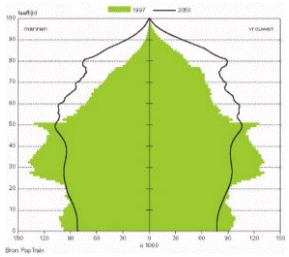
Koninklijke Landmacht

‘How does the Netherlands Army organize for RAS?’

Robotics & Autonomous Systems

LtCol Martijn Hädicke

Start with Why?!



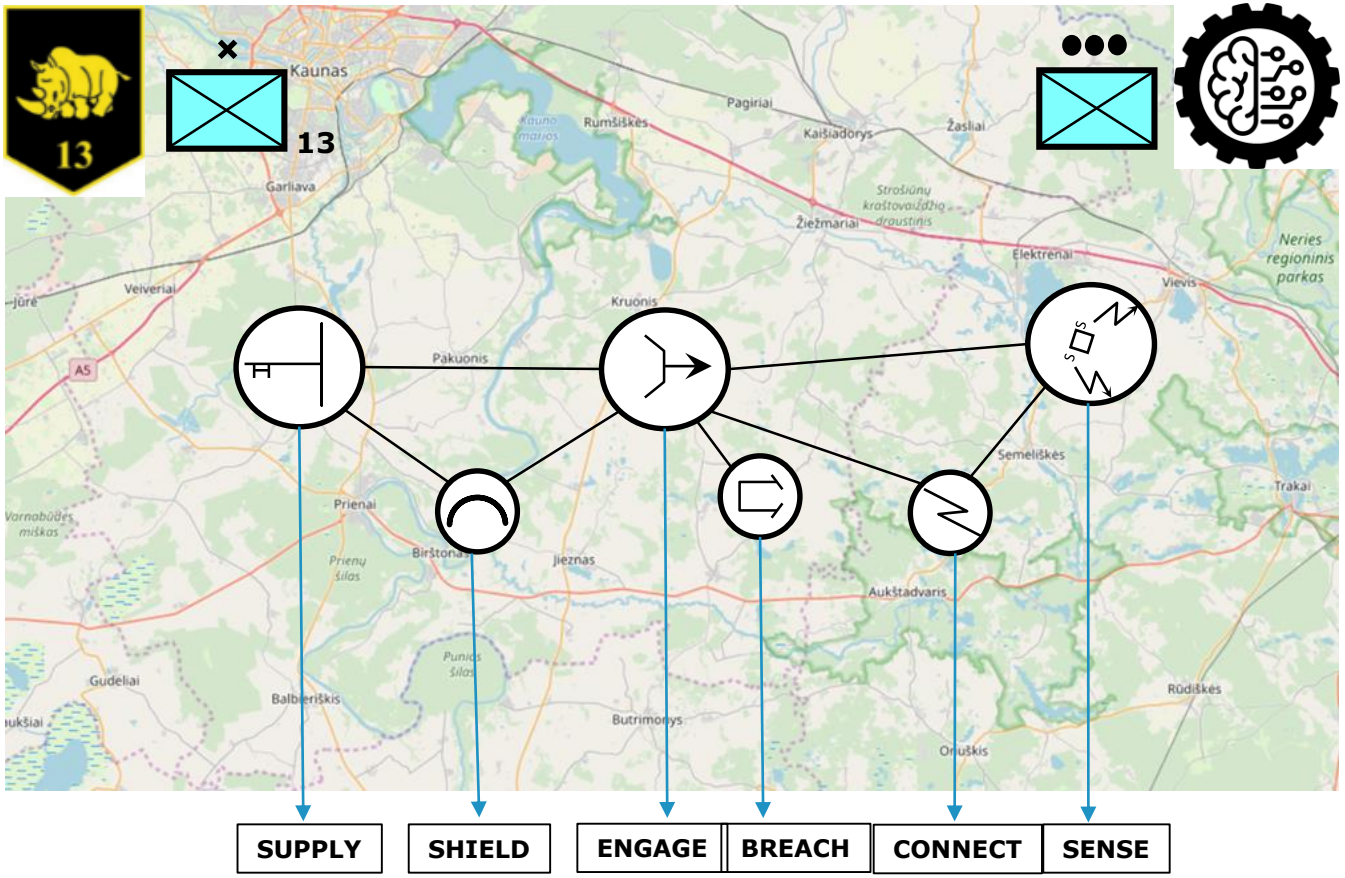
1. Decrease risks for soldiers

2. Be dominant in battle

3. Fighting power less dependant on number of personnel

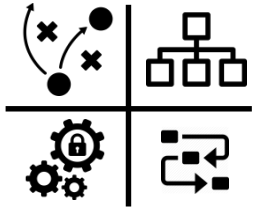
How to organize for a future with RAS?

