With the support of the Erasmus+ Programme of the European Union

Alliance for Strategic Skills Addressing Emerging Technologies in Defence

ASSETs+

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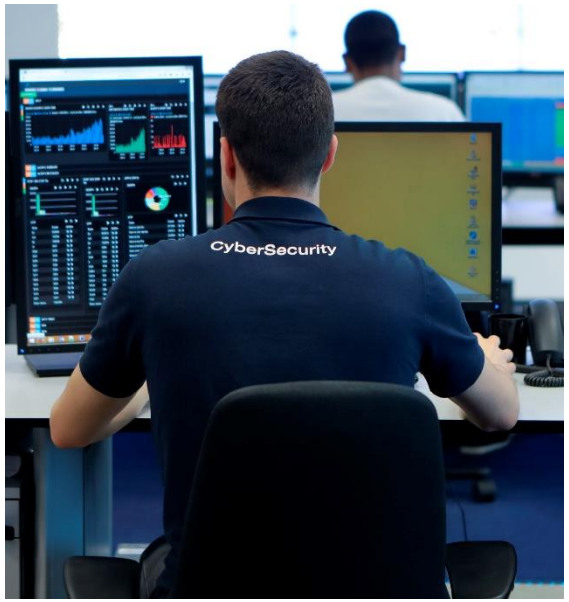
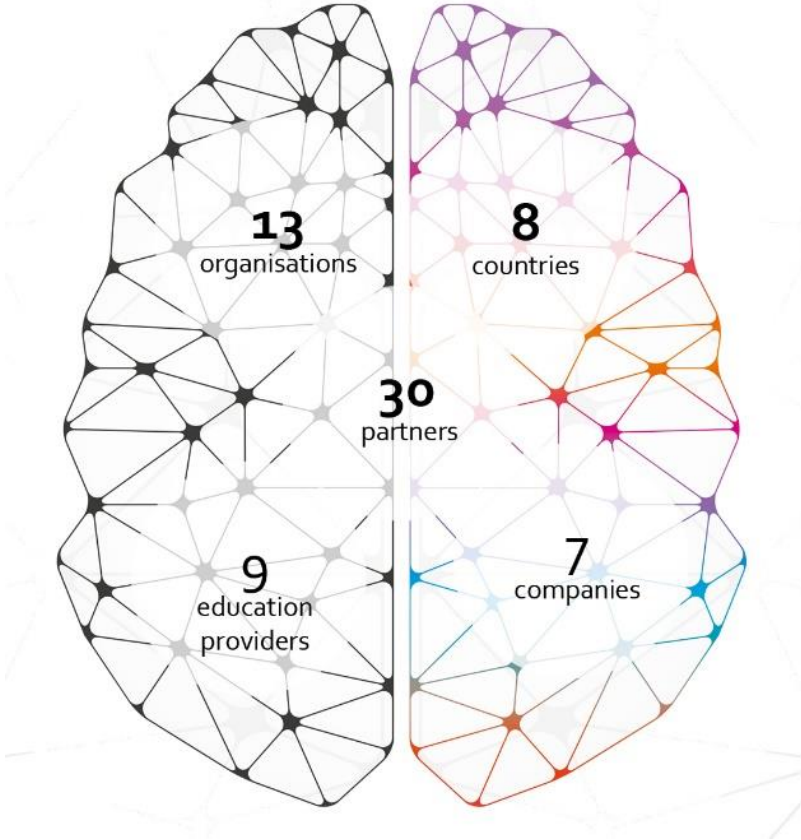
Alliance for Strategic Skills Addressing Emerging Technologies in Defence

Project Coordinator: Prof. Gualtiero Fantoni, University of Pisa



EUROPEAN CONFERENCE
"Future Skills for Europe's Aerospace and Defence Industry"
Rzeszów, 21-22.10.2021

ASSETs+ Consortium



Associated partners: eupportunity reportbrain

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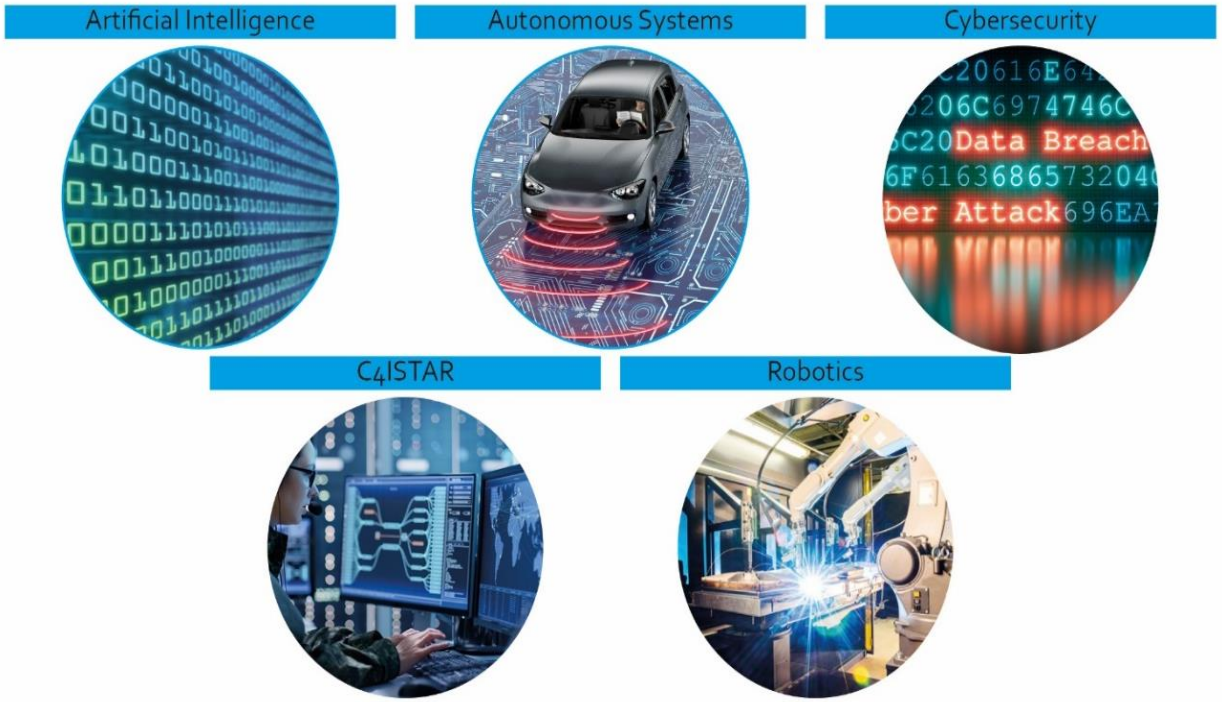
ASSETs+ Core values

