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The European watch on cybersecurity & privacy

A visual guide to the EU Cybersecurity project landscape

Using Big Data and Data Analytics for strategic insights

Funded by the European Commission
Horizon 2020 – Grant # 740129

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Making sense of the landscape

ENGAGEMENT

+188 EU projects

Map, cluster and collaborate
EU Research & Innovation

EU Project Hub - Europe's only collaboration platform for EU-funded cybersecurity and privacy projects. Concertation and Cluster workshops to foster collaboration and market readiness of results.

+100 marketplace services

Promote EU innovation to the EU market

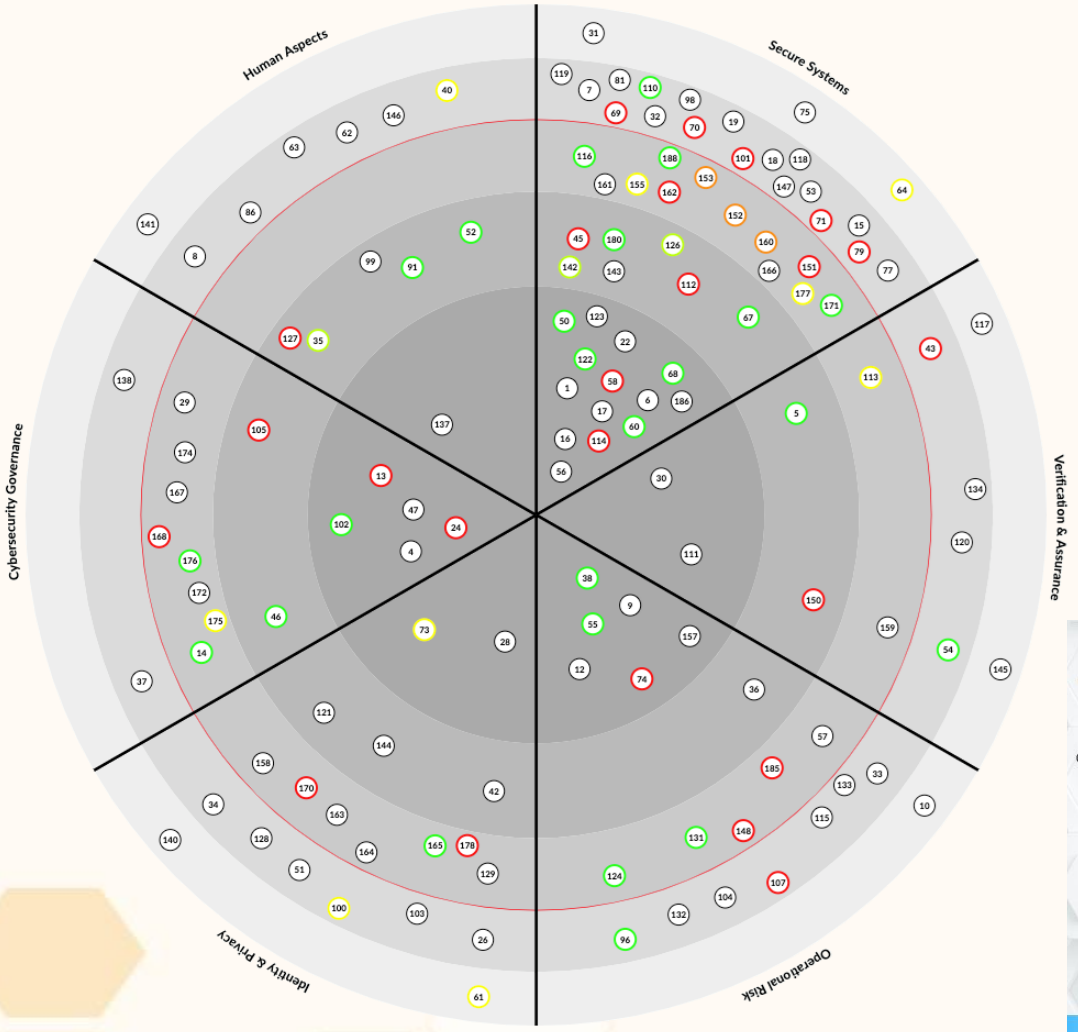
Marketplace - A curated Marketplace of R&I results and services offered by providers across Europe. Market readiness training for projects and SMEs. Free tools, guides and workshops for SMEs across the EU.

+5 resources for policy makers

Recommend policy and standards best practices

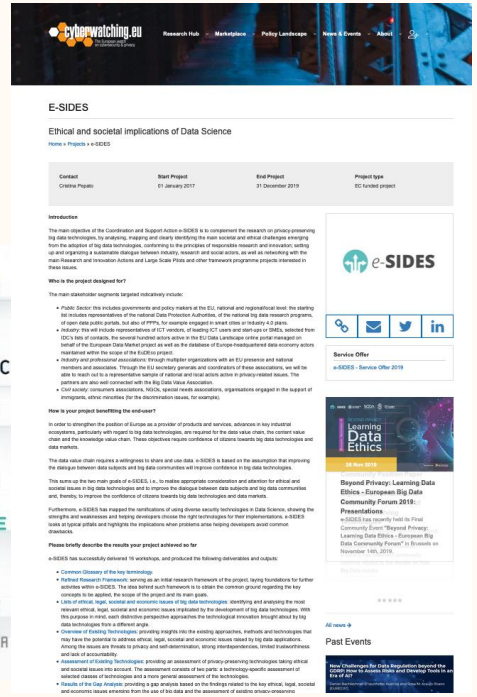
Policy, standards and certification - Recommendations reports: standards and certification, GDPR and emerging technologies. Technology radar including €560 million worth of funded projects.

