



Virtual Stakeholders Workshop

MOSES: The Project



Assoc. Prof. Nikolaos P. Ventikos, NTUA

08/10/2020, Online



Workshop Agenda

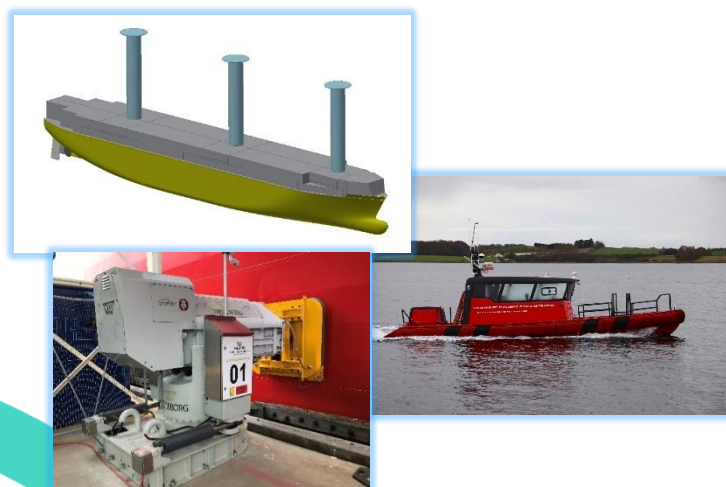
1

We will tell you all about MOSES!
11:05 – 11:15 EEST [NTUA]



2

We will present the basic ideas about
the MOSES innovations
11:15 – 12:00 EEST [NTUA]



3

An open discussion session will follow
for each innovation – facilitated by us
12:00 – 13:00 EEST [MOSES partners]





Consortium - Who is MOSES?

17 Partners across Europe

Expertise in:

- Naval design
- Maritime Logistics
- Risk, Safety, Environmental Assessment
- Sustainability and Cost-benefit Analysis
- Port Infrastructure and operations
- Autonomous System operation
- Business Modelling
- Innovation Management



- 4 Technology Prov.
- 4 Stakeholders
- 3 Ports
- 2 Research Inst.
- 1 University
- 1 Class Society
- 1 Shipyard
- 1 IT



Motivation - The problem

The multimodal container supply chain suffers from systemic problems

Increasing capacities have caused disruptions to the chain...



- Congested waterways
- Manoeuvring and berthing processes are error-prone, time-consuming and costly
- Significant environmental impact

Road/Rail transport

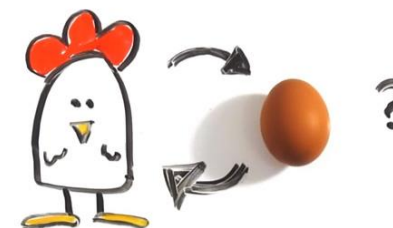
High traffic leads to congestion – environmental impact

Short-sea and inland waterways

Not so well integrated into the chain

Logistics stakeholders remain unwilling to adopt SSS due to significant imbalance of traffic flows at origins/destinations, high cost and unreliability

Feeders are too large for small ports – infrastructure is very limited





What do we hope to achieve and how?



MOSES aims to significantly enhance the European container supply chain – focus on SSS component

SSS feeder services

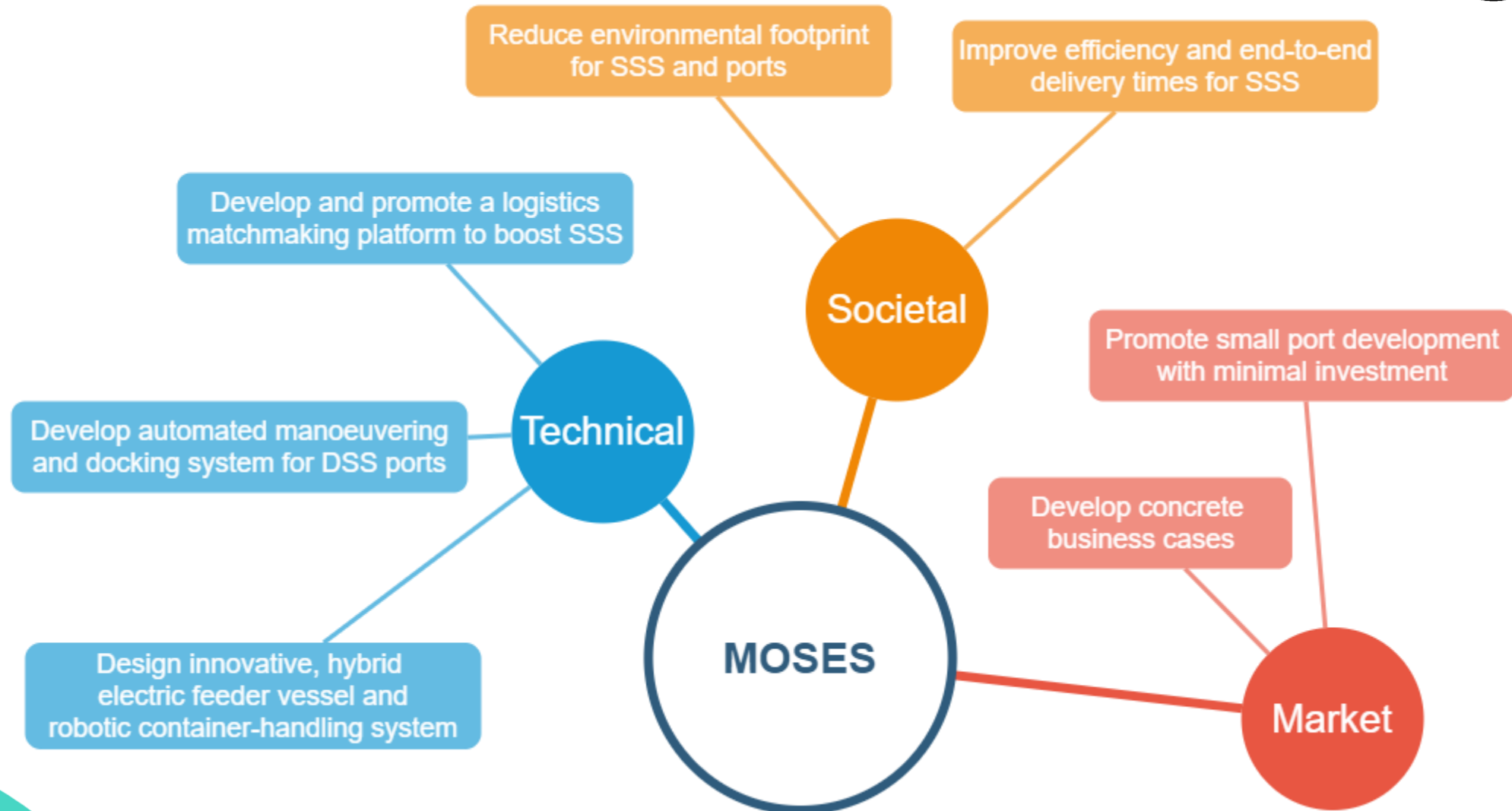
Ship design
for sustainable services – no infrastructure required

Logistics solution
for balancing demand-supply

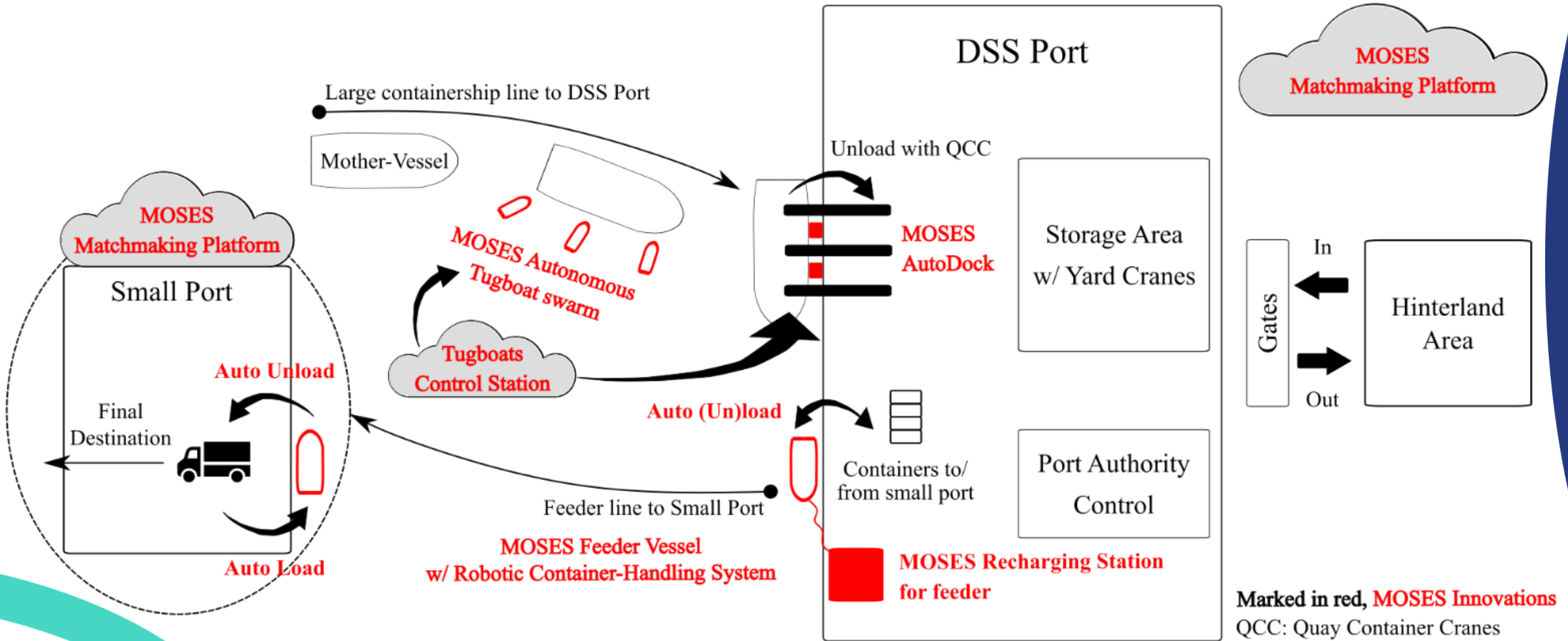
DSS ports efficiency

Technological solutions
for improving DSS ports inefficiencies – reduce berthing time, improve safety

What do we hope to achieve and how?



Concept of Operations

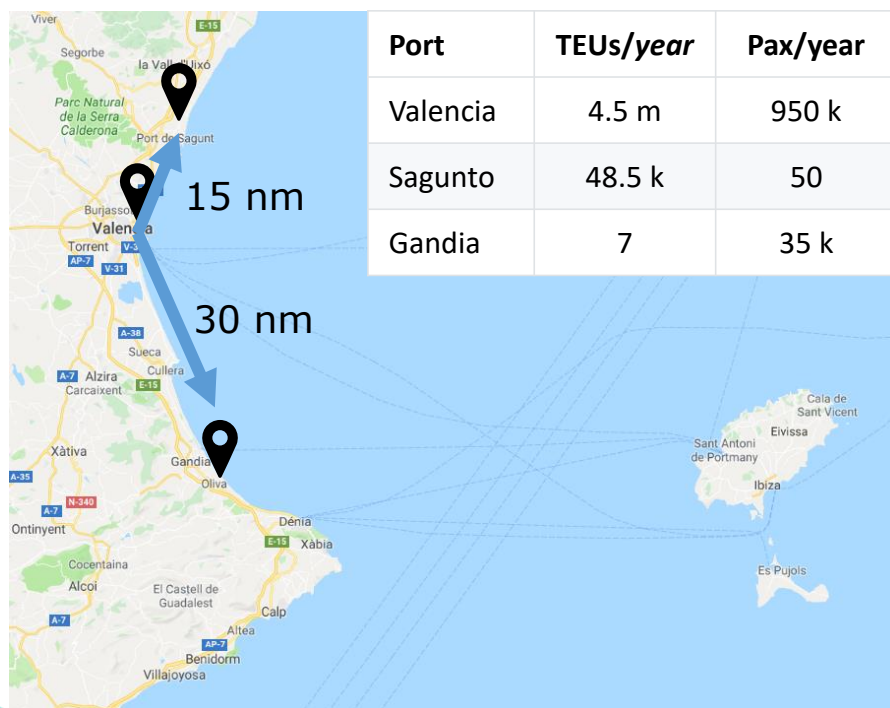




Development based on actual needs

BC #1 (Western MED-Spain)

Containers are trans-shipped from Valencia port using land-based transportation modalities



BC #2 (Eastern MED-Greece)

Cargo from Piraeus to the Aegean islands is picked up by truck, delivered to warehouses and then loaded on another truck that off-loads it on RoRo ferries that serve the islands from Attica ports



Port	TEUs/year	Pax/year
Piraeus Container Terminal	4.5 m	-
Mykonos	20 k	1.2 m



Development based on actual needs

MOSES Transferability Business Case for North Europe



Open call and dedicated reserved budget in the first project year.

State of the art criteria

- Underperforming SSS route for **domestic traffic competing with other modes**
- TEN-T corridor (besides MED, Orient/East-MED)

Implementation will involve the MOSES Matchmaking Platform



By the end of the MOSES Project we will have...

conceptual designs for the innovative feeder vessel / robotic system and a **roadmap** to fully autonomous operation, designed on concrete business cases

a **beta version** of a matchmaking logistics platform

a **concept design** of a recharging station for automated vessels

working architecture and interface for Autonomous Tugboat Swarms that cooperate with a **prototype** of an Automated Mooring system

Technologies that will enhance the role of SSS and small ports

Pilot Demos

viable exploitation paths



What we'd like to get from the workshop



We would like to actively engage everyone as MOSES progresses...



What we'd like to get from the workshop



[Home](#) [About MOSES](#) [Pilot Demos](#) [Material Hub](#) [News](#)



MOSES: AutoMated Vessels
and Supply Chain
Optimisation for
Sustainable Short SEA
Shipping

https://ec.europa.eu/eusurvey/runner/MOSES-User_Needs_Requirements_Questionnaire

News Feed



MOSES User Needs and Requirements Survey

Save The Date!



VALENCIA virtual Focus Group/Workshop, 14.10.2020

Save The Date!



PIRAEUS virtual Focus Group/Workshop, 08.10.2020

MOSES User Needs and Requirements Questionnaire

Save a backup on your local computer (disable if you are using a public/shared computer)

Fields marked with * are mandatory.

Disclaimer

The European Commission is not responsible for the content of questionnaires created using the EUSurvey service - it remains the sole responsibility of the form creator and manager. The use of EUSurvey service does not imply a recommendation or endorsement, by the European Commission, of the views expressed within them.

Pages

[Introduction](#) [The Project](#) [Privacy Policy](#) [Information about the Questionnaire](#) [Consent](#) [Instructions](#)
[Your Organisation](#) [Innovative Feeder Vessel](#) [Robotic Container-Handling System](#) [Autonomous Tugboats](#)
[Automated Mooring System](#) [Matchmaking Platform](#) [General Requirements](#)



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[Standard](#) [Accessibility Mode](#)

Languages
[EN] English

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Introduction

You are invited to complete a questionnaire within the context of the **MOSES** research project (autoMated vessels and supply chain Optimisation for sustainable short **SEA** Shipping) which is funded by the European Union.

It will only take about **15-20 minutes** of your time to complete this questionnaire, which is a part of the project's user needs and requirements definition phase. You will be asked to assess the importance of several aspects of the MOSES innovations. There is also one open-ended question on each subject so that you can provide more information if you wish to do so.

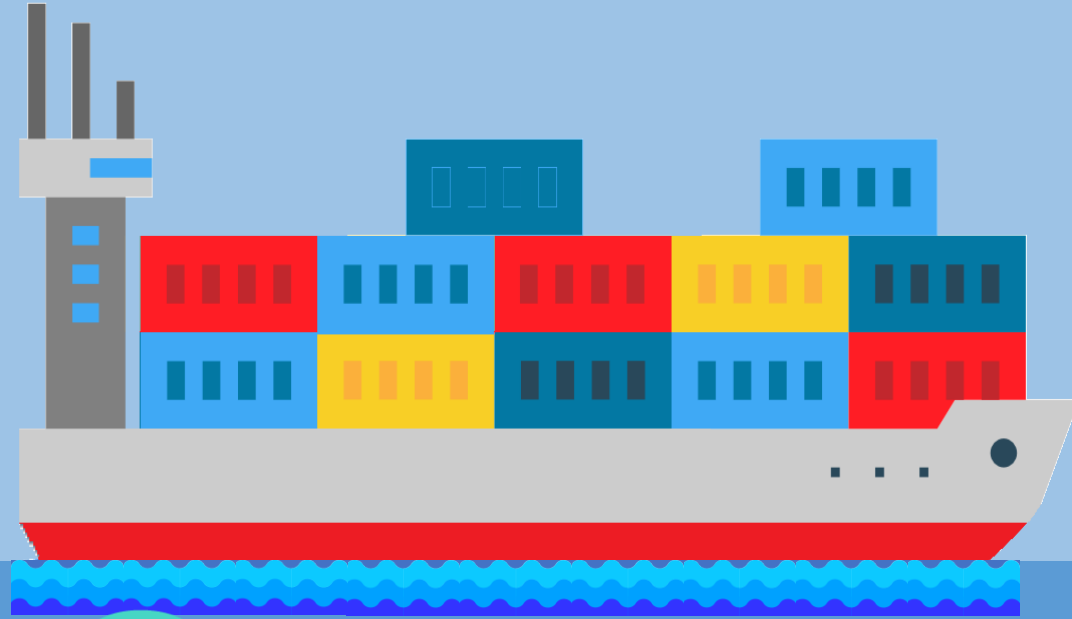
Before you decide if you want to participate, it is important that you understand the aim of the research, what it involves and your rights as a participant. To ensure that you have a clear understanding of these matters, please carefully read through all the sections of this questionnaire. Please feel free to [contact us](#) and ask questions until you are confident that you have received understandable answers before making a decision.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 861678. The content of this questionnaire reflects only the authors' view and the Agency is not responsible for any use that may be made of the information it contains.