5 x more combat power against 5 x lower costs

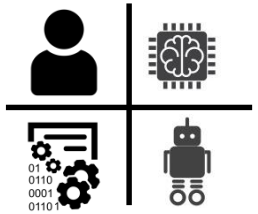


CORE ROLES

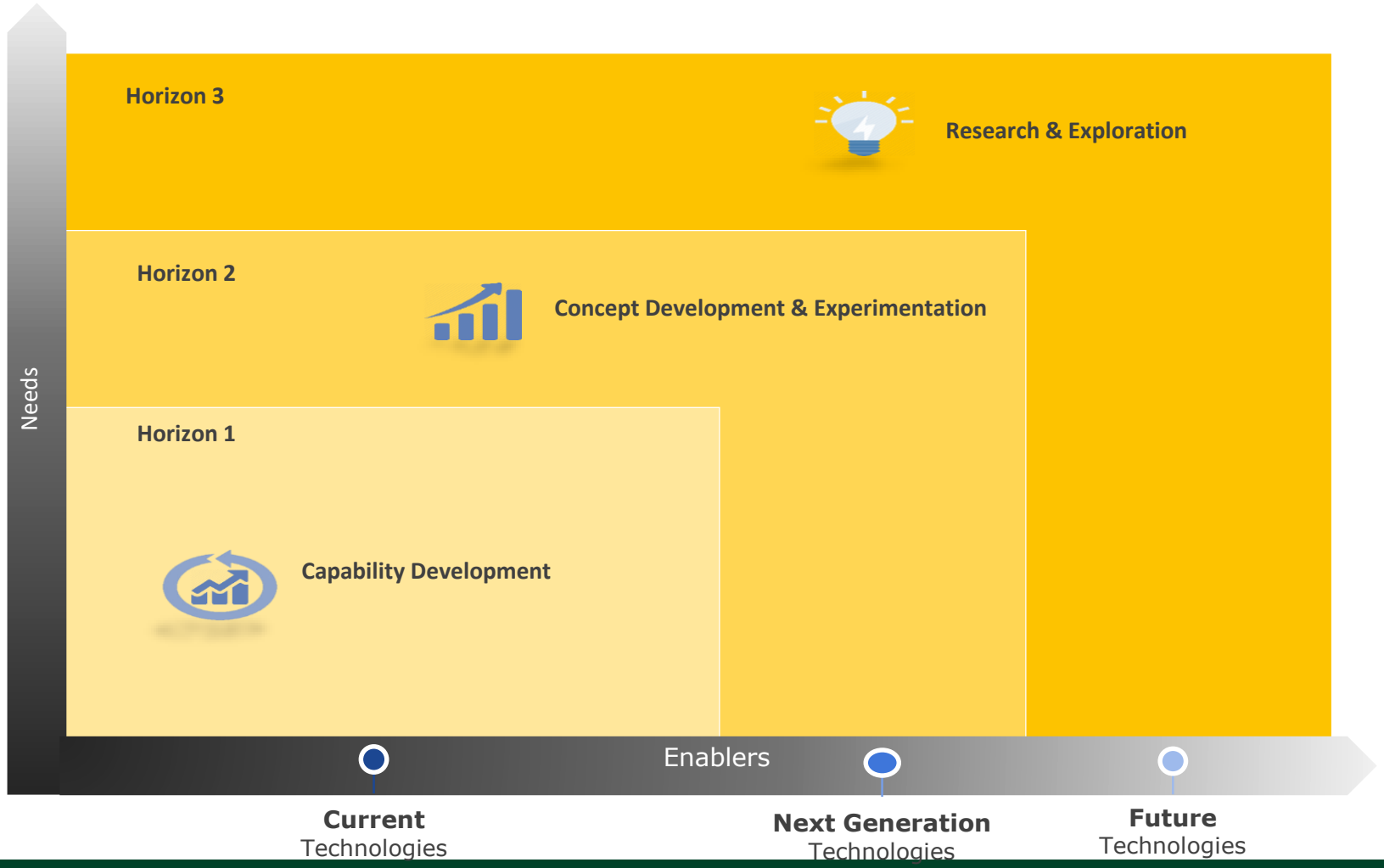
CONOPS



CORE TECHNOLOGIES



Three Horizon Framework for innovation



Horizon 1


Horizon 3
Research & Exploration
Horizon 2
Concept Development & Experimentation
Horizon 1
Capability Development
Needs
Enablers
Current
Technologies
Next Generation
Technologies
Future
Technologies

