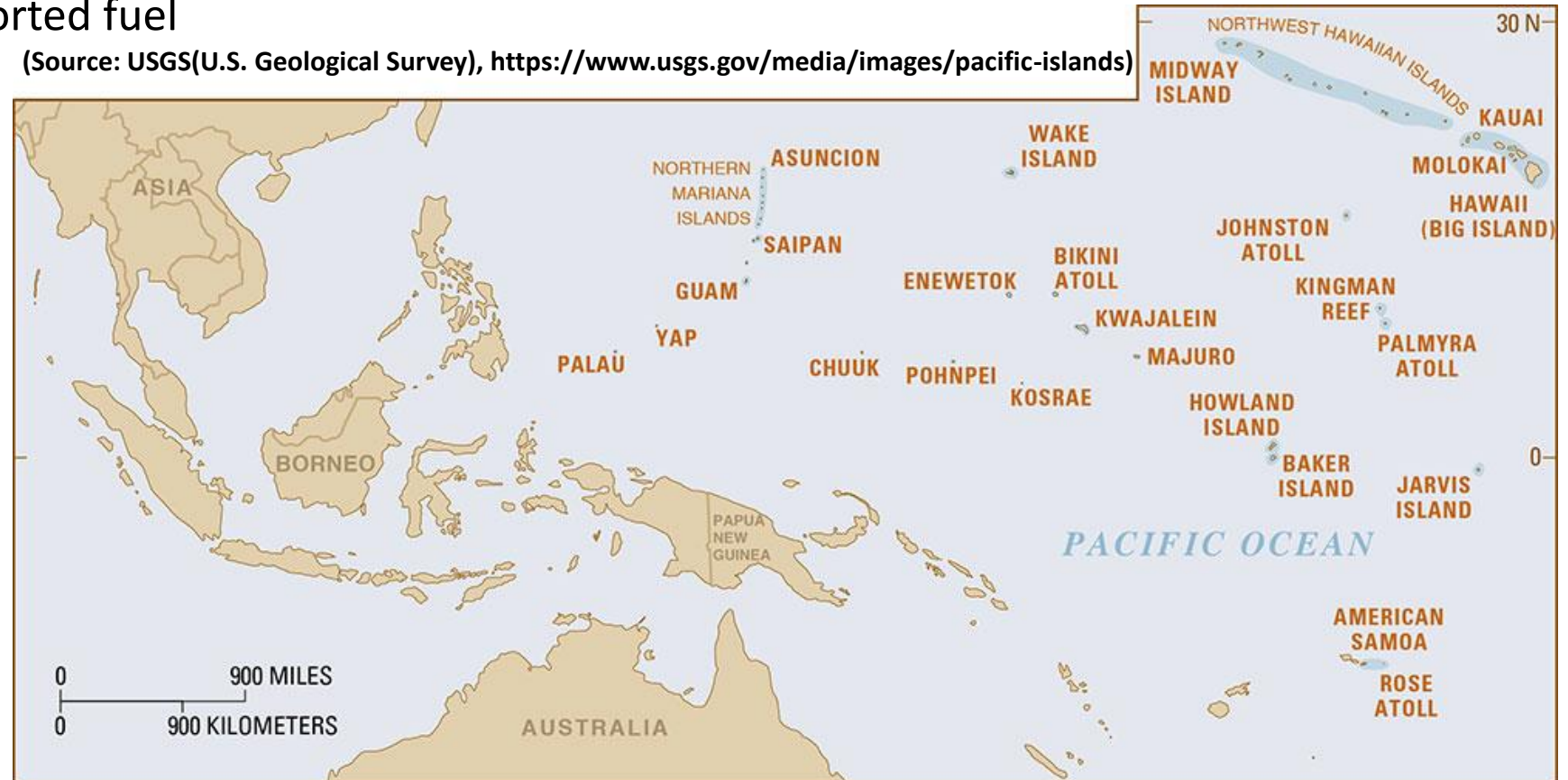


I. Introduction

Regional characteristics of Pacific Island countries

- Remoteness : geographical isolation from major international markets
- Low cargo volumes
- Natural hazards : The Ring of Fire in the Pacific region, frequent volcanic activity, earthquake, and tsunamis
- Heavily reliance on imported fuel