[Next](#)



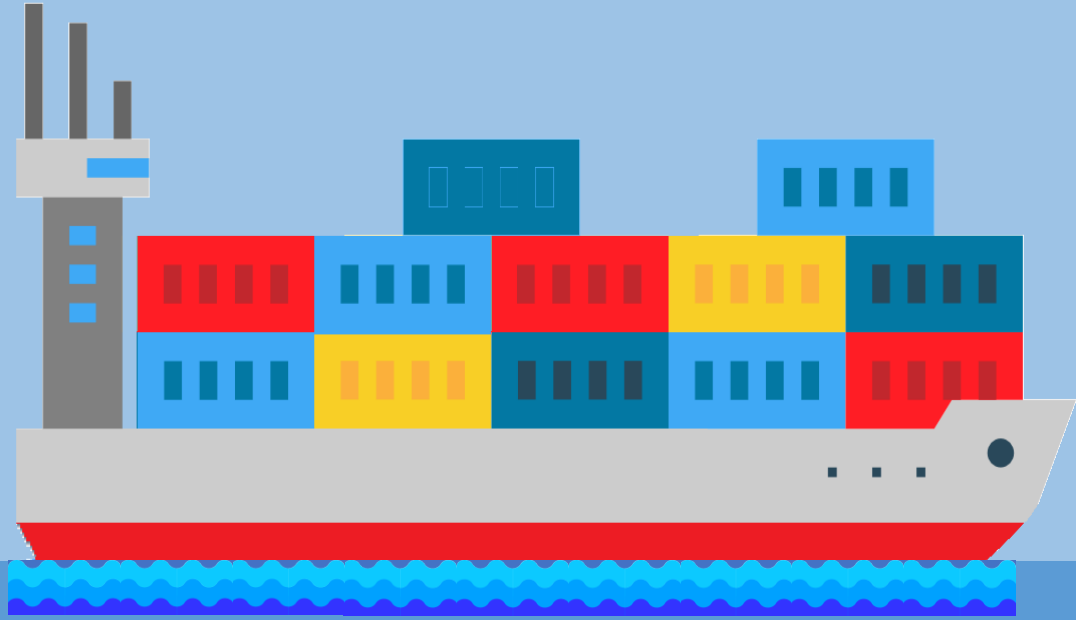


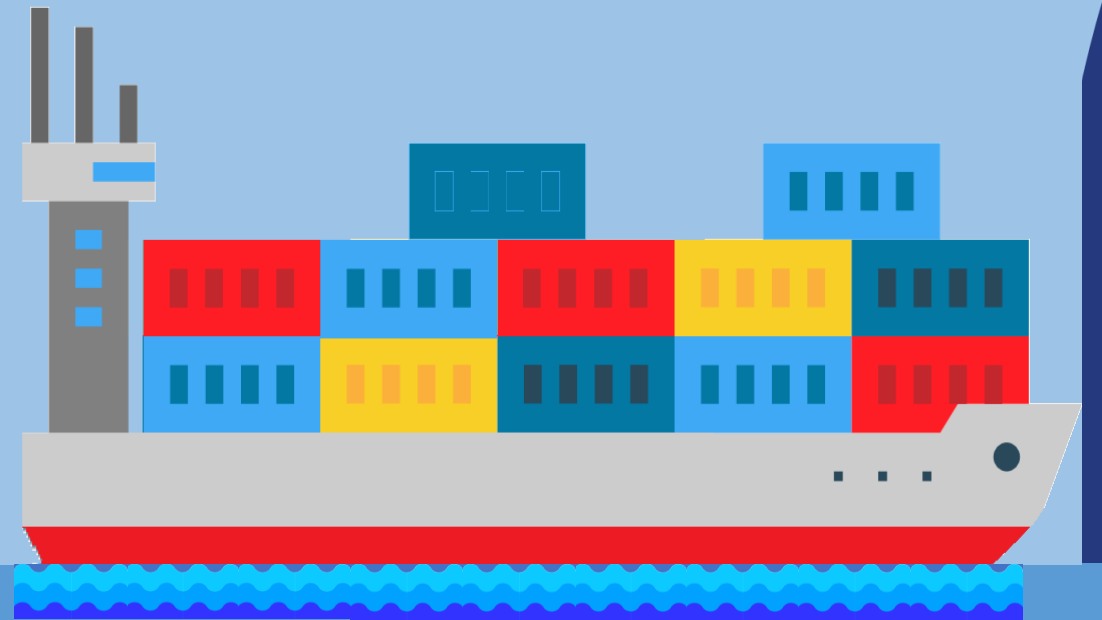
MISES

**Concept of
Operations**

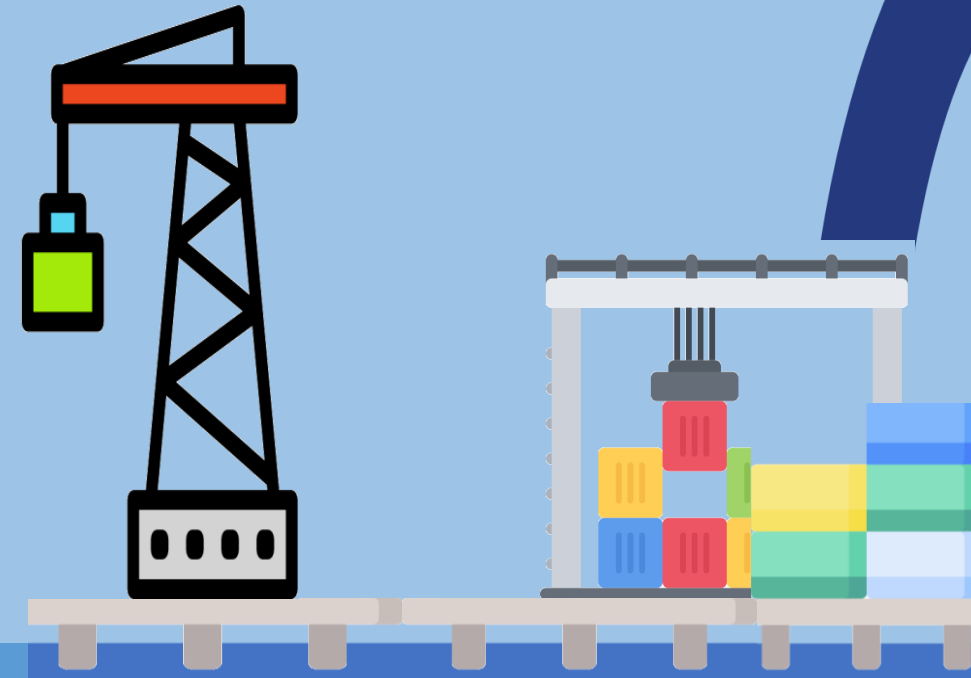
Konstantinos Louzis, PhD Cand., NTUA

Dr. Kostas Naskou, NTUA





Container Terminal

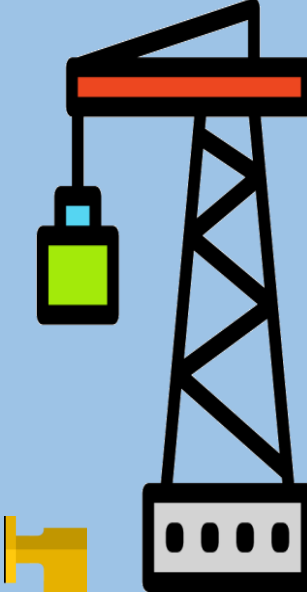


A large containership approaches a Deep Sea Shipping Port

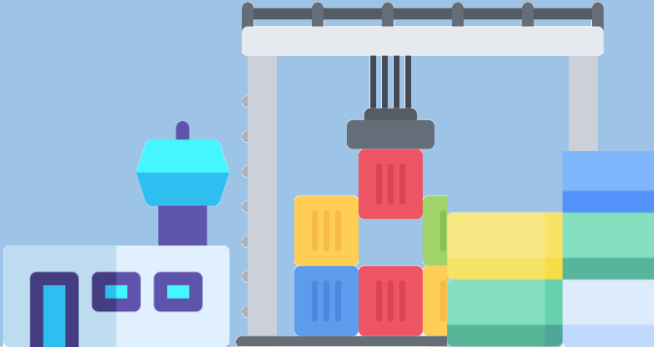
Container Terminal



Autonomous Tugboats

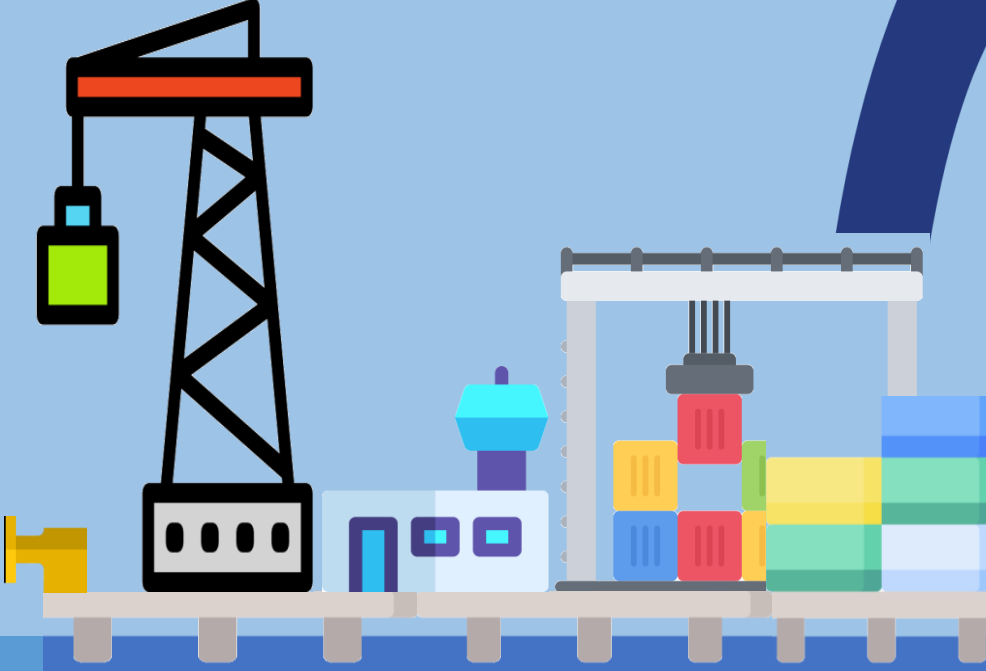


AutoMoor



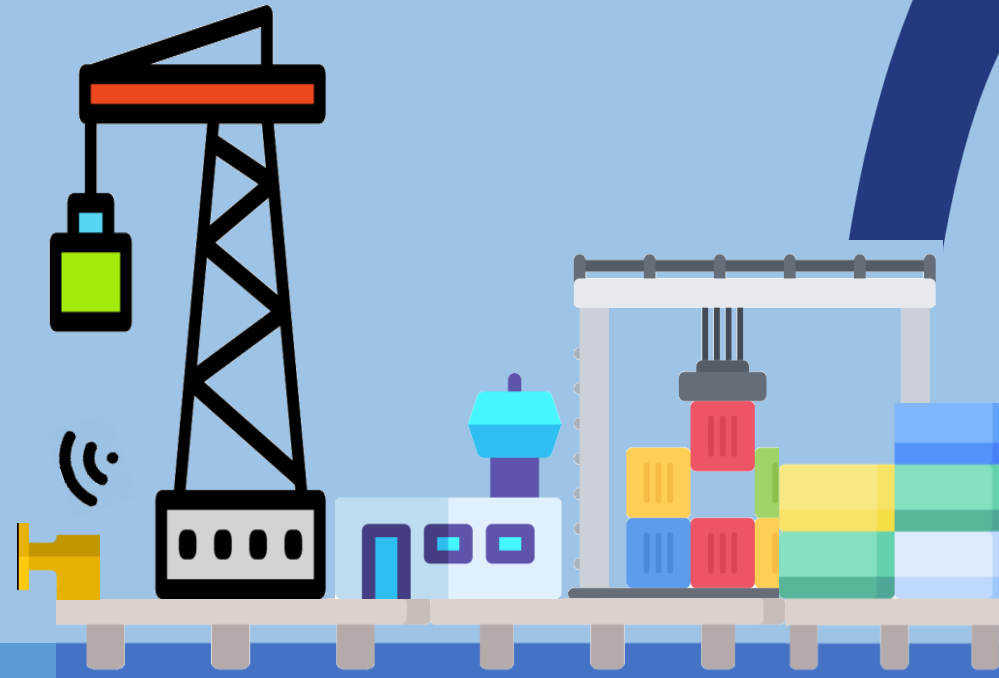
Control Station

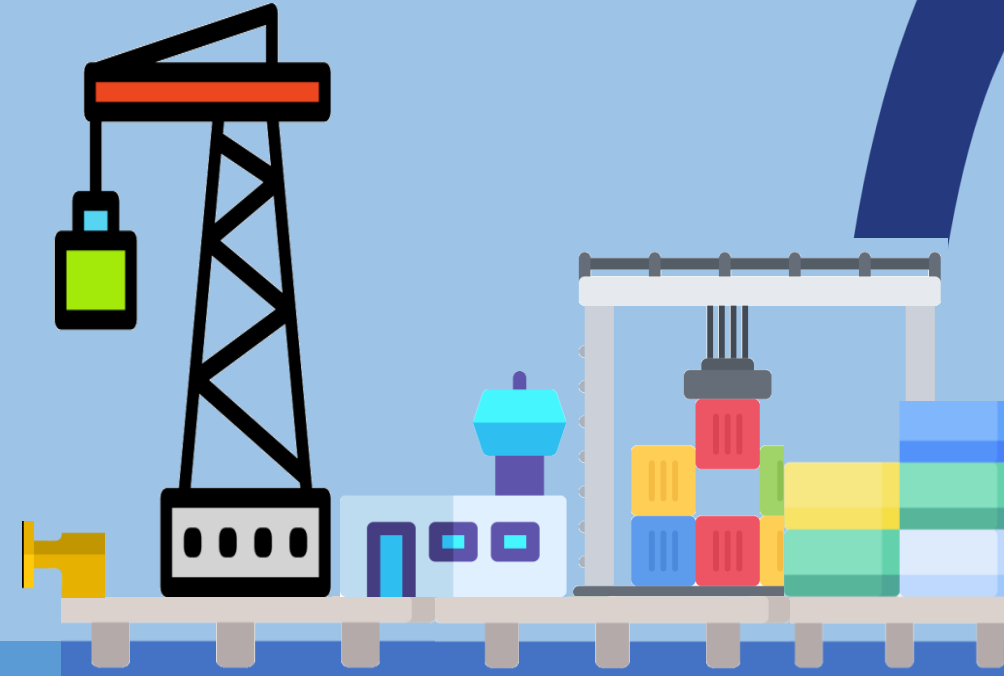
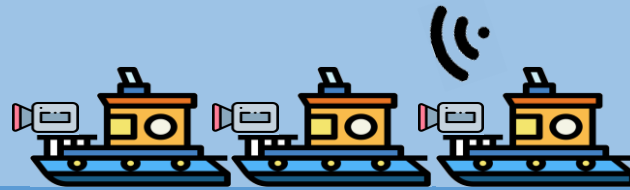
Container Terminal

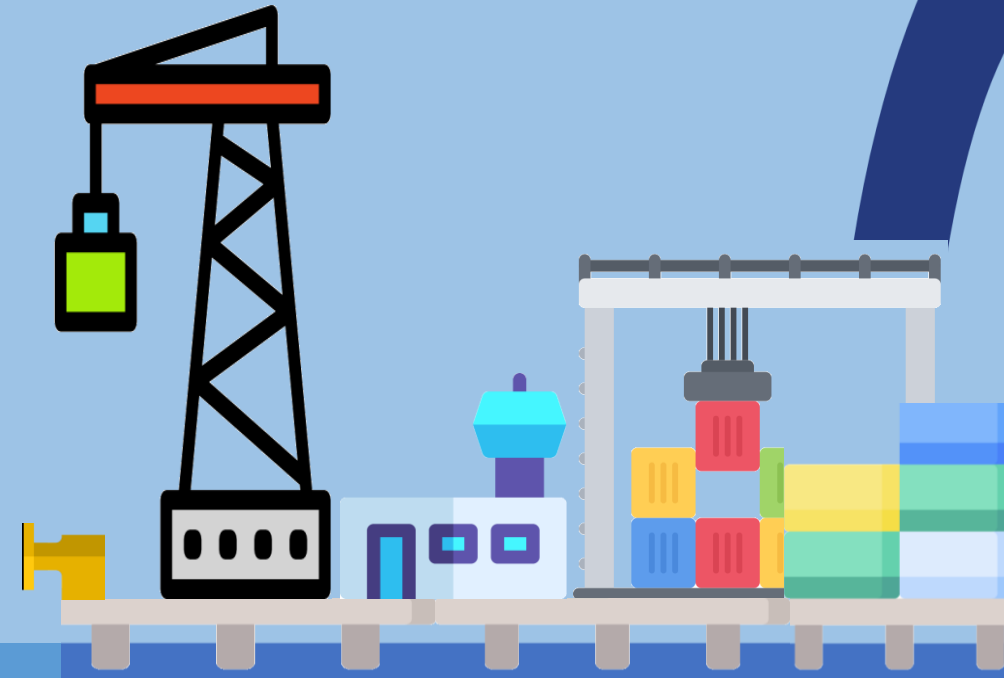
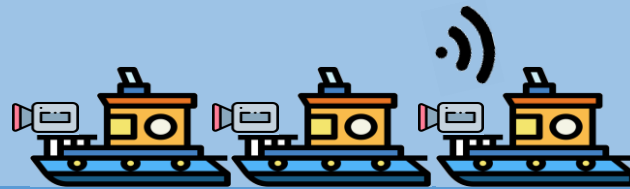


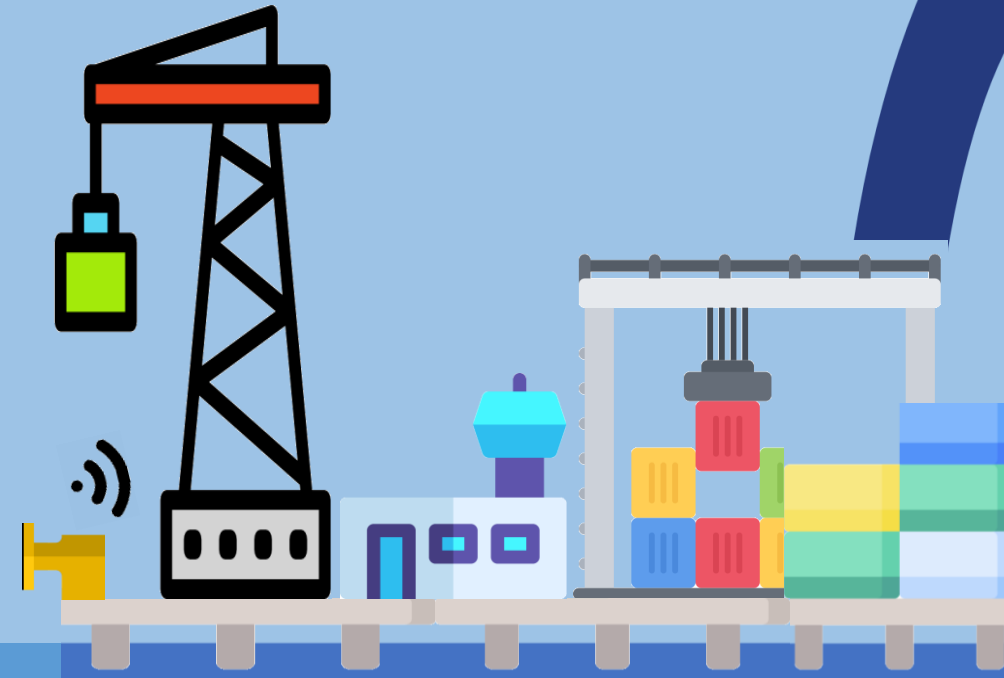


The autonomous tugboats are dispatched to assist the large containership

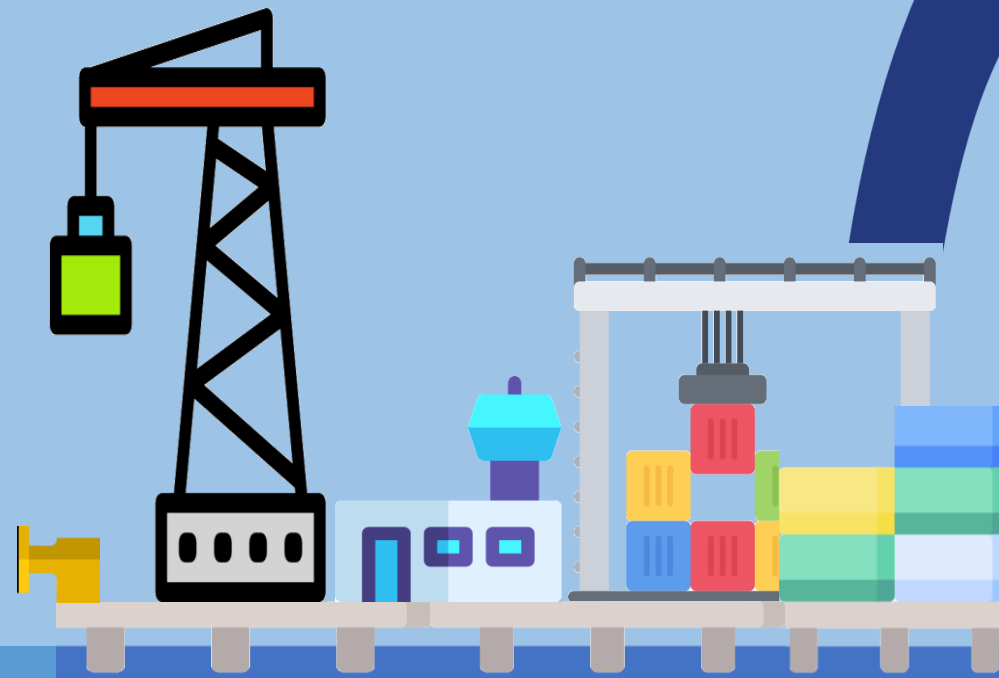
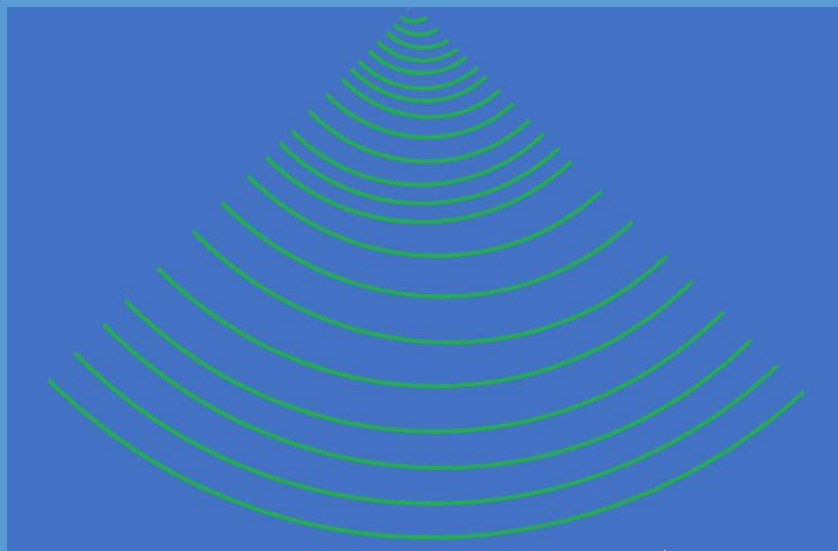
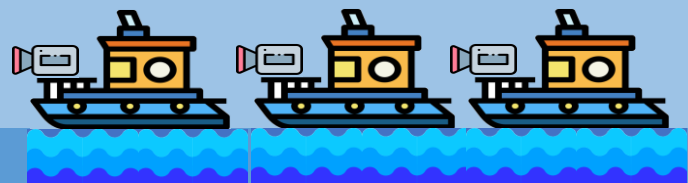