RAS LFX Milrem .50

Horizon 3


Horizon 3
Research & Exploration
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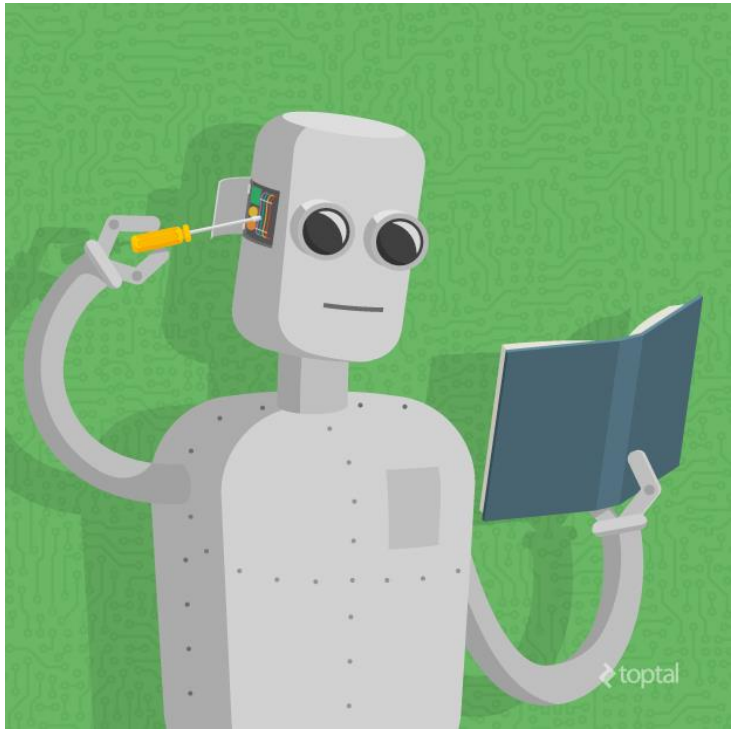
