

ACCIÓ InfoDAY H2020 CARAMEL

7th July 2023




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Cyber Security Innovation Director at
i2CAT Foundation / Master Course In...




Never stop
designing the
digital future

i2CAT.net   



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i2CAT	H2020 CAMEL Project	Lessons Learned	The game of building consortiums	Q&A



i2cat^R

THE INTERNET
RESEARCH CENTER

i2CAT in a nutshell

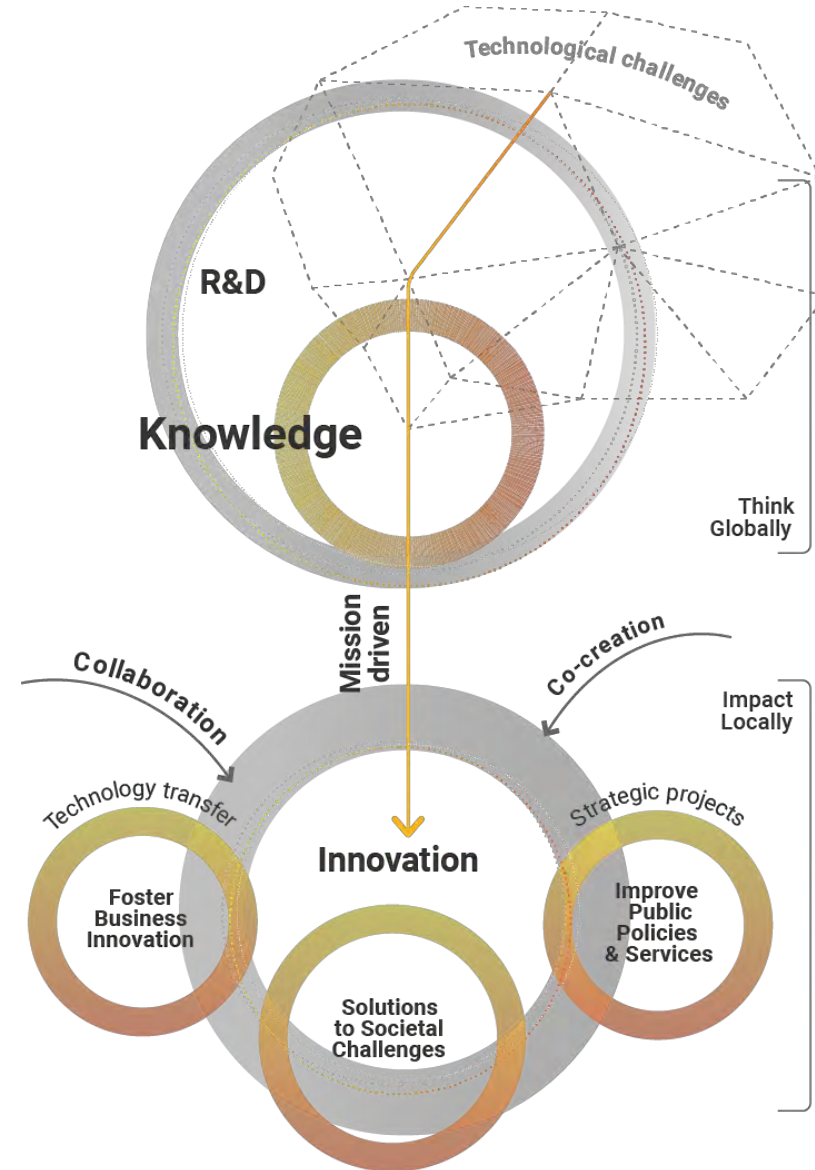


Never stop designing the digital
future

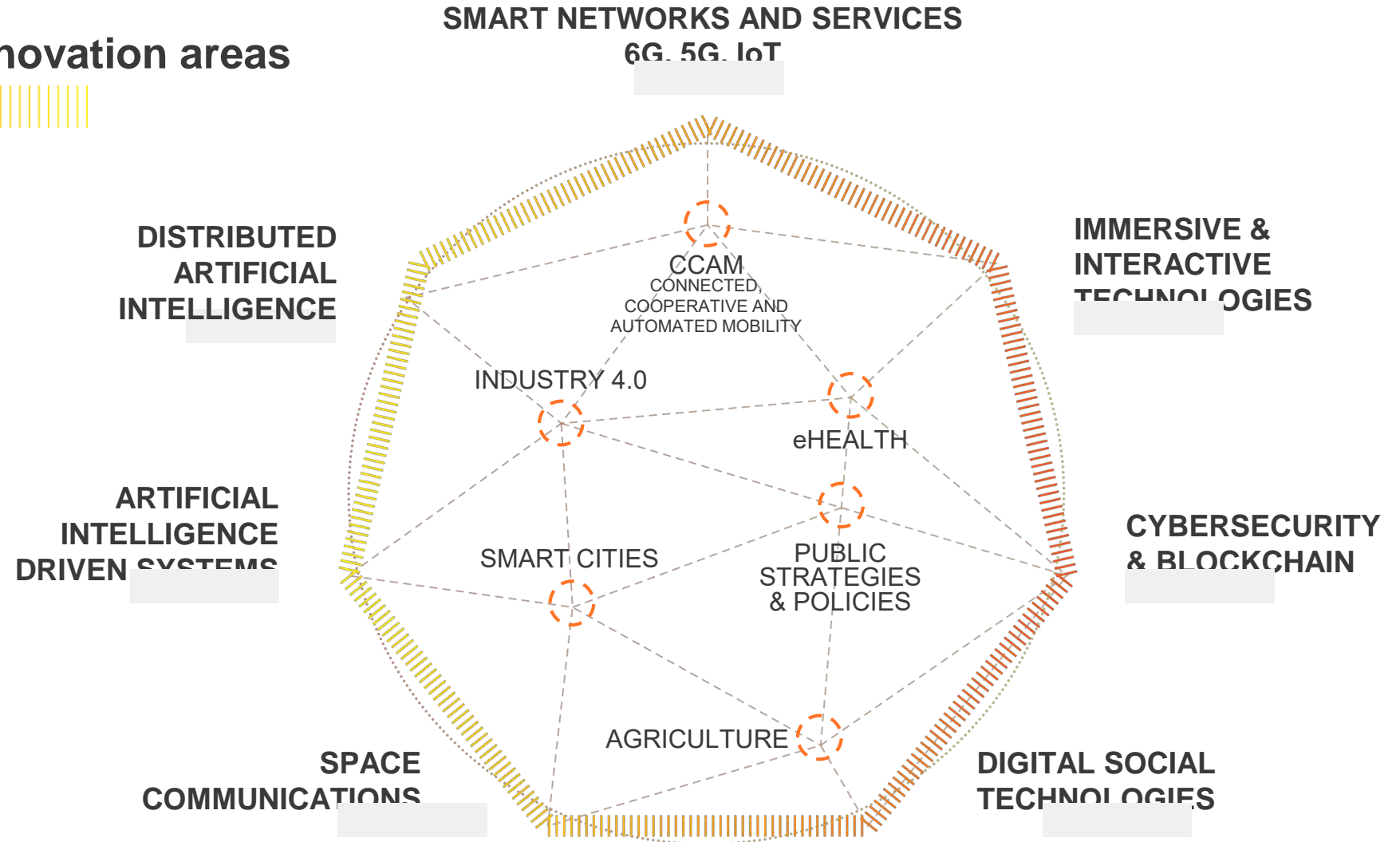
Vision



i2CAT wants to lead the challenge of designing the digital society of the future based on research and innovation in advanced digital technologies.