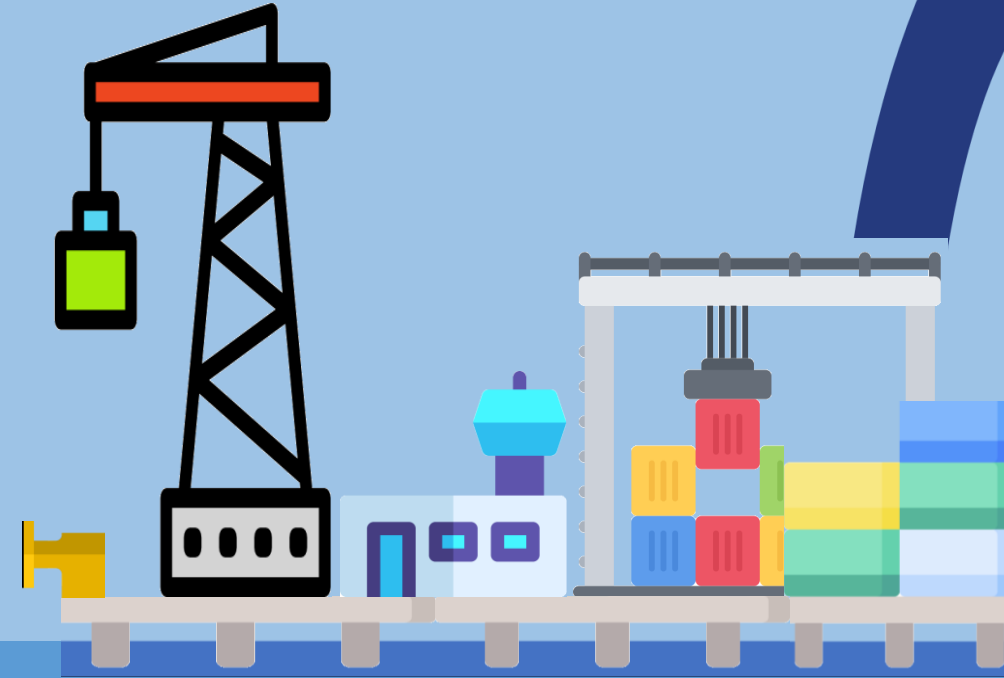
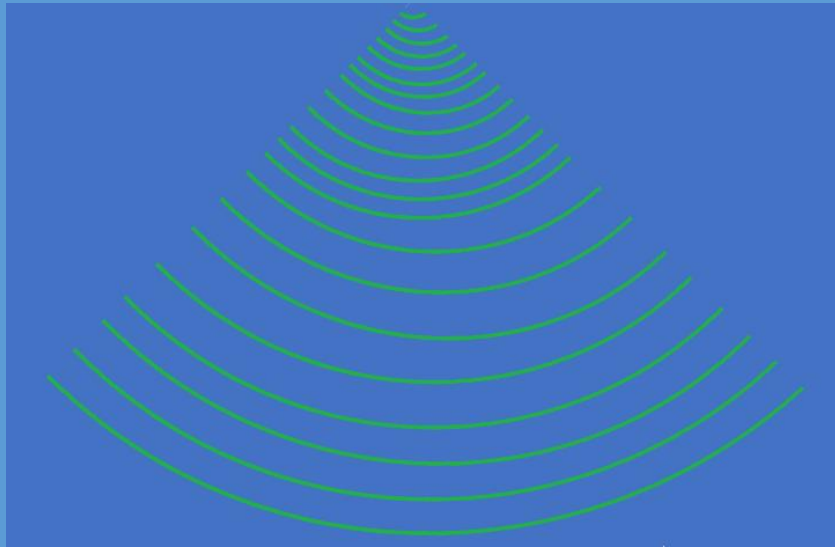
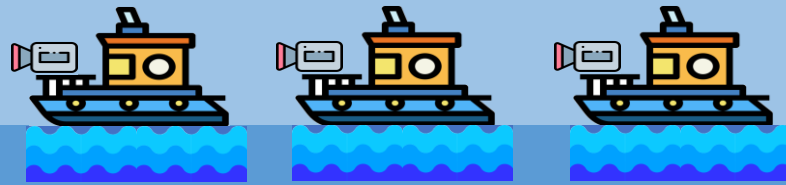


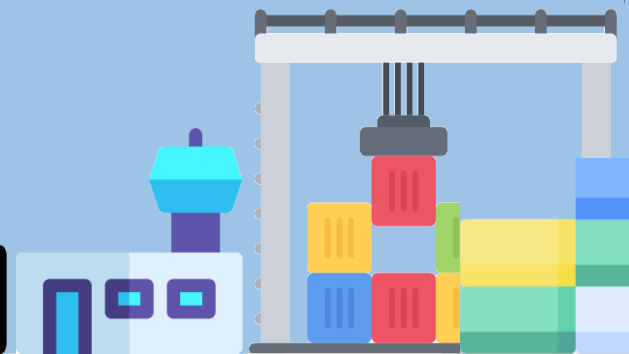
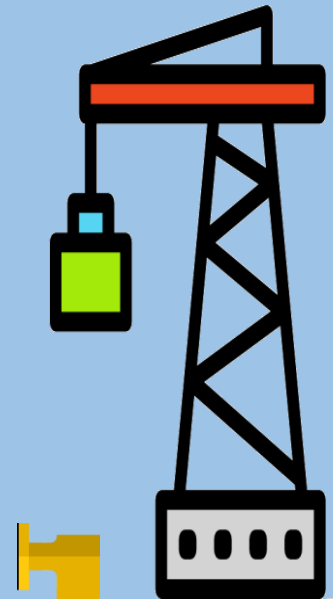
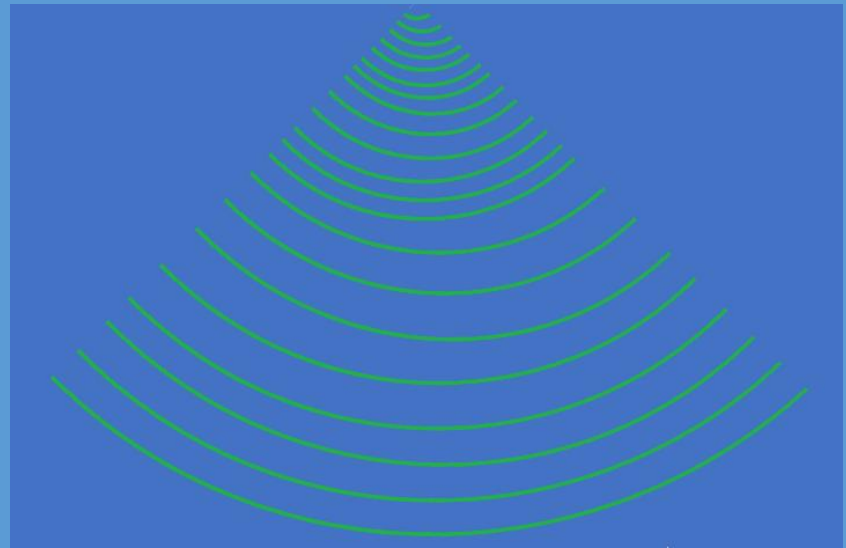
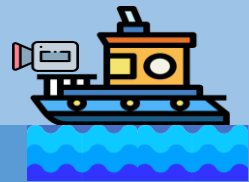
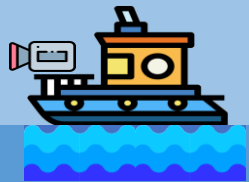
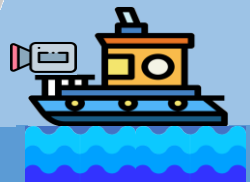


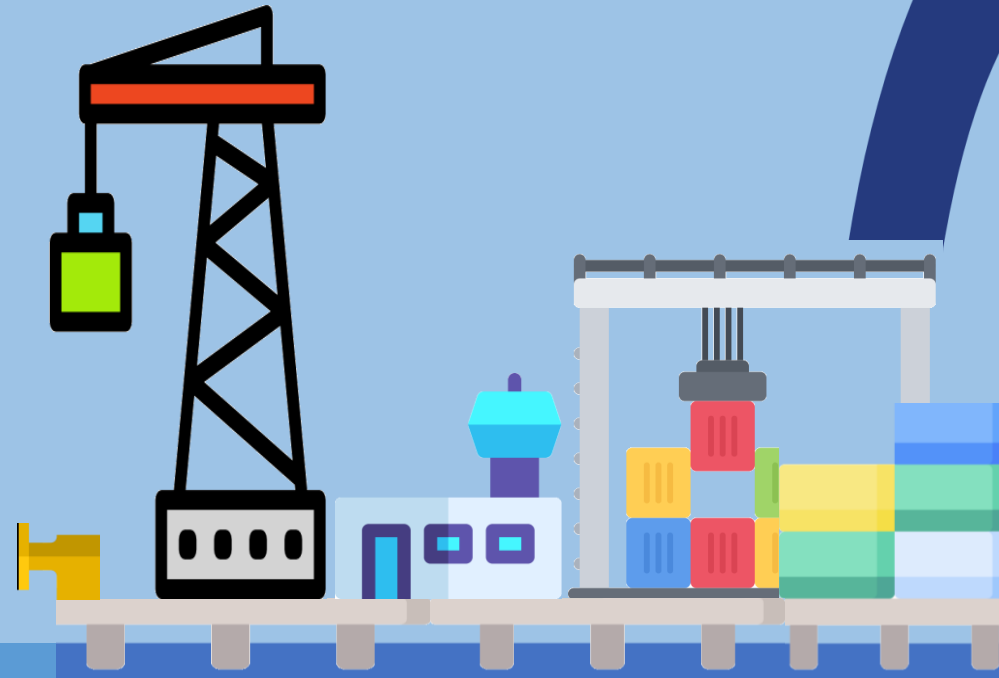
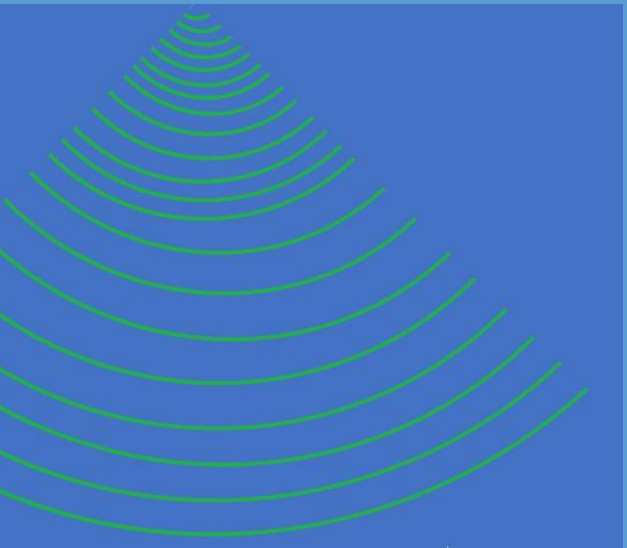
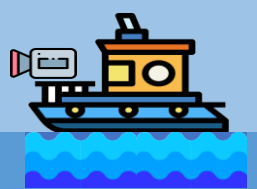
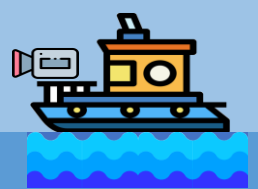


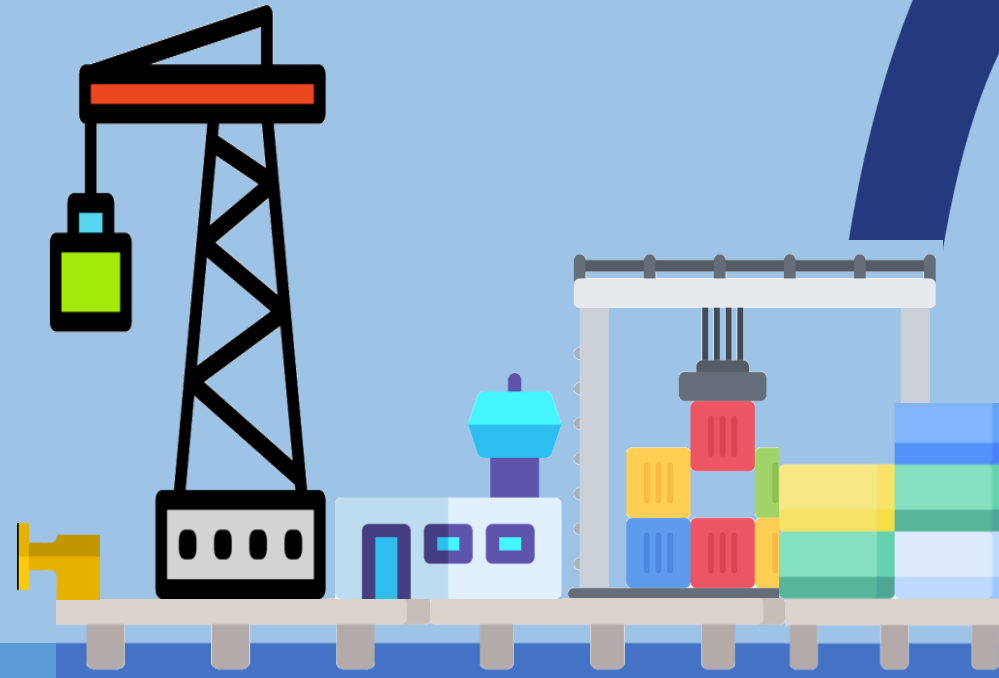


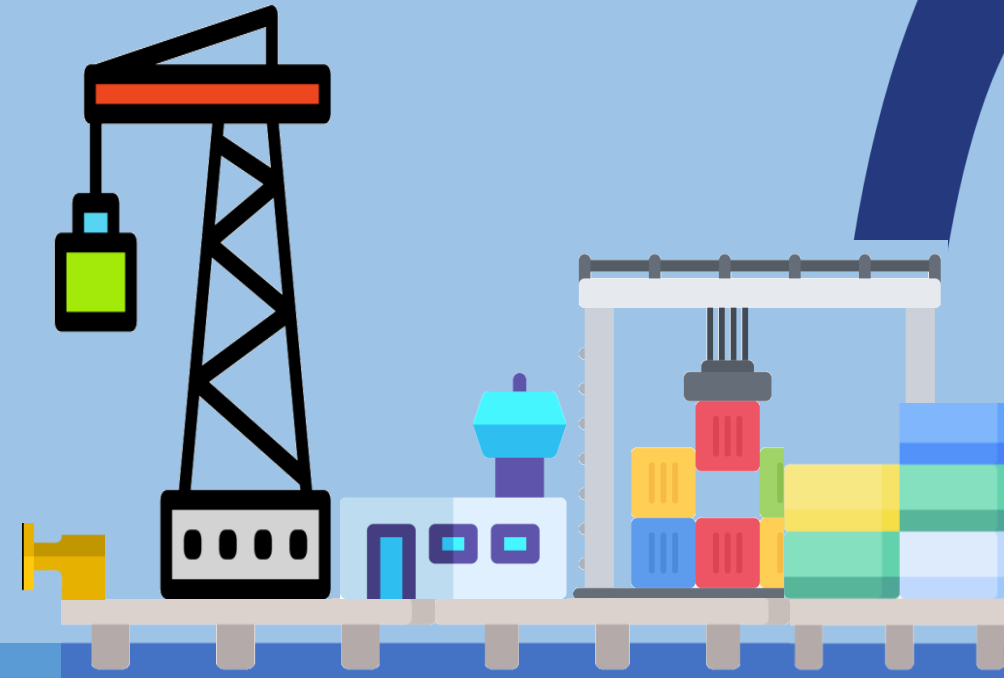
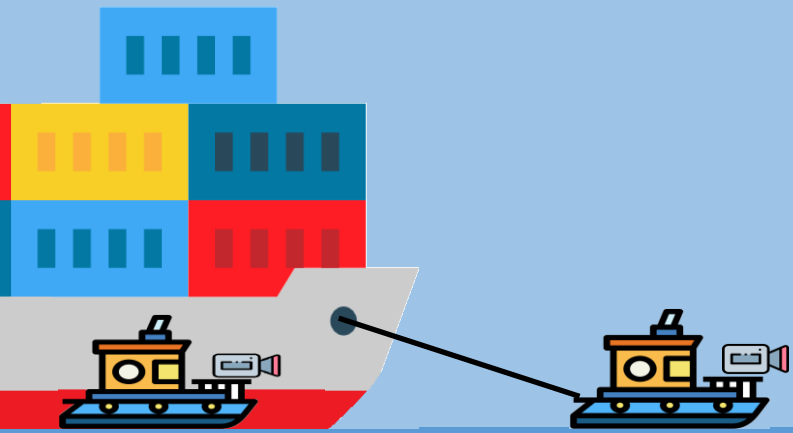




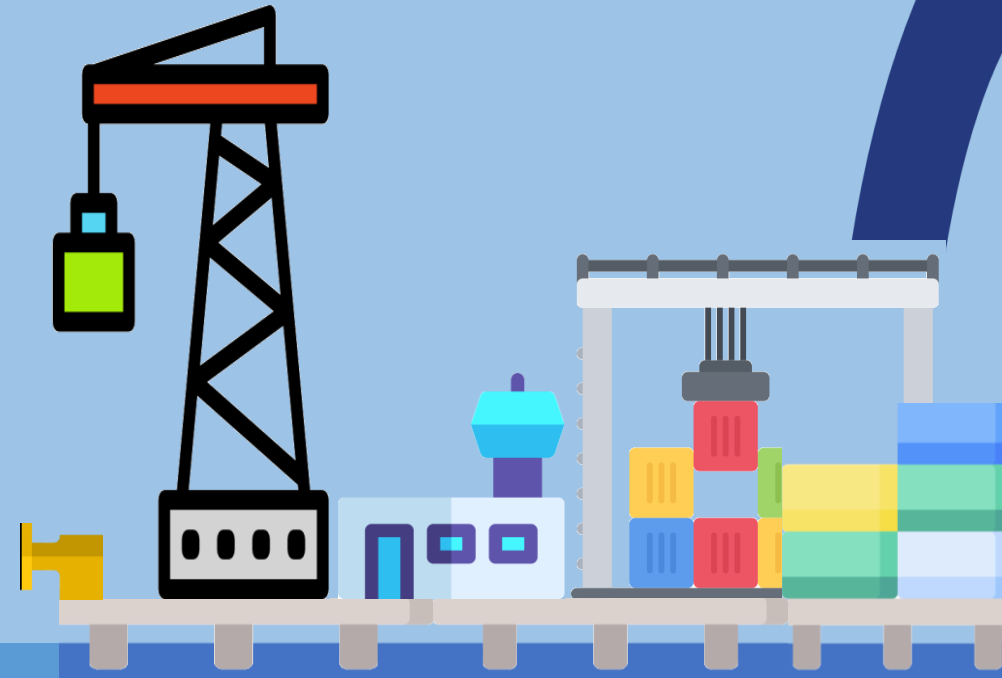
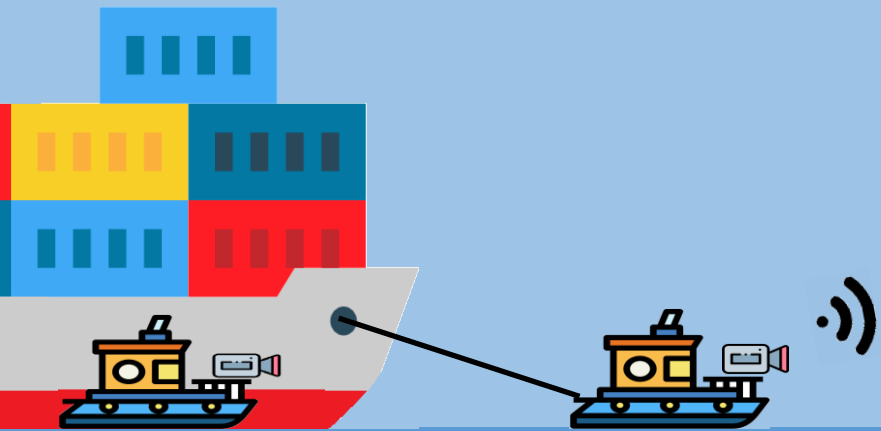


