CONNECTING THE WORLD

BUILDING TOMORROW'S SUSTAINABLE PORT

INTERTRAFFIC - NAG, AMSTERDAM

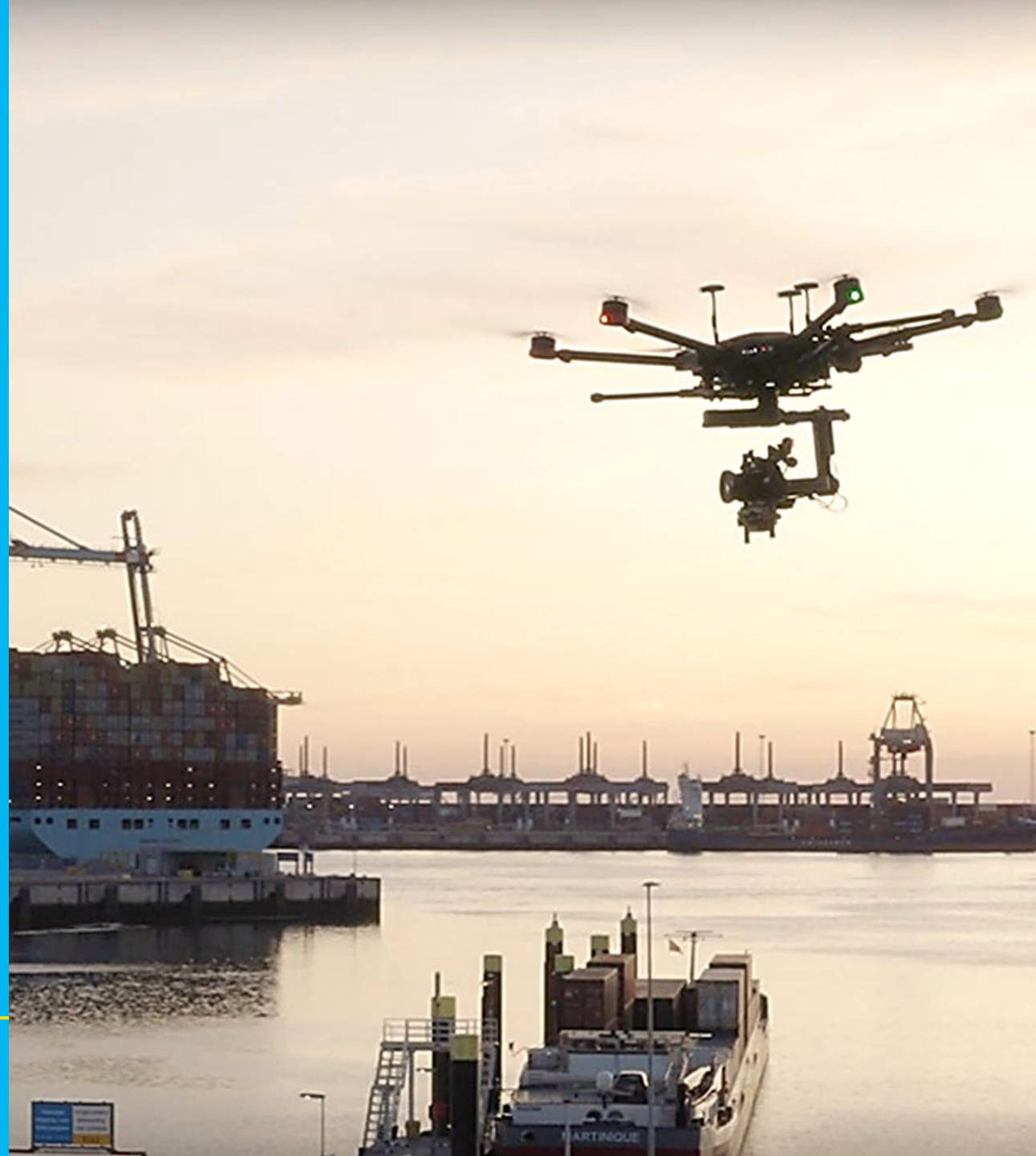
NIELS KALSHOVEN, HEAD OF DRONE INNOVATION PROGRAM @ PORT OF ROTTERDAM

DRONES IN ROTTERDAM

- Growing usage of drones at the Port of Rotterdam
  - Commercial, civil and military