(Source: USGS(U.S. Geological Survey), <https://www.usgs.gov/media/images/pacific-islands>)



Contents from ADB Report,
Smart ports in the Pacific, 2020.11

I. Introduction

Port operation's characteristics of Pacific Island countries

- Willing to be multipurpose ports
- Low level of digital maturity : Most activities are dependent on manual input and/or paper-based systems
- Lack of standard operating procedures
- No regional vessel planning system, seasonal delays and congestion
- delays in the customs and biosecurity operations
 - generally insufficient personnel capacity, time-consuming procedures
- Labor-intensive procedures
- Lack of communication or port connectivity
 - without regular communications or connected systems
 - duplicative work among participants and long process times for imports and exports.

Contents from ADB Report,
Smart ports in the pacific, 2020.11

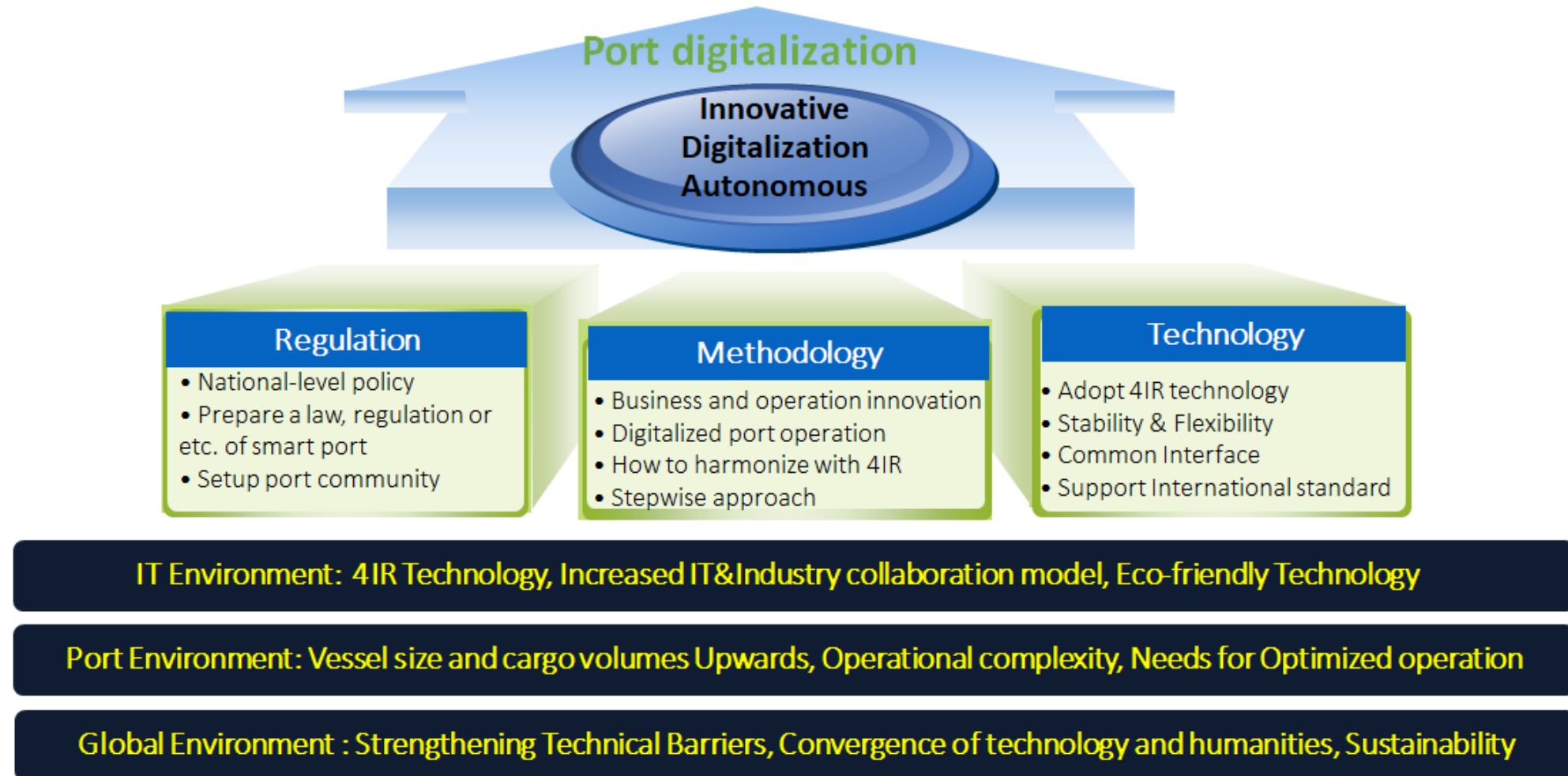
Realize port digitalization to solve the challenges of ports, reduce the technical and operational gap, and enhance the capability, productivity, efficiency, and safety and security of ports through business innovation, work automation, and the 4IR technologies such as Big data, IoT, Robots, Drones, e-documents, etc.