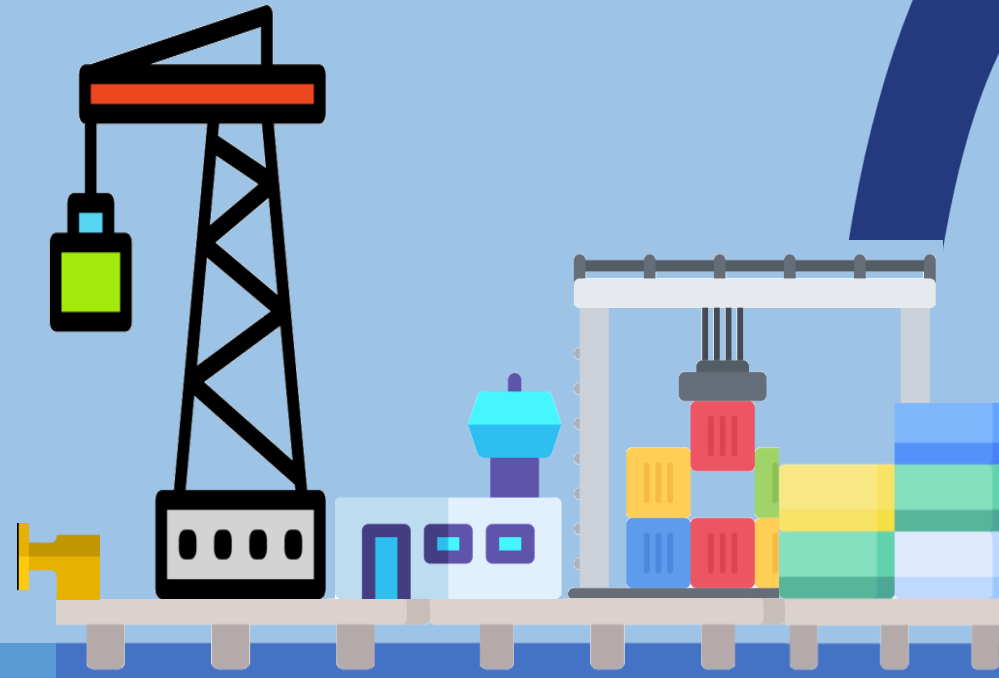
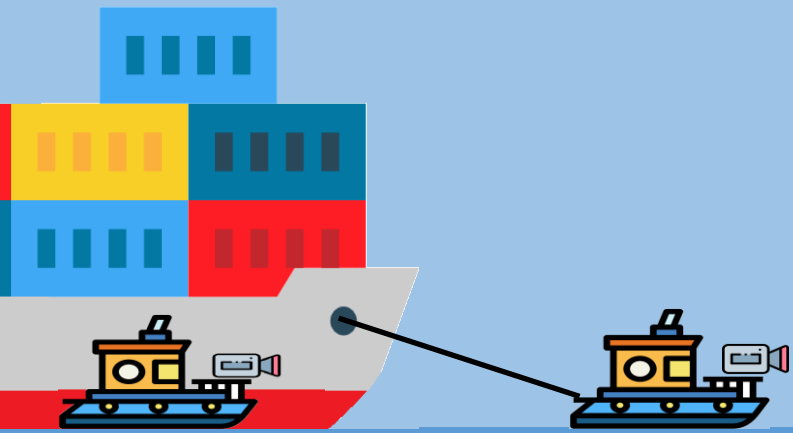


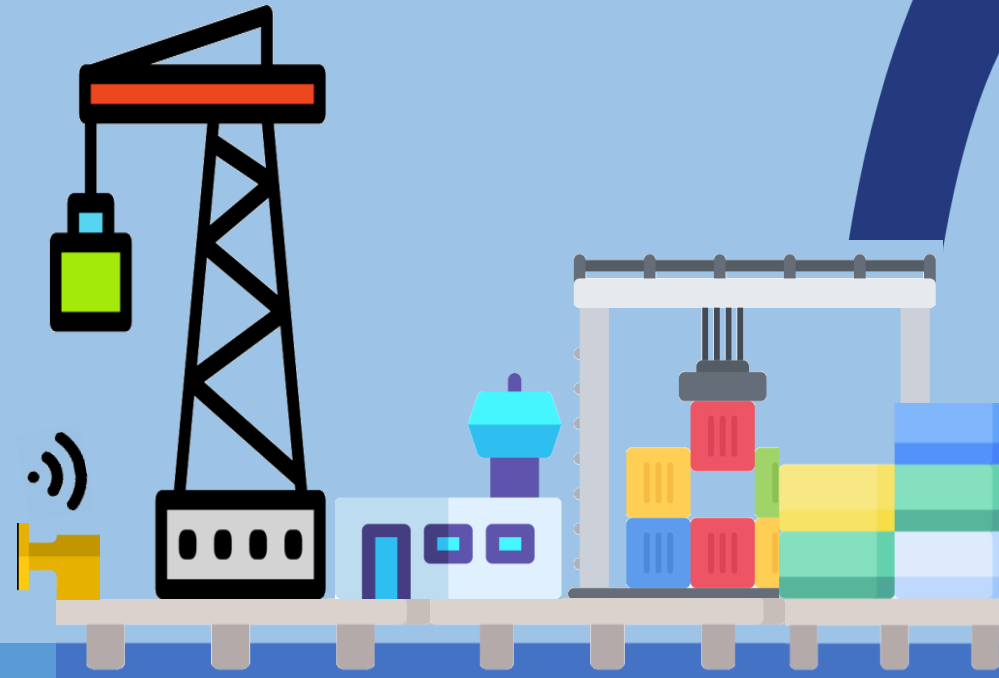
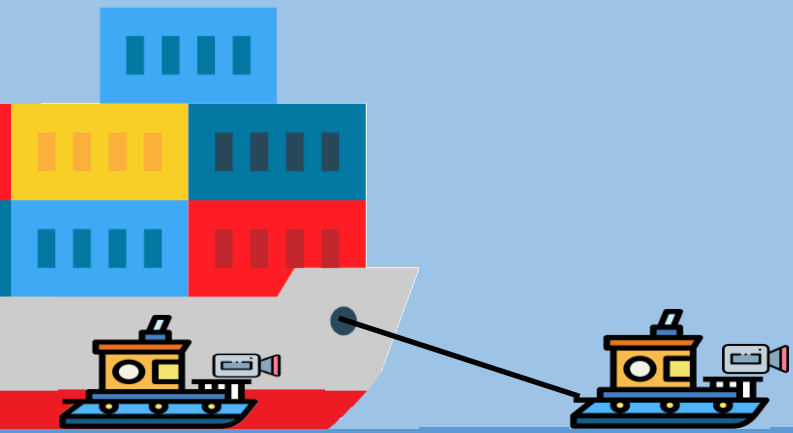


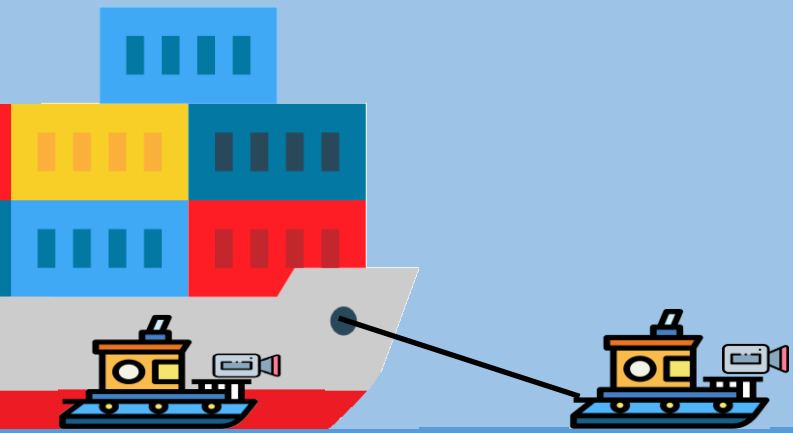


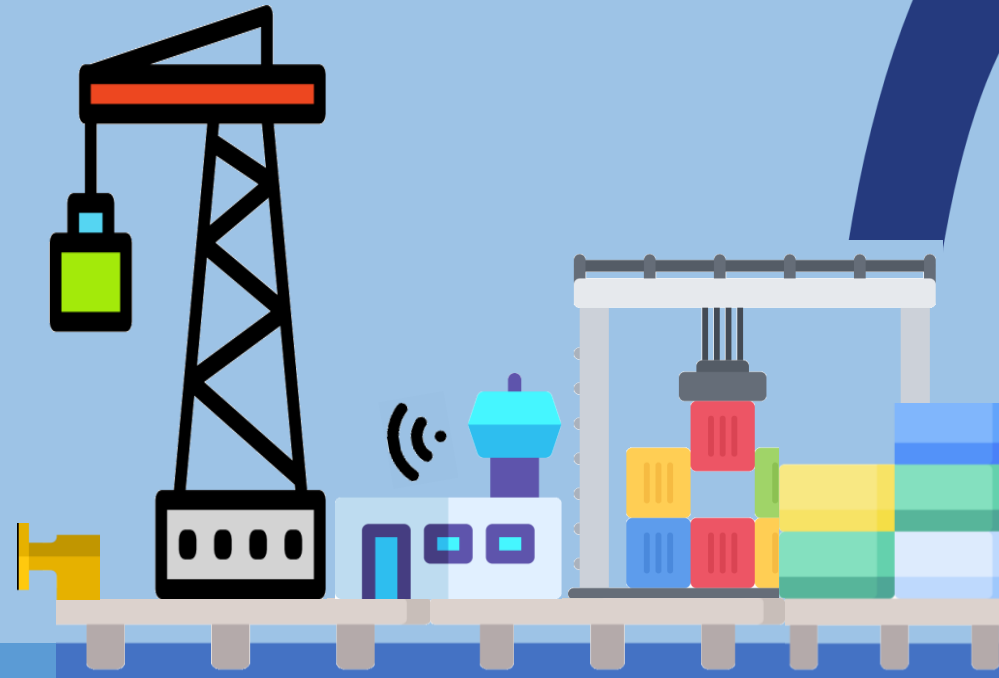
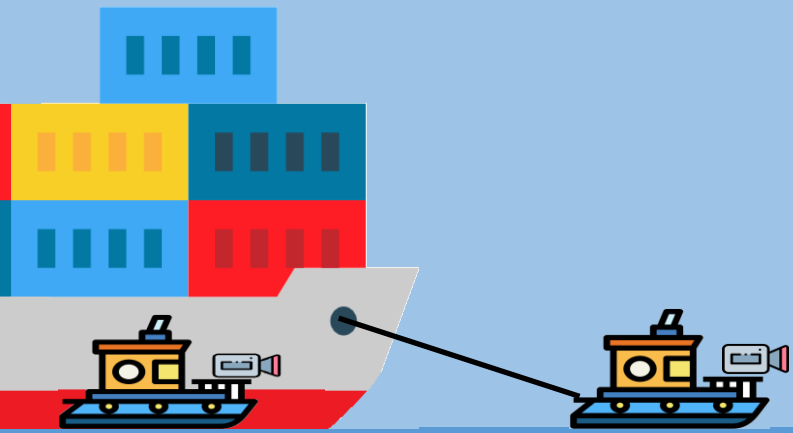
MOSES will develop the technology for enabling autonomous operation
(single or in swarm/cooperative formation)

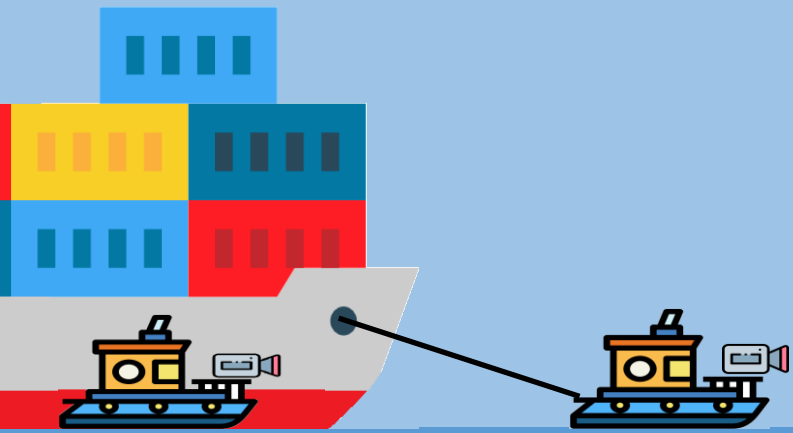


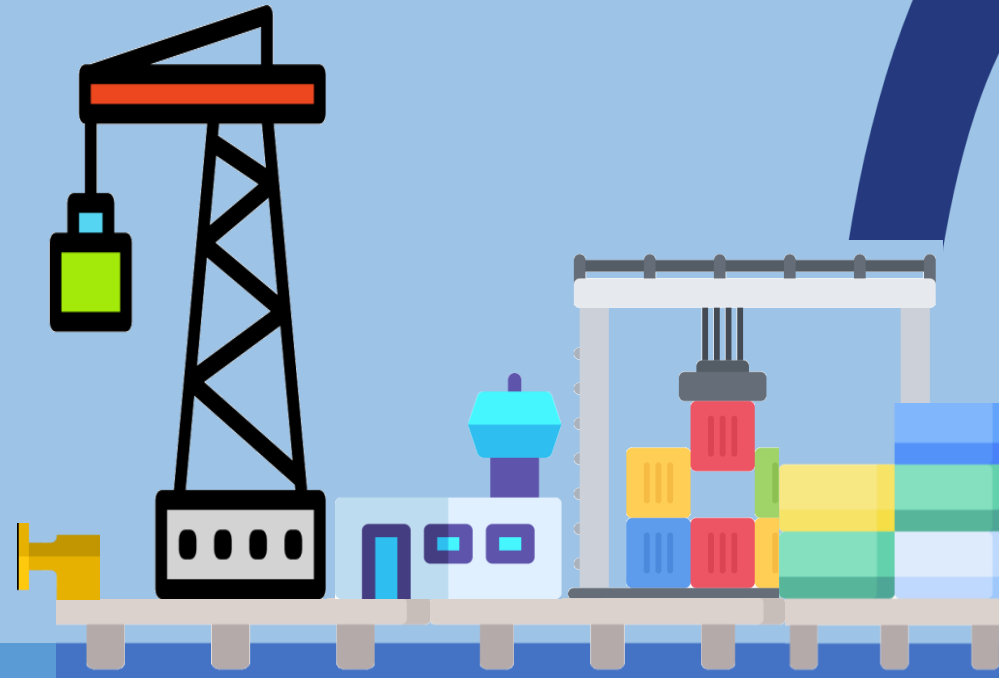
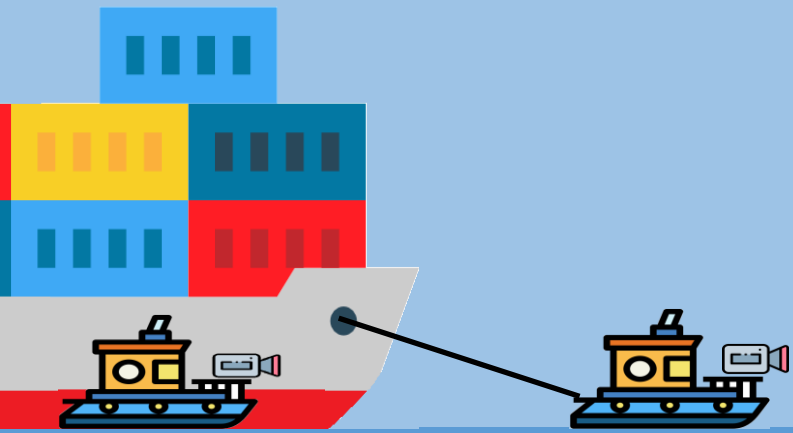


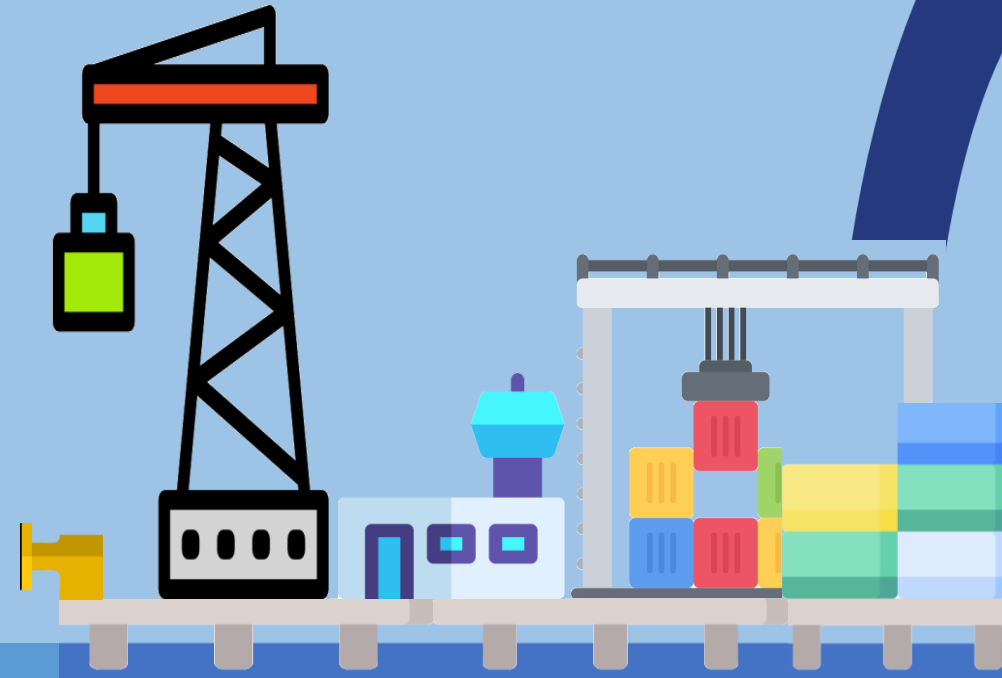
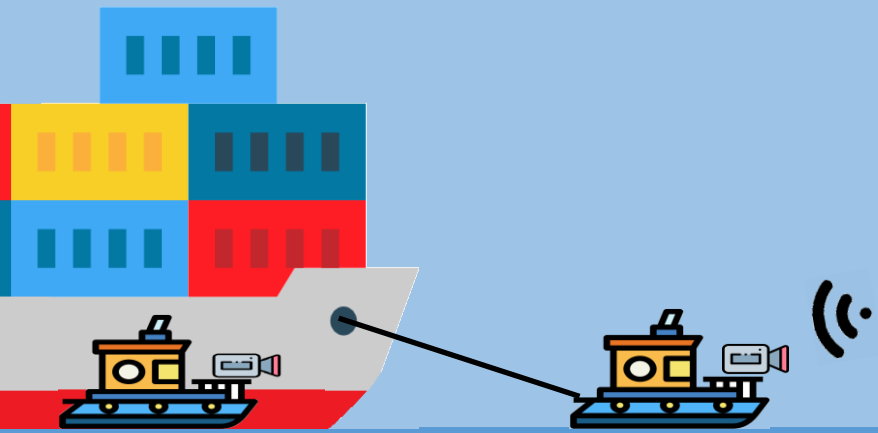