Research and Innovation areas





European
Commission

Horizon 2020
European Union funding
for Research & Innovation



H2020 CAMEL Project

i2CAT strategic R&D initiatives



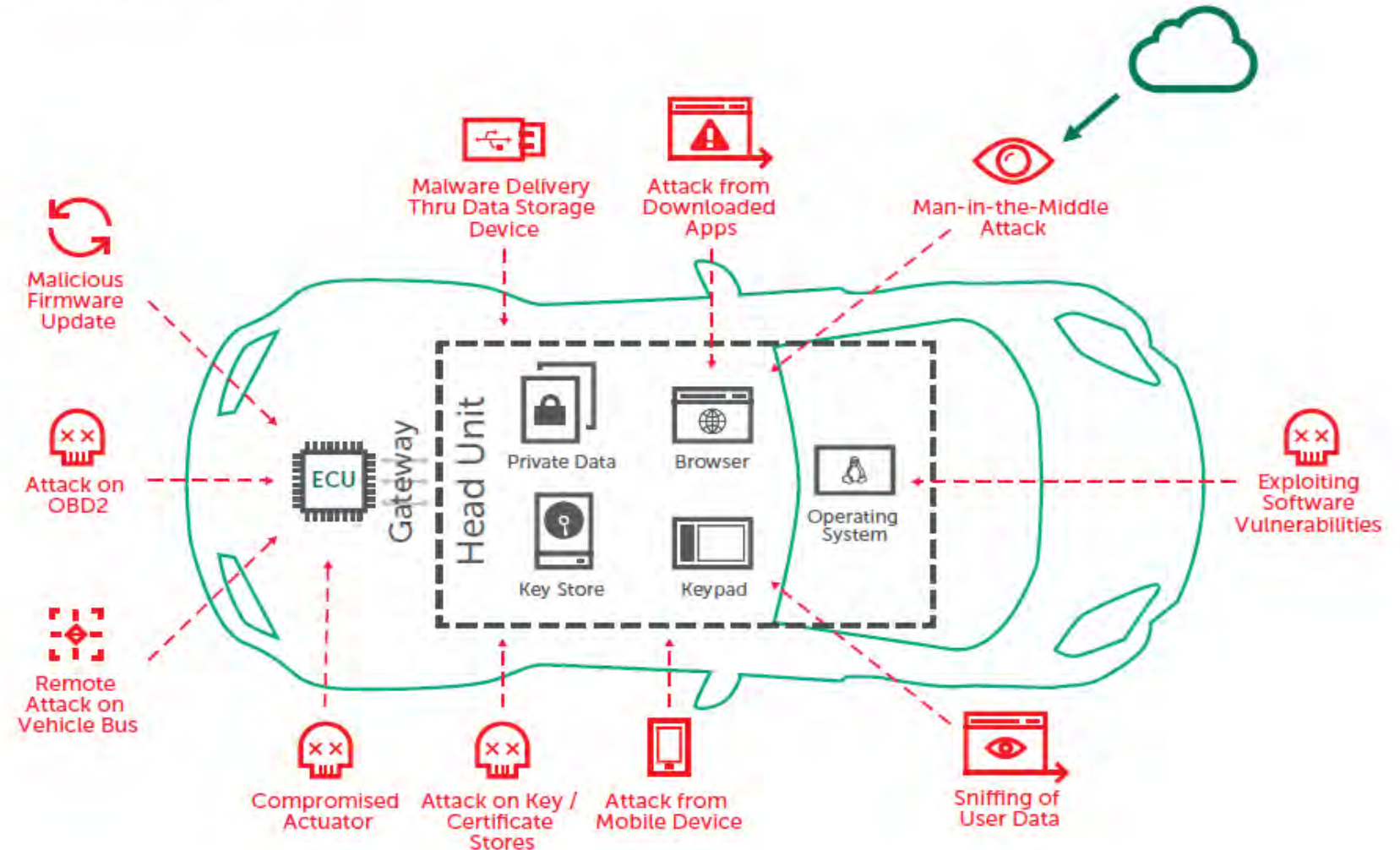
Motivation

Attack surfaces

A modern car is a data center on wheels with a multitude of attack surfaces:

- ❑ Entertainment system
- ❑ Internal buses
- ❑ Sensors
- ❑ Cloud interfaces
- ❑ Interfaces to other vehicles and the road-side infrastructure (V2X)

Connected car threats



H2020 CAMEL (2019-2022)



Artificial Intelligence based cyber security for connected and automated vehicles



Results

- Demonstrators: Detection of defaced traffic signs, attacks on V2X communication, GPS spoofing, attack on eCharging grid
- Anti-hacking device: Highly secure on-board intrusion detection system with ML capabilities
- Integration with backend systems (Automotive SOC)

Project goals

- Automotive Security: Detection and mitigation of threats against connected cars using ML techniques:
 - Pillar 1: Attacks on (semi-)autonomous driving
 - Pillar 2: Attacks on communication links and systems (GPS spoofing, V2X attacks, OBU attacks)
 - Pillar 3: Attack on eCharging infrastructure
 - Pillar 4: Korean partner contributions

Project information

- 15 academic and commercial partners across Europe
- Affiliation with Korean partner project (funded by KR)
- Project runtime: 33 month, 10/2019 - 06/2022
- Horizon 2020 project 70 % funded by EU (100 % for academic partners)



i2CAT's role: Project coordinator and WP leader

CARAMEL Project





CARMEL: THE FUTURE OF AUTOMOTIVE CYBERSECURITY

CARMEL tries to demonstrate the effectiveness of on-board Intrusion Detection Systems (IDS) as a layer of protection directly over the HW ECU, enabling the safety of the vehicles against different types of cyber attacks. The ultimate objective is to offer automated anomaly and fault detection, while being an invariable and reliable black box for CAN-bus data collection.