It is time to go towards Smart ports through port digitalization

II. Port digitalization

Goal for port digitalization

Ensure efficiency, reliability, safety, security of port
Increase national and port competitiveness



II. Port digitalization



What is next for port digitalization

- The adoption of digital technology
 - Move towards the **digitalized Port** with emerging technology
 - Port digitalization could potentially be deployed to monitor impacts, measure performance, and identify bottlenecks
 - Port business innovation, port automation, and unmanned procedures
- Needs a Stepwise Approach
 - appropriate level of smart port maturity and sophistication should be designed
 - a clear, long-term plan to enhance resilience
 - Ex: a 30-year (2021-2051) port infrastructure development plan (PNG), short-term and long-term plan
- Interoperability through information sharing
 - IMO, UN/CEFACT international standards for implementing information systems such as port management, port community system, national single window, etc.
 - Information sharing between Government agency's information systems, with other countries

II. Port digitalization



ESCAP project

■ 1st Phase

- Capturing the status of small ports (target countries)
 - Status of the port itself, facilities, port operations, and users
 - Status of informization of their ports, how to handle port operations, etc.
- Best practices of port digitalization focused on small ports or successful digitalized ports
- Gap analysis, capturing requirements of target countries' small port
- Extracts what they want for port digitalization and designs the recommendation

■ 2nd Phase

- Suggest suitable (proper) port service models from the recommendation of 1st phase
- Implements suitable (proper) port service models of target countries' small port
- Pilot testing and feedback
- Finalize ESCAP project