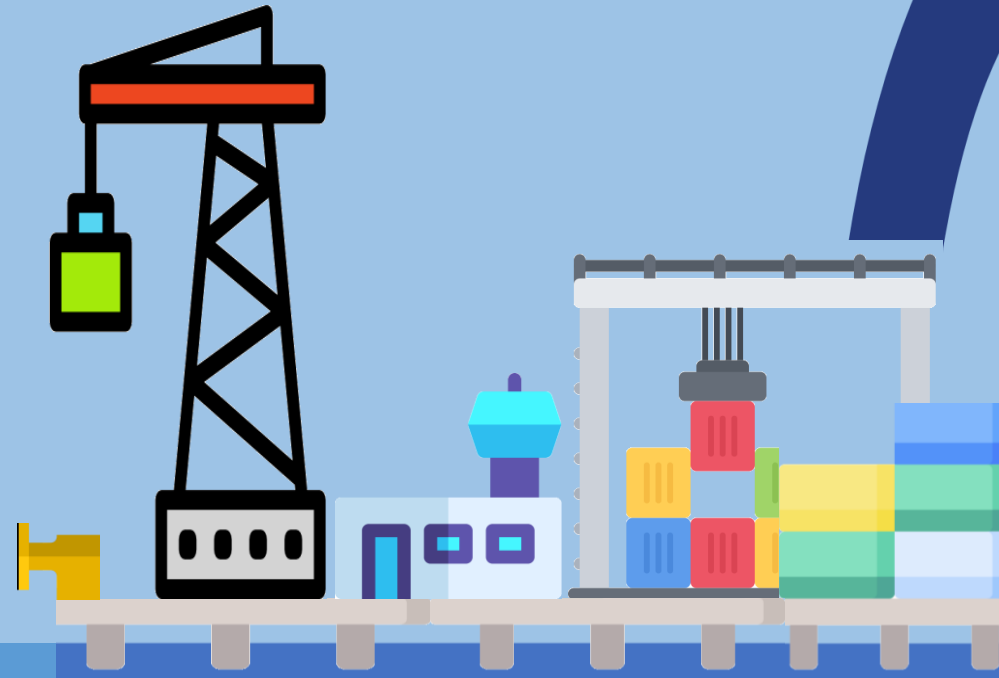
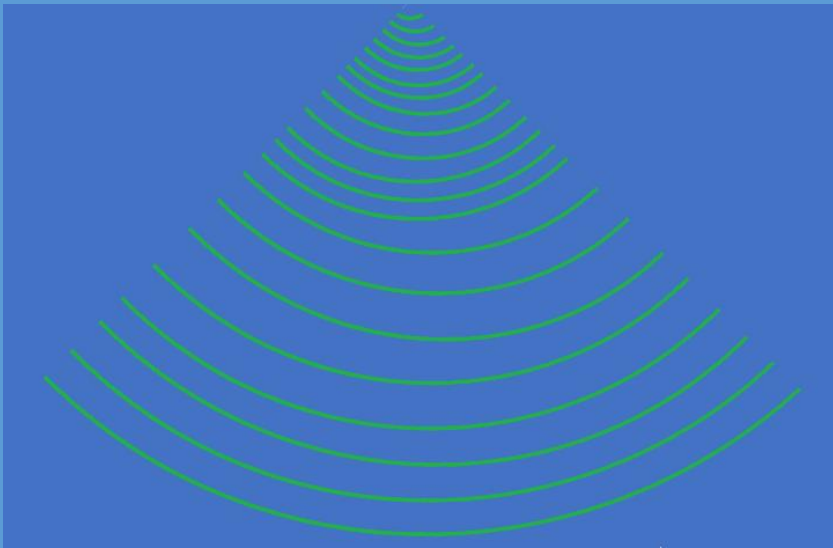
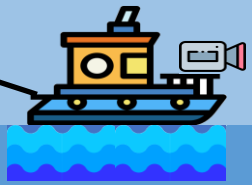
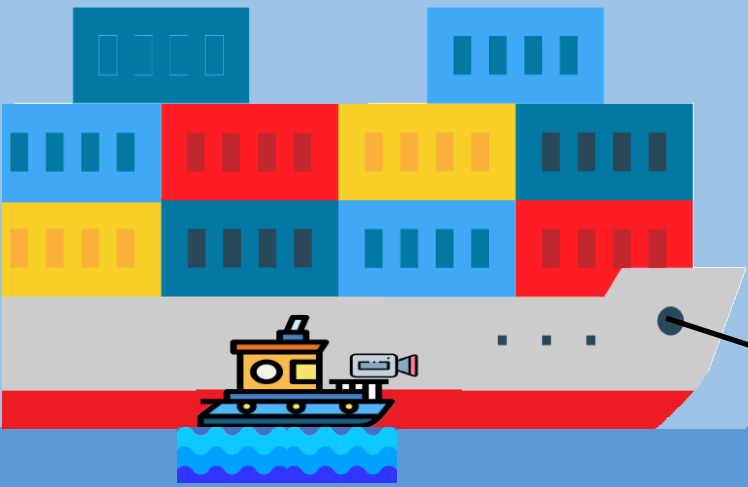


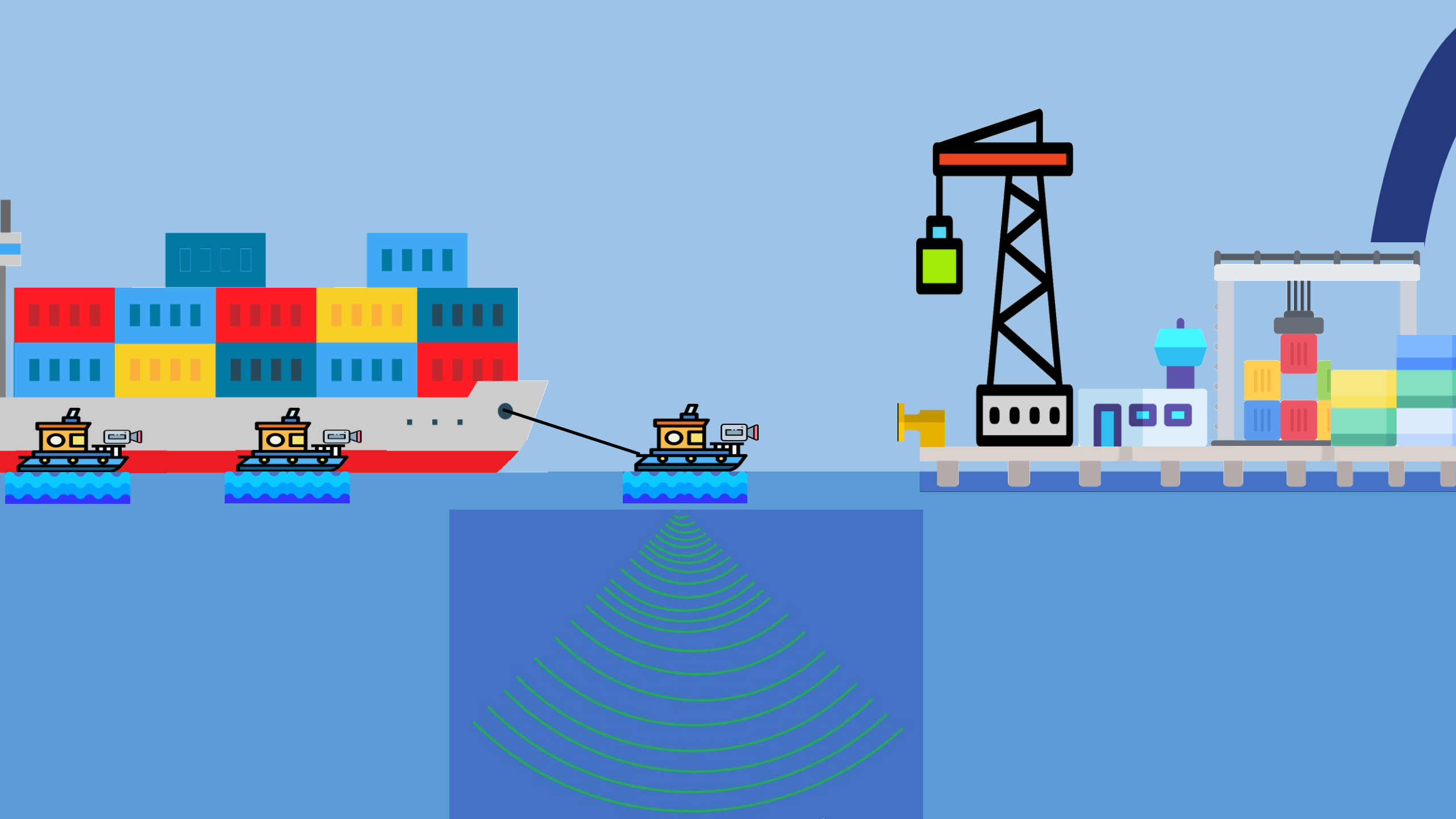


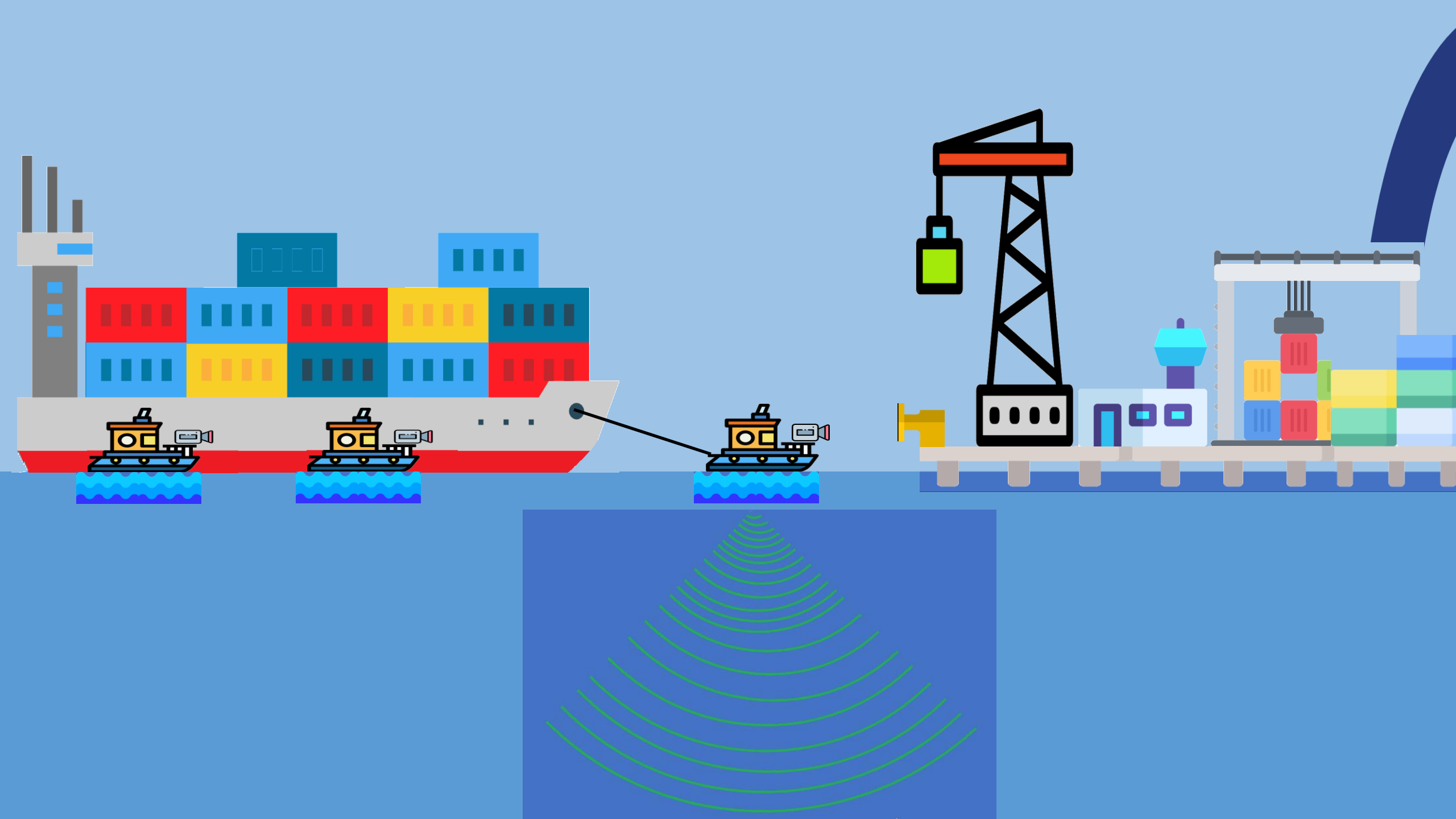


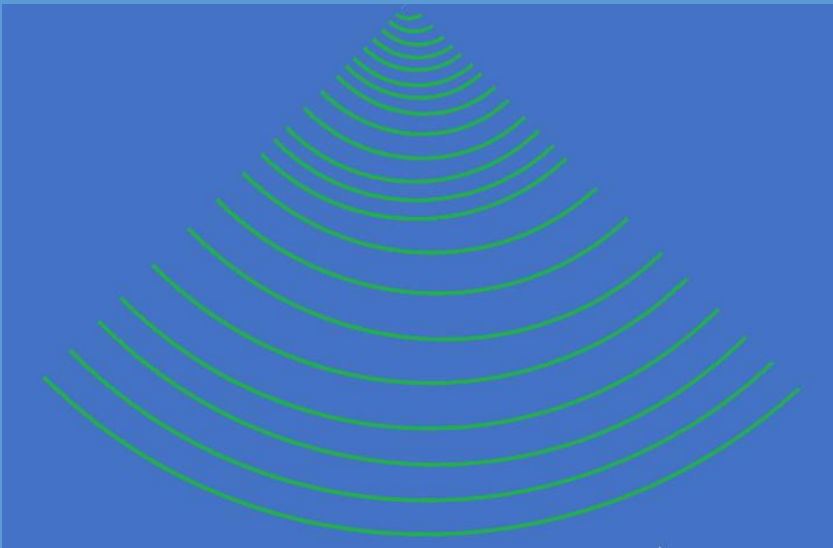
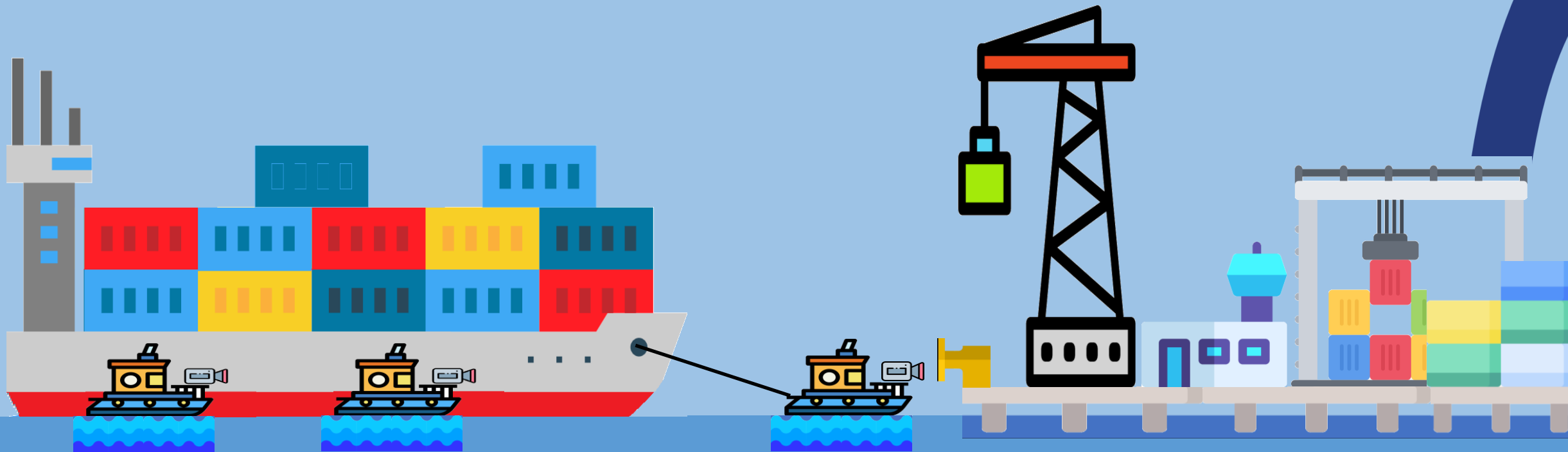














The AutoMoor unit will be retrofitted with intelligence to cooperate with the autonomous tugboats

