Building a sustainable human resources supply chain for the European Defence Industry within:



Our goal is to understand, anticipate and formalize Defence skill needs in ever-changing technological fields for designing training courses and developing a European Defence Qualification System

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Our aim is to understand, anticipate and formalize Defence skill needs…

Understand:

Collect **industrial** needs

Meet **educational** requirements

Anticipate:

Rely on **AI** and **human** expertise

Map **technological** evolution

Formalize:

Extract **skills** needs related to the identified technologies

Group skills in **job profiles**

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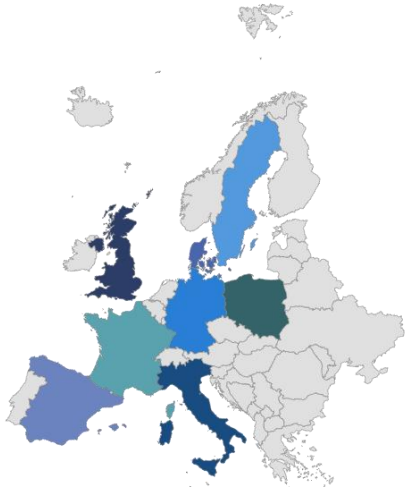
… in ever-changing technological fields…

Robotics, Autonomous vehicles, Artificial intelligence

C4ISTAR
(Command, Control, Communications, Computers, Intelligence, Surveillance, Target Acquisition and Reconnaissance)

Cybersecurity



Universities, VET Providers, Industry, Research foundation and Sectoral organization

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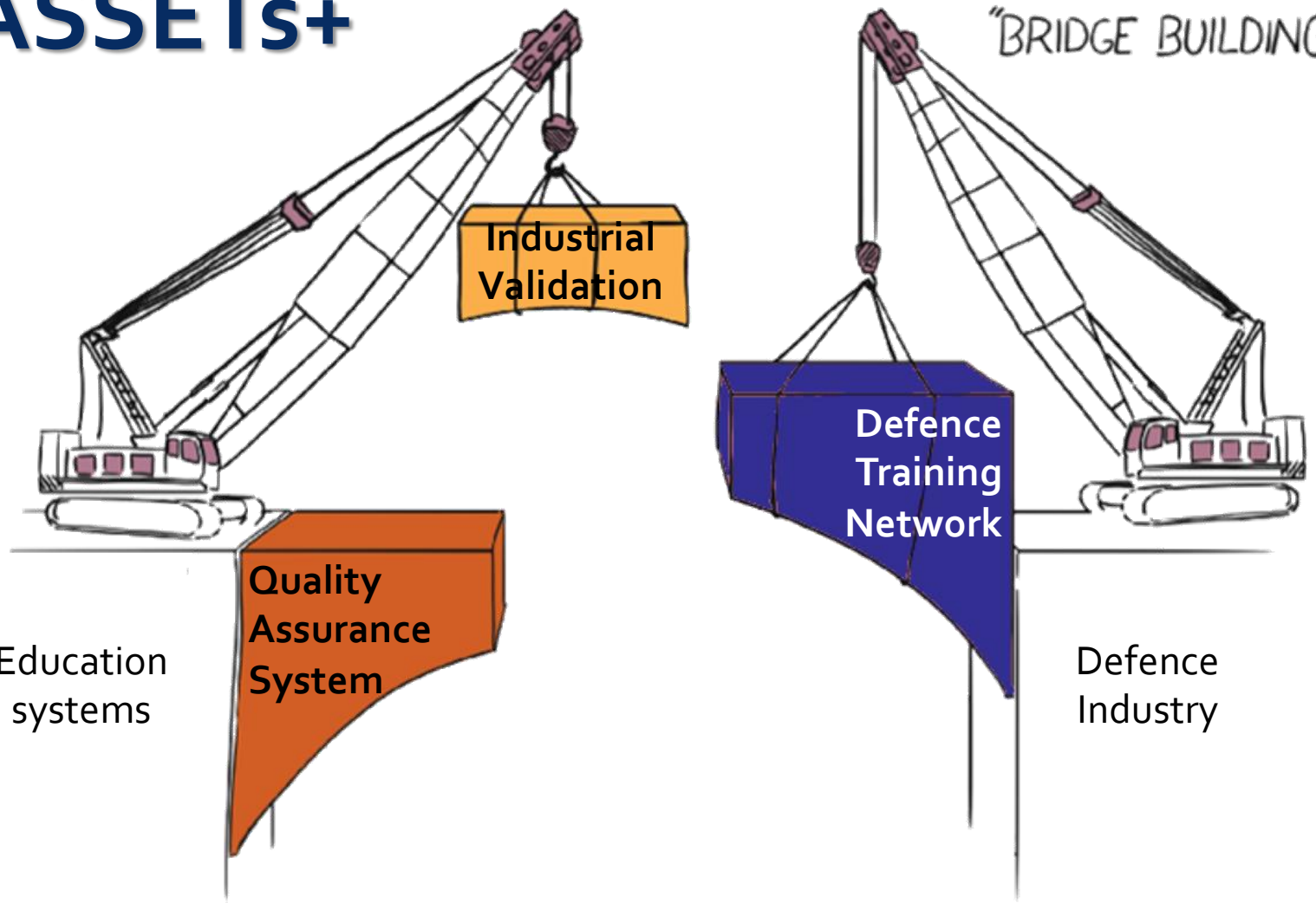

… for designing training courses and developing an European Defence Qualification Systems.

