



The European watch
on cybersecurity & privacy

The EU Project Radar - Understanding the Cybersecurity Research and Innovation Landscape through visualization

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Funded by the European Commission
Horizon 2020 – Grant # 740129



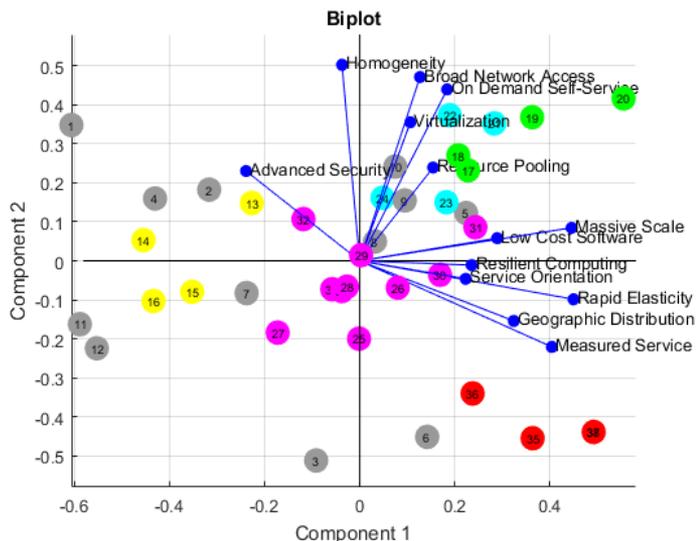
EU H2020 Cybersecurity research in numbers

>220 projects

Spanning 15 years
(Feb 2008 – Feb 2023)

~€765M total budget

Cloud Landscape Clustering

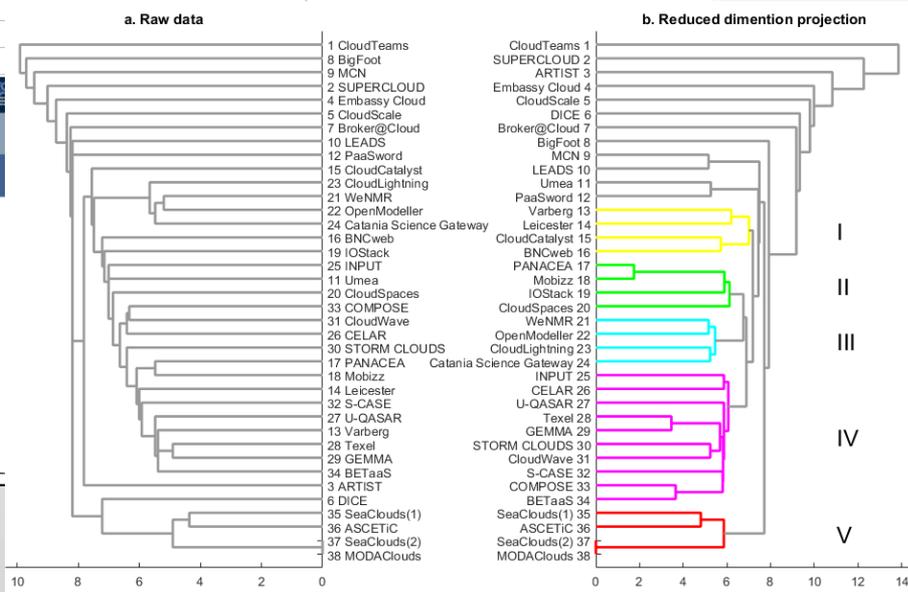


Project	On-demand self-service	Broad network access	Resource pooling	Rapid elasticity	Measured service	Massive scale	Homogeneity	Virtualisation	Low cost software	Resilient computing	Geographic distribution	Service orientation	Advanced security
100 Percent IT#	9	7	9	7	9	6	5	9	5	7	6	5	9
ARTIST	3	5	8	7	8	2	1	1	6	1	7	7	3
ASCETIC	7	2	5	7	9	7	3	5	7	8	7	6	2
BETaaS	7	8	6	7	6	4	3	4	2	7	6	7	5
BigFoot	9	4	9	9	1	9	1	9	1	6	4	4	1
BNCweb	7	4	4	3	2	4	5	3	5	2	1	7	2

First Name: _____
 Last Name: _____
 Affiliation: _____
 E-Mail address: _____
 Project/Activity: _____
 Project website: _____

NIST Cloud Computing Characteristic

Characteristic	1	5	9
On-demand self-service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broad network access	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resource pooling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rapid elasticity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Measured service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Massive scale	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Homogeneity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Virtualisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low cost software	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Resilient computing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