European Project Radar



2017-2021

- 188 R&I Projects mapped to date
- Click through to our project hub with detailed and updated information on each project



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MTRL

Market Readiness Levels

0, 1, 2, 3	IDEATION	It seems almost impossible that the result/s can be introduced into the market successfully.
4, 5	TESTING	The project needs to improve some aspects of the preparation to market, but it's ready to join the End User Club for validating results.
6, 7	TRACTION	The results are ready to be commercialized, but there is still room for enhancement and some aspects should be improved.
8, 9	SCALING	The sales are going well and the product/service is stable.

Technology Readiness Levels

0, 1, 2, 3	IDEA	Research Level, from the unproven concept to the proof of concept
4, 5	PROTOTYPE	Innovation Level From an initial prototype integrated to the test in the intended environment.
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Agenda

- 11:00 - 11:10 - **Welcome and introduction,** Nick Ferguson
- 11:10 - 11:20 - **Introduction of the underpinning concepts (taxonomy, MTRL),** Michel Dresher, UOXF and Marina Ramirez, AEI Cibersiguridad
- 11:20 – 11:25 - **European network of Cybersecurity centres and competence Hub for innovation and Operations,** Matteo Merialdo, ECHO
- 11:25 - 11:35 - **Introduction to the radar and its visualisation concepts,** Michel Dresher
- 11:35 - 11:45 - **Introduction of the live radar,** Michel Dresher, UOXF
- 11:45 - 11:55 - **Q&A**
- 11:55 - 12:00 - **Closing remarks**

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Speaker

Nicholas Ferguson

Cyberwatching Project Coordinator, & Senior Project Manager

Trust-IT Services
Communicating ICT to markets

Michel Drescher

Founder and Director of Cloud Consult Ltd. & Cloud Computing Standards Specialist

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Matteo Merialdo

Project Implementation Coordinator, RHEA Group

ECHO
European network of Cybersecurity centres and competence Hub for innovation and Operations

Marina Ramirez

Head Business and ICT Consultant and Project Manager

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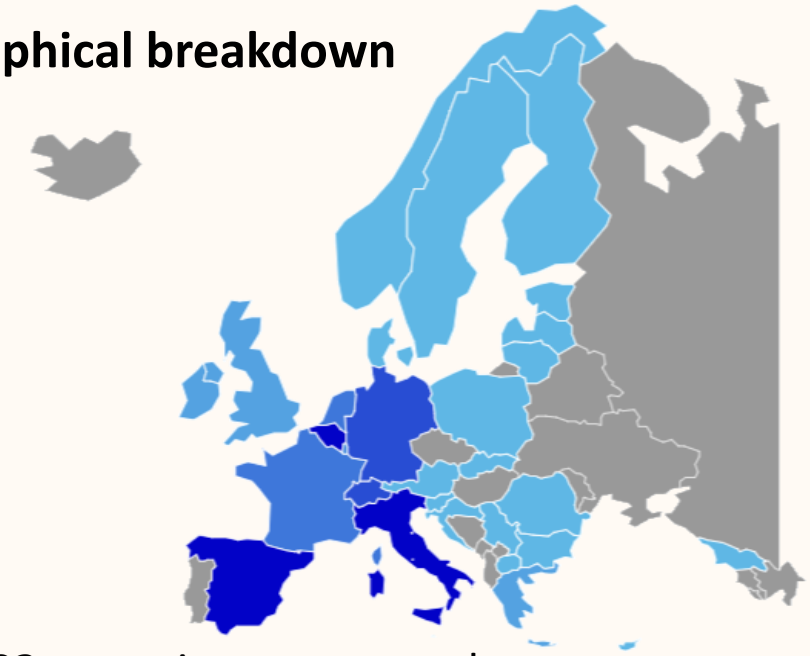
Agrupación Empresarial Innovadora CIBERSEGURIDAD y Tecnologías Avanzadas

