

We start at 9h30 CET

3

# Chair Cybersecurity for Critical Networked Infrastructures @ECW 2022

**Marc-Oliver Pahl**

Titulaire de la chaire cybersécurité des  
infrastructures critiques ([cyberCNI.fr](http://cyberCNI.fr))



Sécurité des infrastructures critiques

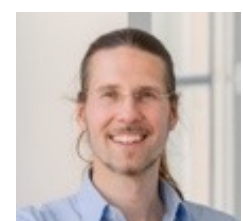
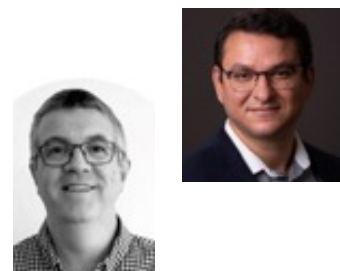


## *Session 1*

The chaire Cybersecurity of Critical Networked Infrastructures ([cyberCNI.fr](http://cyberCNI.fr)) as important pillar in the French and European cybersecurity ecosystem

CYBERCNI  
Sécurité des infrastructures critiques

- 09:30 am Chaire cyberCNI.fr - Excellence in cybersecurity since 2016  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*
- 09:45 am Cybersecurity as central element in the DNA of IMT Atlantique - the chair CyberCNI in its heart  
*Christophe Lerouge, Director of IMT Atlantique*  
*Veronique Stephan, Development and Corporate relations, IMT Atlantique*
- 09:55 am The chaire CyberCNI as key actor of the ecosystem of the Pôle d'Excellence Cyber (PEC)  
Colonel Pierre-Arnaud Borrelly, Délégué général du PEC,  
Commandant du Groupement de cyberdéfense des Armées (COMCYBER/GCA)
- 10:00 am The role of academic partnerships within Airbus Defence and Space Cybersecurity at the example of the chair  
*CyberCNI, Nicolas Razy, Head of Defence and Strategic Programmes France, Airbus*
- 10:05 am The added value of the collaboration with the chair CyberCNI for our bank  
*Marc-Michel Stack, Head of Group IT Technology Intelligence, BNP PARIBAS*
- 10:10 am Energy and CyberCNI - the role of the collaboration for EDF  
Etienne Decossin, Responsable du programme Tech de l'information - Simulation avancée, EDF R&D  
Youssef Laarouchi, Cybersecurity Project Manager, EDF
- 10:15 am Let's roll - cybersecurity for mobile infrastructures: a successful collaboration between SNCF and the chair  
CyberCNI, Cyril Cappi, Team Leader Rail Safety System at SNCF /  
VP R&D at Fédération Française de la Cybersécurité
- 10:20 am How to join the club? 7 Reasons for becoming a partner of the chair CyberCNI  
Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes
- 10:25 am Outlook to the research session at 11h00  
Networking





## *Session II*

Excellent cybersecurity research around current challenges in cybersecurity for critical infrastructures

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11:00 am Cybersecurity as key factor in the ecosystem of Brittany and the role of the chair CyberCNI within  
*Jérôme Tré-Hardy, Conseiller régional délégué à la transition numérique et la cyber- Région Bretagne*



11:05 am Research Activities of the Chaire  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*



11:10 am **90sec per PhD thesis**

11:30 am **Panel:** How safe are our critical infrastructures under the current geopolitical circumstances?

The recent geopolitical developments show us once more how fragile our critical infrastructures are. With the outbreak of the war in Ukraine, diverse disruptions in systems such as energy production or communication occurred. In this panel we discuss the new threat potential we are facing today.

- *Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes (Moderation)*
- *Cyril Cappi, Team Leader Rail Safety System at SNCF / VP R&D at Fédération Française de la Cybersécurité*
- *Gianluca Vannuccini, Director Dir Système Information, Infrastructures Technologiques et Innovation, Toscana*
- *Éric Labouré, Nokia Head of Business Operations, Managed Security Services, Nokia*
- *Alban Odrejeck, Co-founder/CTO & speaker chez ANOZR WAY*
- *Reda Yaich, Senior Researcher SystemX*