III. What to do for digitalization in port

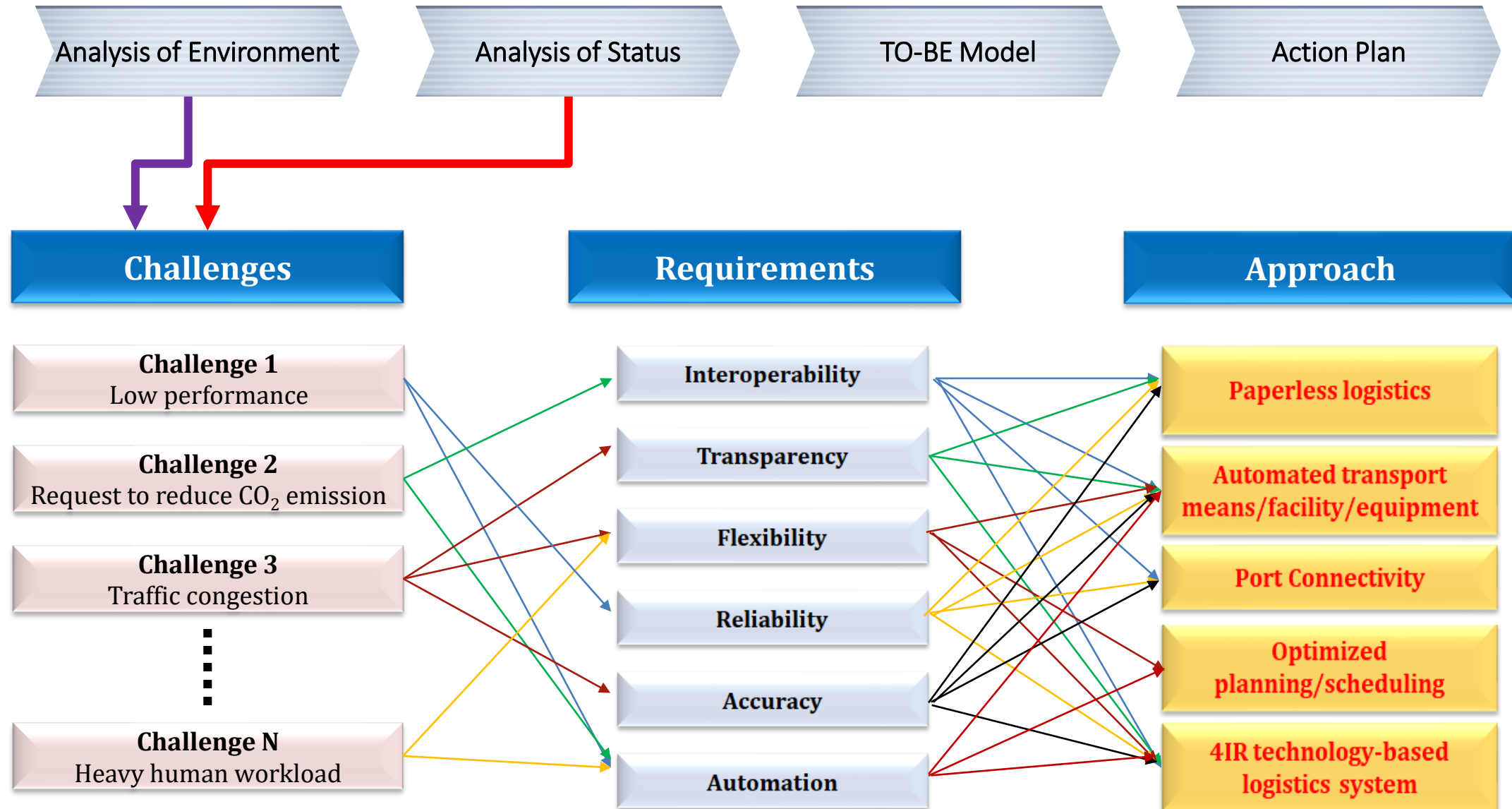


Preliminary requirement

- **Environmental and policy perspective** : Pursuit a conformation with national policies and strategies, captures operational and technical requirements, Analysis of environmental changes
- **Strategic perspective** : The legacy laws, regulations, policies, etc. revision, national level master plan or roadmap, Securing budgets. resources, and a professional manpower through high level training
- **Process innovation and technical perspective**
 - Applying 4IR technologies for a sustainable and resilient port
 - Securing an end-to-end visibility through dataization, providing prediction service and on-demand service
- **Standard and structured methodology perspective**
 - defines goals, strategies, and action plans through analysis maturity methodology