Participants: **125 Webinar Registrants**

Geographical breakdown



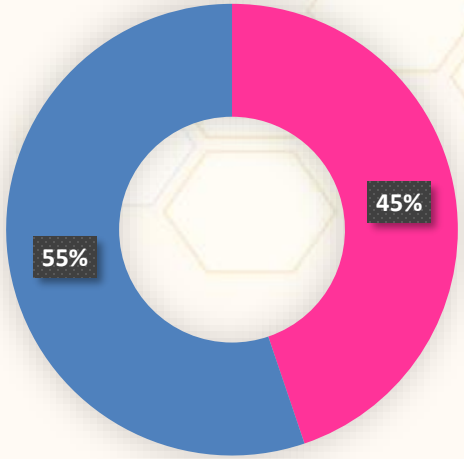
23 countries represented

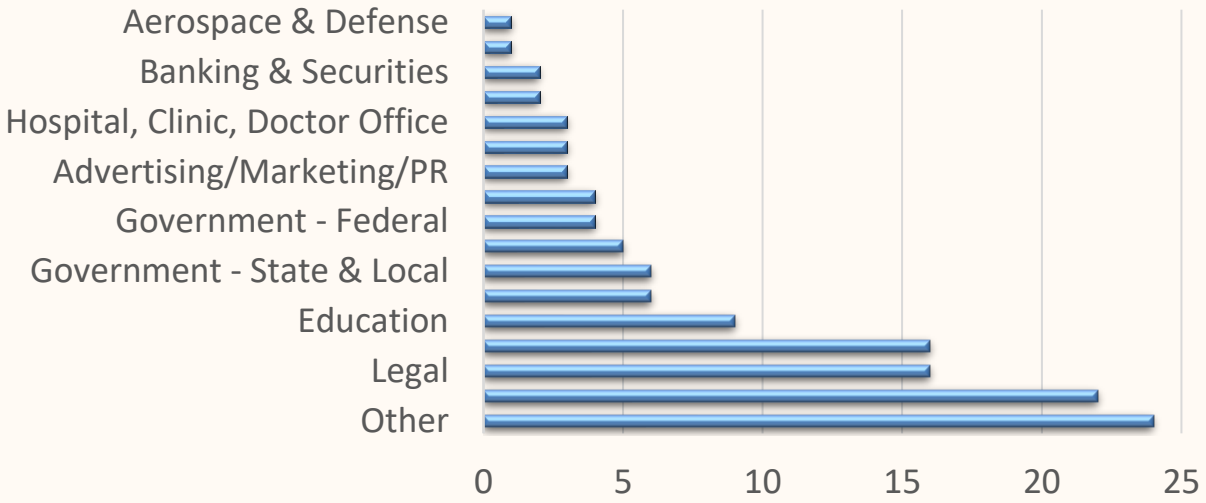
113 Europe

12 United States

25 H2020 Projects represented

Gender ♂♀





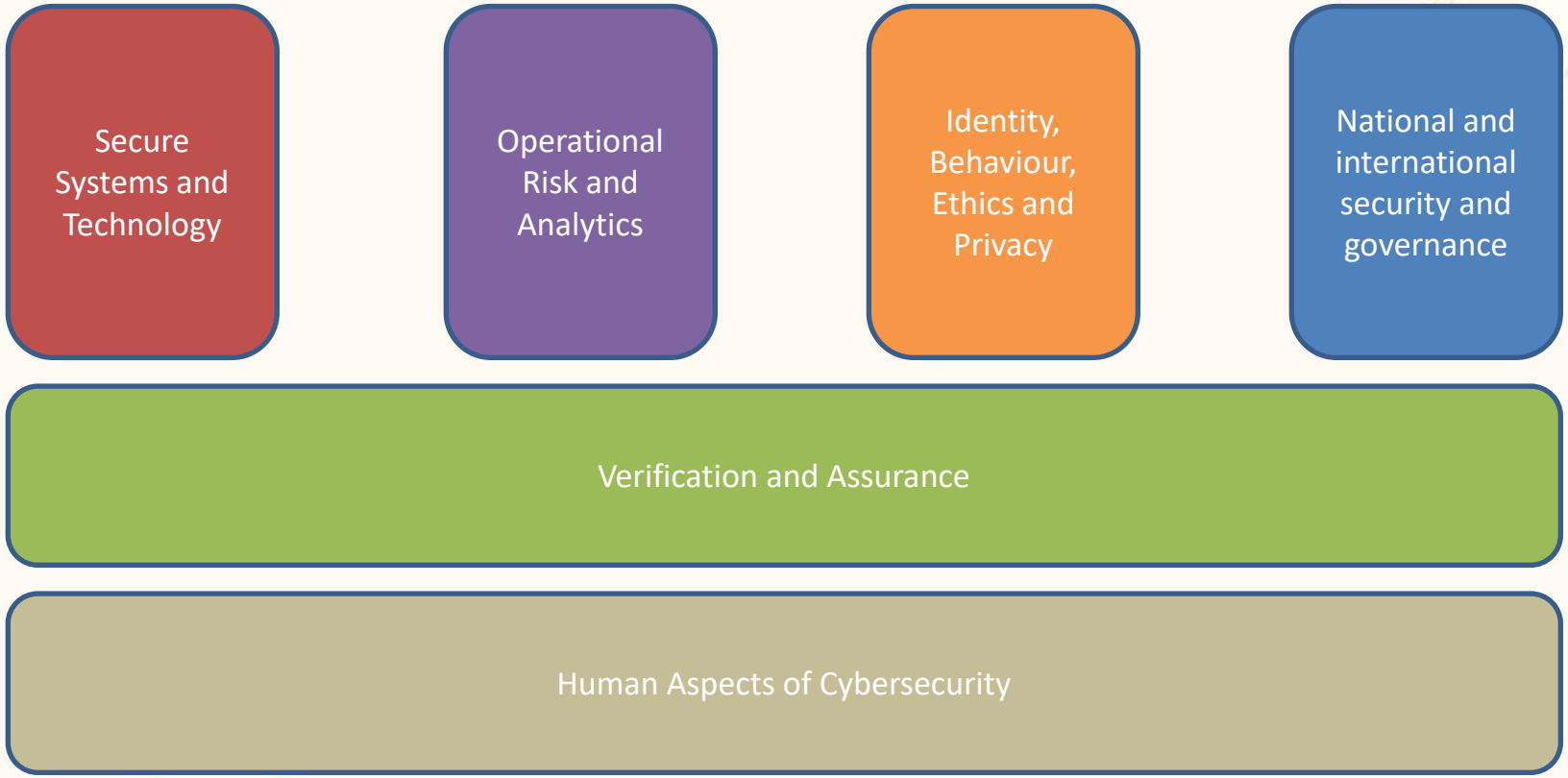
Taxonomy, Market and Technology Readiness (MTRL)

UNDERPINNING CONCEPTS

Cyberwatching.eu cybersecurity & privacy taxonomy

Taxonomy Level 1: Category	Taxonomy Level 2: Cluster
Foundational technical methods & risk management for trustworthy systems in cybersecurity & privacy	Operational Risk and Analytics
	Verification and Assurance
Applications and user-oriented services to support cybersecurity and privacy	Secure Systems and Technology
	Identity, Behaviour, Ethics and Privacy
Policy, governance, ethics, trust, and usability, human aspects of cybersecurity & privacy.	National and international security and governance
	Human Aspects of Cybersecurity

Cyberwatching.eu cybersecurity & privacy taxonomy



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Secure Systems and Technology

- Technologies designed to deliver security & privacy capabilities into technology from the design stage;
  - Cryptography,
  - Trusted platforms,
  - Wireless & mobile security,
  - Cloud Computing security,
  - Secure software development/coding paradigms.

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Operational Risk and Analytics

- Development of understanding of risk and harm resulting from cyberattack;
  - cyberattack propagation across and between organisations,
  - awareness of current understanding of scenario and risk management,
  - Metrics and models for security postures,
  - Analytics for predicting risk, prioritising responses and supporting security operations.

