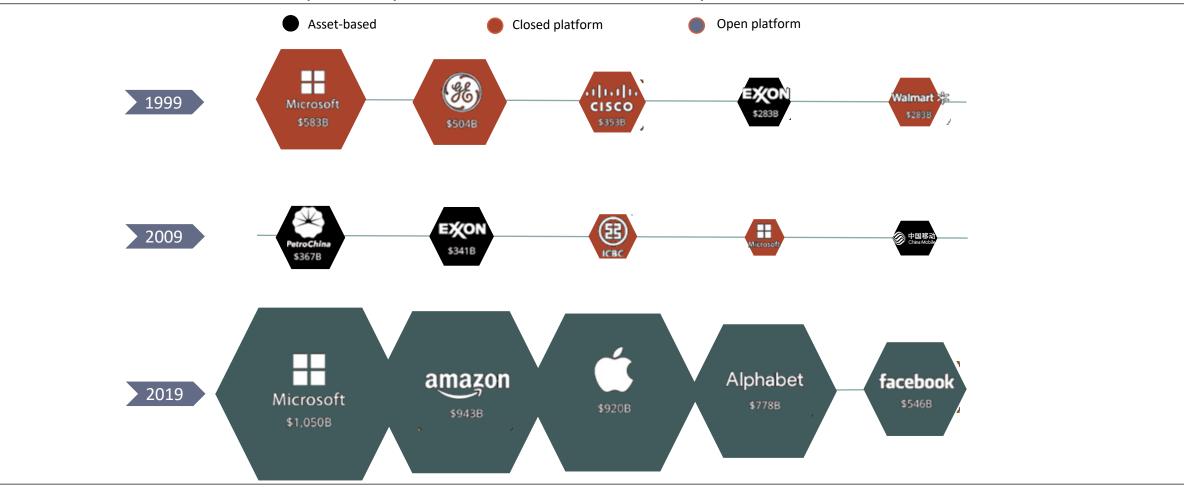




# The power of platforms



### Top 5 companies in terms of market capitalization





































# Smart Ports - A story of...



TECHNOLOGICAL POTENTIAL

SOCIAL CHANGE CAPACITY































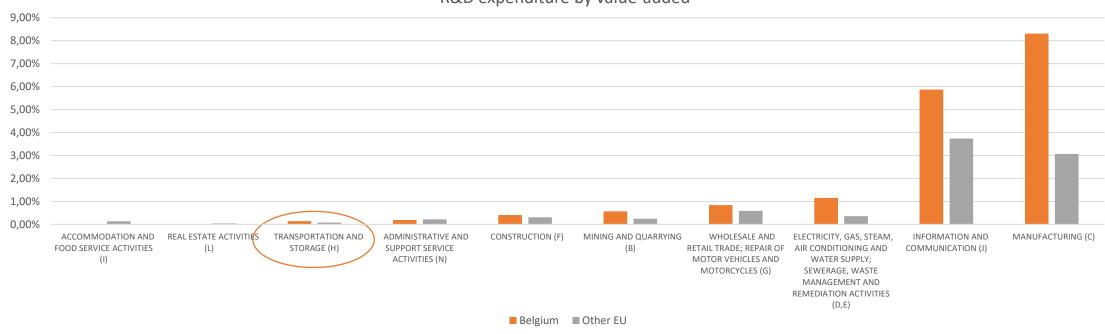




### The innovation impulse?



#### R&D expenditure by value-added





































### What is a Smart Port?

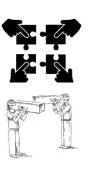












### A Smart Port is a port that

- optimizes in-, port- and out-bound flows of goods and information,
- leads a sustainable development,
- guarantees safe, resilient and secure activities
- through the capabilities of its (extended) port community and enabling technologies"

































### Strategic challenges

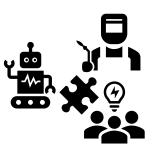




Each port operates under varying environment-related contingencies



A lack of a holistic approach



Tech adoption is not enough, new mindset, rules and disciplines are needed

































## Tactical challenges only a community can overcome





Our own or others' low IT maturity



Data standards



Getting everyone to commit



No willingness to change, if it entails losing an existing benefit



Lack of appropriate data platform



The business case clear for everyone



Mental shift



Mainly operational focus



Lack of resources































### **Smart Port Maturity Model**



Integrating the state-of-the-art scientific literature on failure and successes of smart port digital transformation







focused





### Case: North Sea Port



Karel Saey Rick Van Sluijs



































### **Case - Port of Moerdijk**





- 4th biggest port of the Netherlands
- +400 companies in logistics and chemicals

















#### Phase 1

Fragmented

#### Phase 2

Defining smart port

enablement

### Moerdijk Case – Containers

Human Intuition-based risk analysis, Fragmented security tools (X-Ray scanning, Inspection animals etc.), safety equipement to abide by the law

Labour-intensive activities. Mostly telephone and email based communication, causing miscommunication

Ad-hoc manual (spreadsheet-based) planning. Mostly telephone and email based communication.