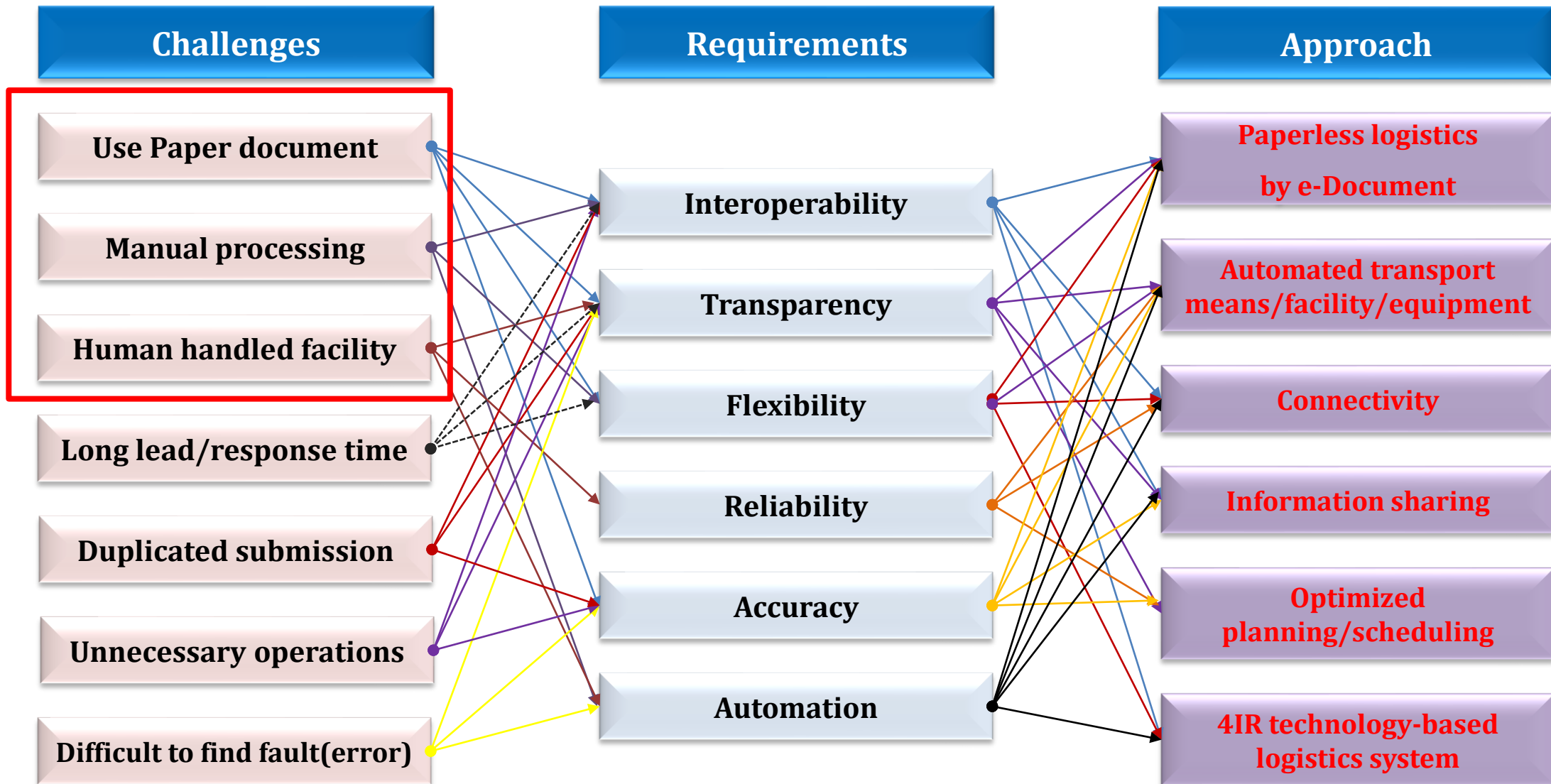
III. What to do for digitalization in port