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Identity, Behaviour and Ethics

- Management of personal identity including different levels of assurance when used for online capabilities or services,
- How to understand common norms when applied in the online or digital realm,
- Diverse perspectives and interpretations to questions such as;
  - Who are you online with?
  - How do you communicate, and what can (or should) you do?
  - What expectations (personal and legally binding) are there? E.g. directives?

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National and international security, privacy and governance

- Development of Politics, international relations, defence, policy and governance issues
  - How do countries and communities interact with (and through) technology, and how might this change in different contexts?
  - How do national standards transcend borders or boundaries?
  - How should different threat persistence levels and domain cybersecurity understanding be shared?
  - At what point does something change from being a business problem to a national security problem?
  - What expectations of privacy can there be and should there be?

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Verification and Assurance

- Enabling the establishment of levels of confidence in a system in terms of security and privacy, primarily looking at other systems to either determine if they are secure or to assert they are;
  - Formal Verification seeks to build a mathematical model of a digital system and then try to prove whether it is ‘correct’, often helping to find subtle flaws,
  - Assurance focuses on managing risks related to the use, processing, storage, and transmission of information.

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Human Aspects of Cybersecurity

- Understanding humans interaction with, and through, digital systems;
  - whether to understand and design for target users,
  - understand how adversaries operate and can exploit the systems.
- Includes aspects like usability, trust, collaborative practices, social embeddedness, nationhood, cultural diversity and the relationship between microsocial interactions and global structures.

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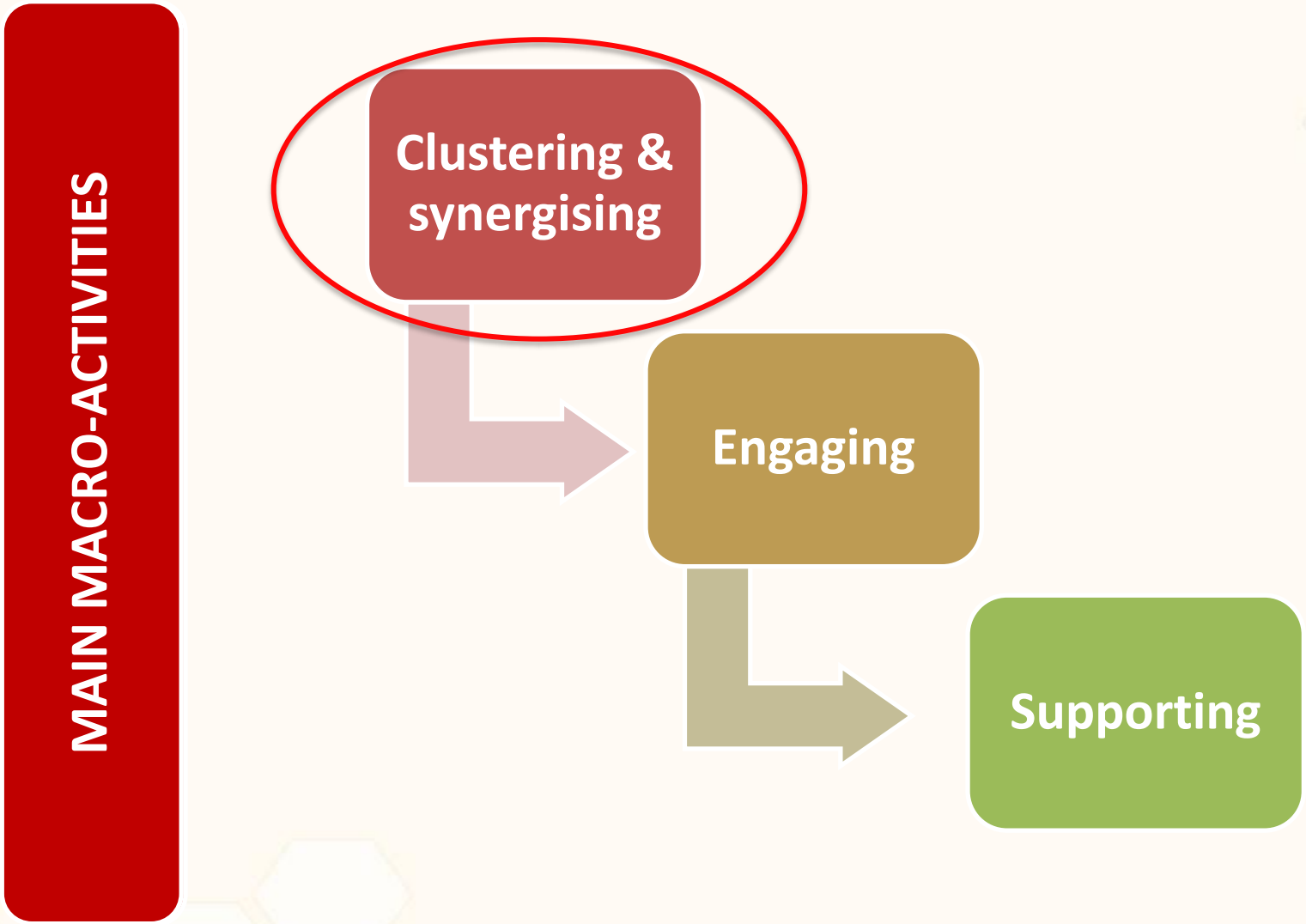
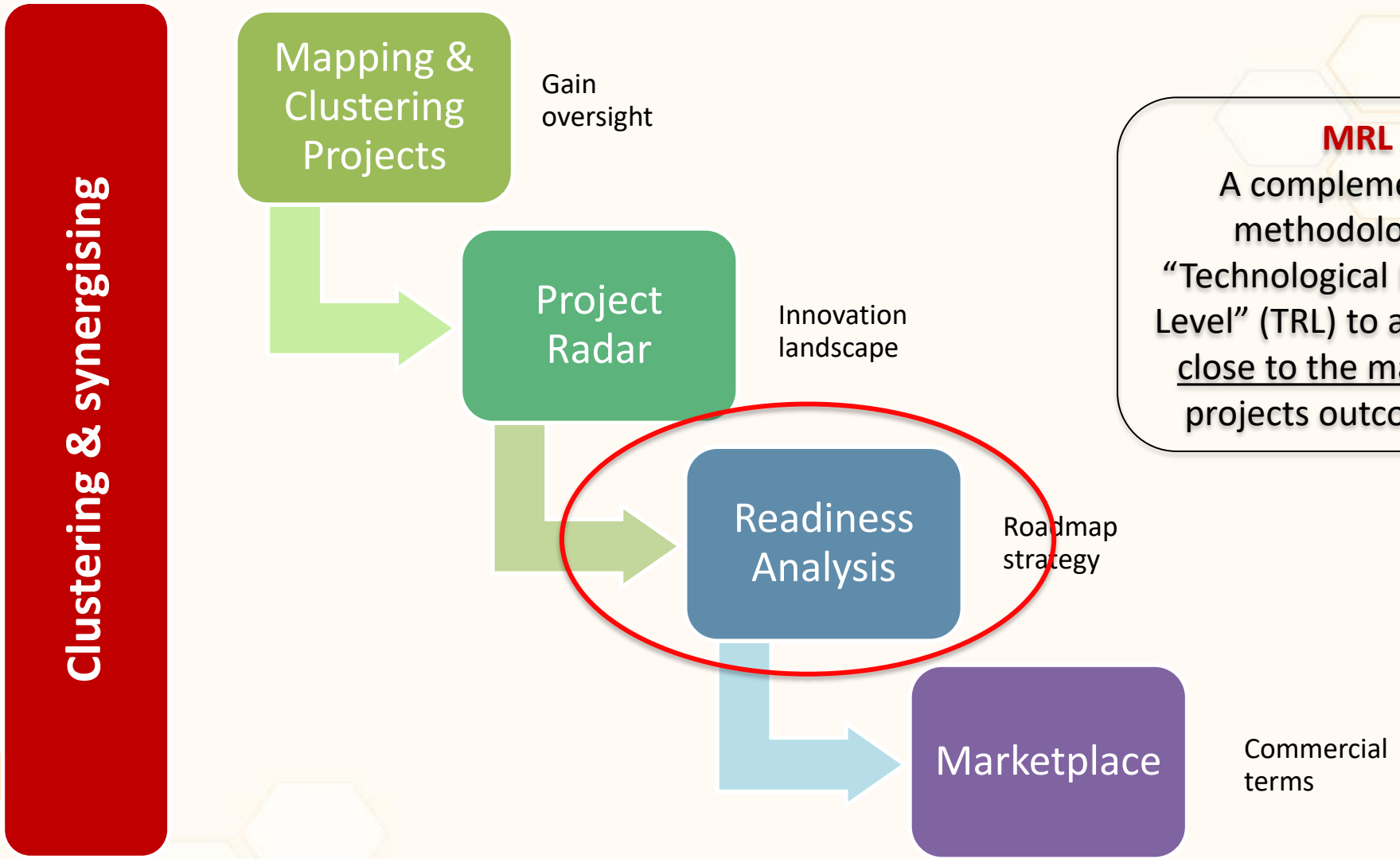
What is MRL


