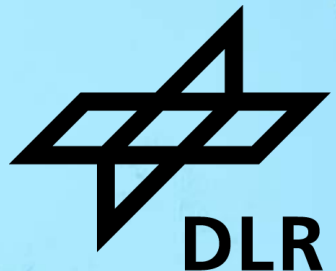


PRELIMINARY LESSONS FROM CURRENT CONFLICTS ABOUT THREATS ON CRITICAL MARITIME INFRASTRUCTURE BY UNMANNED SYSTEMS

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Agenda



- What is the issue?
- What are the implications?
- What are the lessons?
- What is to be expected?

What is the issue?



The Toloka - TLK 150 Photo: Brave1

Morphological scenario analysis - Factors



Approach distance

UxV

Mission

Top Speed

Cruise Speed

Propulsion
technology

Drone control

Length

Payload

Potential Targets

Sea conditions

Weather conditions

Morphological scenario analysis – States 1

Approach
distance

< 12 nm

< 200 nm

> 200 nm

UxV

Above
surface

Below
surface

Mission 1

Kinetic effect

Mine
operation

Communication
platform

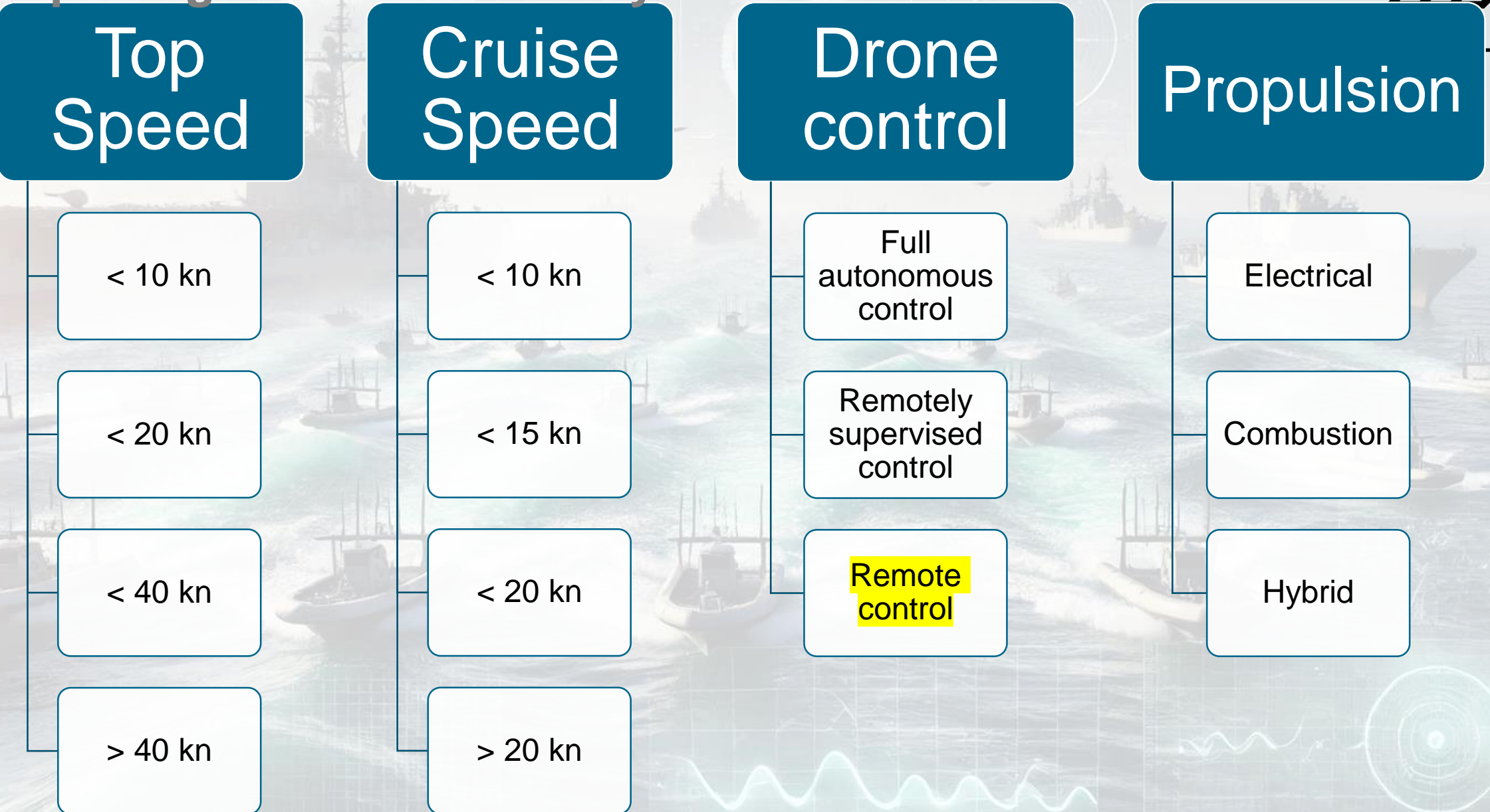
Mission 2

Search and
rescue

ISR

Supply

Morphological scenario analysis – States 2



Morphological scenario analysis – States 3

Payload

< 100 kg

< 500 kg

< 1000 kg

>1000 kg

Potential
targets 1

Surface
static

Surface
mobile

Subsurface
static

Potential
targets 2

Subsurface
mobile

Onshore
static

Onshore
mobile

Air mobile

Length

< 5 m

< 7 m

< 10 m

>10m

Morphological scenario analysis – States 4