BPR - Analysis



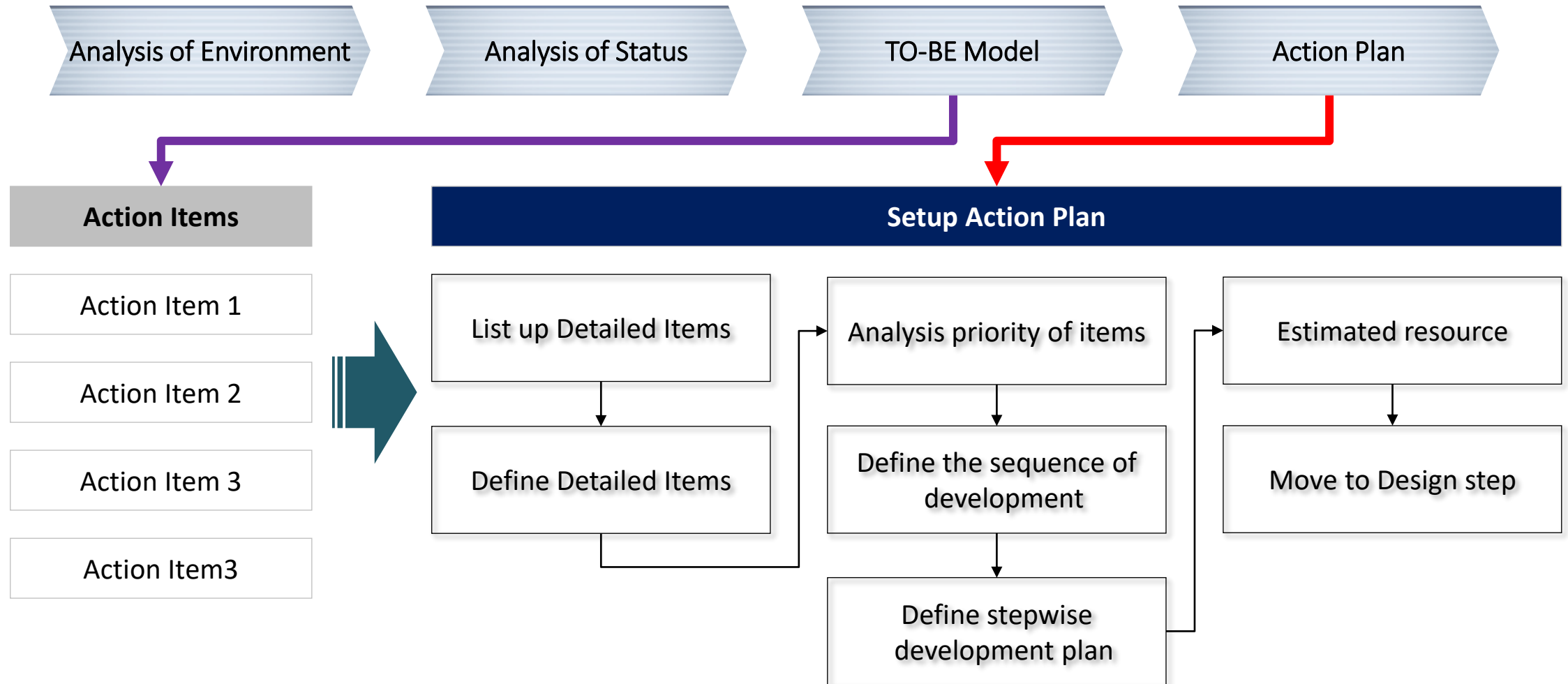
III. What to do for digitalization in port

BPR - Analysis



III. Stepwise approach for Port Digitalization

BPR - Design To-be Model



III. What to do for digitalization in port

Informatization

■ Developing information system

- Receive and process port operations-related documents electronically from port user
- Able to prevent manual work and duplicate inputs, and cost and time-saving
- Connect to external organization including Customs and Information sharing
- Ex: e-invoicing, cargo declaration, berth allocation, etc.

■ PCS, Port Community system

- PCS is a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the competitive position of the sea and airports communities

■ Maritime Single Window (MSW)

- Since 1 January 2024, all IMO Member States are required to use a single, centralized digital platform or "Maritime Single Window" (MSW) to collect and exchange information with ships when they call at ports
- on mandatory electronic data exchange in ports for ship clearance