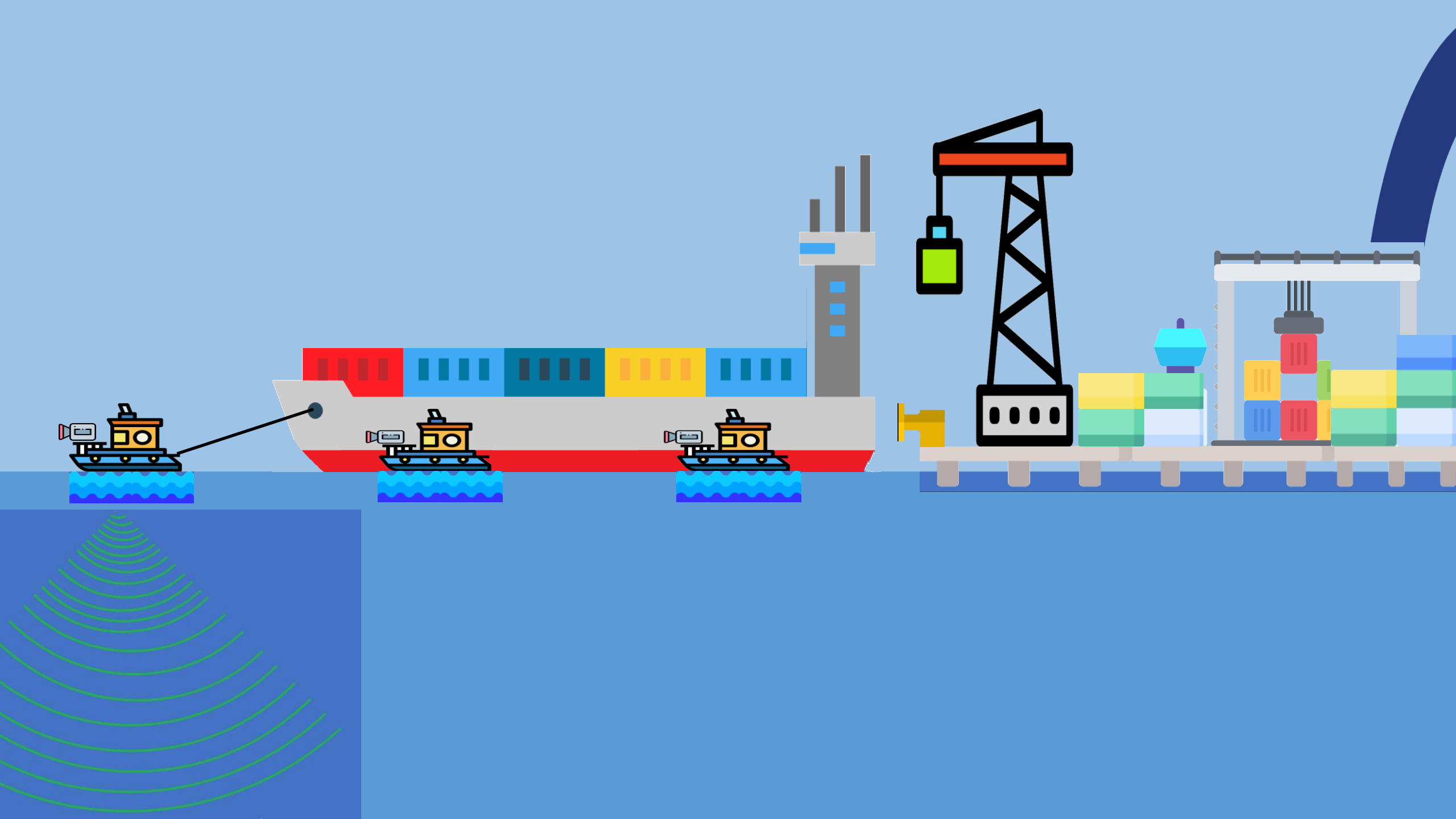


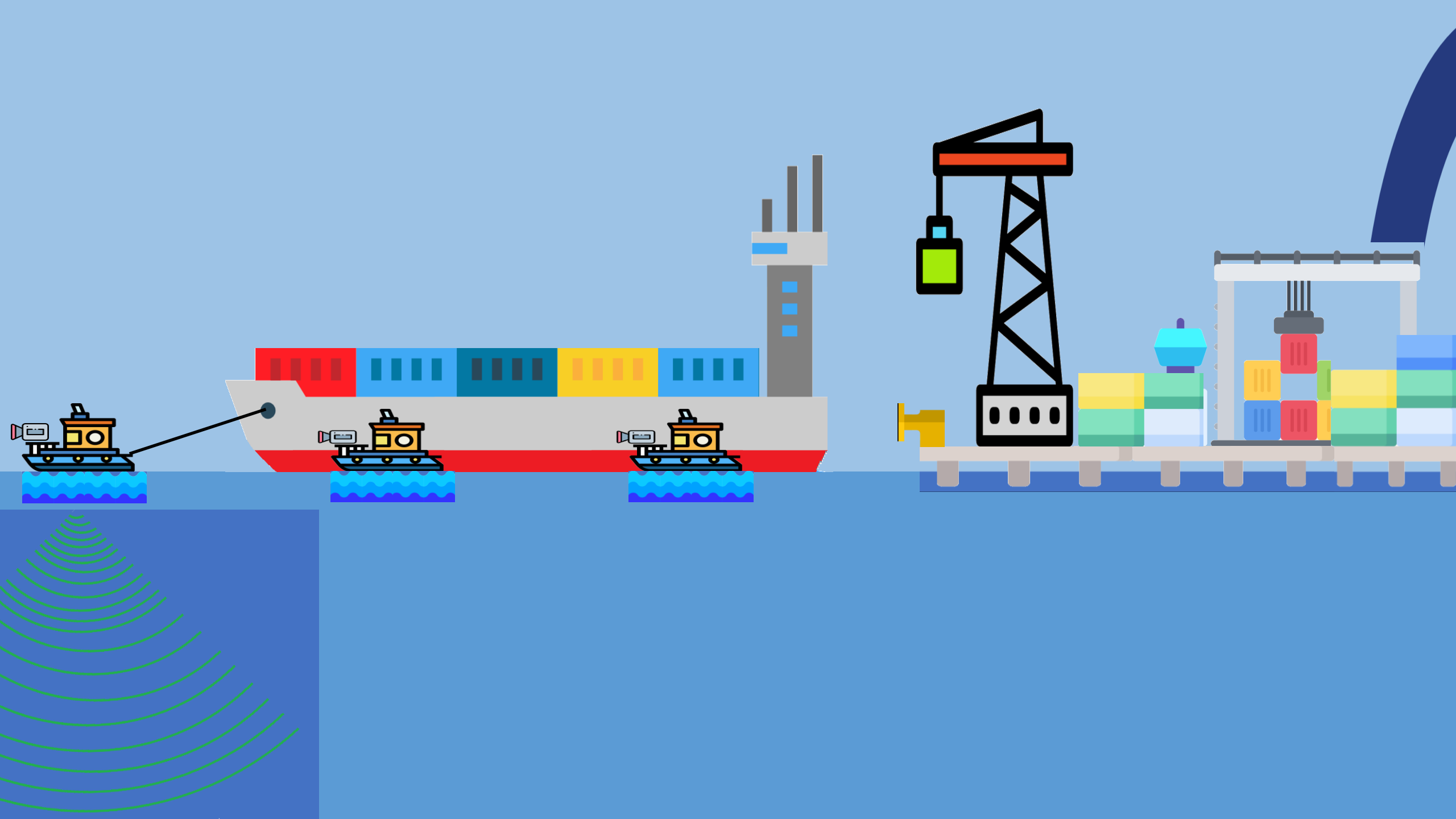


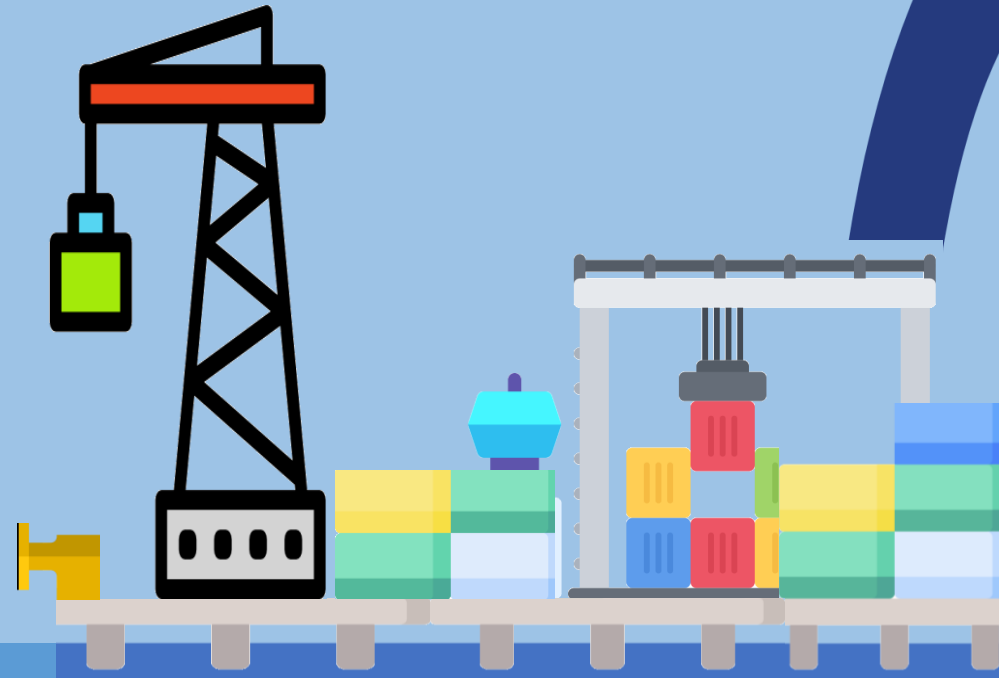
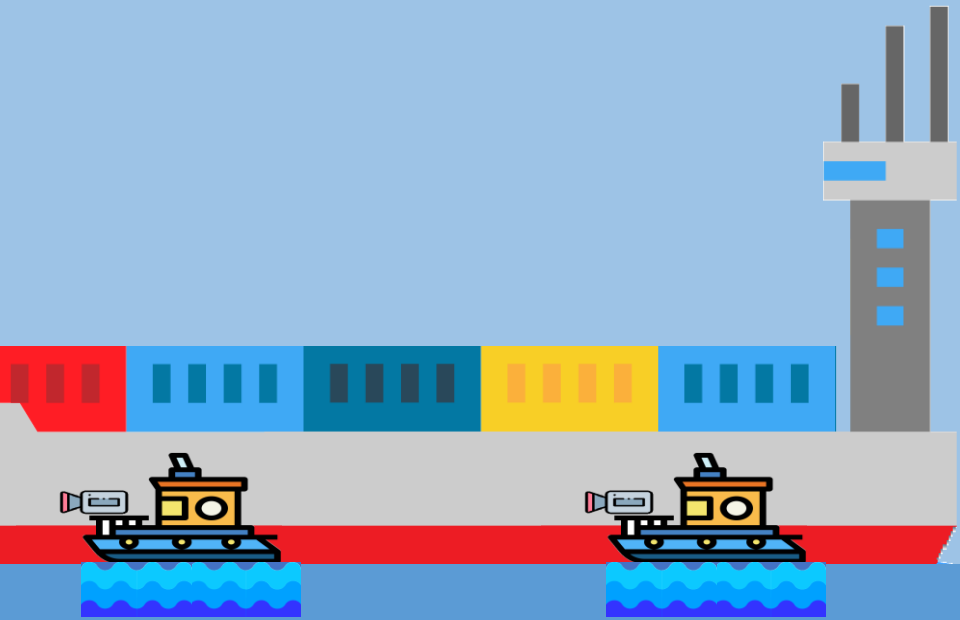


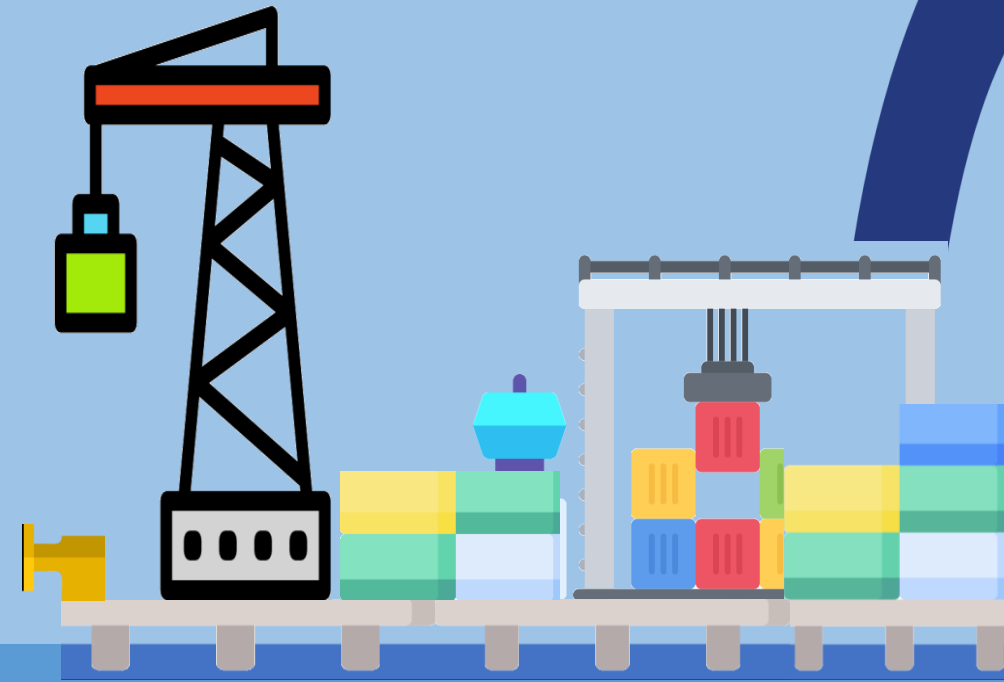
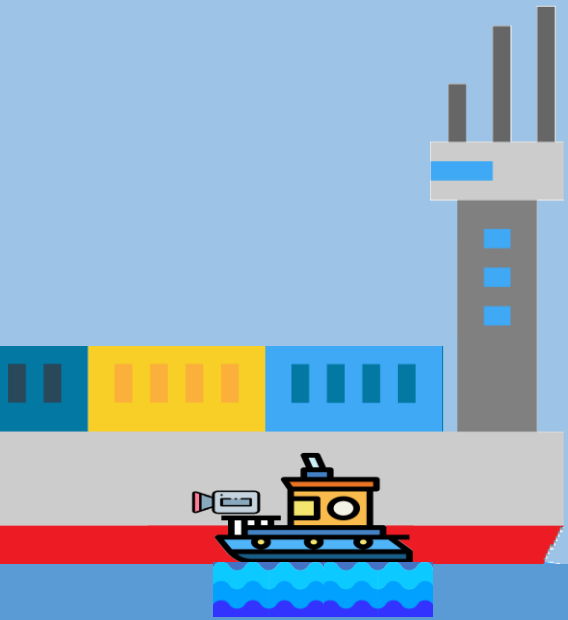


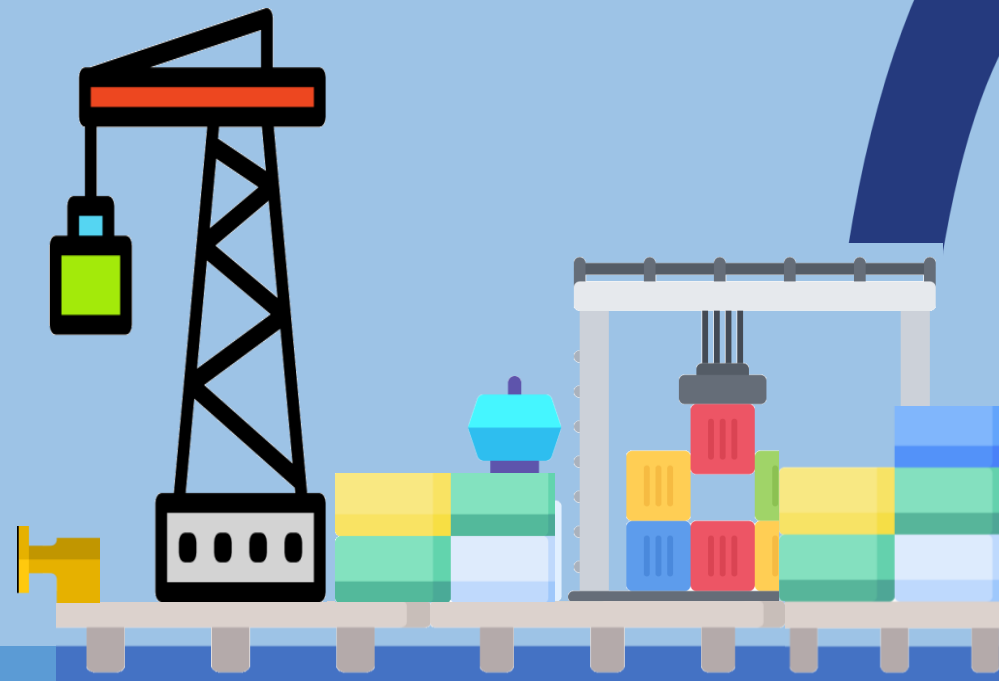








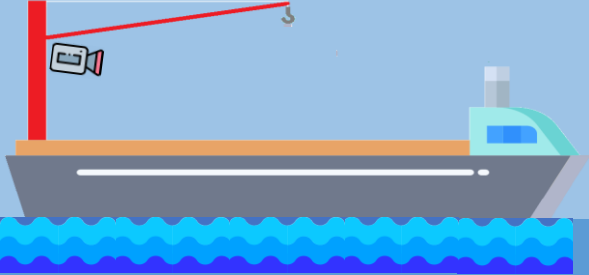






Some containers are bound for a small port
(mainland or island)