MAIN MACRO-ACTIVITIES
Clustering & synergising
Engaging
Supporting

What is MRL



MRL
A complementary methodology to "Technological Readiness Level" (TRL) to assess how close to the market the projects outcomes are

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TRL vs MRL

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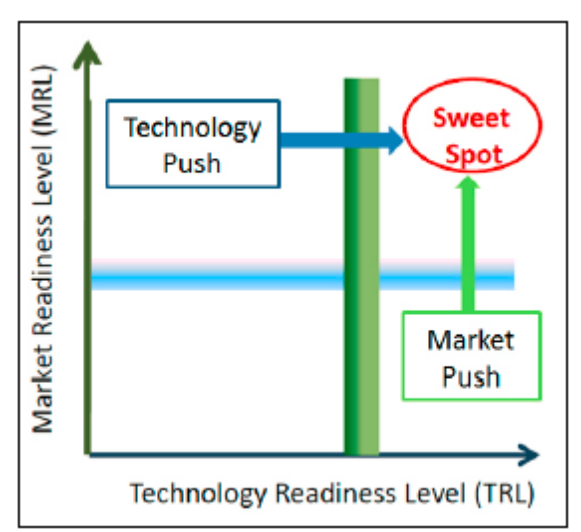
TRL vs MRL

- TRL try to respond the question: (b) Is the technology ready for the market?
- MRL try to respond the question: (a) Is the market ready for the technology?
- Goal: Synchronize time and content of technology development and market development to reach the Sweet Spot

The hardest part for R&I projects



How to assess MRL

- Automatic tool: MTRL questionnaire
  - 9 simple questions to assess current MRL and TRL
  - Sent to all projects in the Project hub each 6 months
- Projects clustering + MTRL assessment = projects working groups →Synergies →Joint activities
  - Next steps: 2 conference calls with 2 groups of projects grouped by MRL score (in preparation)
- MTRL score → Improve accuracy of Project Radar

ECHO

European network of Cybersecurity centres and competence Hub for innovation and Operations