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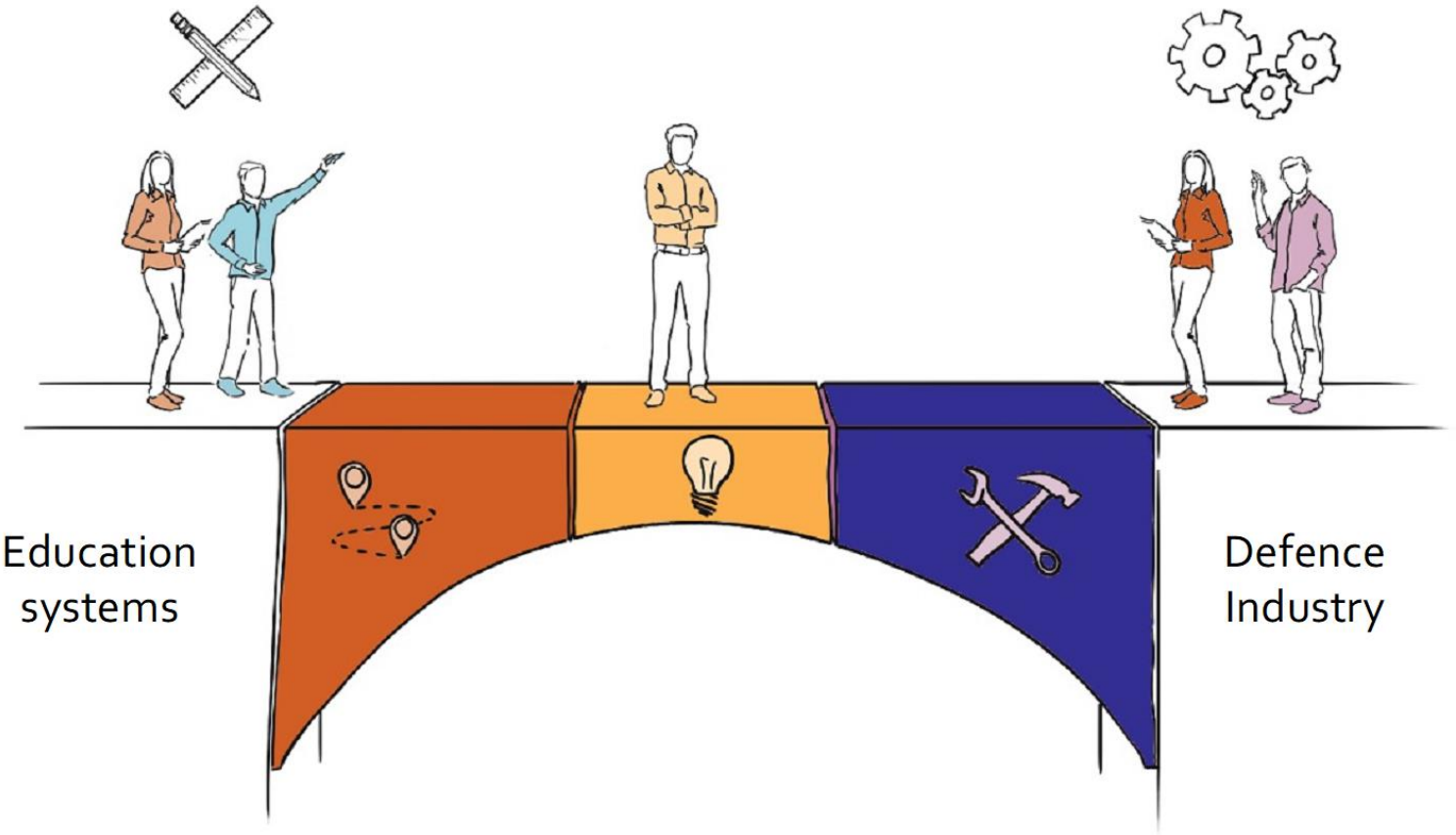


Harmonized Training Courses and Qualifications designed and developed in ASSETs+ for Defence

Alliance for Strategic Skills Addressing Emerging Technologies in Defence

INDUSTRY VALIDATION

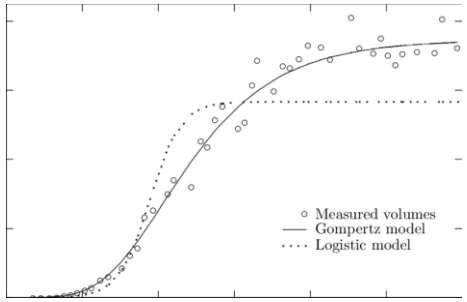
INDUSTRY VALIDATION

Techs analysis → Tech foresight → Skills analysis → Brainstorming with experts → Roadmaps