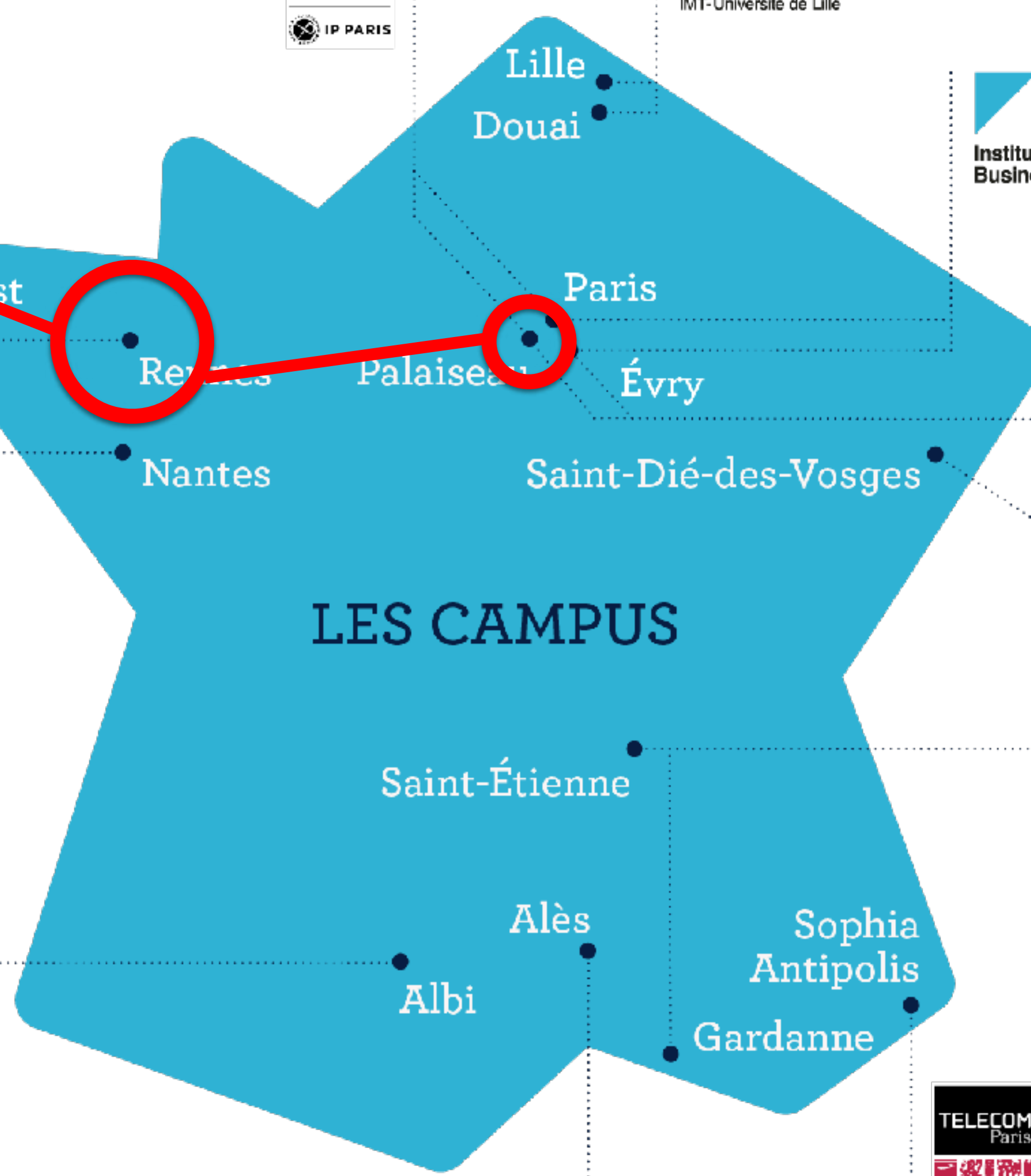
Chaire [cyberCNI.fr](https://cyberCNI.fr)

# Cybersécurité des Infrastructures Critiques

CYBERCNI  
Sécurité des infrastructures critiques



CHAIRE  
**CYBERCNI**  
Sécurité des infrastructures critiques



# It's all about people...



10+ Professors

4+ PostDocs

8+ PhD Students

7 Partners





Phase I (1/2016-1/2019)

Phase II (1/2019-1/2022)

Phase III (1/2022-1/2025)





Chaire cyberCNI.fr

# Research Update

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# The cyberCNI.fr Research Update

The cyberCNI.fr (<https://cyberCNI.fr/>) Research Update (spring/ Fall) happens once per semester. It is the *big status event* of the chair Cyber CNI.

All works around the chair (PhD students, PostDocs, Engineers, . . . ) are presenting their progress, current works, and next challenges. There are vital discussions with the audience on the topics.