- Regulation of cooperative unmanned autonomous systems:
  - U-Space Airspace: drone traffic control in teh very low level airspace (<150M)

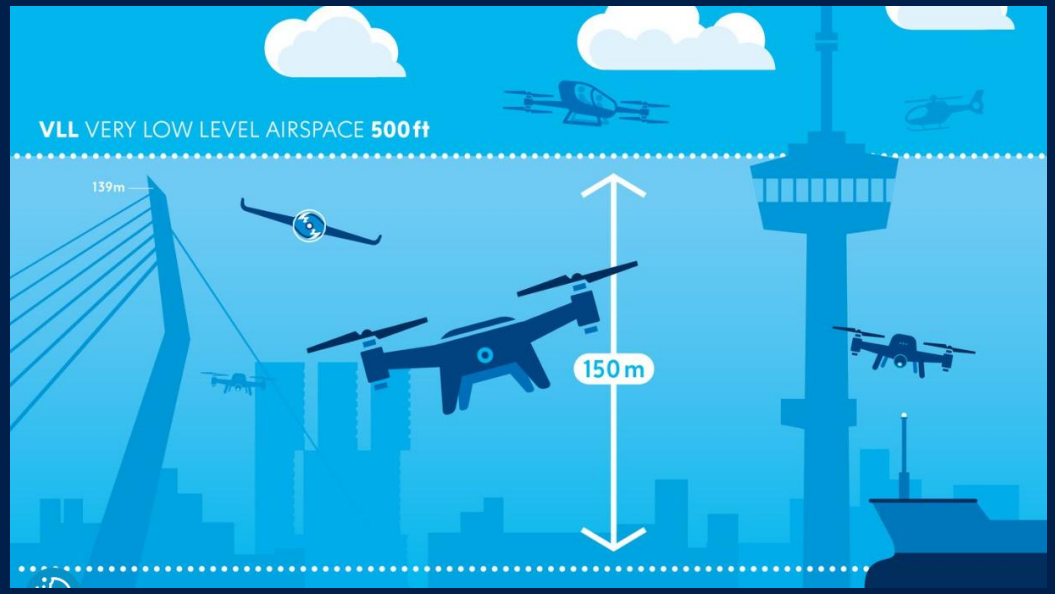
- Countering non-cooperative unmanned autonomous systems:
  - Virtual Defense Program: detection, identification and neutralization of unauthorized drones