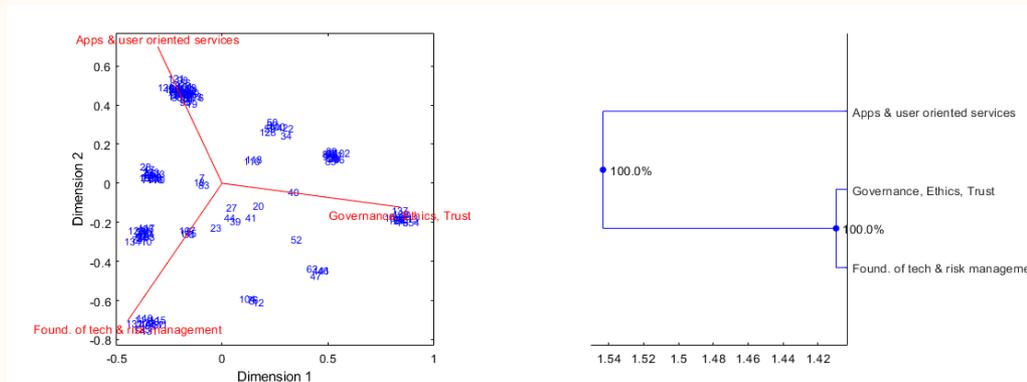
Mapping of R&I activities in EU National & Associated countries

Analysis and Clustering

- Visualize analytics of projects within the Cybersecurity landscape
- Cybersecurity specific Taxonomy

Scores for project utilised to create Cyberwatching specific biplot and clustering

- 66 'Apps & user oriented services' led
- 35 'Found. of tech & risk management'
- 32 'Governance, Ethics, Trust'



Key objectives for improved understanding and visualisation

◆ Single point

- ◆ Entry point to explore the landscape
- ◆ Integrate with many other resources and information hubs