Reactive approach to oil spills and other negatively impacting environmental disasters. Environment is not part of the strategy of the firm.

Division of specialized labor instead of processes, reactive approach, optimization only at the silo-level, arms-length interaction orientation, strong opposition against change (Set-up of) rules for Identity and Access Management, standardized data sharing for information

Current

nfrastructure and

resources (i.e. employees),

(Set-up of) initial rules on standardized information exchange (e.g. Dangerous goods regulations). Identifiable sensor installation

Current

ort-Authority focused ems), Measurement of

weight to avoid accidents (VGM)

(Set-up of) rules on hinterland data capture and charing and WSN (Wireless Sensory re usage monitoring

#### Current

out the supply-chain. Static modality overview is present.

(Set-up of) environmental targets, sensors to measure <u>natural habitats</u>, calamities,

### Current

water and soil consumption

reporting

(Set-up of) standardization rules for information exchange in processes, internal and external bi-lateral collaborative skills, understanding of direct partner goals (e.g. tacit processknowledge), combining digital indset with supply-chain process knowledge Incorporating privacy legislation in design

#### Phase 3

Defined & digitizing smart port

Identity and Access Management (IAM) Systems, Paperless clearance, Drone surveillance and virtual fencing, Asset and cargo damage inspection, Standardized

dangerous goods). Supply-chain information available for authorities (customs, police etc.)

Gate automation, Berth Planning, Demand Planning, Yard/Storay Planning, Utility Data Platform ( Community focused - utilia Asset Maintenance - redicts

Asset Maintenance redict Digitized document and cas systems

Paperless cargo moves, Automated (low-touch) gates, Modality and capacity planning, bi-lateral modality planning (Terminal Truck appointment systems)

Environmental impact dashbor rd,
Energy use optimization tools
movement sensors for yard liab
Supply-chain waste more re-use solutions

Defined and working rules for close engagement and cooperation in supply-chains,

Current

structures

#### Phase 4

Managed, measured & intra-connected smart port

Port-wide adopted standards for data sharing, Anomaly IAM montoring of centrally-shared IAM logs (Whs. What, When), Port-wide cyber security protection of Cls, Al-bas, wide non-intrusive customs in wide pro-active search-and wide pro-active search-and security of the contractive emergency response solutions, Notification

Fully automated container handling, Cargo Bundeling, Collaborative Integrated planning, dynamic & integrated digital twin, sharing of assets (cranes, warehouses etc.), combine money,Port-wide adopted standards for data sharing,

Port-wide Integrated modality planning and notification tool (for rail, barge a road), Corridor-based mod May planning bundeling, Unito arr planning, Port-wide Traffic systems

Port-wide waste reduction platform, Proactive dredging, port-wide sustainability dashboard, port-wide smart grids, Illegal pollution tracking, tracking and enforcing port-wide emission targets for alle stakeholders

Understanding indirect impact on the osystem of business actions, smart business work capability due to easy (dis)connection enlighted self-interest, mathibactizental collaboration structures, common pur platform and develop innovations for the deas-as-alice

#### Phase 5

Optimized & continually improved inter-connected smart port

Inter-port suspicious cargo notification and tracking solutions, inter-port aligned customs information systems (G2G), Inter-port driven risk assessments

Inter-port workload balancing, interport empty container/asset repositioning, inter-port departure and arrival notification and Interport data sharing standards and interoperable platforms

Integrated E2E modality and capacity planning and pooling (bridging port complexity differences), Connected corridor integration platforms,

Corridor (or larger - global) enforced environmental standards systems, Inter-port enforced GHG optimal routing of cargo, Corridor (or larger global) waste reduction platform,

Global mindset, understanding of inter-connectedness, whole-network vision, inter-port (dis)connection cooperation standards, openess to redesign end-to-end supply-chain,

# components of a smart port?

What are the



**European Regional Development Fund** 

**SPEED** 

Smart Port Barometer

June 30th 2021

Tracking progress of smart port maturity in international port areas

Benchmarking digital maturity & ambitions of port stakeholder types

Kick-off: June 30th, 2021

Publication of results: September 30th, 2021

Distribution of participant benchmark results: October 2021

Participate & get your organization's benchmark: https://bit.ly/362zdvr

Partnership requests: Lorenzo.Franchi@ams.ac.be



### Thank you for your attention!



### The Smart Port Maturity Model can

- 1. Guide individual actors in their digital transformation.
- 2. Map your current maturity and benchmarking them against captains of industry
- 3. Strategically align your port community to choose digital transformation projects together