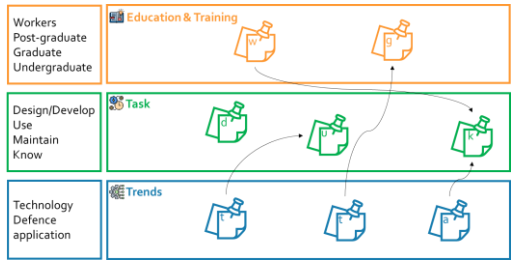
~50k

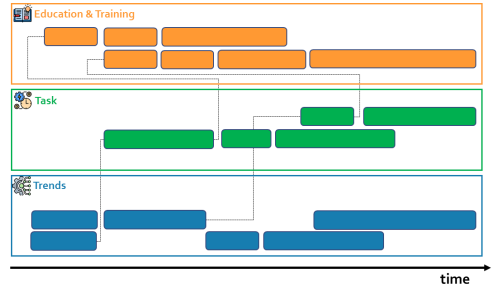
analyzed documents

Scopus · NICE NATIONAL INITIATIVE FOR CYBERSECURITY EDUCATION · NATO OTAN · indeed · C4ISRNET



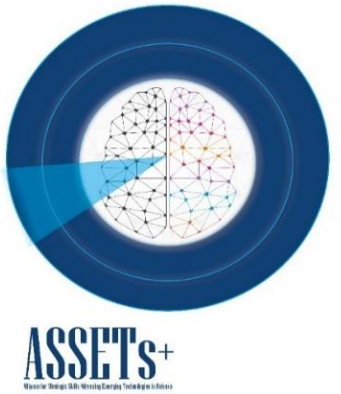
Skill2ESCO





EUROPEAN CONFERENCE
"Future Skills for Europe's

The ASSETs+ Approach



FILIPPO CHIARELLO

ASSISTANT PROFESSOR

DESTEC – Department of Energy, System Engineering, Territory & Construction

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ASSETs+ approach

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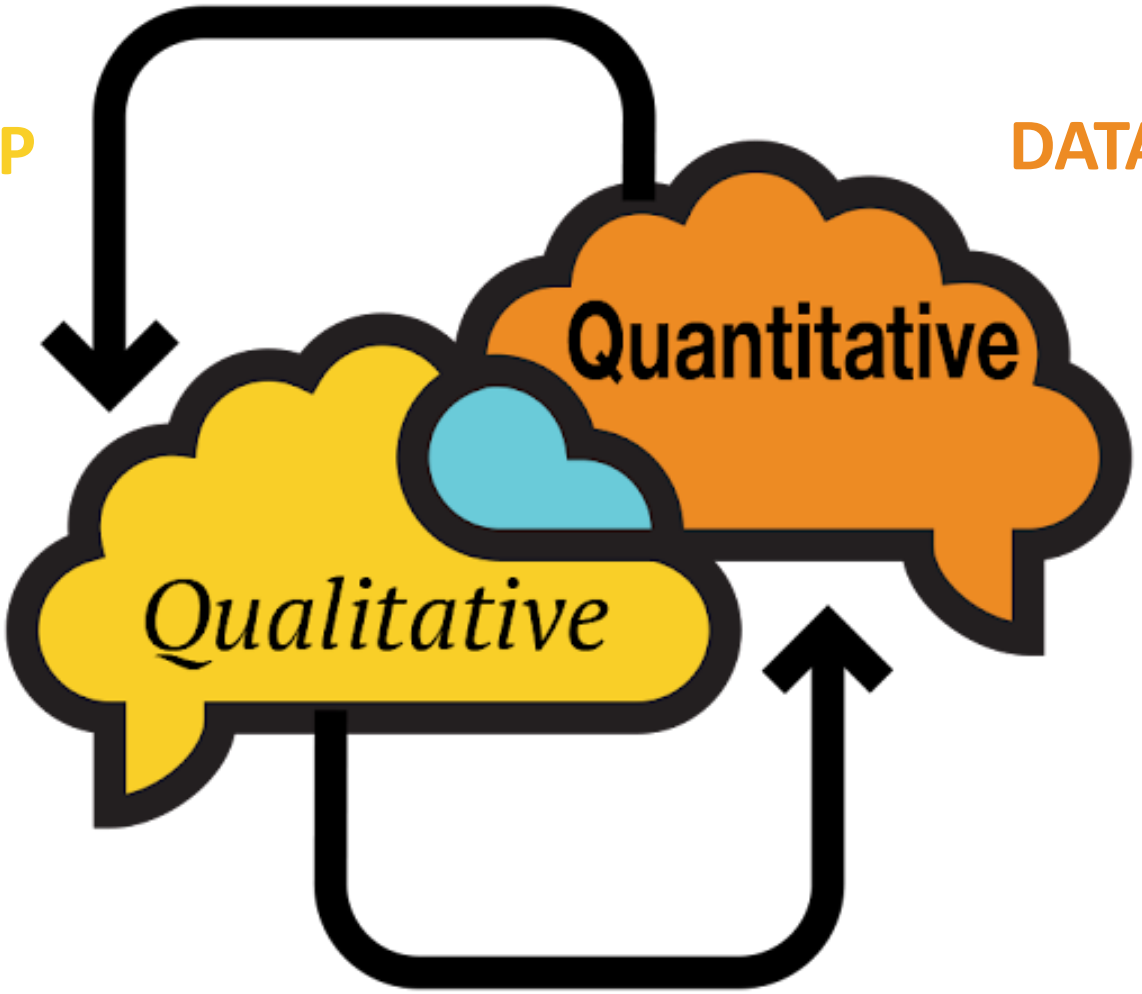
HUMAN-IN-THE-LOOP

Complexity

Extent

Comunicability



DATA-DRIVEN APPROACH

Efficiency

Completeness

Reproducibility

ASSETs+ approach

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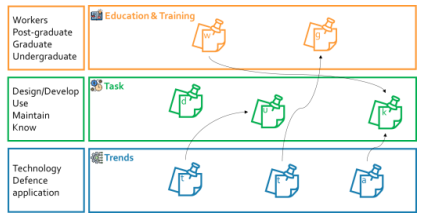
Automatic analysis on the **current** situation in Defence

Data driven results

Database and report on relevant techs, apps, skills and job profiles

Expert knowledge on **future** oriented time-framed events.