Port of Rotterdam

DRONES

DEVELOPING U-SPACE PORT OF ROTTERDAM



2020
Drone Port of Rotterdam

2022
U-Space prototype

2026
Start implementation Pre U-Space

2030
Fully implemented U-Space

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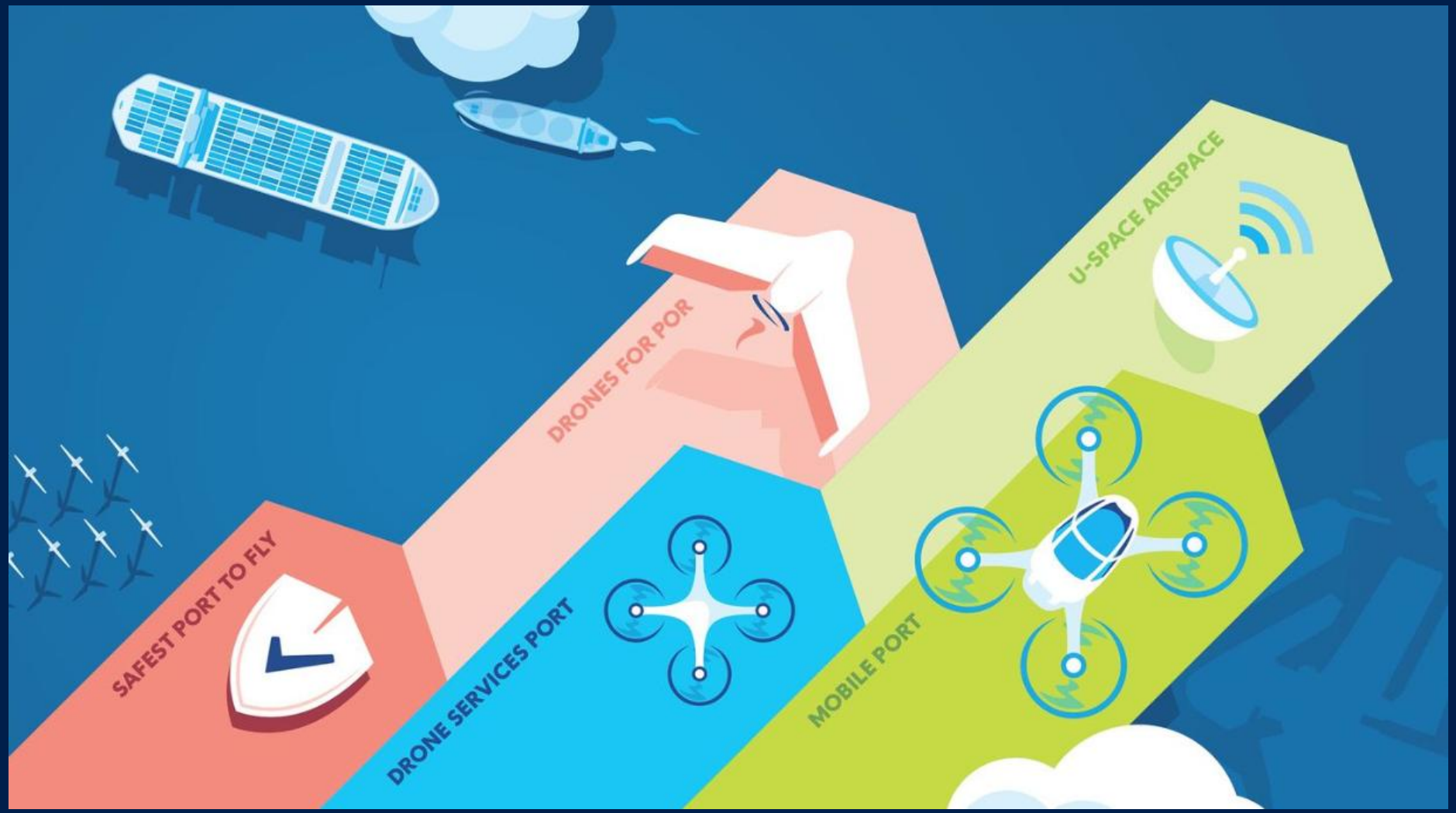
DRONES

2020

Role & value determination of drone activities in the port of Rotterdam



U-SPACE

2022-2026

Port of Rotterdam

2030: DIGITAL DRONE TRAFFIC CONTROL IN U-SPACE

IMPORTANCE OF U-SPACE FOR SAFETY AND SECURITY

- Safety:
  - Mitigating the risks of accidents
  - Awareness of safe drone use

- Security:
  - Requirements for (cyber) security and critical infrastructure
  - Geofencing
  - Temporary restrictions on drone operations in (parts of) the port
  - Distinguish between authorized and unauthorized drones

VIRTUAL DEFENSE PROGRAM

Objective:

- Detection, identification, and neutralization of unauthorized drones
- Multi-domain unmanned autonomous systems (air, water, and land)

Focus areas:

1. Technology
2. Risk analysis
3. Collaboration with partners

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KEY CHALLENGES

- Responsibilities and capabilities:
  - From detection to intervention
  - Entity, regional, national, EU, NATO
  - Civil-Military
- Data-exchange detection
- Situation awareness (looking at the same data)
- Scale, size and complexity of the Port of Rotterdam
- Rapid development in threats and new technologies

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QUESTIONS?