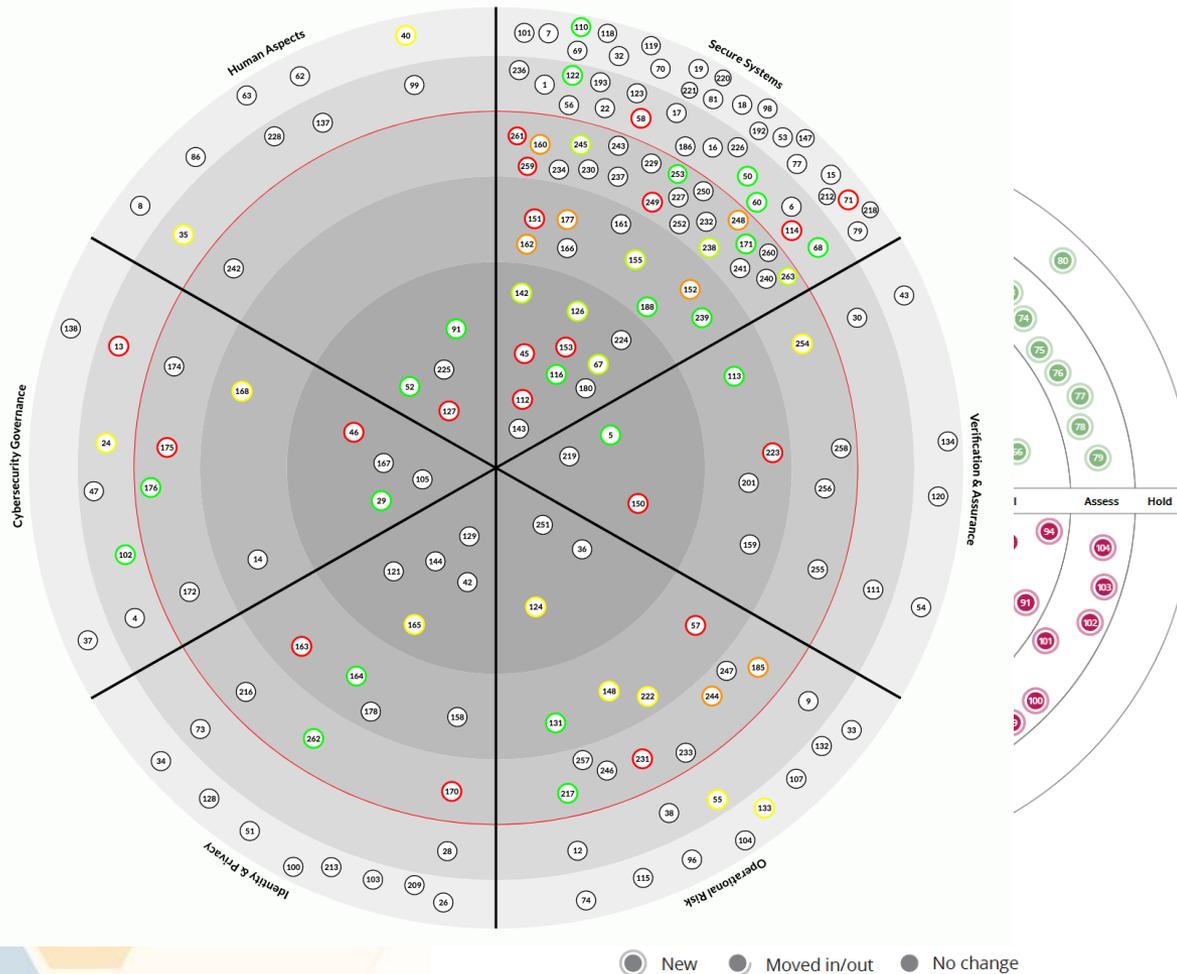
◆ Useful to many different exploiters

- ◆ 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

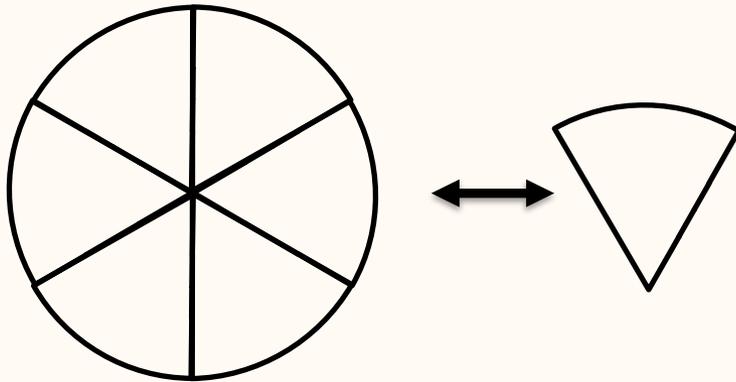
Development of Technology Radar



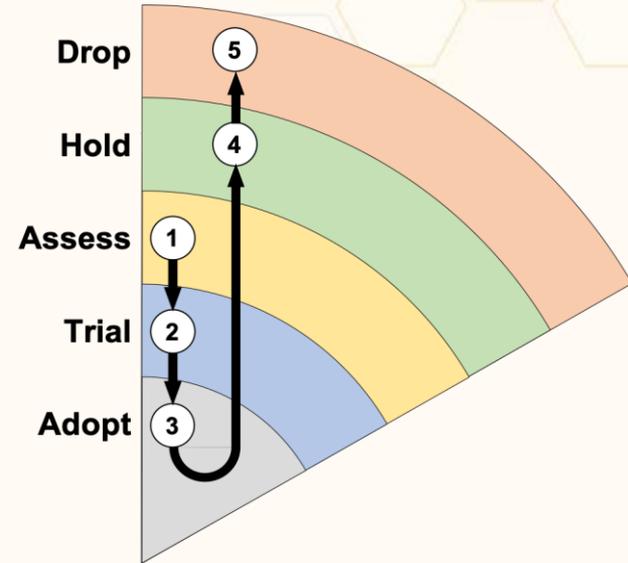
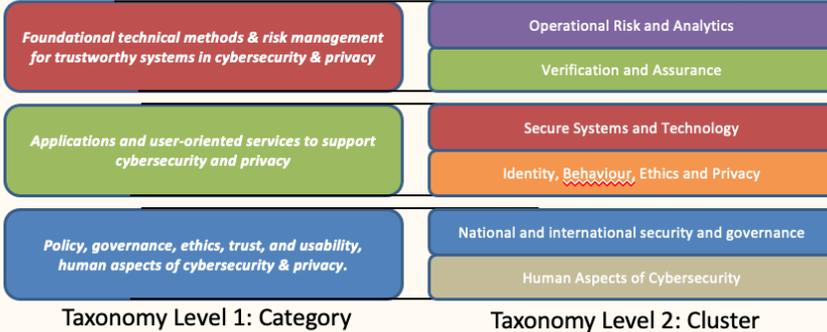
with MTRL