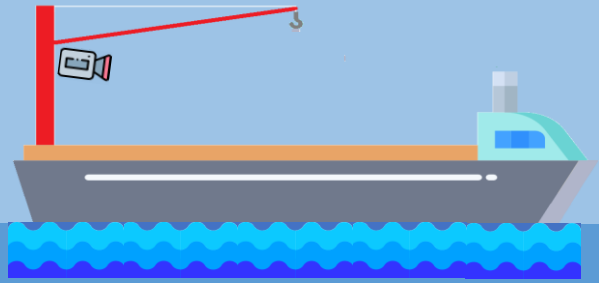
Robotic
Container-Handling
System

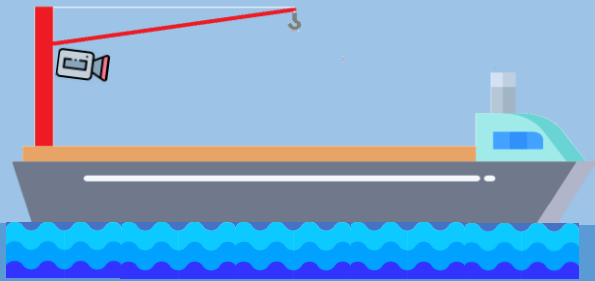


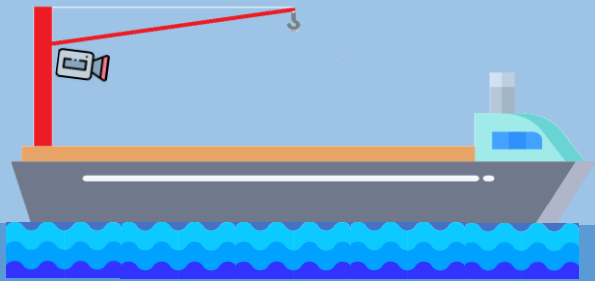
Innovative
Feeder
Vessels

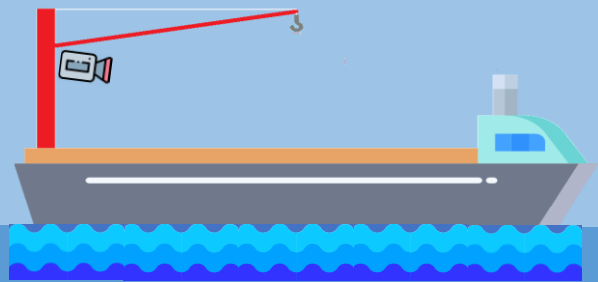


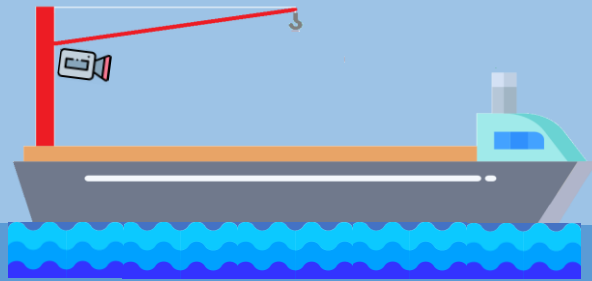
Charging Station

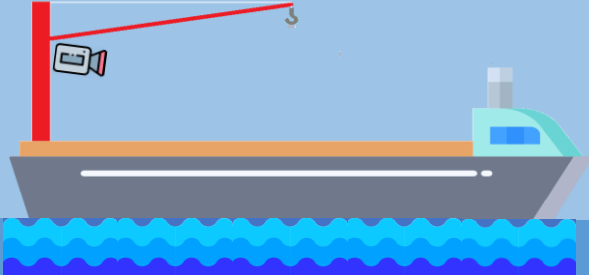


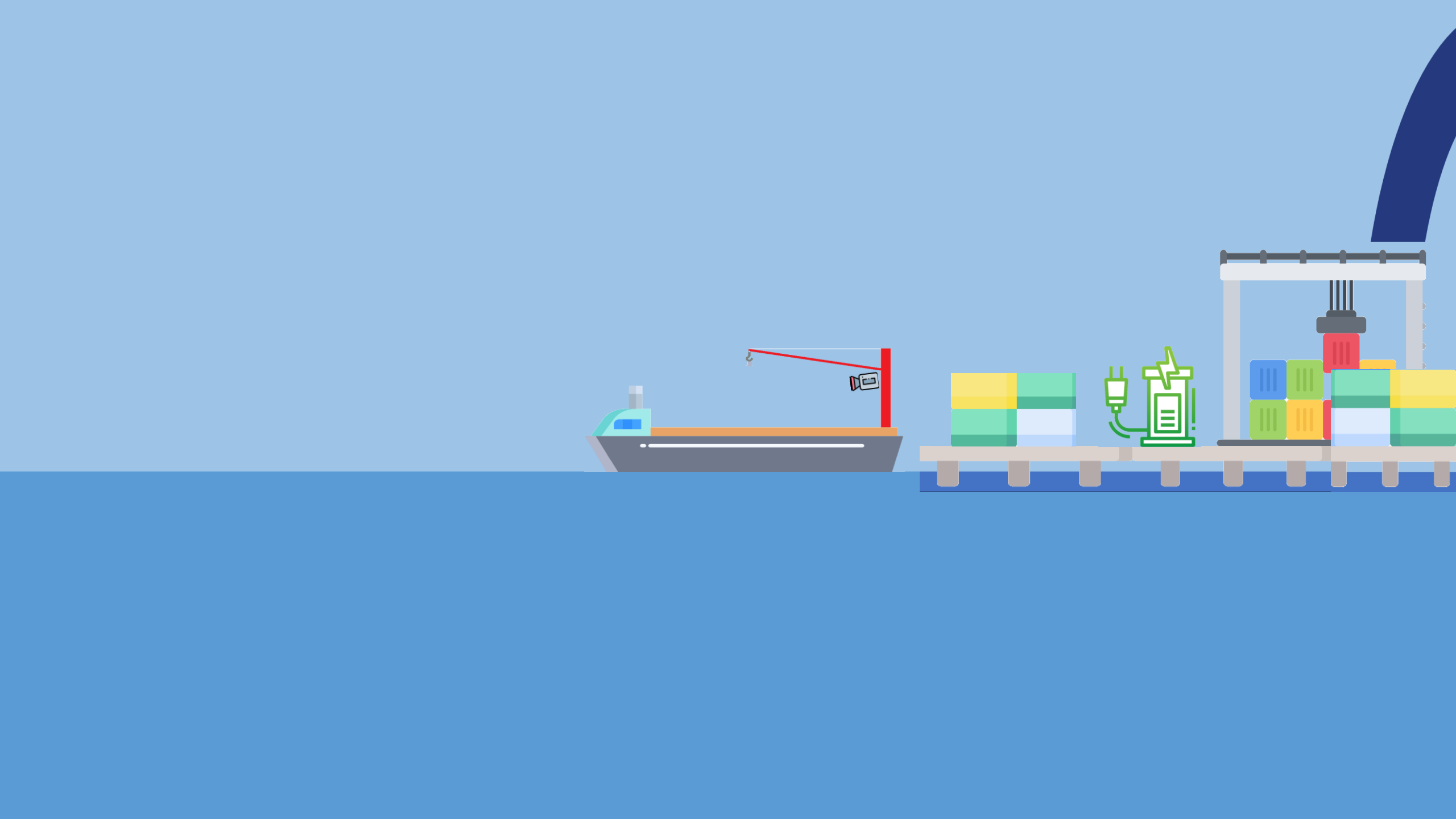


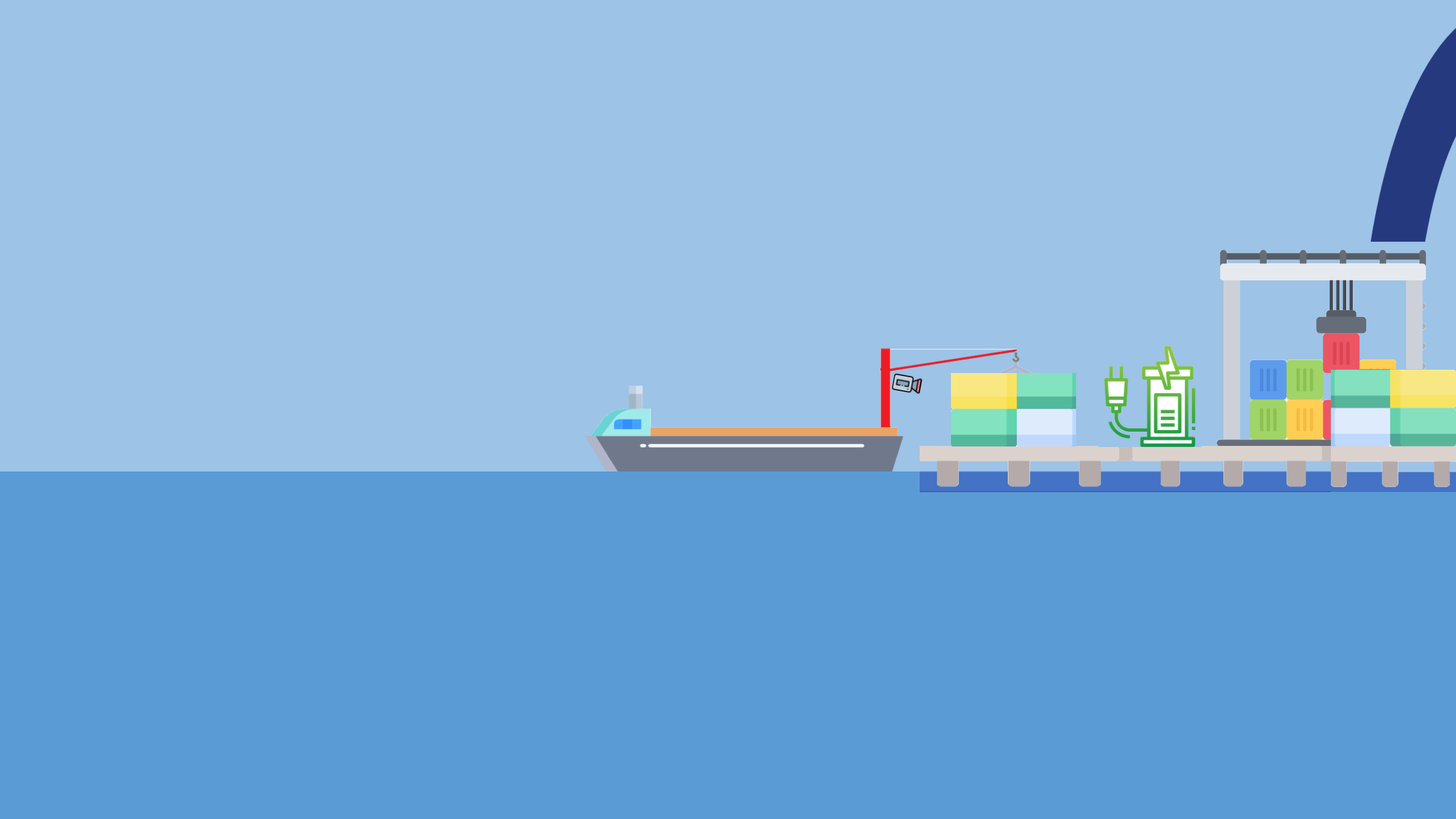


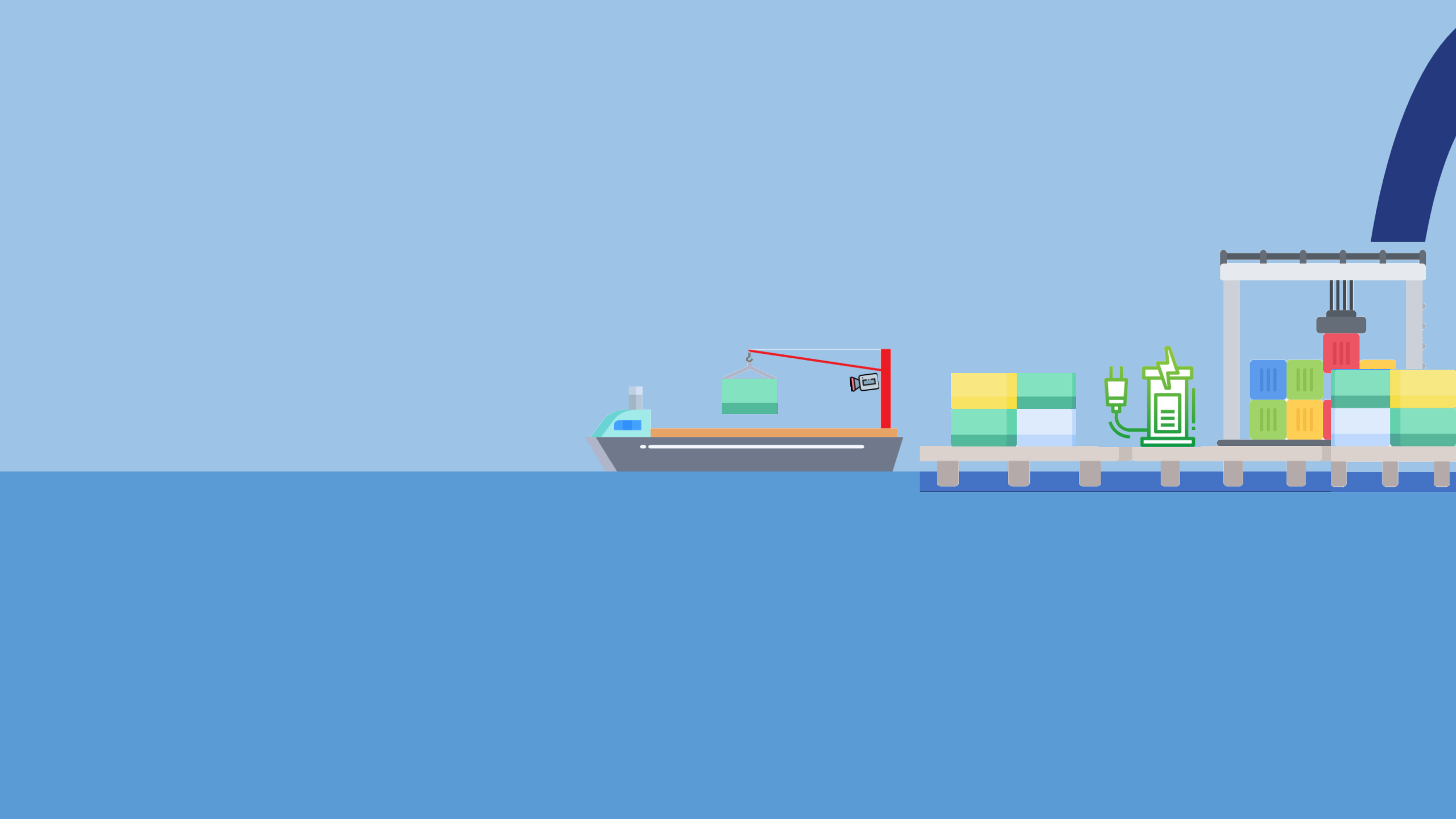


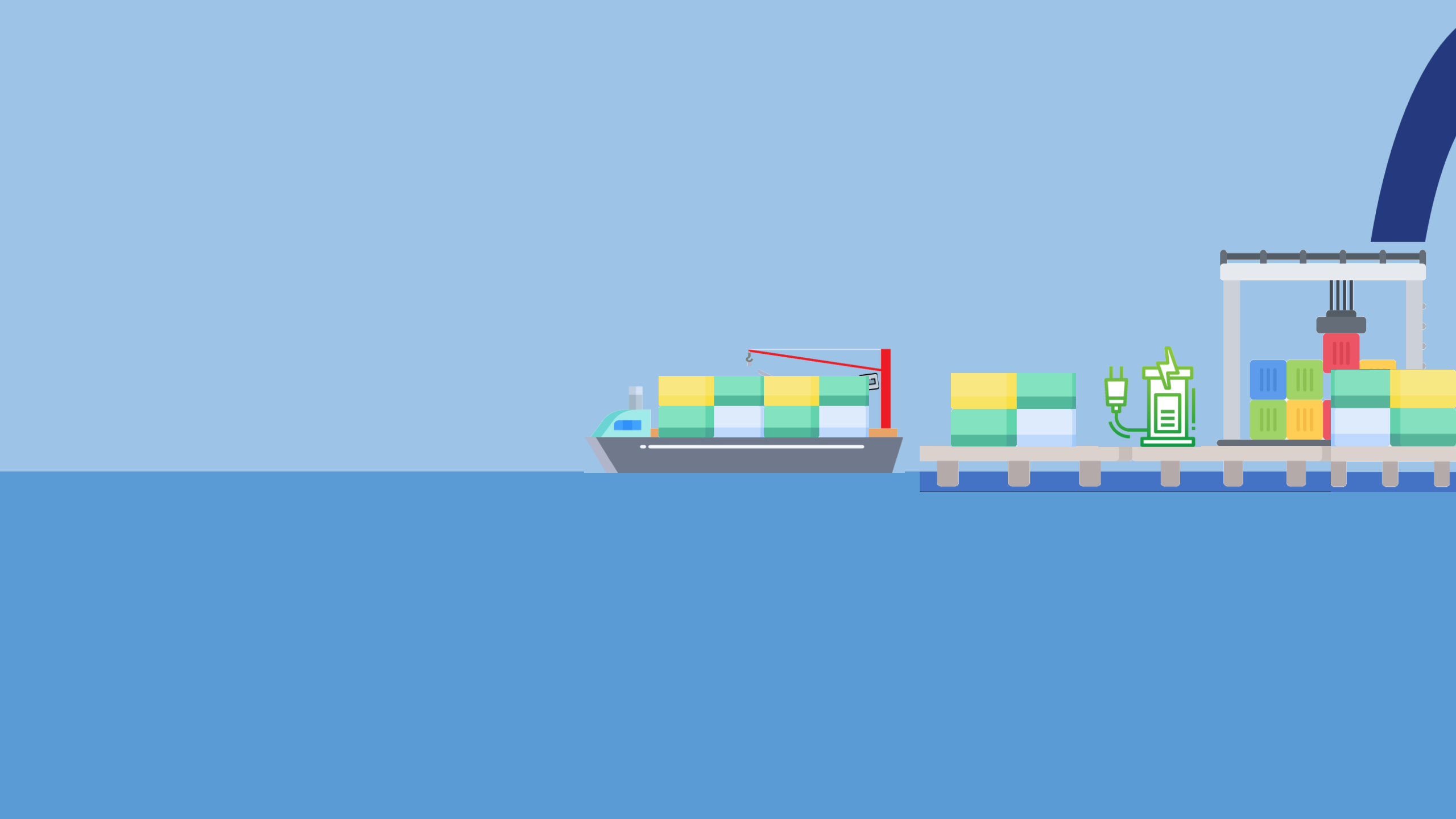


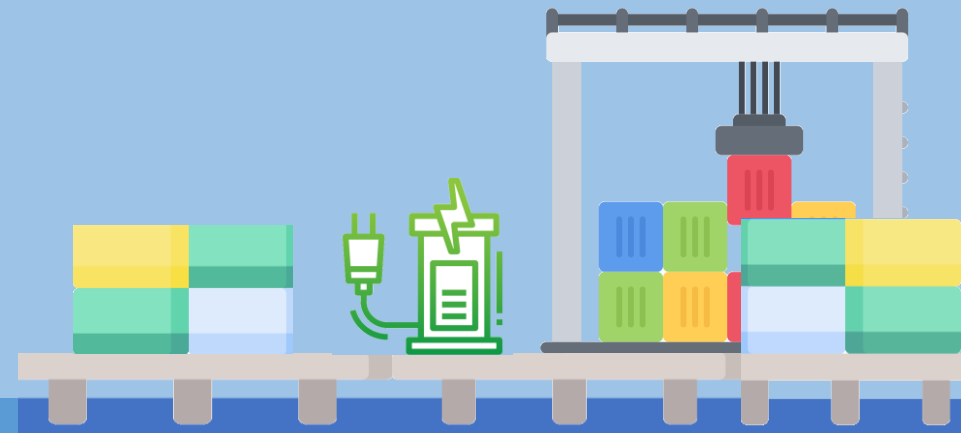
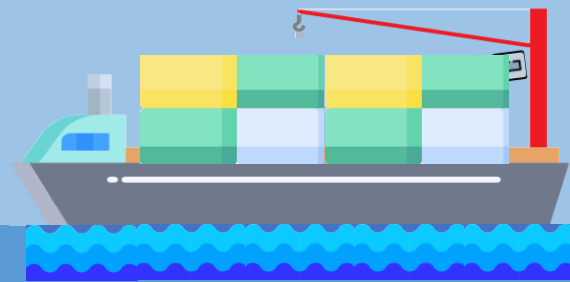


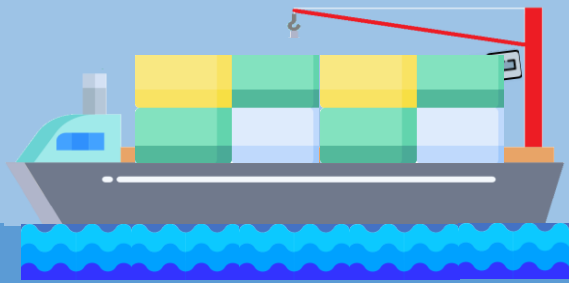


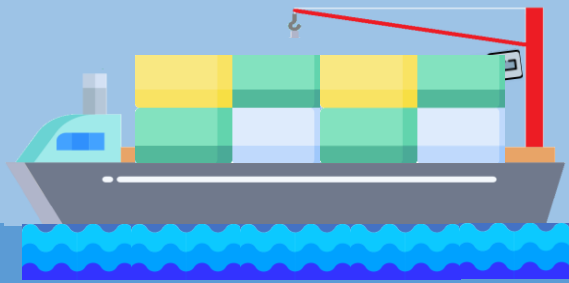


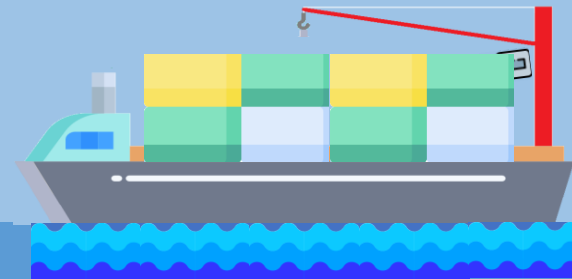
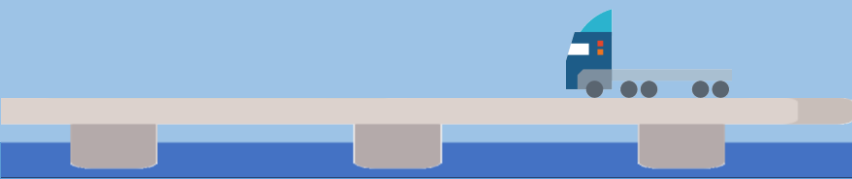




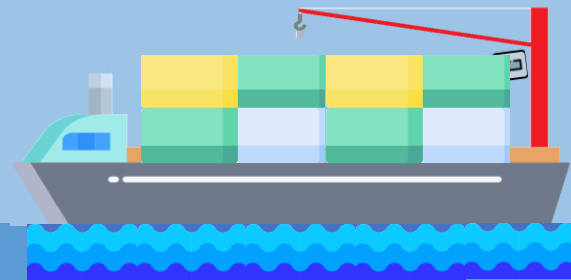


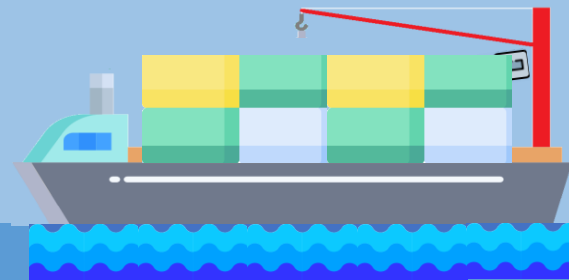
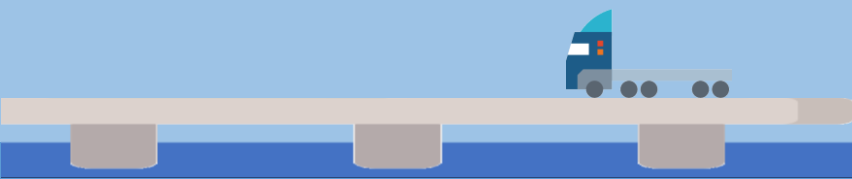