Brainstorming results



3 technological domains

97 technologies classified

172 skills classified

59 applications identified

181 job profiles identified

3 sessions

~50 ideas generated per session

3 perspectives explored:

- Technologies and applications
- Job activities
- Education & training

ALL the companies of ASSETs+

ASSETs+ approach

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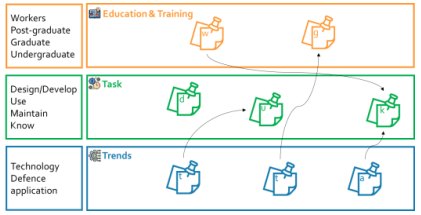
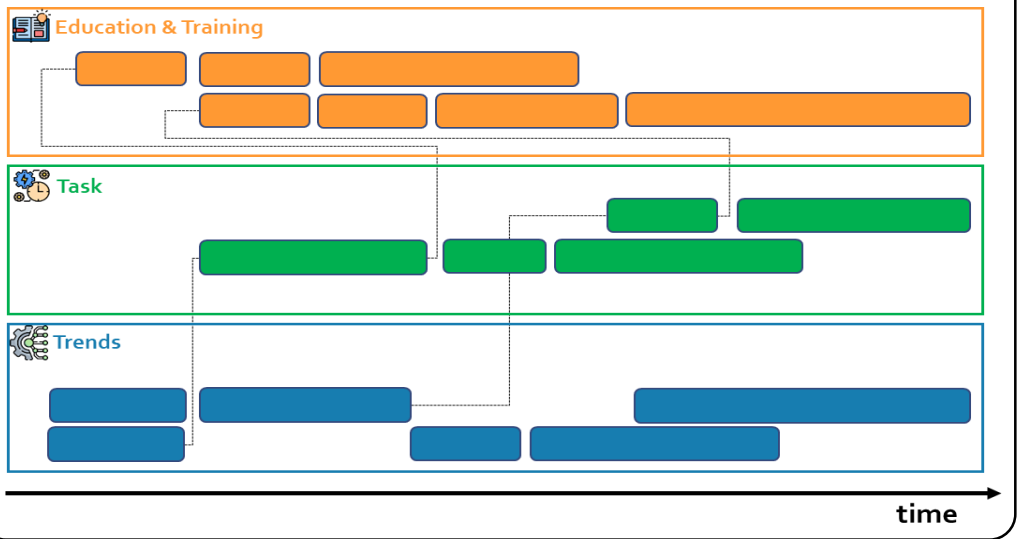


Roadmaps



Technologies and skills analysis - Quantitative

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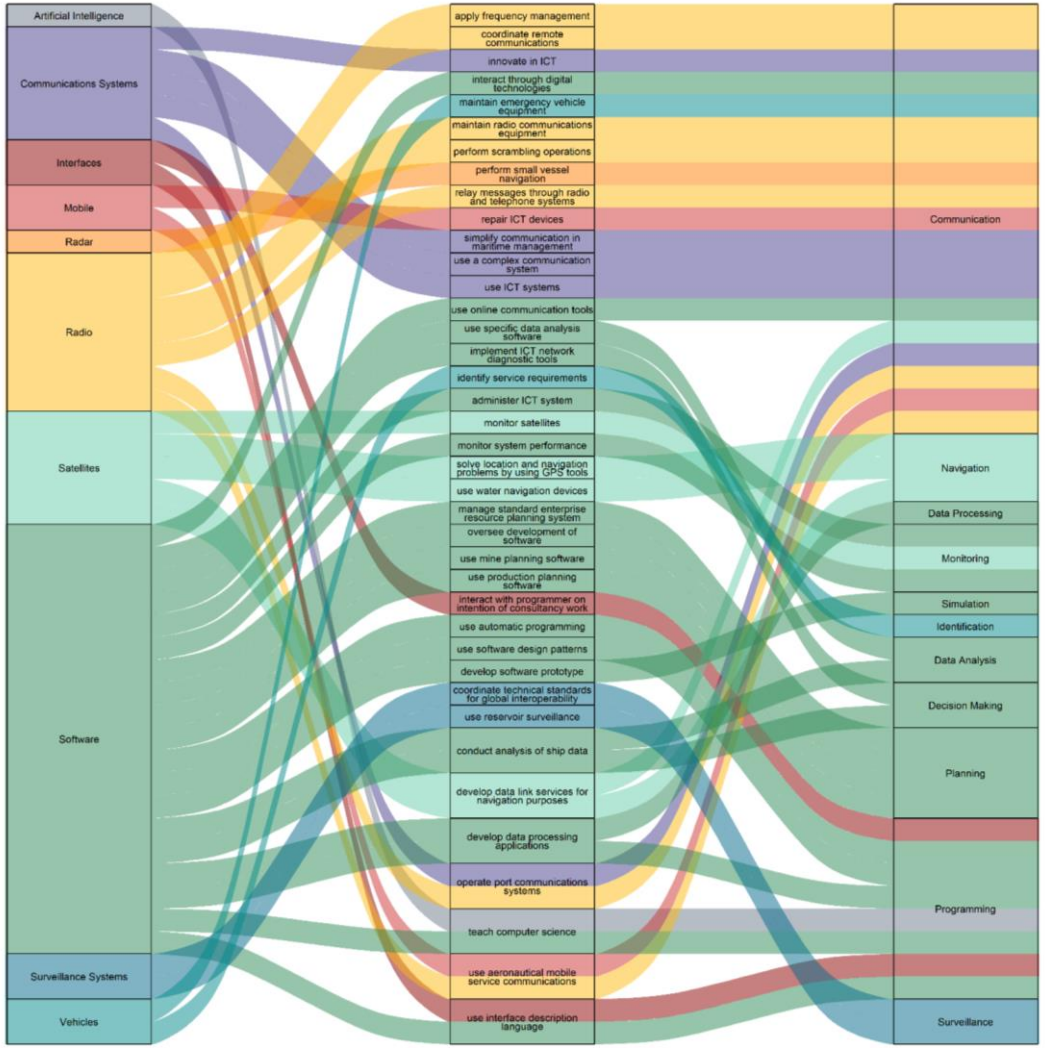
Results