**It is the perfect opportunity for getting an overview on and discussing what is going on at the chair.**



# Research Update Events

- 08.06.2020 Online
- 11.12.2020 Online/ Rennes
- 24.06.2021 Online/ Rennes
- 17.12.2021 DG EDF, Palaiseau
- 20.05.2022 IMT Atlantique, Rennes
- 17.10.2022 DG SNCF, Paris
- 4/2023 BNP Paribas, Paris
- 10/ 2023 Airbus, Paris





# Research at the chaire [cyberCNI.fr](https://cybercni.fr)

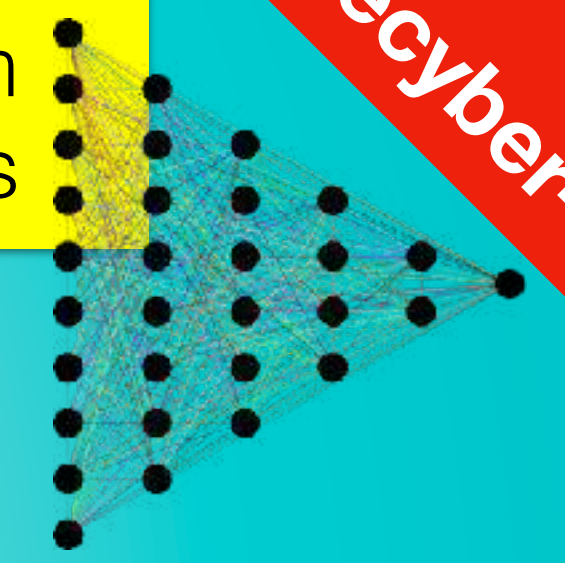
CHAIRE  
CYBERCNI  
Sécurité des infrastructures critiques

<https://www.chairecyber-cni.org/>



**Prevent**  
Security-by-Design

**Mitigate**  
Self-Defend Security Incidents  
Self-Recover from Security Incidents



**Human-in-the-loop**  
Innovative interfaces, Mixed Reality  
Data Analytics  
Configuration  
Live interaction, collaborative actions

**Detect**  
Anomaly Detection



Ethical Algorithms Machine Learning  
Distributed Ledgers Digital Twins



 **Prevent**

 **Detect**


 **Mitigate**


 **Human-in-the-loop**


 T5 : Software Defined Security for Internet of Things

 T9 : Federated threat detection and defense

**AI**

T2: 3D interfaces for Cybersecurity 


 T4: Optimisation of security risks through learning on heterogeneous data


T1 : Automated learning and handling of Cyber-Physical Attacks 


T6' : Jumeaux numériques pour la cyber-sécurité 

 Cybersecurity for connected mobile systems

 Collaborative Cybersecurity


 [IMTA] P3-1-Digital-Twin: Modular Digital Twin-based cyber resilience

**TP**  
 [TP] P3-3-Codeledger: CodeLedger: tracking the provenance of critical open source components

 [IMTA] P3-2-Piloting: Real-world detection and mitigation of AI-based cyberattacks and defence mechanisms

 [TSP] P3-4: How can crypto-watermarking-DLTs improve trust in the use of AI for cybersecurity? 

 [IMTA] P3-6-Software: Improving resilience through securing connected software in IT and OT (PostDoc)

 [IMTA] P3-5-Interface: Multi-Modal Collaborative Cybersecurity Operation Center

Engineer

PostDoc

PhD student



# Activities throughout the year

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Sécurité des infrastructures critiques