using JRC Cybersecurity taxonomy
code to build

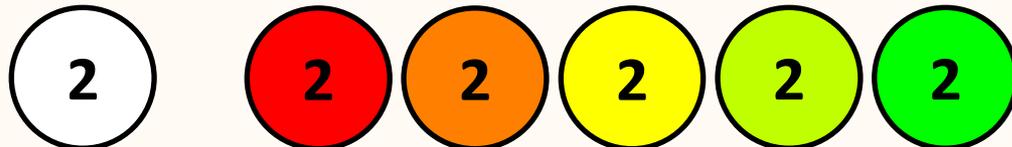
Radar visualization elements



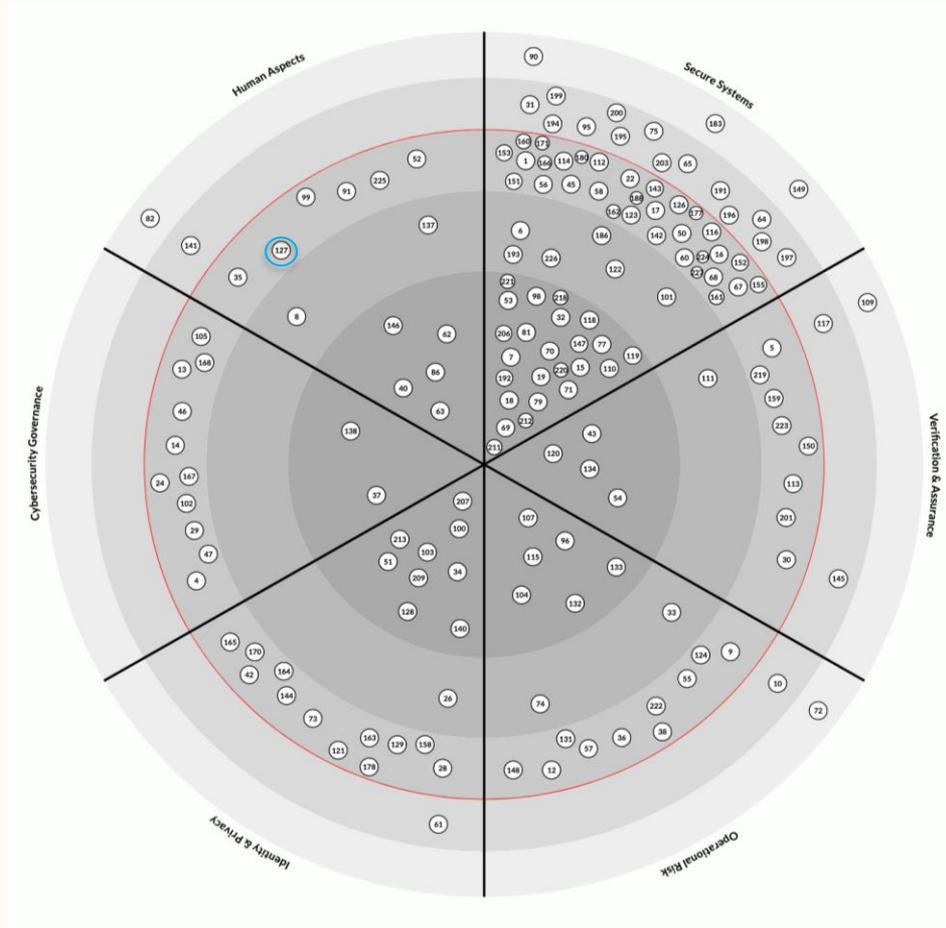
The Cyberwatching Cybersecurity and Privacy research taxonomy