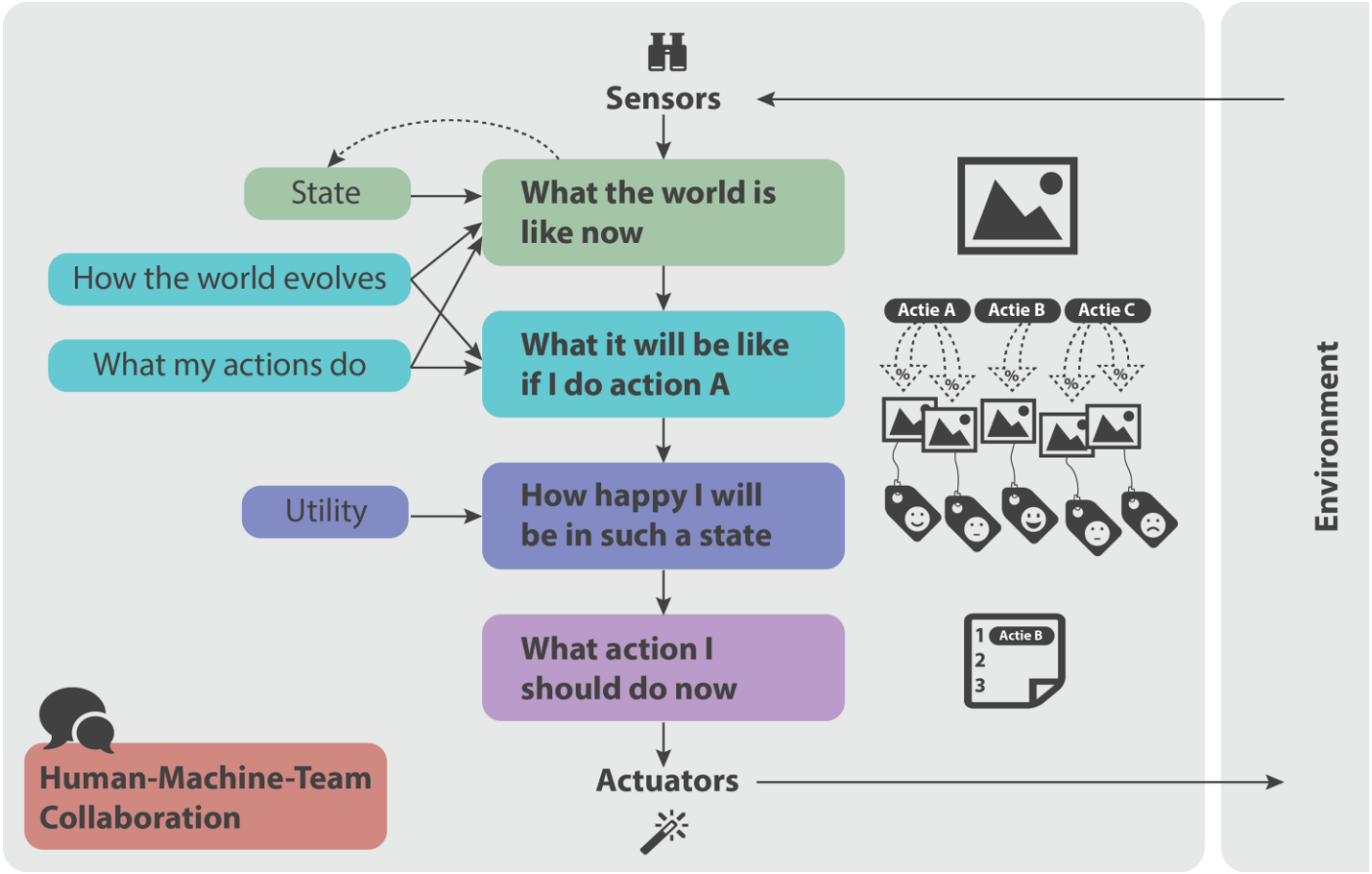
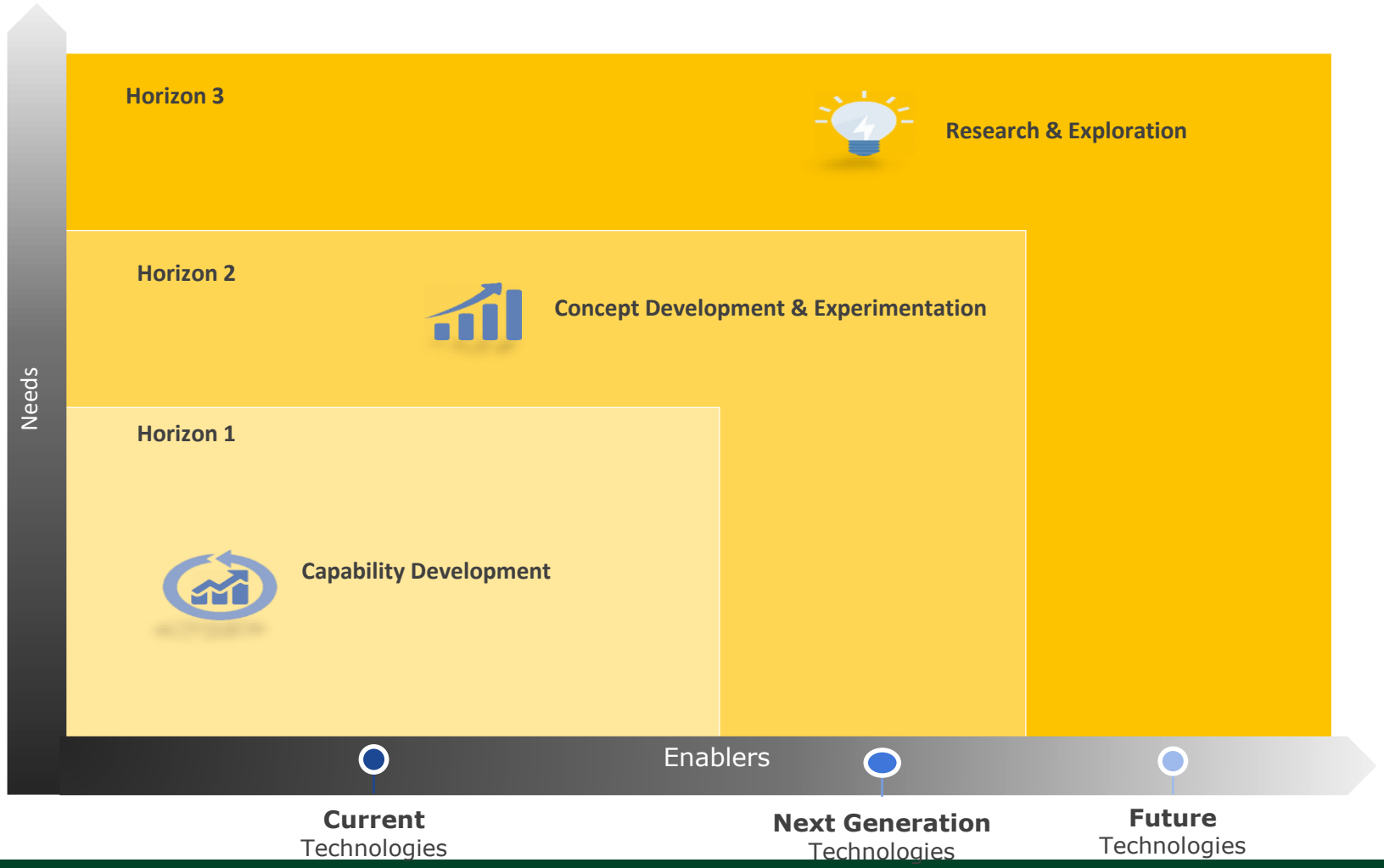
Inside the robot brain: reasoning