# Publications

- [1] Hassan Chaitou, Thomas Robert, Jean Leneutre, and Laurent Pautet. Threats to adversarial training for idss and mitigation. In Proceedings of the 19th International Conference on Security and Cryptography (Secrypt 2022), Lisbon, Portugal, 2022.
- [2] Valentin Dimov, Erkin Kirdan, and Marc-Oliver Pahl. Resource tradeoffs for tls-secured mqtt-based iot management. In NOMS 2022 Workshops - Manage-IoT 2022 (), 2022.
- [3] Awaleh Houssein-Meraneh, Christophe Clavier, H el ene Le-Bouder, Julien Maillard, and Ga elle Thomas. Blind side channel on the elephant lfsr. In Proceedings of the 19th International Conference on Security and Cryptography (Secrypt 2022), Lisbon, Portugal, 2022.
- [4] Leo Lavaur, Marc-Oliver Pahl, Yann Busnel, and Fabien Autrel. The evolution of federated learning-based intrusion detection and mitigation: a survey. IEEE Transactions on Network and Service Management, 2022.
- [5] Christian L ubben and Marc-Oliver Pahl. Autonomous convergence mechanisms for collaborative crowd-sourced data-modeling. In NOMS 2022 - Full and short papers (), 2022.
- [6] Christian L ubben, Simon Sch affner, and Marc-Oliver Pahl. Continuous microservice re- placement in the iot. In NOMS 2022 Workshops - Manage-IoT 2022 (), 2022.
- [7] Mariana Segovia, Jose Rubio-Hernan, Ana Cavalli, and Joaquin Garcia-Alfaro. Switched- based control testbed to assure cyber-physical resilience by design. In Proceedings of the 19th International Conference on Security and Cryptography (Secrypt 2022), Lisbon, Portugal, 2022.
- [8] Manel Smine, David Espes, and Marc-Oliver Pahl. Optimal access control deployment in network function virtualization. In NOMS 2022 - Full and short papers (), 2022.

obsolete functions. In that case, it is important to decommission the device, and recycle it. One solution for recycling is to re-use the object in a different application or deployment, if it embeds the necessary functions. It can also be disassembled and its parts can be sent to different recycling industry. In order to make this possible, we need to address the issues of localization, keep-alive, classification and security.

security point of view, this process represents a risk since it offers the attacker various ways of degrading classifier performance (either by forcing classifications mischievous, either by randomly degrading its performance). These two types of attacks require more or less effort from the attacker.

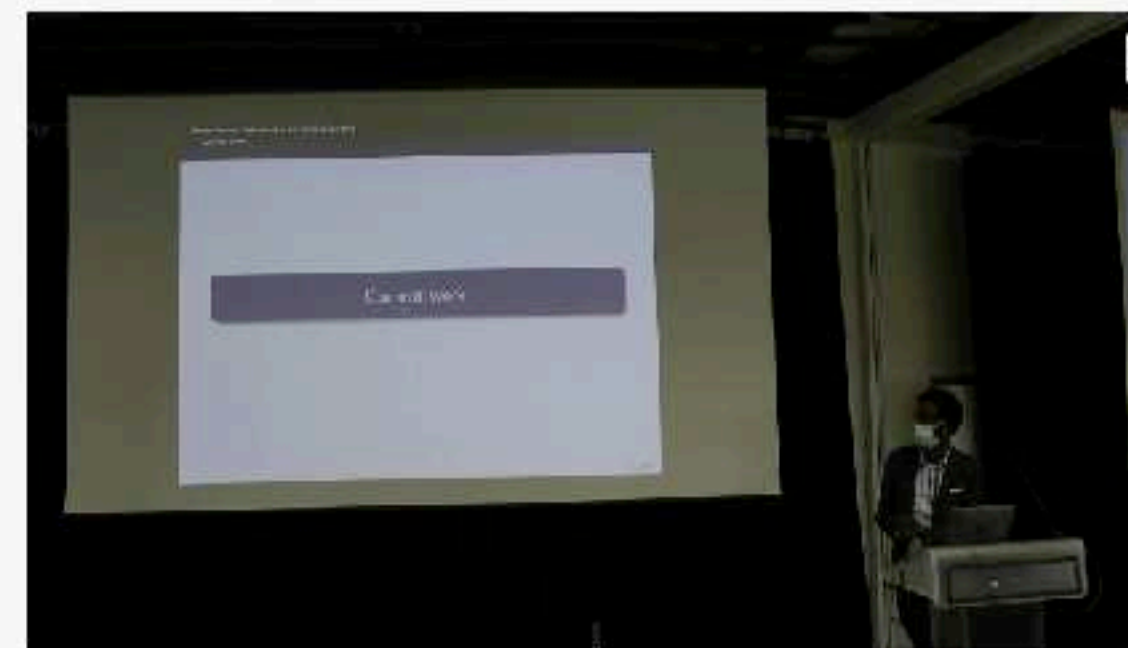
This risk is exacerbated when data comes from sources (network equipment, organizations) corresponding to heterogeneous trust levels. Hassan's thesis aims at controlling the risk associated with this update via game theory in the case where the confidence in the learning data is not homogeneous.



## BONNE ANNÉE 2022 ! HAPPY 2022!

- January 1, 2022 By Marc-Oliver Pahl ☐  
Uncategorized

Dear members and friends of the chair CyberCNI.fr, we wish you all the best for the year 2022! May many of your wishes become reality! Click on the video to watch our wishes....