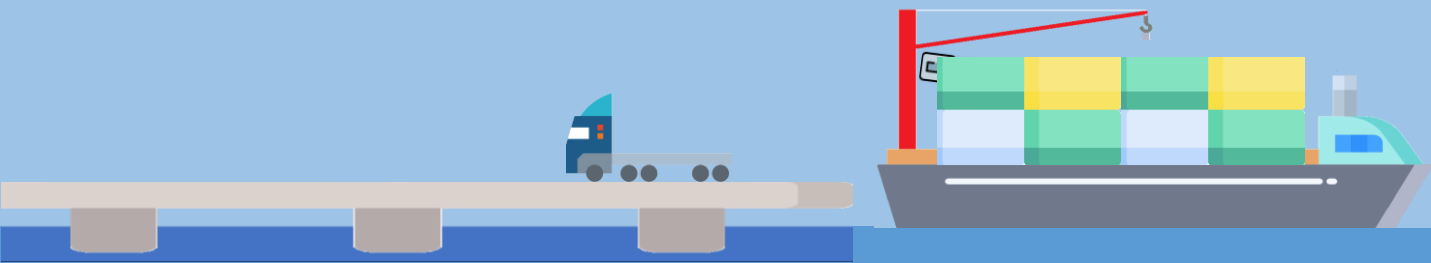




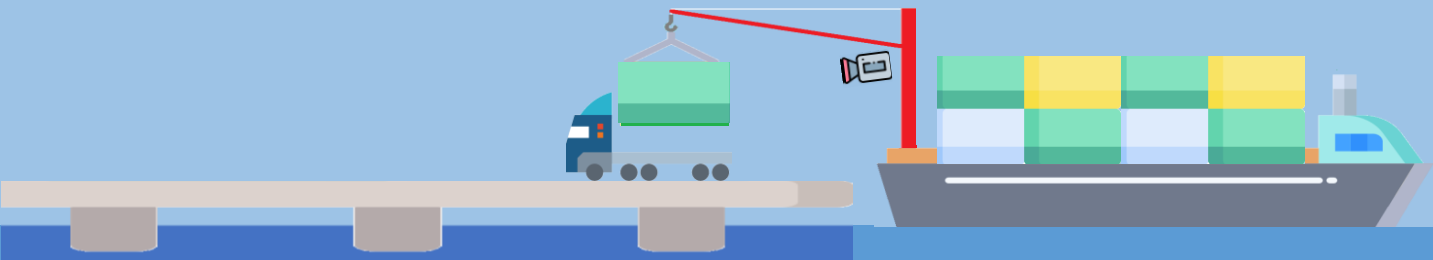
The small port has no infrastructure to handle containers

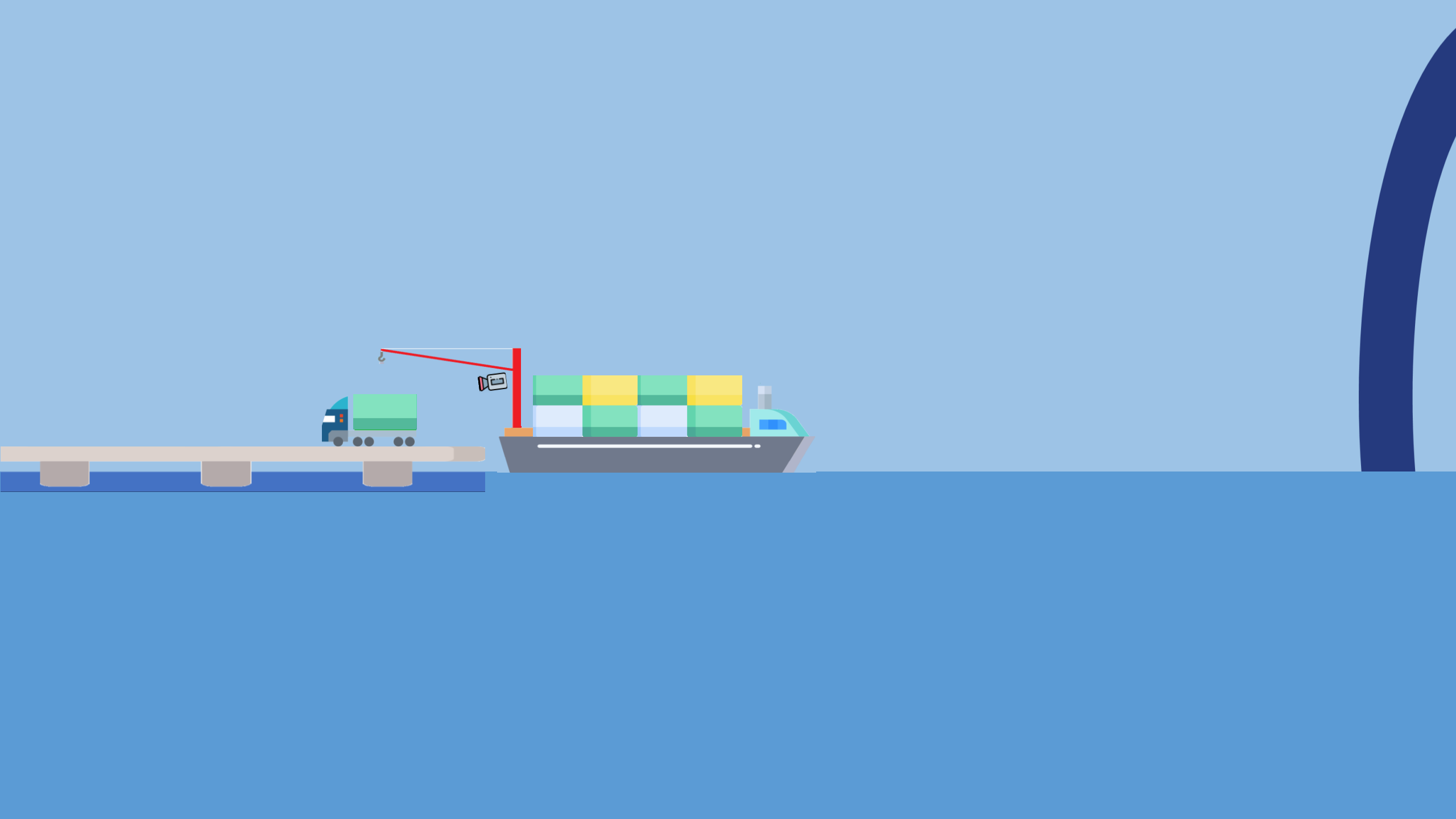


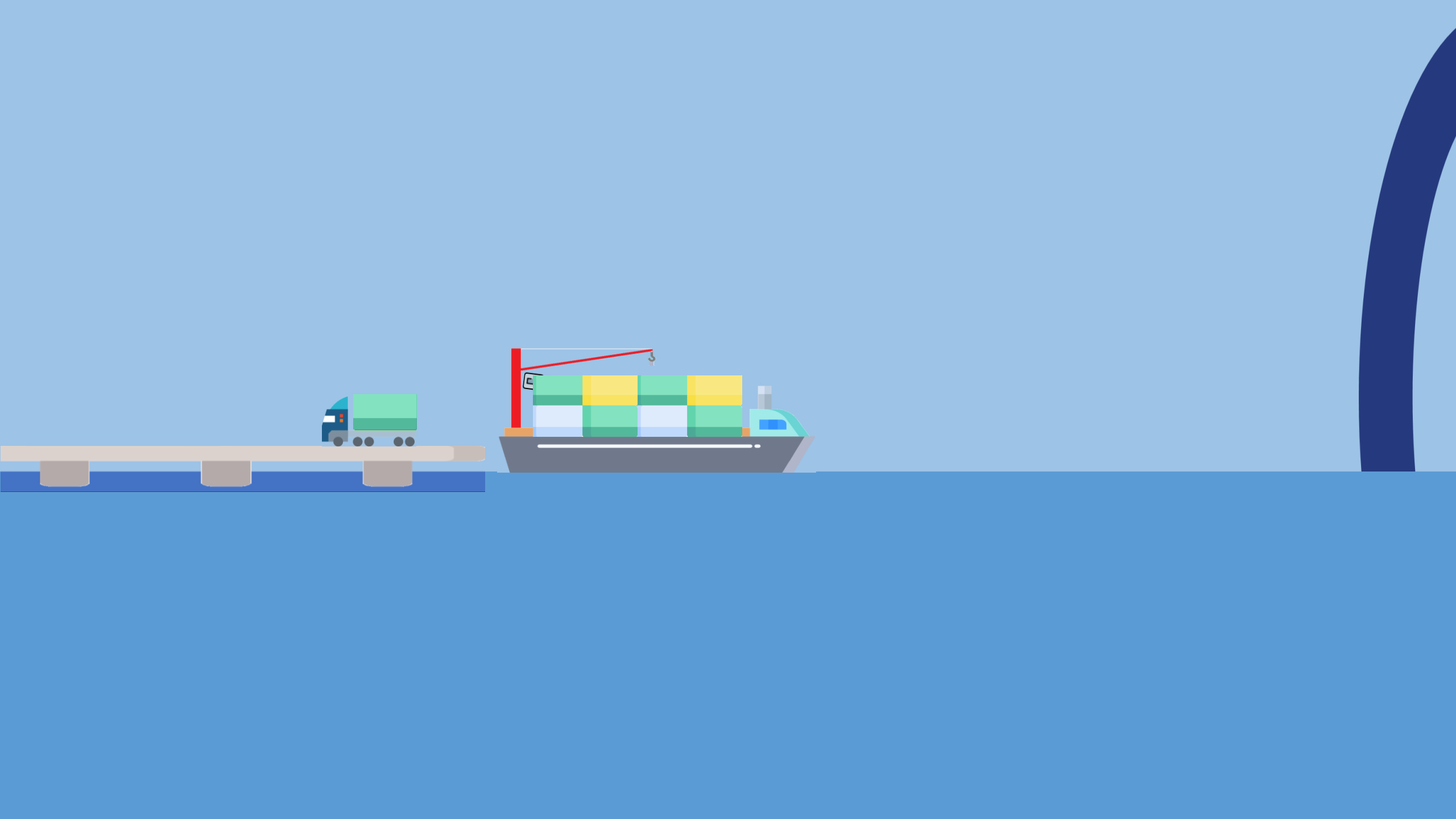


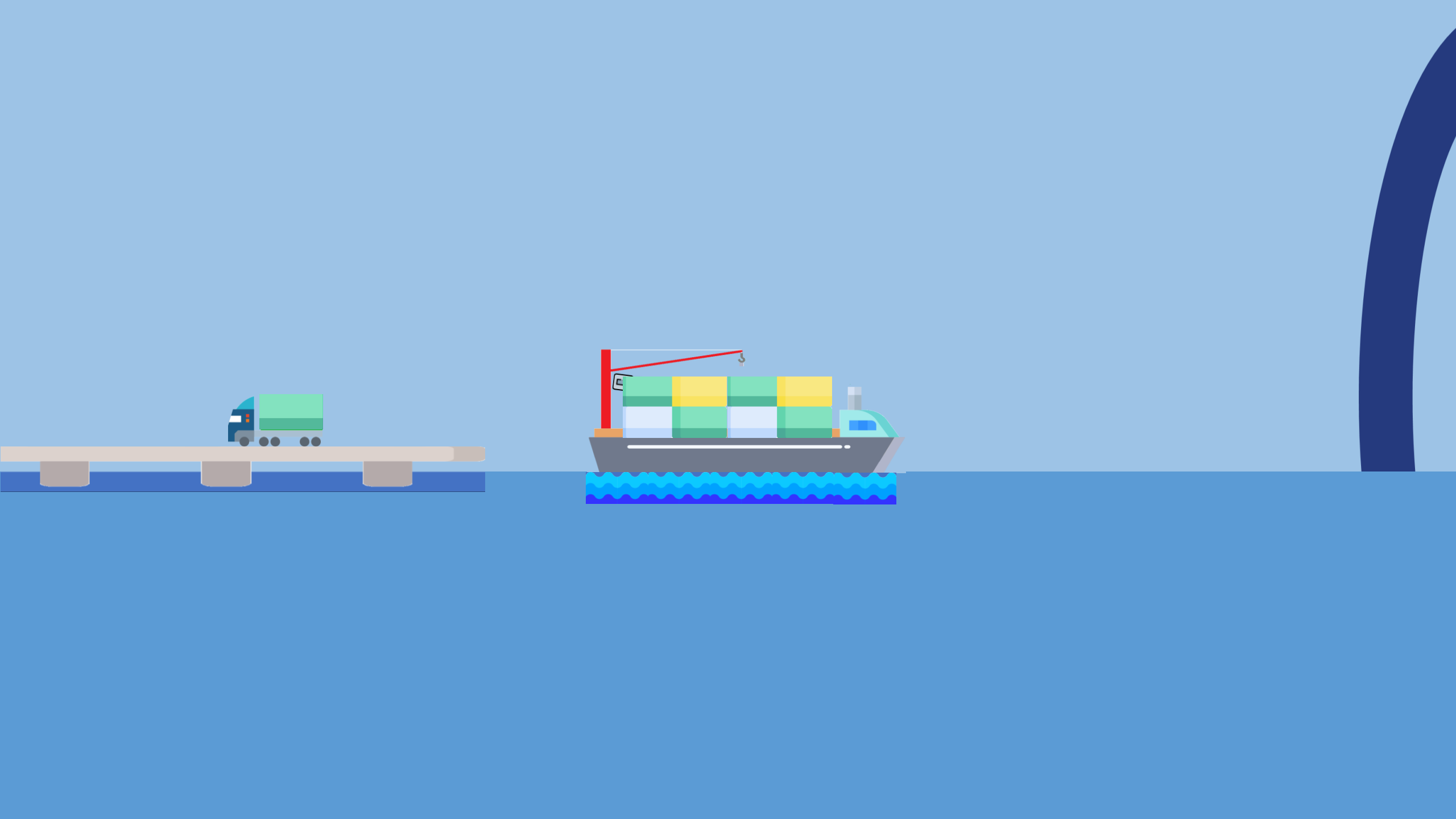


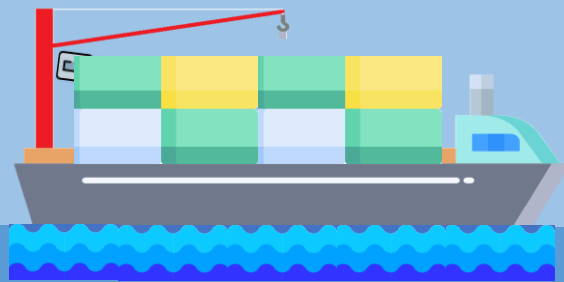
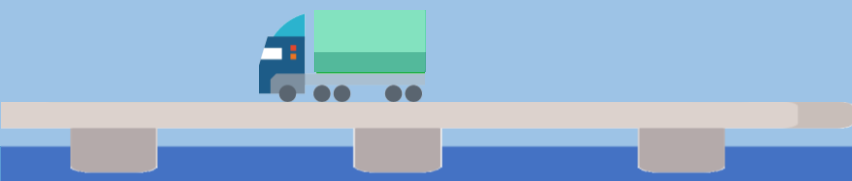
The MOSES Innovative Feeder will unload containers directly to trucks with the automated container handling system

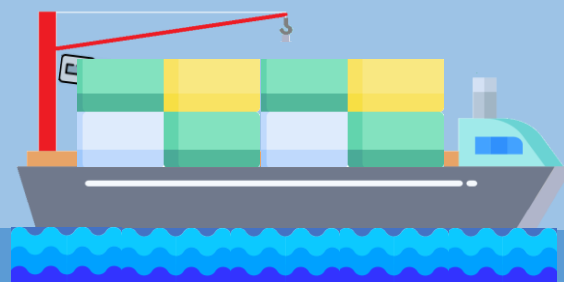


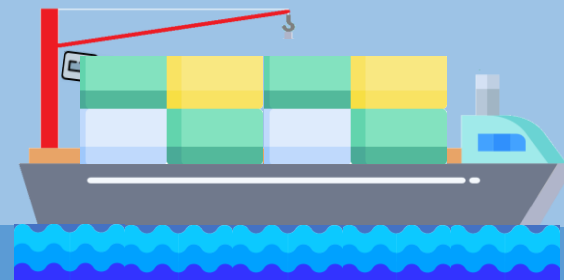


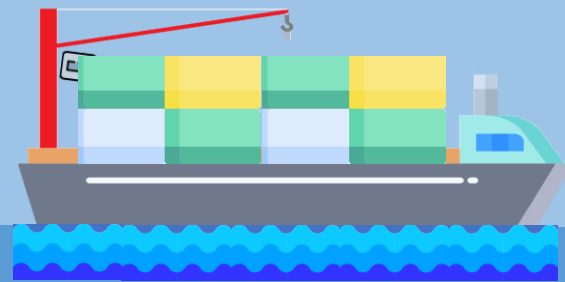








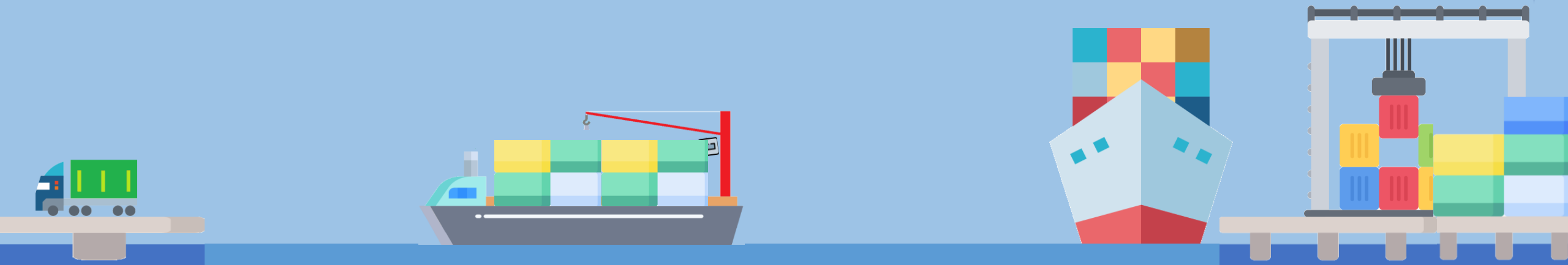






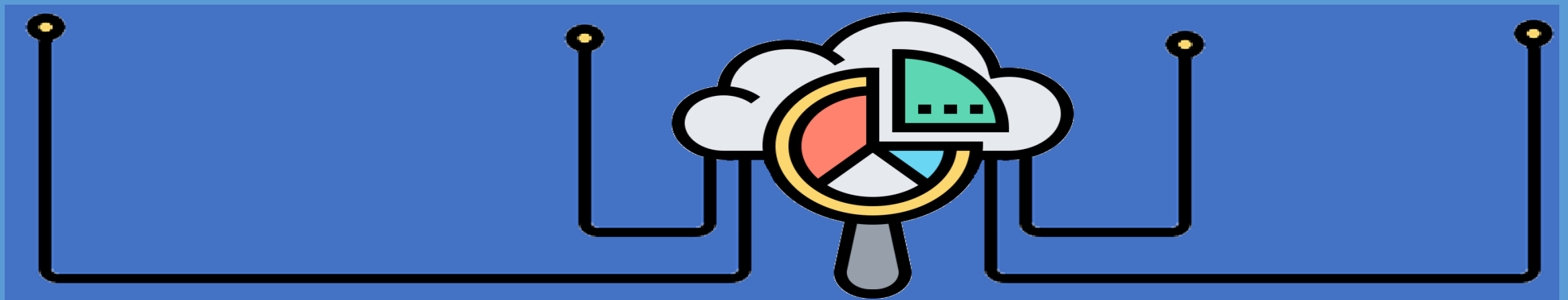
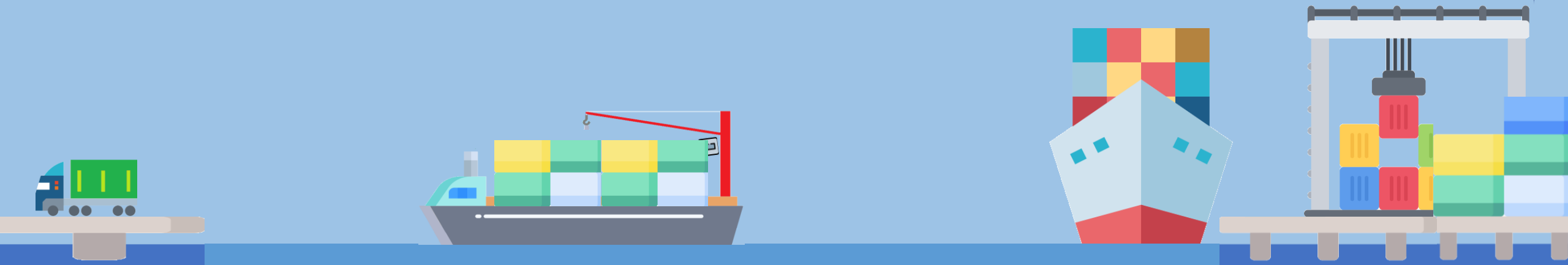


Propose Changes to Port Operations



Everyone is happy...but technology is not enough!

Demand and supply must be balanced to sustain SSS feeder services



Matchmaking Logistics Platform

Credits:

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MOSES

Thank you for your attention!



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