Assess → Trial → Adopt
→ Hold → Drop

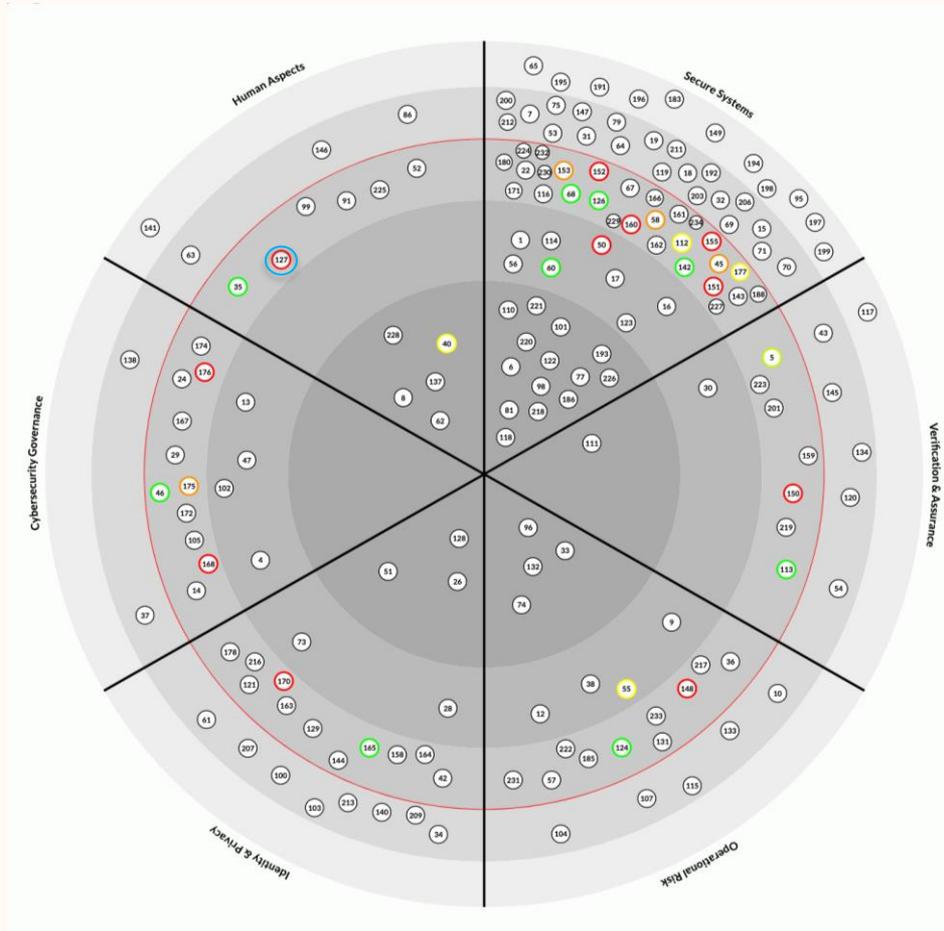


Autumn 2018



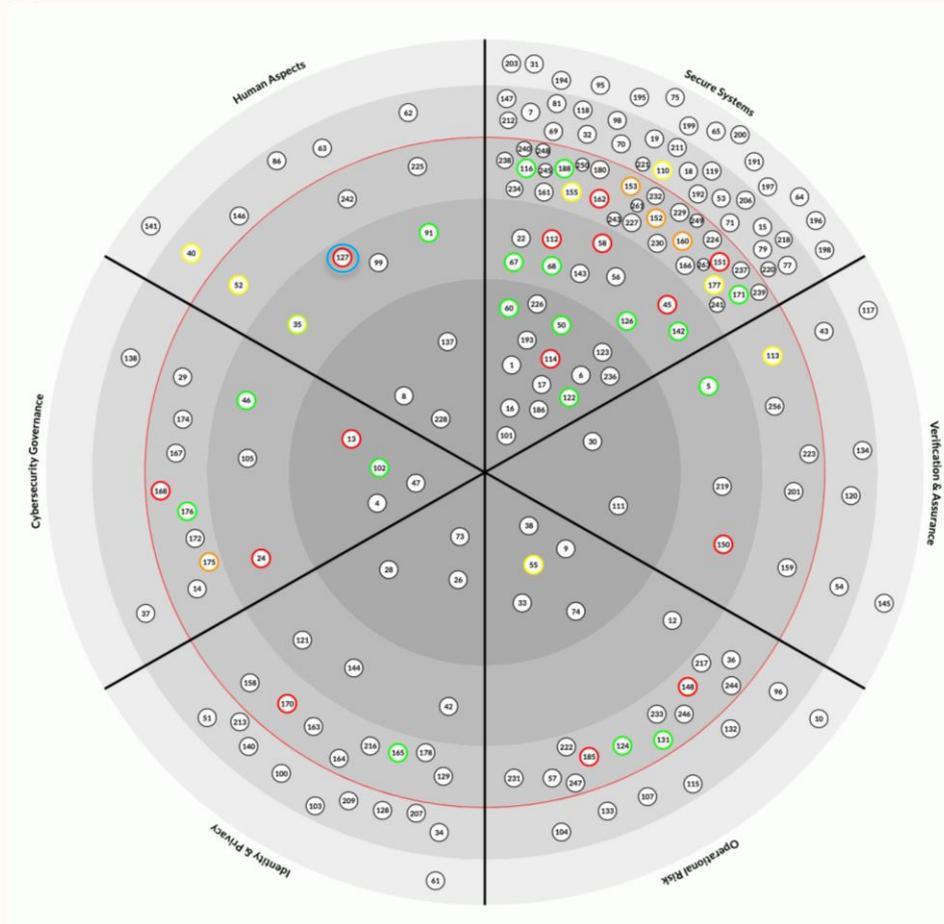
Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Autumn 2018	34	17	9	40	34	134

