

Machine-based autonomy forces a paradigm-shift in R&D

World Science Forum 2024
RISK ASSESSMENT – Weighing Risk in Policymaking

Marina Rantanen Modéer
Head of Autonomy and Guidance, Navigation & Control
Saab Underwater Systems





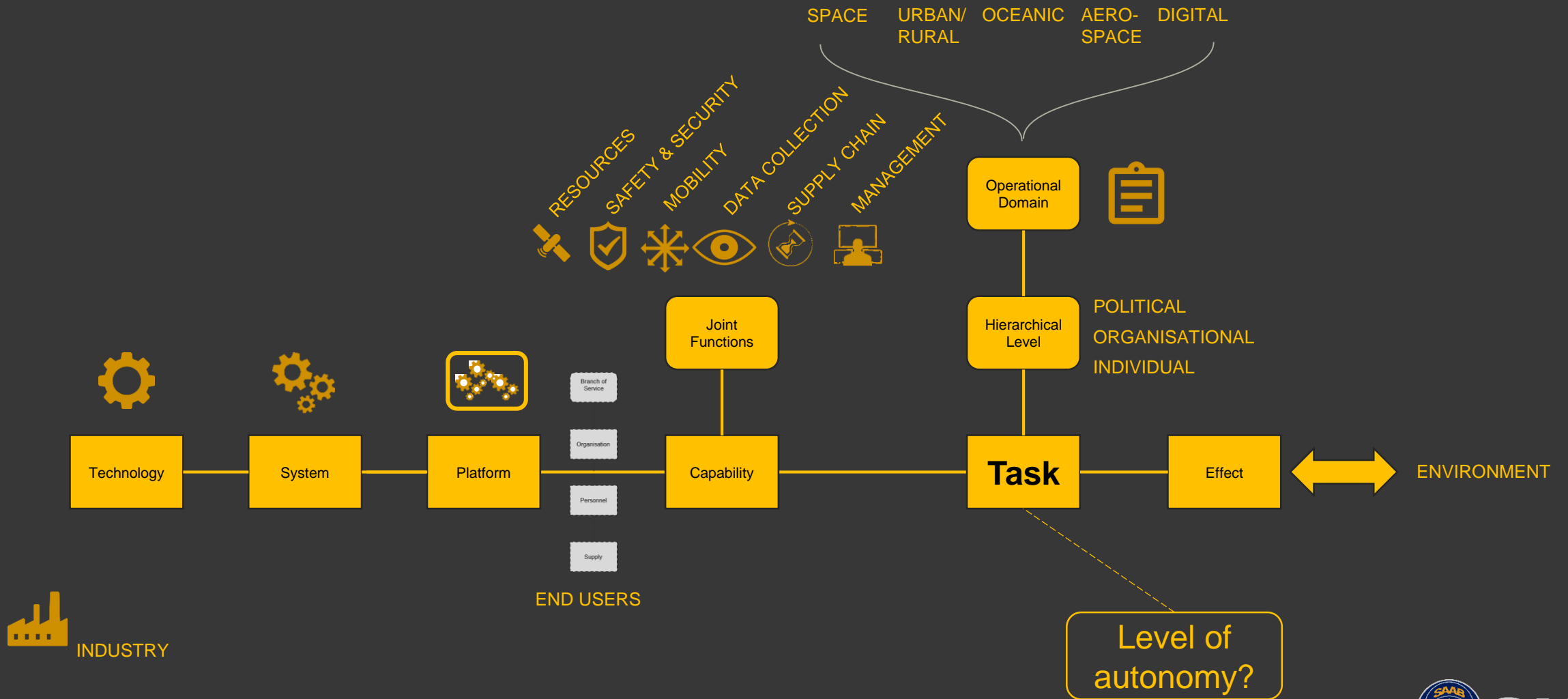
MEANINGFUL CONTEXT

A dolphin is shown in profile, swimming towards a yellow autonomous underwater vehicle (AUV) resting on the sandy ocean floor. The dolphin's head is close to the AUV, suggesting an interaction. The AUV is a rectangular, yellow device with various sensors and a camera lens visible. The background is a clear, blue-green underwater environment.

WHAT IS AUTONOMY?