III. What to do for digitalization in port

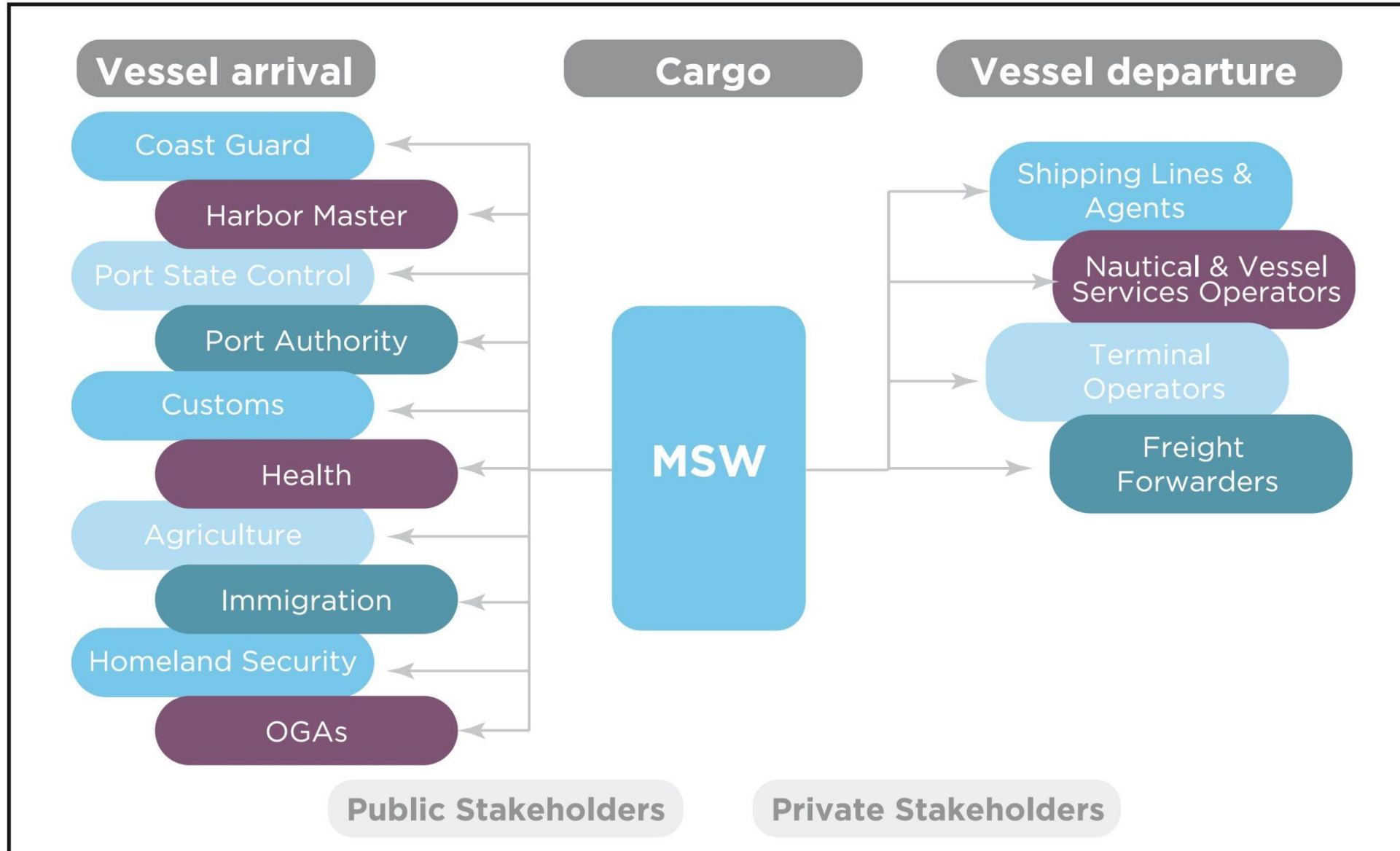
PCS

Port Community Systems (PCS) are digital collaborative platforms that enable seamless exchange of information among a port's many stakeholders, including customs agencies, port management, shipping and logistics companies, and freight forwarders.



III. What to do for digitalization in port

MSW



IV. Conclusion

Why starting toward to a smart port using digitalization?

- **Digital transformation** and globalization, information should be exchanged between cross-border countries for connectivity, interoperability, reliability, or safety, etc.
- Technical trend is also changing, therefore many organizations try to adopt new technology to enhance their capability

Goal
Direction
Strategy

Roadmap
Masterplan

Strong leadership
Close relationship

**Digitalization
with
Technology**

IV. Conclusion



Next steps

■ Port Digitalization Study

- Questionnaire collection: ~ end of August
- Analysis of collected Questionnaires: September
- Draft of analysis: October
- Present and update the result of the analysis: December 2024
- Finalize the study report: December 2024

■ Upcoming activities

- Kick-off meeting (virtual): TBD
- Capacity building workshop on port digitalization and resilience in Asia and the Pacific: early December 2024



감사합니다.

Thank you

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