Solution Space: Reasoning



Horizon 2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Artificial Intelligence

Thank you for your attention

MILREM ROBOTICS

Integrating Robotic Autonomous Systems into the Future Land Force

Mart Noorma
Science and Development Director, Milrem Robotics
Professor of Space and Military Technologies, University of Tartu

Innovation and Disruption

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- Innovation: application of better solutions that meet new requirements, **unarticulated** needs, or existing market needs

- Disruptive innovation: innovation that creates a new market and value network and eventually disrupts an existing market and value network, displacing established market-leading firms, products, and alliances

OODA loop for maintaining competitiveness

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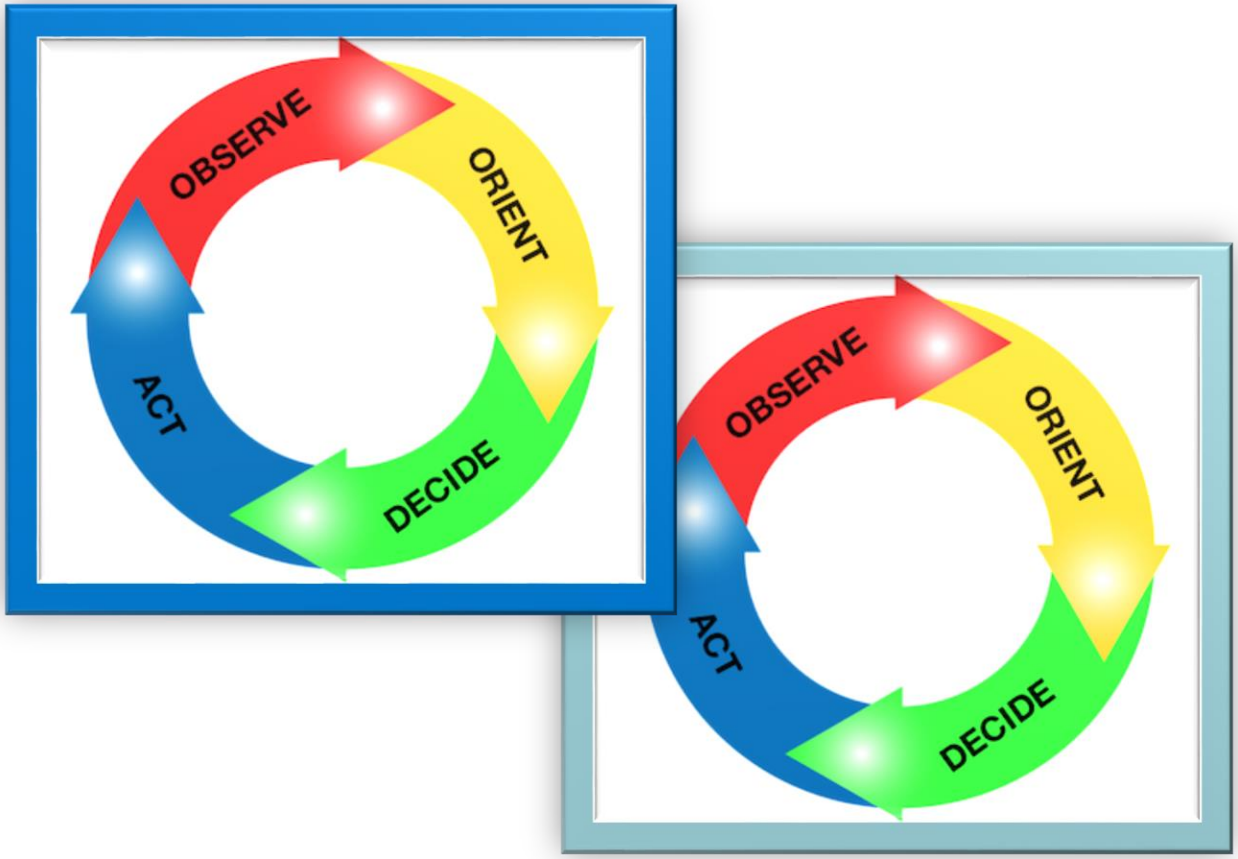

Assessment of new technologies

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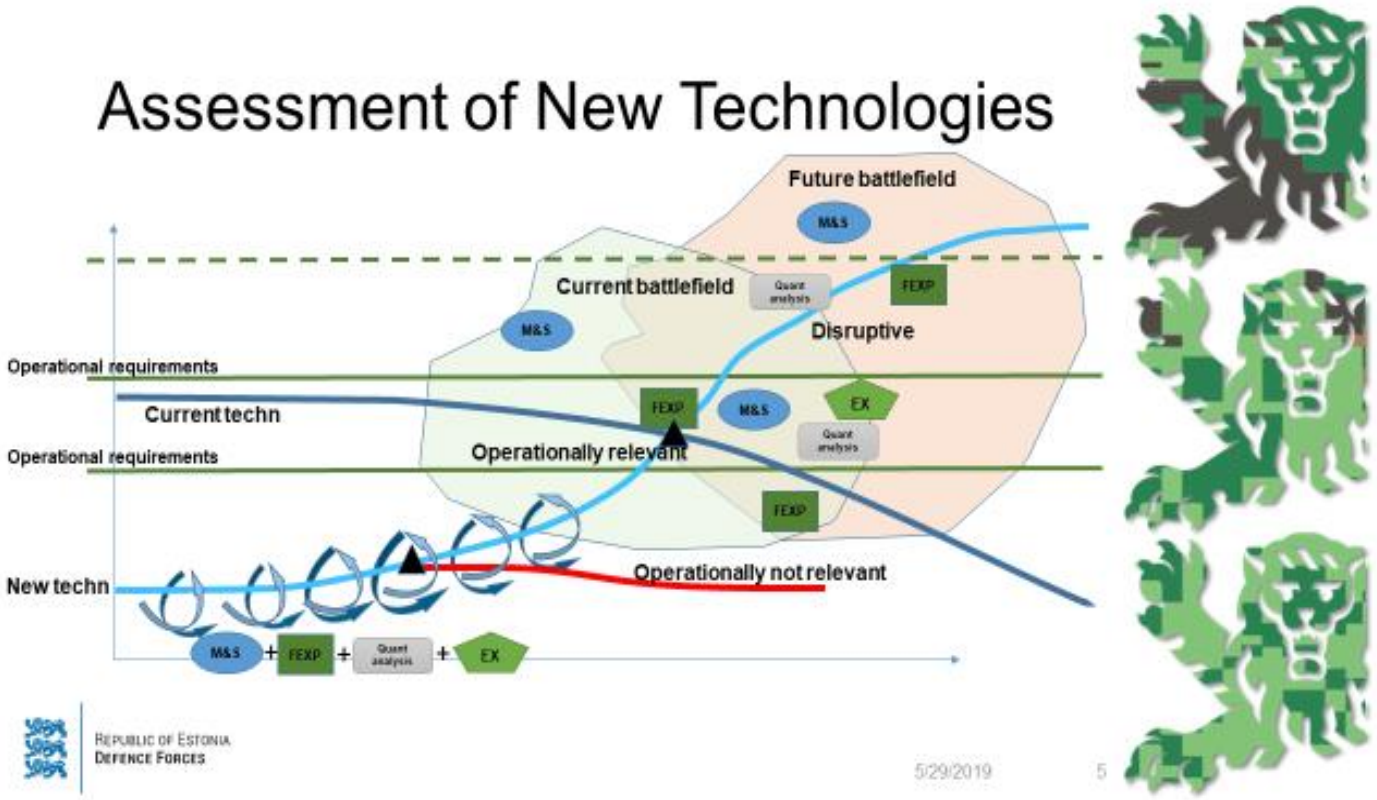