Matteo Merialdo, Project Implementation Coordinator

RHEA Group

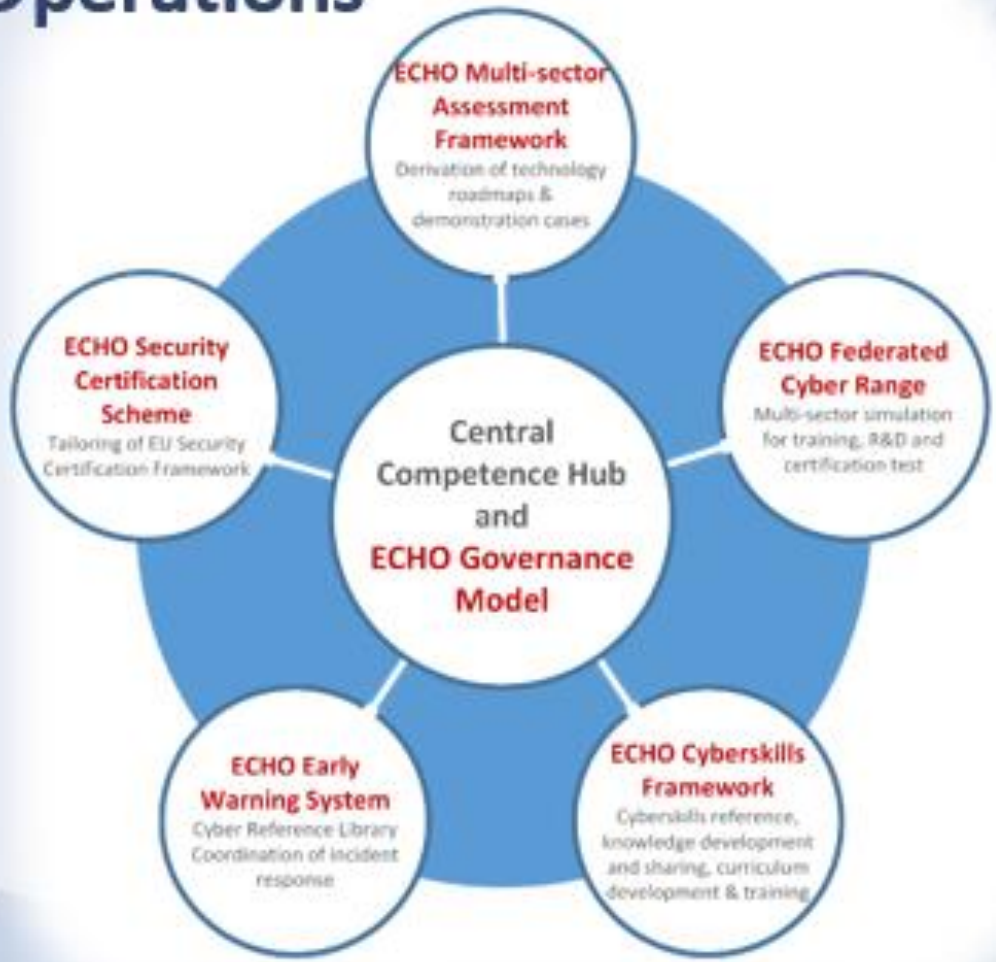
Project Introduction

Cyberwatching webinar,
02/04/2020

Funded by the European Union's Horizon 2020
Research and Innovation Programme, under Grant Agreement no 830943

European network of Cybersecurity centres and competence Hub for innovation and Operations

- Project Coordinator: **Royal Military Academy of Belgium**
- Project Management: **RHEA System S.A.**
- **Goal:** creation of a network of cyber security centers, to pilot the future European Network of Competence Centers
- Main concepts:
  - **ECHO Governance Model**
    - Management of direction and engagement of partners (current and future)
  - **ECHO Multi-sector assessment framework**
    - Transverse and inter-sector needs assessment and technology R&D roadmaps
  - **ECHO Cyberskills Framework and training curriculum**
    - Cyberskills reference model and associated curriculum
  - **ECHO Security Certification Scheme**
    - Development of sector specific security certification needs within EU Cybersecurity Certification Framework
  - **ECHO Federated Cyber Range**
    - Advanced cyber simulation environment supporting training, R&D and certification
  - **ECHO Early Warning System**
    - Secured collaborative information sharing of cyber-relevant information



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New engagement opportunities:

- ECHO Targets 15 new partner engagements in the life of the project
  - Different possible degrees of collaboration and partnership
- Managed by the ECHO Multi-sector Innovation and Exploitation Coordinator

Participation encouraged via:

- Early Warning System collaboration
- Federation of Cyber Ranges collaboration
- Technology roadmaps contributions
- Multi-sector scenarios participation

Six technology roadmaps:

- ECHO Early Warning System
- ECHO Federated Cyber Range
- 2 x Early priority horizontal technologies to be developed in the scope of the project
- 2x Horizontal technologies to be developed under separate funding

Three multi-sector scenarios:

- Health care
- Marine Transportation
- Energy as critical infrastructure

ECHO

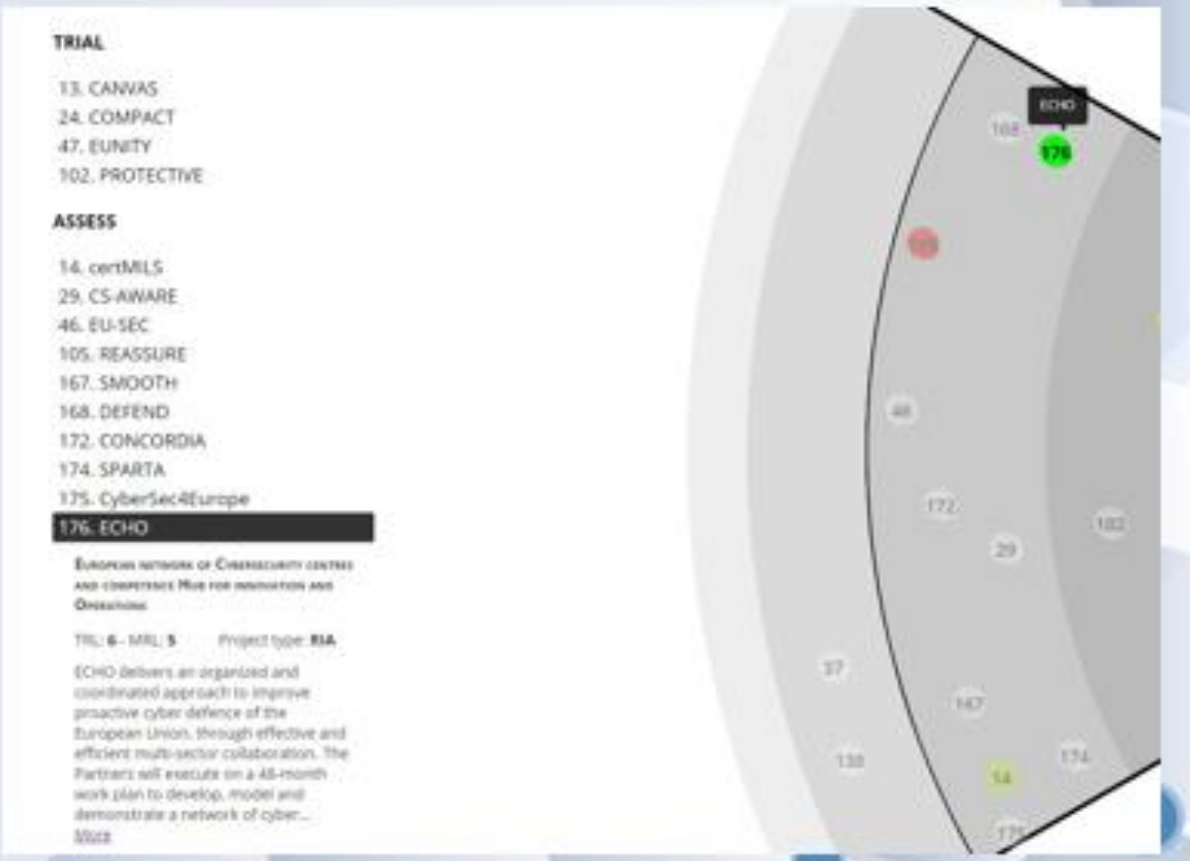
Key summary:

- 30 existing partners
- 15 new partner engagements
- 13 Existing centres
- 16 nations
- 9 industrial sectors
- 13 security disciplines
- 5 demonstration cases
- 6 technology roadmaps
- 3 multi-sector scenarios

ECHO

European network of Cybersecurity centres and competence Hub for innovation and Operations

- **ECHO applied to the MTRL tool from Cyberwatching for two main reasons**
  - Fast and convenient way to track progresses
  - Allow other projects to be aware of the project and our progresses
- **ECHO is currently using the radar and Cyberwatching.eu in order to search for other project, especially to find collaboration in sector-specific topics (energy and healthcare, for example)**



ECHO

Cyberwatching Project Radar

RADAR VISUALIZATION CONCEPTS

Cyberwatching Project Radar

RADAR VISUALIZATION CONCEPTS

EU H2020 Cybersecurity research in numbers

188 projects

Spanning 15 years
(Feb 2008 – Feb 2023)

€765M total budget

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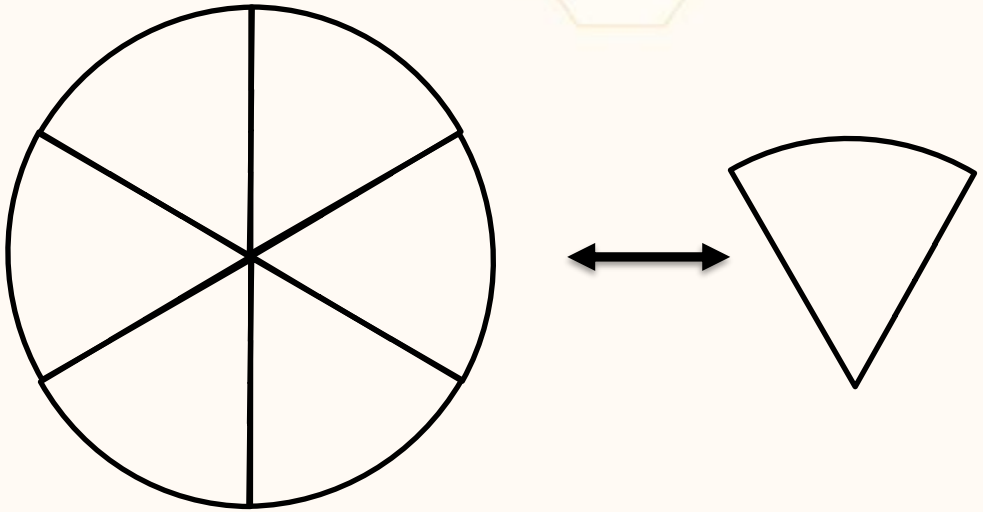
Main objectives

- Single point
  - Entry point to explore the landscape
  - Integrate with many other resources and information hubs
- Useful to many different exploiters
  - EU funded projects
  - EU Commission (incl. PAO, JRC, etc)
  - Technology licensees
  - Investors
- Clear and illustrative overview
  - Extract and visualize **key information**
  - Easy navigation and filtering of data