Spring 2019



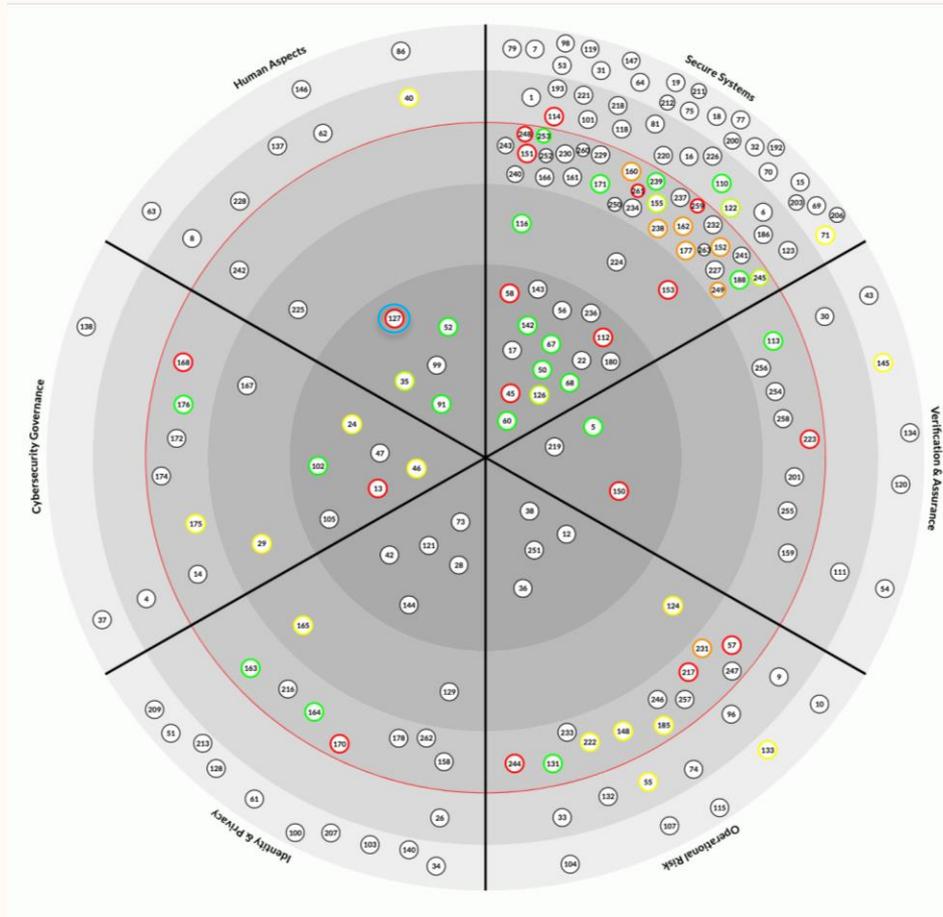
Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Spring 2019	69	15	32	48	11	175

Autumn 2019



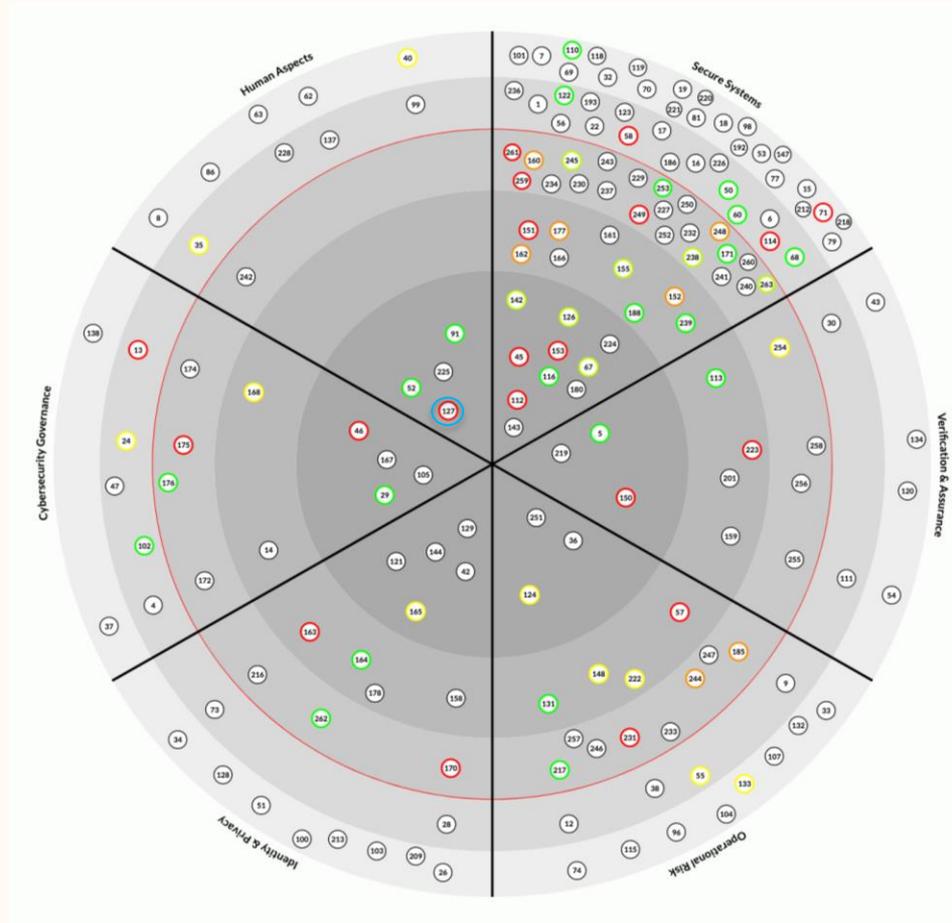
Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Autumn 2019	67	22	34	52	16	191