Fig. by LTC Sten

NATO NIAG SG231 Autonomy

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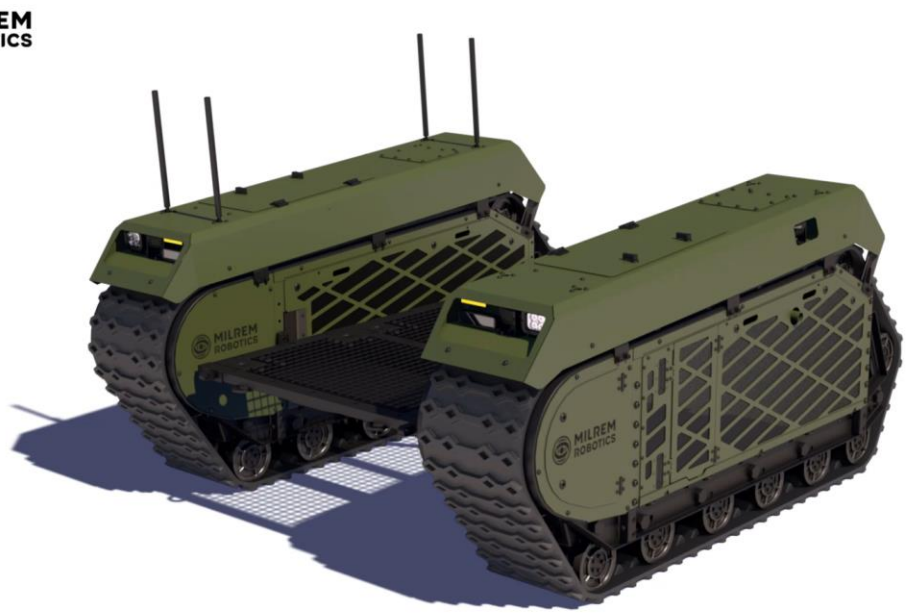
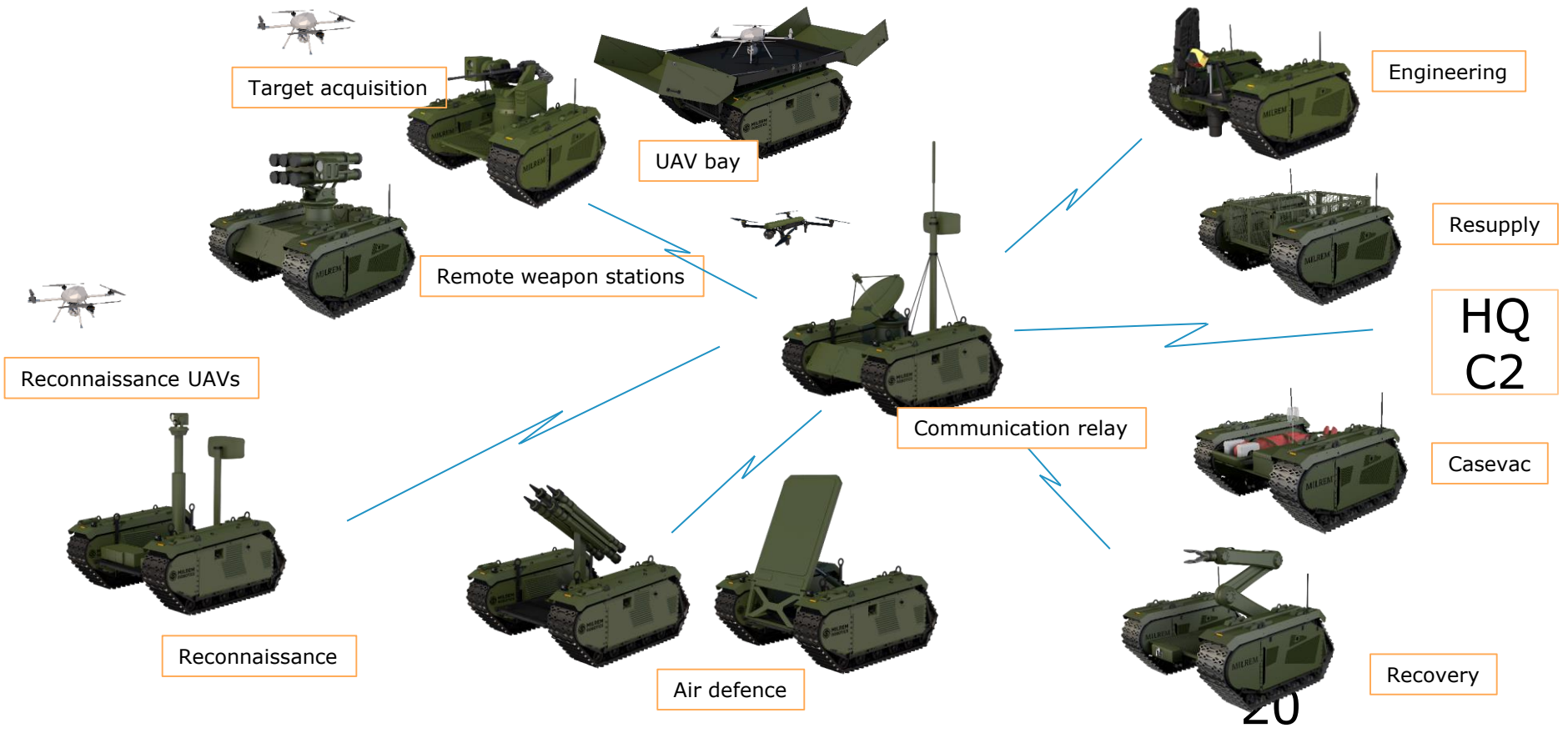
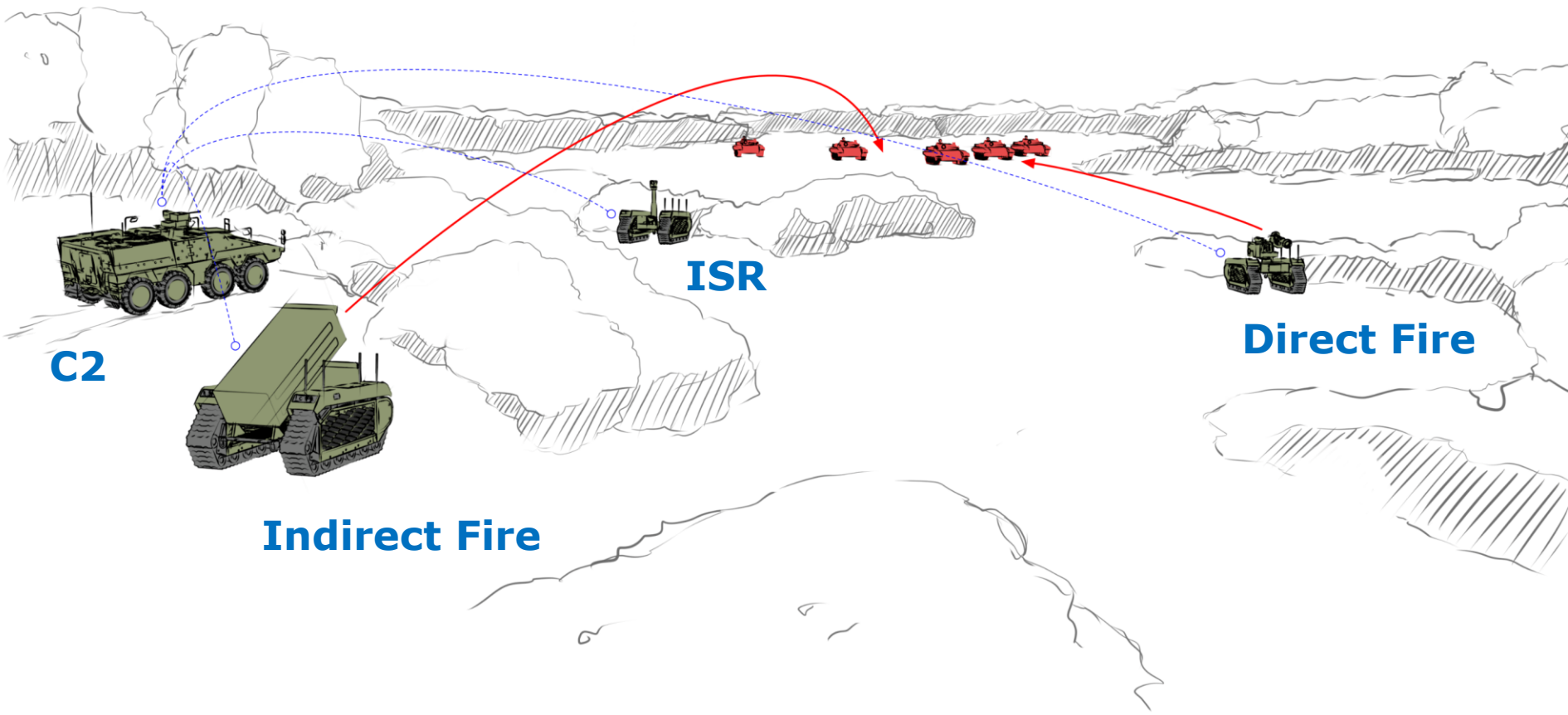
1. Integrate Autonomy into NATO ETEE at all levels for civil and military personnel for efficient and timely adoption of Autonomous Capabilities for future NATO Planning and Operations;
2. Reinforce early Industry involvement as a key enabler for Autonomy-driven transformation;
3. Augment public awareness of the benefits and risks of Systems with Autonomous Functions;
4. Allied nations to ensure an efficient and trustable Supply Chain - in which key NATO and Allied nations' Suppliers remain dependable regardless of political and societal circumstances;
5. Qualification, Verification, Validation, and Certification of Artificial Intelligence based Systems is of paramount importance to assure full confidence in the performance of Systems with Autonomous Functions;
6. Cyber Resilience and Security of Data Acquisition, Storage, Management and Communications is paramount across all domains;
7. Recognize Autonomy as a Capability Area in its own right and establish a NATO Autonomy Governance Structure - to which Industry should refer.