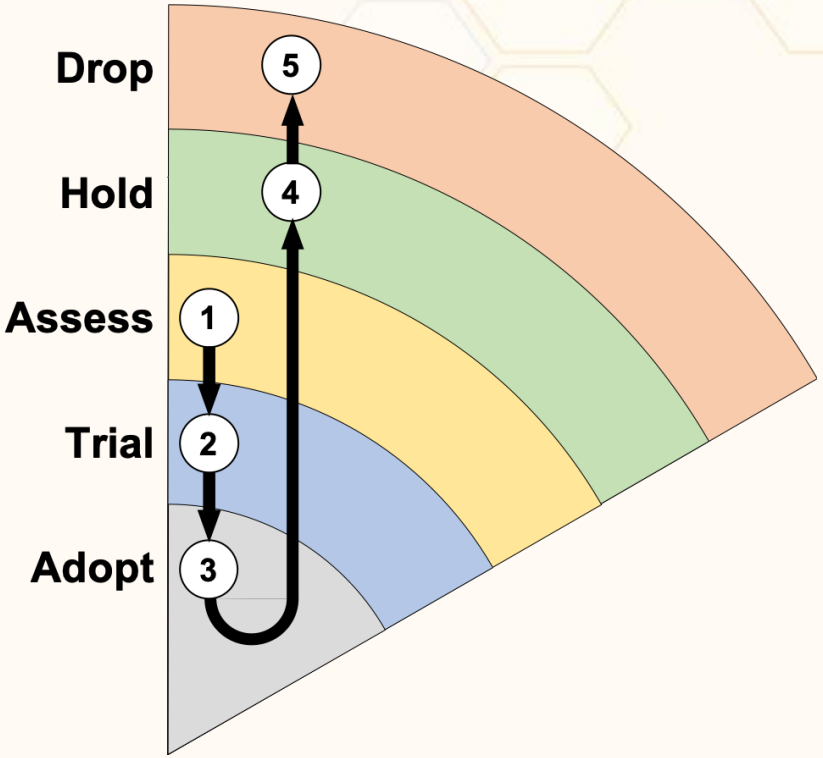
Radar visualization elements: Segments

- Full radar overview
  - All applicable projects
  - Across all segments
- Segment view
  - 6 segments – 6 taxonomy terms
  - Drill into one segment



Radar visualization elements: Rings

- Rings illustrate project age
  - Relative to radar date
- Active projects
  - Assess
  - Trial
  - Adopt
- Finished projects
  - Hold
  - Drop



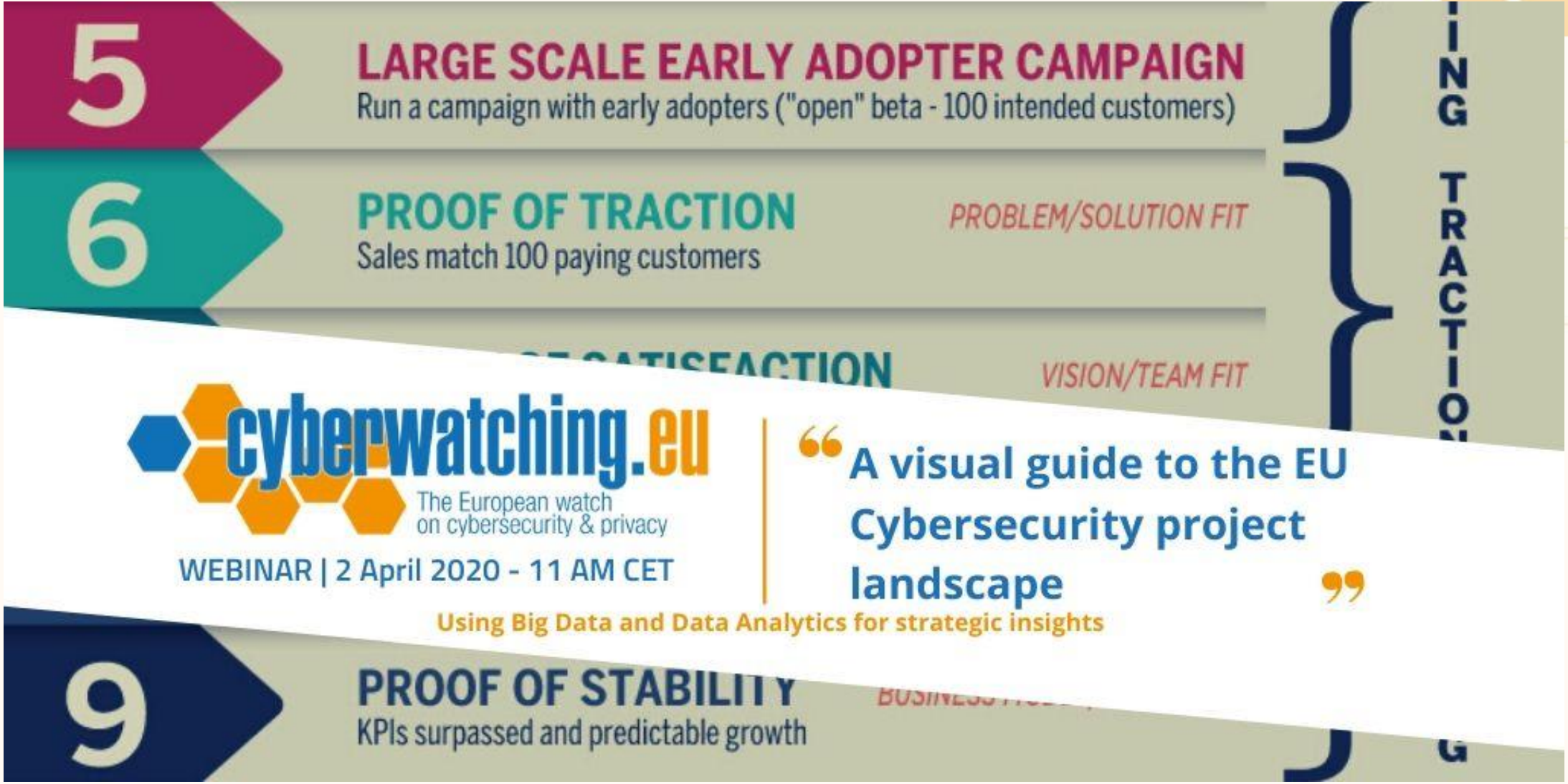
Assess → Trial → Adopt → Hold → Drop

Radar visualization elements: Blips

- Blips represent projects
  - Unique number
  - B/W blip → no MTRL scores!

- Blip colour spectrum
  - Relative project performance
  - Against median of scores
  - Red = lowest performance band
  - Green = highest performance band

LIVE DEMONSTRATION



QUESTIONS & ANSWERS

Thank-you

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