The capability and mandate to make meaningful decisions

Traceability model



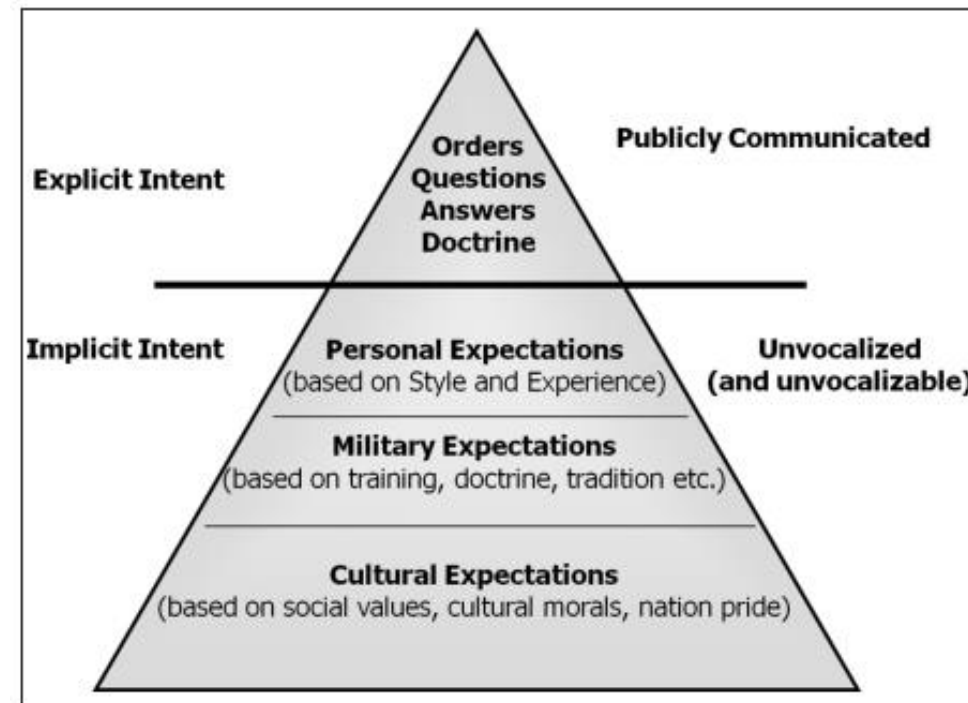
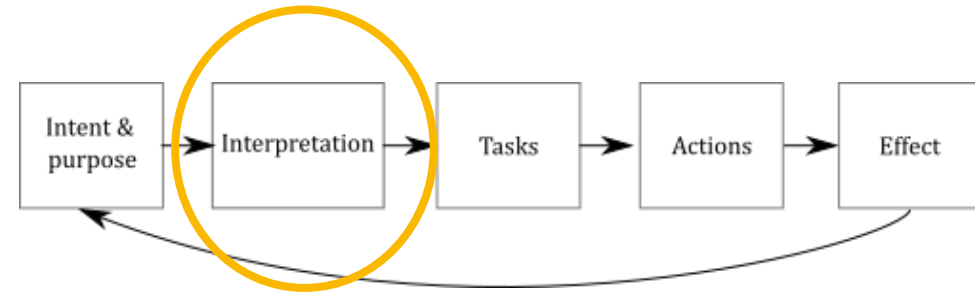
Two main categories – a multitude of technologies