Modular Solution



Multipurpose




C2
ISR
Direct Fire
Indirect Fire

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Anti-tank weapon system 6 x

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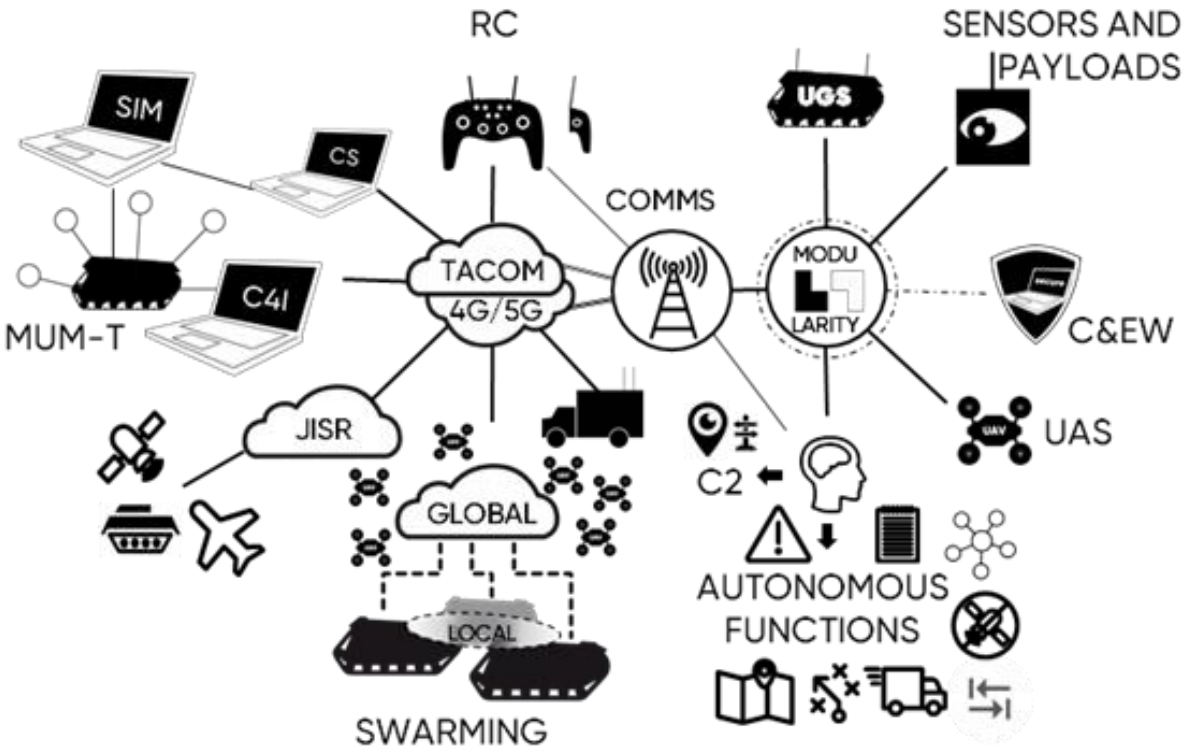
System

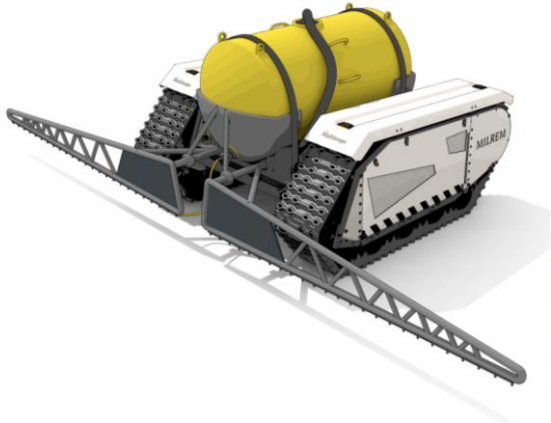


Application: September 2019
Project timeline: 2020-2022
Budget: 30,6 M€
Aligned with PESCO

MUGS consortium:

- Germany
- France
- Estonia
- Finland
- Latvia
- Belgium
- Spain

Civil applications



Civil applications

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Thank you!
Aitäh!

Mart.Noorma@milrem.com