**CHAIRE CYBERCNI  
@EDF PARIS  
(21.9.2021) – AWALEH  
HOUSSEIN  
MERANEH,  
AUTOMATED**

# TALK.CYBERcni.fr

- 26.01.2022 Carol Fung (Professor, Virginia Commonwealth University, USA) – Security and Privacy Protection for IoT Networks
- 23.02.2022 Soumya Banerjee (Senior Vice President Innovation Trasn-Solutions Ltd, Ireland) – Securing the Internet of Things: Lattice-based crypto and side-channel attacks
- 30.03.2022 Ayoub SABBAR (CEO & Founder ORNISEC, Président CLUSIR BRETAGNE, France) – Comment mettre en place un programme efficace de sensibilisation à la cybersécurité au sein des organisations
- 27.04.2022 Cora Perner (Airbus, Germany) – Security for ground and air vehicles
- 25.05.2022 Julien Nocetti (Académie militaire de Saint-Cyr, Titulaire de la Chaire Gouvernance du risque cyber, Rennes S) – Geopolitics: Upgrading the level-playing expertise
- 27.07.2022 Philipp Drieger (Principal Machine Learning Architect, Splunk, Germany) – Thrive in the Data Age how Siemens cybersecurity, operations and business use cases using Splunk
- 05.10.2022 Nicolas RAZY and Nicolas LORIOT (Airbus) – Airbus CyberSecurity – 10 years of challenges and opportunities
- 21.10.2022 Gabi Dreo (University of armed Forces, Germany) – Paradigm shift from cybersecurity to cyber resilience
- 26.10.2022 Aaron Ding (Director of CPI Lab, Tenured Faculty at TU Delft, Associate Professor at Uni Helsinki) – Trustworthiness
- ?? .11.2022 Moritz Flößler (EuropaNova Germany e.V., Germany) – Institutionalizing Cybersecurity: National Strategies and their Implications for Europe
- 23.11.2022 Roland van Rijswijk-Deij (Professor of Network Security at University of Twente, Principal Scientist at NLnet Labs) – Quantum Proving the Internet
- 30.11.2022 Clemens Arzt (Professur für Staats- und Verwaltungsrecht und Recht der Fahrzeugautomatisierung, HWR Berlin, Germany) – T.B.A.
- 07.12.2022 Cristian Hesselman (Director of SIDN Labs, Netherlands)- T.B.A.



**TALK.CYBERCNI.FR**

**Prevent**  
Security-by-Design

**Detect**  
Anomaly Detection

**Mitigate**  
Self-Defend Security Incidents  
Self-Recover from Security Incidents

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Sécurité des Infrastructures critiques

Ethical Algorithms Machine Learning  
Distributed Ledgers Digital Twins

chairecyber-cni.org/

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

THE MONTHLY  
CYBERSECURITY  
SPEAKER SERIES

**27.1.2021 17h00 -**  
**Frédéric Julhes**  
**Head of Airbus**  
**CYBERSECURITY SAS**

chairecyber-cni.org/

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**24/02/2021**  
**17h >>>>>**  
*Securing Smart Homes:  
Cross-Layer Second Line of Defence*

free livestream on  
**YouTube**

**Muhammad Usman, Senior Lecturer University of South Wales**

chairecyber-cni.org

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**31/03/2021**  
**17h >>>>>**  
*Addressing security breaches through  
trusted data management*

free livestream on  
**YouTube**

**Sylvain Guilley, co-founder and CTO at Secure-IC, France**

chairecyber-cni.org

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**16/06/2021**  
**17h CET >>>**  
*Mutter aller Sicherheitslücken:  
Arbitrary Code Execution in  
the Universal Turing Machine*

free live stream on  
**YouTube**  
**LinkedIn**

**Pontus Johnson, Prof. KTH Royal Institute of Technology, Sweden**

chairecyber-cni.org

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**28/05/2021**  
**17h CET >>>**  
*Identifying relevant cyber  
risks quickly with the  
EBIOS RM method*

free live stream on  
**YouTube**  
**LinkedIn**

**Tony Hedoux, Product Owner Cyber at All4Tec, France**

chairecyber-cni.org

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**26/05/2021**  
**17h CET >>>**  
*Dare the breakthrough of  
cybersecurity: an opportunity  
to build sovereignty*

free live stream on  
**YouTube**  
**LinkedIn**

**Cyril Cappi, Senior Research Engineer at SNCF, France**

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AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