Quantitative analysis generates fine-grained results that are synthetised using data-visualisation techniques



Technologies **Skills** **Applications**

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Technologies and skills analysis - Quantitative

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Results

Not only
technological skills
and **technical job profiles**

But also
defence related and **transversal skills** and **occupations**

Technologies and skills analysis - Quantitative

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Defence related job profiles

Robotics, AI and Autonomous-Systems domain

117 job profiles

C4ISTAR domain

69 job profiles

Cybersecurity domain

31 job profiles

A **survey** to the **industrial partners** allows to identify the **most relevant job profiles** to include in the design of edu-training activities.

Aerospace Engineer
Database Designed
Marine Engineer
Software Analyst
Software Architect
Data Scientist
Database Administrator
Ict System Administrator
Optoelectronic Engineer
Chief Ict Security Officer
Cyber Defense Analyst
Cyber Defense Incident Responder
Information Systems Security Developer
Security Architect

Technologies and skills analysis - Quantitative

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Skills2ESCO

14 new skills proposed

8 skills'updates proposed

4 job profiles'updates proposed

1 new job profile proposed **and integrated!**

English (en)

ICT security engineer

Description

ICT security engineers advise and implement solutions to control access to data and programs and ensure the protection of the organization's mission and business processes.
ICT security engineers are the gatekeepers of information within an organization or product by being responsible for the protection and security of the related systems. They are in charge of the network and systems in a security capacity and design, plan and execute the system's security architecture, including reference models, segment and solution architectures, and security policies and procedures. They update and upgrade the security systems in response to security-related incidents. ICT security engineers collaborate with the security team to identify, validate, and levy requirements and to participate in target selection, validation, synchronization and execution of cyber actions. They collaborate with other planners, operators and or analysts to provide post-event analysis.

Alternative label

security architect
IT security expert
ICT security advisor
ICT security architect
information communications technology security consultant
ICT security consultant
IT security advisor
IT security consultant
consultant in ICT security activities
information technology security consultant

Technologies and skills analysis - Qualitative

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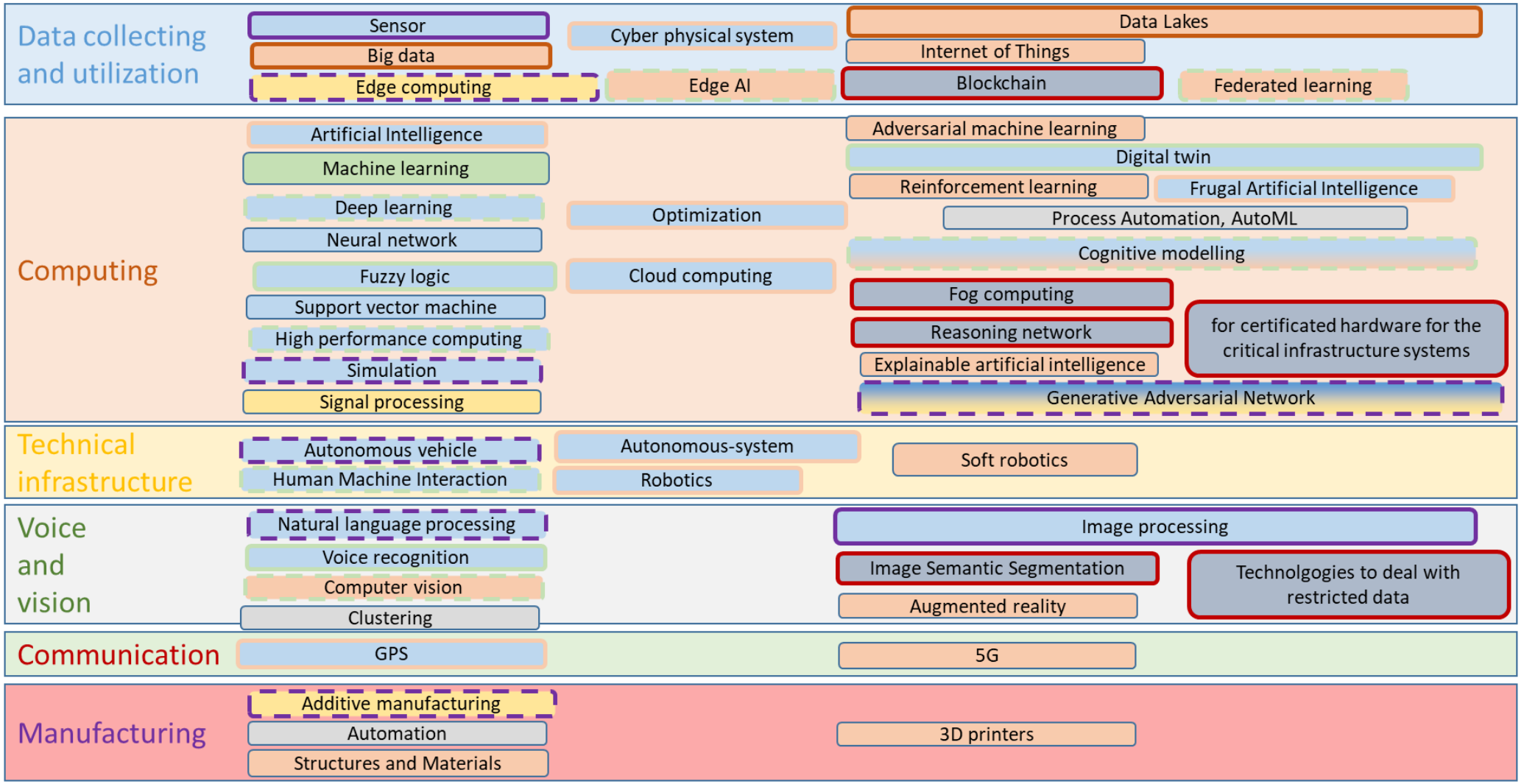
C4aiD: Our Framework to Look Forward with panel of experts