IOT SOLUTIONS
 WORLD CONGRESS

BE THE GAME CHANGER



Pillar 2 Achievement 1: Radio Interoperability



CAMEL in action



YouTube CAMEL CHANNEL

INICIO

VÍDEOS

LISTAS

CANALES

COMENTARIOS

MÁS INFORMACIÓN



Subidas

▶ REPRODUCIR TODO



Collaborating mitigation mechanism against GPS...

10 visualizaciones · hace 1 mes



Holistic Situational Awareness with ML...

15 visualizaciones · hace 1 mes



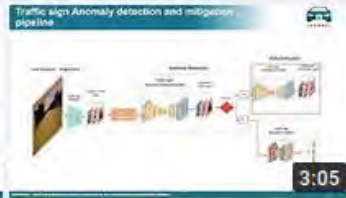
In-vehicle Location Spoofing Attack Detection

15 visualizaciones · hace 1 mes



Detecting possible attacks on the camera sensor using...

16 visualizaciones · hace 1 mes



Traffic sign anomaly detection and mitigation...

18 visualizaciones · hace 1 mes



RSU-OBU-TestBed

32 visualizaciones · hace 1 mes

<https://www.youtube.com/channel/UCX9JMIToA5U1CRWwNMnwTYQ>

Bonus slide: Caramel Project Book



<https://nowpublishers.com/article/BookDetails/9781638280606>



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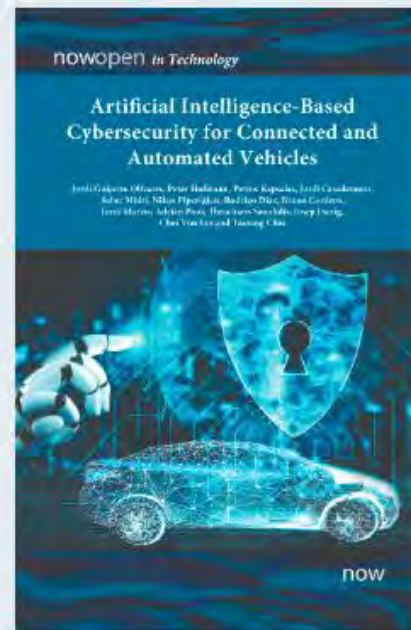
Artificial Intelligence-based Cybersecurity for Connected and Automated Vehicles

nowopen

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02/ Lessons learned

Lessons learned as Coordinator

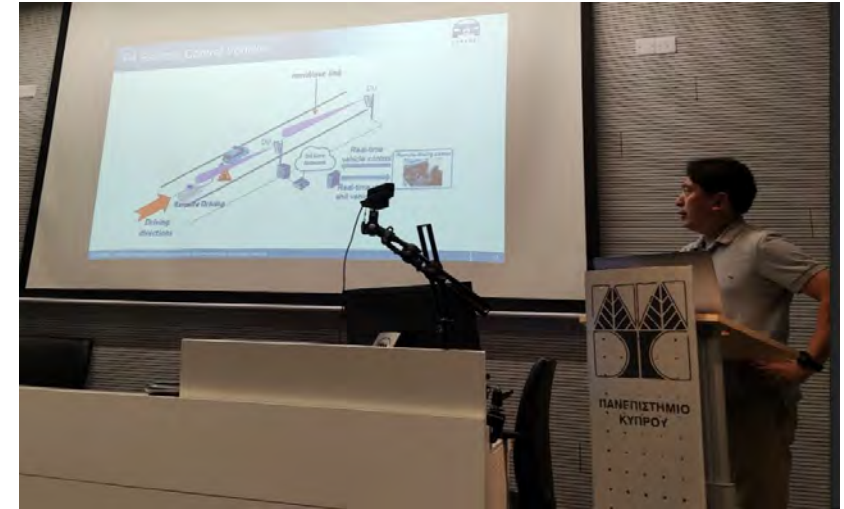


PROS

- Networking and visibility
- Direct Connection to European officers
- Technological synergies and extra opportunities
- External activities with other consortiums
- EAB and SAB coordination

- And extra bonus points like

- Dissemination of the organisation
- New international contacts
- New contacts for Letters of Support
- EAB and SAB active participation
- Near Future Individual agreements
- Near Future Projects participation
- ...