Spring 2020



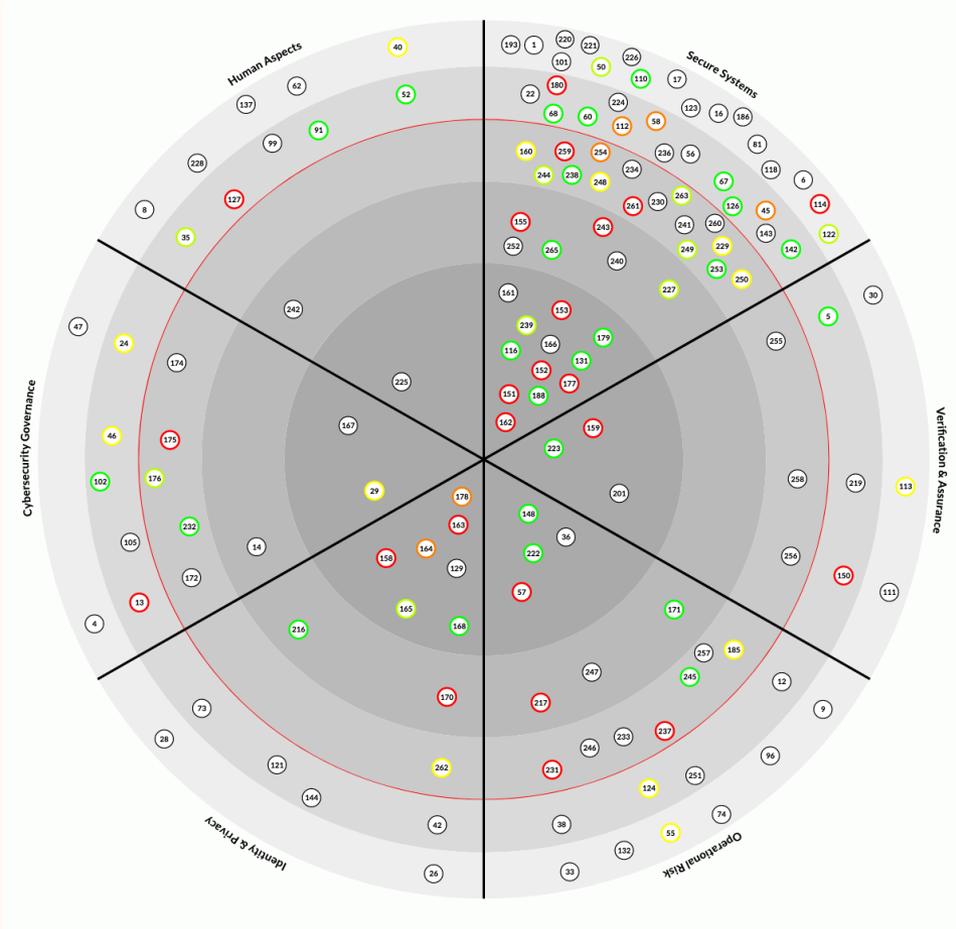
Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Spring 2020	63	9	38	32	48	190

Autumn 2020



Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Autumn 2020	42	23	29	34	50	178

Spring 2021



Radar	Assess	Trial	Adopt	Hold	Drop	TOTAL
Spring 2021 (Live May 31 st 2021)	32	13	29	35	35	144

◆ Distribution of projects

◆ Secure Systems

◆ Most dominant by far – 45% of all projects.