C4AID: Command Control Communication Cybersecurity Artificial Intelligence Defence (Intelligence, Surveillance, Target Acquisition, Reconnaissance)		Defence Areas					
		Factory	Land	Sea	Air	Space	Cyberspace
Technologies	Artificial Intelligence					Third session	
	Cybersecurity					Second session	
	Robot			First session			
	Autonomous Systems						

AI, Robotics, Autonomous Systems - Technology & Applications Roadmap



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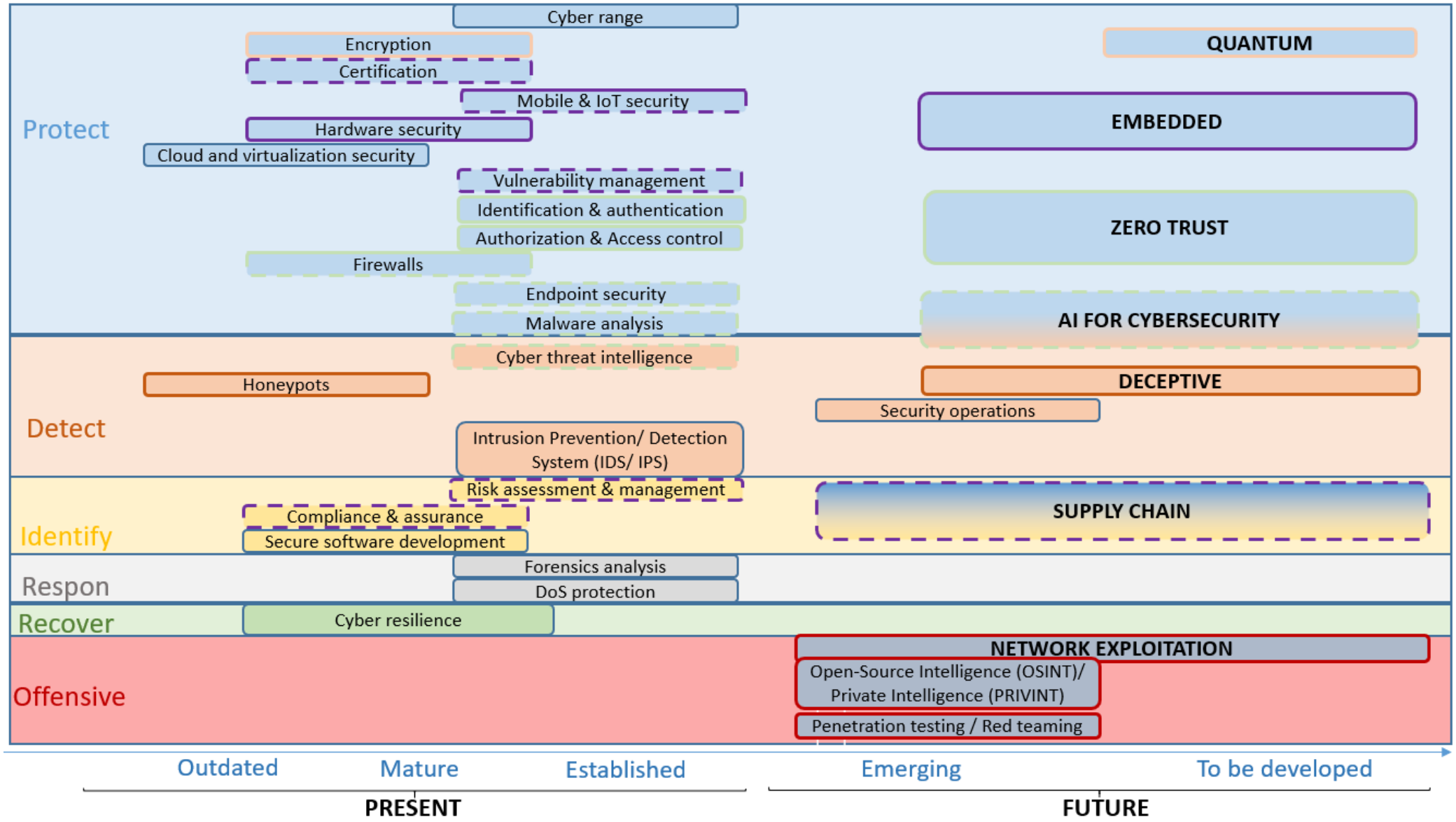
Cybersecurity - Technology & Applications Roadmap



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Technologies and skills analysis - Qualitative