[IOTSWC 2022] 자율주행차 해킹사고 어쩌나...EU '카라멜' 철벽 사이버보안

김문기 기자 | 입력 2022.05.11 14:24



댓글 쓰기 (+) (-) (URL) (Print)

사이버 보안 시스템 개발 목표

[아이뉴스24 김문기 기자] 네트워크에 연결된 자율주행차를 해킹하게 된다면 어떤 상황이 발생할까.



카라멜은 10일 스페인 피라 바르셀로나와 산업인터넷컨소시엄(IIC)과 함께 10일부터 12일(현지시간)까지 스페인 바르셀로나 피라 그란비아에서 개최하는 사물인터넷 솔루션 월드 콘GRESS(IOTSWC) 2022 테스트베드에 차량 내 내장된 변조 방지 장치(AH)를 선보였다. (사진=김문기 기자)

생각만으로 끔찍한 사고가 발생할 수도 있다. 이같은 상황을 미연에 방지하고자 완성차 시장 강자인 EU에서 차량과 관련한 사이버보안을 강화하기 위한 협력이 가속화되고 있다. IOTSWC에서도 유럽의 지원을 받는 '카라멜(CAMEL)'이 나서 실제 차량 사이버보안을 선보였다.

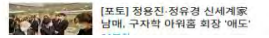
카라멜은 10일 스페인 피라 바르셀로나와 산업인터넷컨소시엄(IIC)과 함께 10일부터 12일(현지시간)까지 스페인 바르셀로나 피라 그란비아에서 개최하는 사물인터넷 솔루션 월드 콘GRESS(IOTSWC) 2022 테스트베드에 차량 내 내장된 변조 방지 장치(AH)를 선보였다.

많이 본 뉴스

- 트렌스젠더 이효정 "자기 가슴·얼굴 수술해왔다" (16건의 할매)
- '갤럭시S23' 5G 속도 어디까지?...배일 먼은 '컬럼니스트'로 데뷔
- [H] 명투기 1년! ① 역시 명장사였다...월급보상 논란 속 '시세차익' 논쟁
- 레퍼 뱃사공 'DM 연애 전문'...이용진도 인정
- '공간소음' 때문에...워킹에 코로나 퍼트린 30대

실시간 뉴스

- 오후 6시 전국서 2만4903명 확진...어제보다 1785명 감소 (2분전)
- 한국비트은행, 1분기 순이익 401억원 시현...전년비 16.8% 감소 (22분전)
- 99% 폭락한 '루나' 업비트·고팍서서 회복 (28분전)
- [오늘의 전자 단신] 후지필름, 초단초점 프로젝트 'FP-Z60...' (33분전)
- [포드] 정용진-정유경 신세계에 넘어, 구자혁-이원홍 회장 '에도' (33분전)



04/ The game of building consortiums



i2CAT Cybersecurity Area - Vision



Target real world problems and generate knowledge and assets for societal cyber growth and awareness.



Affiliations



<https://www.ecs-org.eu/activities>



<https://www.renic.es/en>



<https://www.renic.es/en>



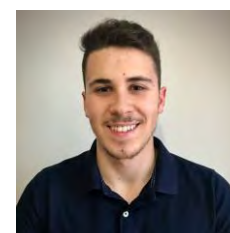
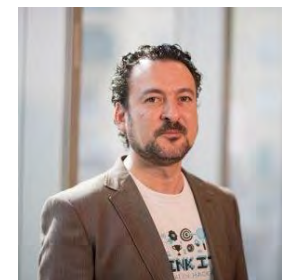
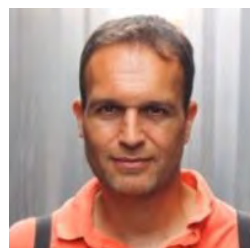
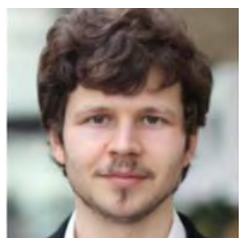
<https://dca.cat/ca/dca-ciberseguretats/>



Research & Innovation Topics



Team Members in Cyber Security and Blockchain Area



16 Team Members,
3 PhD Holders
8 Members Dedicated to
Innovation and Transfer,
3 PhD Candidates



05/ Q&A

- Space for discussion



Thanks!



7th July 2023



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