1. Core platform automation

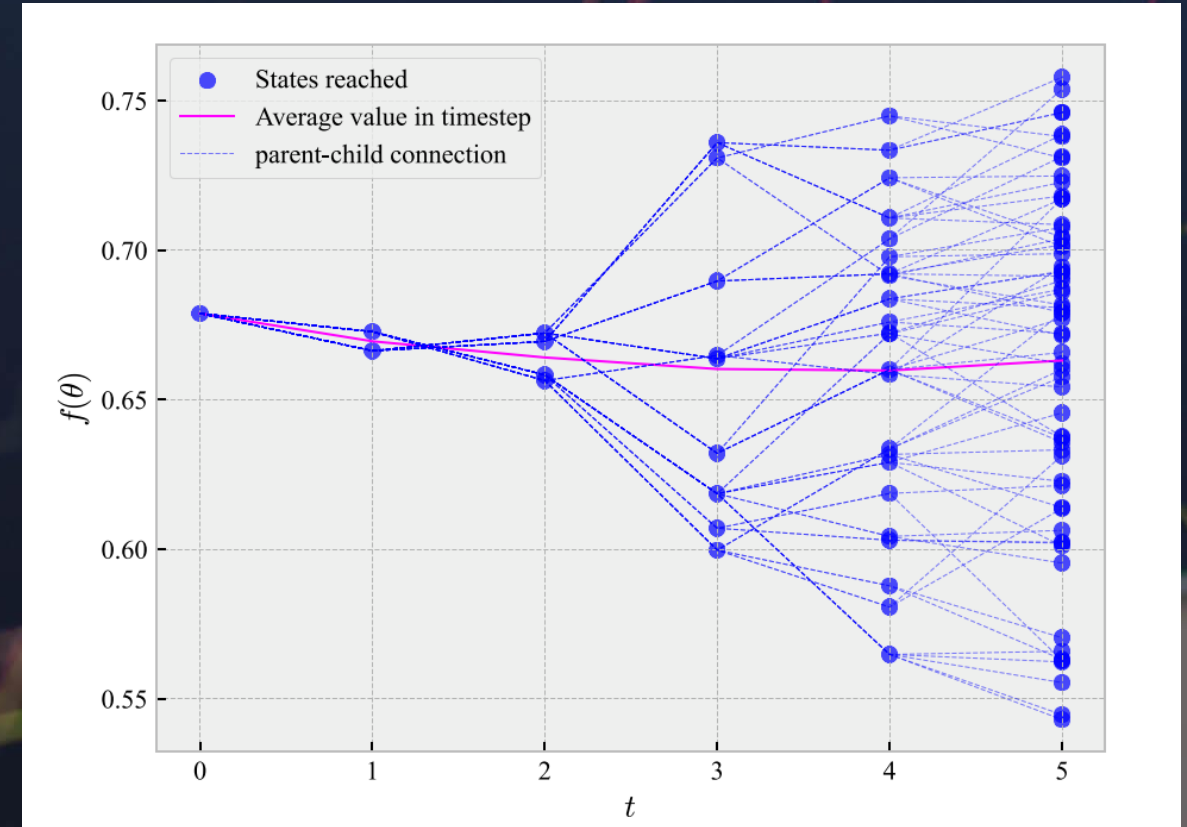
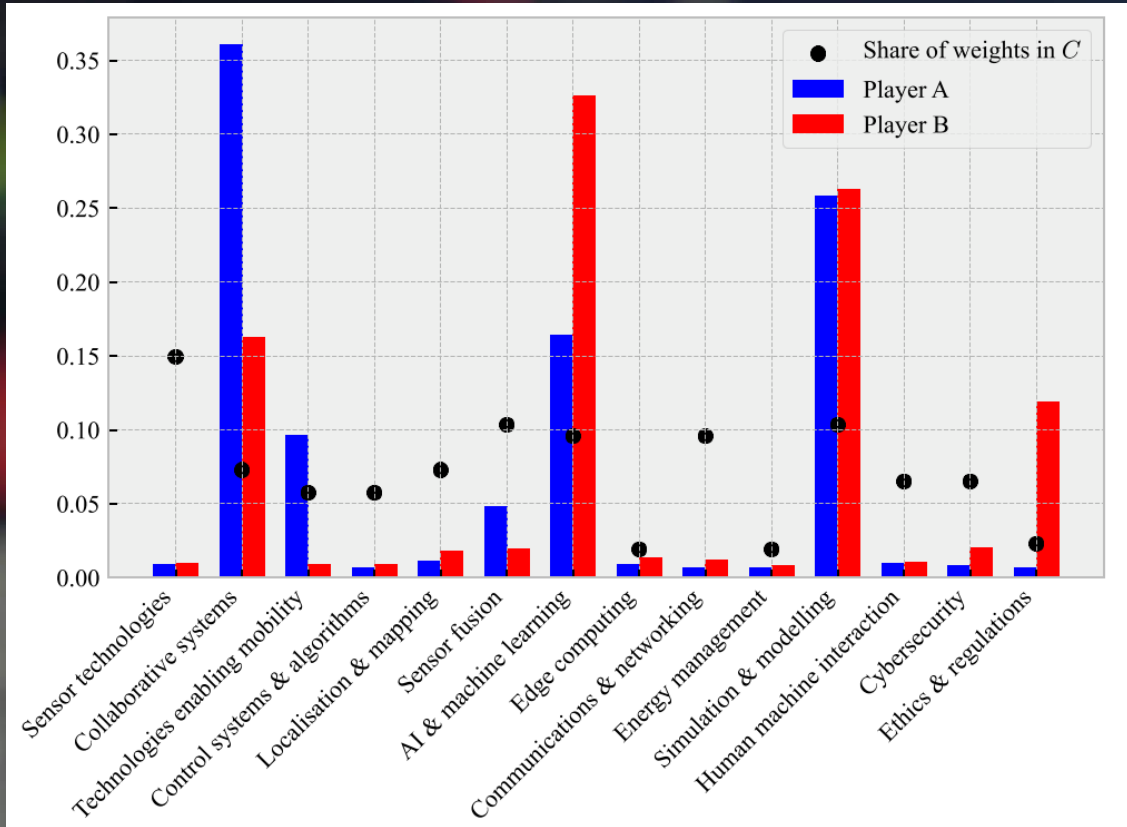
- Efficiency
- Reliability and Consistency
- Scalability

2. Abstract problem-solving

- Generalization
- Innovation and creativity
- Adaptability



Quantitative Technology forecasting for better investments



Way forward

Since autonomy is to decide for oneself:

1. ...there is an urgent need for behavioural requirements (which will change the way industry develops technology)
2. ...we will need quantitative methods for technology roadmapping such that we can leverage AI to have a robust plan for various evolutions
3. ...we need to be aware that many different technologies make up that of autonomy – it is not a standalone science, eg:
 - Synthetic cognition
 - Teaming between sentient machines
 - Mission management that assumes independent behavior
4. ...we must foster a scientific approach to realization of *desired autonomy* through effective R&D infrastructures

In short:
Use robust approaches
and leverage AI when
investing in the
techonolgies that make
up autonomy



The capability and
mandate to make
meaningful decisions