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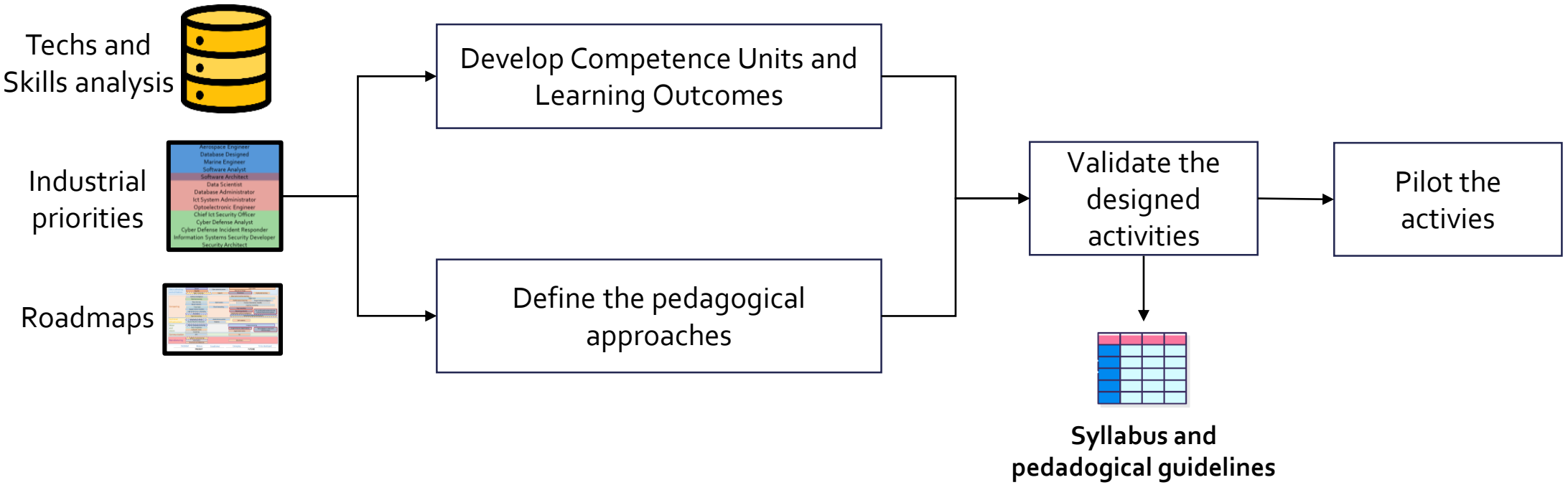
	First brainstorming: **AI, Robotics and AV in the Sea**	Second brainstorming: **Cybersecurity**	Third brainstorming: **Artificial Intelligence**
Technologies and Applications	Machine learning on the edge and its trade offs	Open-source and quantum computing	Technical Standards for AI in defence
Job Activities	AI mixed with business and engineering process	Needs of Cybersecurity Architects, Chief Product Security Officer and SecDevOps	Collaboration with end-users and technologies
Education and Training	Multi-disciplinarity & soft-skills	Agile, short and gamified courses for lifelong learning	Awareness of Defence specific needs for AI

From design to implementation: training courses for the Defence Industry

From industrial needs to designed prototypes to pilots - Method



From design to implementation: training courses for the Defence Industry

Results

+100 ECTS prototyped

56 education&training activities designed

for upskilling and reskilling

Highly specialised knowledge

EQF7

- UAV-based data acquisition
- Computer Methods
- Software engineering
- Remote sensing image analysis
- AI based optimisation
- Maritime technologies
- AI for defence
- Core Cybersecurity

Advanced knowledge

EQF6

- AI for defence seasonal school
- European Defence Challenge
- Cybersecurity principles

Comprehensive and theoretical knowledge

EQF4/5

- Activities in Engineering sciences, Computer sciences, Mathematics and Management
- Cybersecurity for data science

Target techs, skills and job profiles for domain

AI | AI & C4ISTAR | C4ISTAR | Cybersecurity

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ASSETs+: WPI scientific publications

Chiarello, F., Fantoni, G., Hogarth, T., Giordano, V., Baltina, L., & Spada, I. (2021).
Towards ESCO 4.0–Is the European classification of skills in line with Industry 4.0? A text mining approach.
Technological Forecasting and Social Change

Giordano, V., Chiarello, F., Melluso, N., Fantoni, G., & Bonaccorsi, A. (2021).
Text and Dynamic Network Analysis for Measuring Technological Convergence: A Case Study on Defense Patent Data.
IEEE Transactions on Engineering Management.

Belingheri, P., Chiarello, F., Fronzetti Colladon, A., & Rovelli, P. (2021).
Twenty years of gender equality research: A scoping review based on a new semantic indicator.
Plos one

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www.assets-plus.eu

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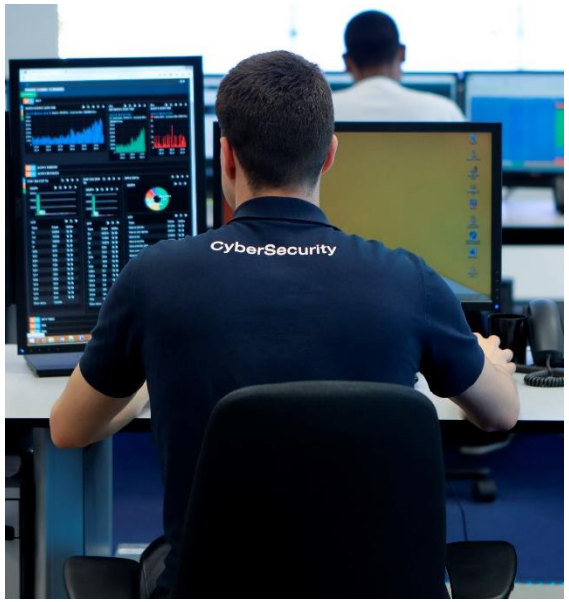

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