◆ Operational Risk, Identity & Privacy

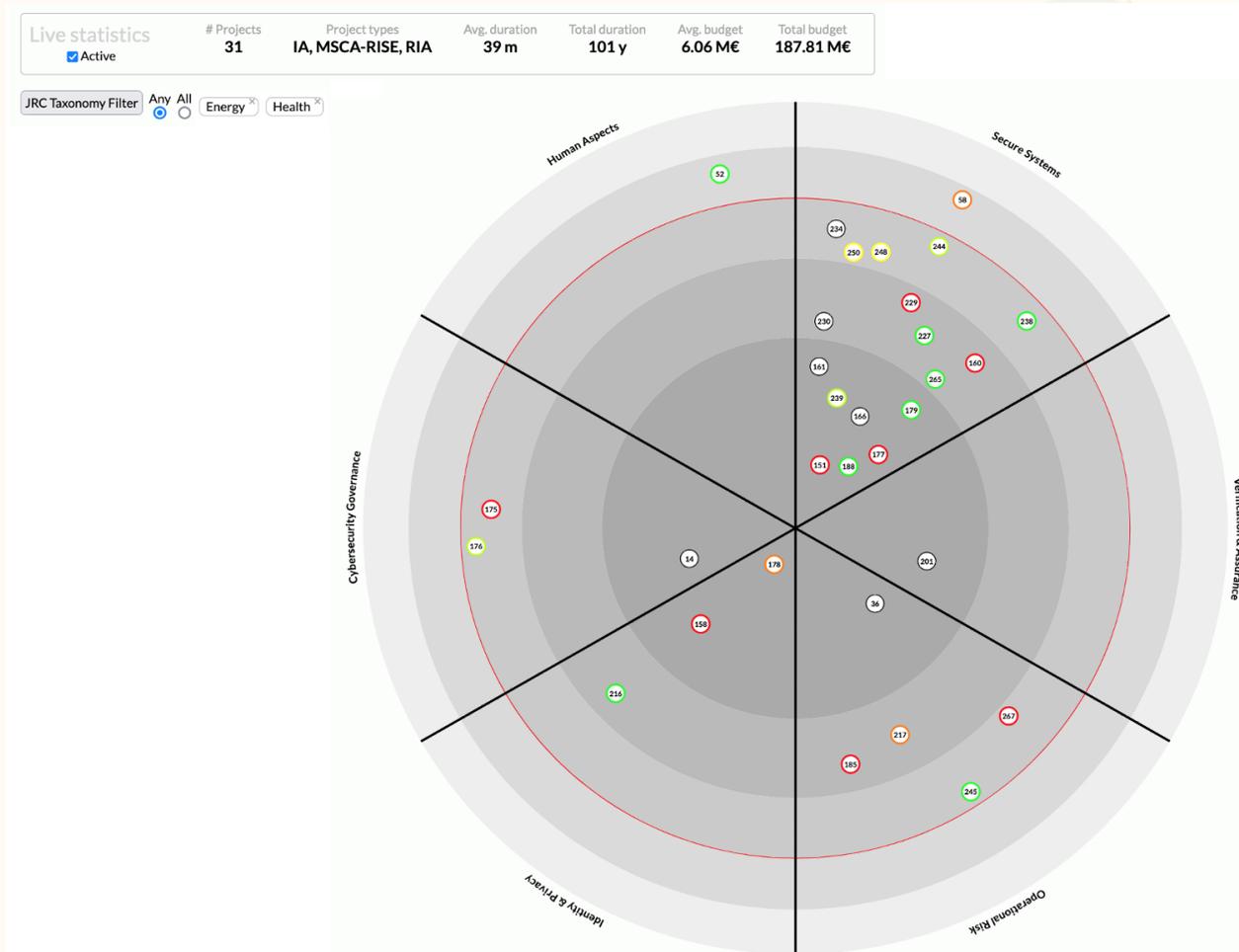
◆ Low interest; about 1/6 each in terms of projects

◆ Verification & Assurance, Cybersecurity Governance, Human Aspects

◆ Lowest interest, not even 10% share of each sector across the radars

Radars edition	Secure Systems	Verification & Assurance	Operational Risk	Identity & Privacy	Cybersecurity Governance	Human Aspects	TOTAL
Autumn 2018	35%	12%	15%	14%	9%	15%	100%
Spring 2019	46%	9%	14%	14%	10%	9%	100%
Autumn 2019	47%	9%	15%	13%	9%	8%	100%
Spring 2020	46%	9%	15%	13%	9%	8%	100%
Autumn 2020	46%	10%	15%	12%	10%	8%	100%
Spring 2021	45%	8%	17%	11%	10%	8%	100%
Change in year	-1%	-1%	2%	-2%	1%	-	

Filtering for greater insights



European Cybersecurity Centres of Expertise Map - Definitions and Taxonomy, JRC111441, <http://dx.doi.org/10.2760/622400>

Filtering for greater insights

◆ JRC Taxonomy Analysis

◆ Cybersecurity domains

- ◆ 77 projects @ 487.56M€
- ◆ Cybersecurity Governance - 19%, Operational Risk - 16%, Secure systems 14%, Verification & Analysis 9%, Identity & Privacy 8%, Human Aspects 6%
- ◆ All bar Steganography, Steganalysis and Watermarking & Theoretical Foundations have > 4 projects

◆ Sectors

- ◆ 75 projects @ 479.46M€
- ◆ Secure systems & Cybersecurity Governance - 20%, Operational Risk - 11%, Identity & Privacy - 9%, Verification & Analysis - 7%, Human Aspects - 4%
- ◆ Digital Services and Platforms largest with 33 projects, Audiovisual and media, Defense and Food and Drink smallest with only two projects (both projects that have selected every sector as applicable)

◆ Technology & Use Cases

- ◆ 74 projects @ 477.55M€
- ◆ Cybersecurity Governance - 28%, Secure systems - 20%, Operational Risk - 16%, Verification & Analysis - 15%, Identity & Privacy - 9%, Human Aspects - 5%
- ◆ Blockchain and Distributed Ledger Technology (DLT) & Critical Infrastructure Protection (CIP) both have over 20 projects looking at these technology domains, multiple (too many to individually name) have less than 2 projects working on them.

- ◆ Remarkably even spread though of projects that are labelled in terms of overall budget per area.

Conclusion

- ◆ Significant record and analysis of projects sponsored through H2020 program.
- ◆ Clear decrease in funded activities as multiple programs draw to a close.
- ◆ Significantly more projects have MTRL assessments i.e. the majority
- ◆ Need to investigate sustainability models for the project radar.