Sea conditions

< 0,5 m

< 1 m

< 2m

Weather conditions

Rainfall

Snowfall

Fog

Cloudy

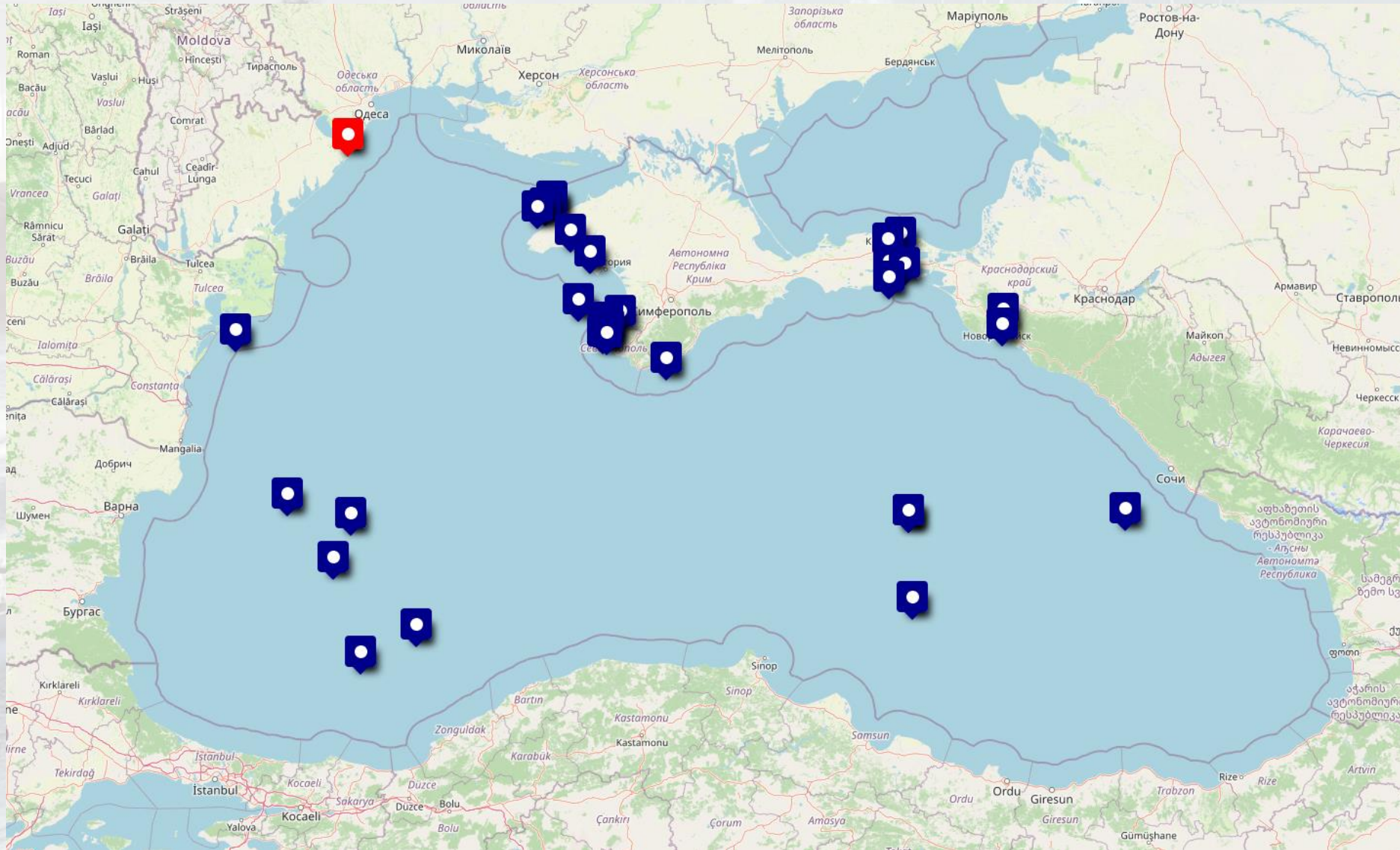
Sunlight

Consistency matrix based on 30 UxV designs



		UxV		Length				Sea conditions
UxV	above surface							
	below surface							
Length	<5m	+	+					
	<7m	+	0					
	<10m	+	-					
	>10m	+	-					
Sea conditions	< 0,5 m	+	+	+	+	+	+	
	< 1m	+	+	0	0	+	+	
	< 2 m	+	0	-	-	0	+	

UxV in the Black Sea



Preliminary Lessons



- Rapid development outside of industrial standards
- COSP are used to reduce development efforts
- Capabilities focus on niches
- Generalized production facilities are able to modify and adopt designs quickly
- Strategic communication maximizes effect
- Limited Area of Operation due to environmental and control dependency

What is to be expected



- Combined operations
 - Exploitation of underwater potential
 - Proliferation of know-how
 - Increasing level of autonomy
-
- Increased threat to merchant shipping
 - Urgent need to professionalize the capabilities
 - Risk of utilization by non state actors

Topic: Preliminary lessons from current conflicts about threats on critical maritime infrastructure by Unmanned systems

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