**TALK.CYBERCNI.FR**

**30/06/2021**  
**17h CET >>>**  
*Quantum Safe and  
Safe Quantum Data  
communications*

free live stream on  
**YouTube**  
**LinkedIn**

**Michel Barbeau, Professor and Director School CS, Carleton Univ., Canada**

chairecyber-cni.org

AIRBUS AMOSSYS BNP PARIBAS EDF NOKIA Bell Labs

*Tell your friends...*

TALK.CYBERCNI.FR

28/07/2021  
17h CET >>>

free live Stream on  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**Automotive Cybersecurity -  
How to make Millions in a  
\$5.1 Billion Dollar Industry**



**Hasan Ibne Akram, CEO Matrickz GmbH, Germany**

TALK.CYBERCNI.FR

25/08/2021  
17h CET >>>

free live Stream on  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**Resilience for Critical  
Infrastructures:  
a Volunteer Cyber Brigade**



**Carl Denis, AG KRITIS, Germany**

TALK.CYBERCNI.FR

29/09/2021  
17h CET >>>

free live Stream on  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**CyberSchool: Mounting the  
first graduate cybersecurity  
school in France**



**Frédéric Renouard, Pierre-Alain Fouque, Cyberschool, France**



your monthly cybersecurity talk  
TALK.CYBERCNI.FR

27/10/2021  
@5PM CET >>>

free live Stream  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**Cybersecurity Risk Analysis:  
Reaching the Full Potential**



**Dr. Sebastian Labitzke, ITK Engineering GmbH, Germany**

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

24/11/2021  
@5PM CET >>>

free live Stream  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**A Multilayer Cybersecurity Framework  
for the Internet of Vehicles**



**Mohammad Hamad, TU München, Germany**

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

15/12/2021  
@5PM CET >>>

free live Stream  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**DDoS Attacks and Botnet Services**



**Oliver Hohfeld, BTU Cottbus, Germany**



your monthly cybersecurity talk  
TALK.CYBERCNI.FR

25/01/2022  
@5PM CET >>>

free live Stream  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**Security and Privacy  
Protection for IoT Networks**



**Carol Fung, Virginia Commonwealth University, USA**

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

23/02/2022  
@5PM CET >>>

free live Stream  
  
  
[chairyber-cni.org](http://chairyber-cni.org)

**Securing the Internet of Things: Lattice-  
based crypto and side-channel attacks**



**Soumya Banerjee, Trasn-Solutions Ltd.**



Tell your friends...

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

30/03/2022  
@5PM CET >>>

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Comment mettre en place un programme efficace de sensibilisation à la cybersécurité au sein des organisations*

Ayoub Sabbar, CEO & Founder ORNISEC, France

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

27/04/2022  
@5PM CET >>>

Live from NOMS 2022 in Budapest. Join us in room TOBOZ !!

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Security for ground and air vehicles*

Cora Perner, Airbus, Germany

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

13/05/2022  
@2PM CET >>>

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Cybersecurity on nation state level*

Moritz Flössler, EuropaNova Germany e.V., Germany



your monthly cybersecurity talk  
TALK.CYBERCNI.FR

25/05/2022  
@5PM CET >>>

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Cyber-related threats & Geopolitics: Upgrading the level-playing expertise*

Julien Nocetti, Head Chair in Cyber Risk Governance, Rennes SB, France

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

27/07/2022  
@2PM CET >>> 21

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Big Data Cybersecurity and Machine Learning with SPLUNK*

Philipp Drieger (Principal Machine Learning Architect, Splunk, Germany)

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

07/09/2022  
@3PM CET >>> 20

free LIVE Stream  
YouTube  
LinkedIn  
cyberCNI.fr

*Airbus CyberSecurity - 10 years of challenges and opportunities*

Nicolas Razy and Nicolas Lorient, Airbus, France



your monthly cybersecurity talk  
TALK.CYBERCNI.FR

??/??/2022  
@5PM CET >>>

free LIVE Stream  
YouTube  
LinkedIn  
chairyber-cni.org

*Another exciting talk yet to be announced...*

I am the speaker, Institution, Country

your monthly cybersecurity talk  
TALK.CYBERCNI.FR

??/??/2022  
@5PM CET >>>

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YouTube  
LinkedIn  
chairyber-cni.org

*Another exciting talk yet to be announced...*

I am the speaker, Institution, Country



Tell your friends...



# 5th Future-IoT PhD School

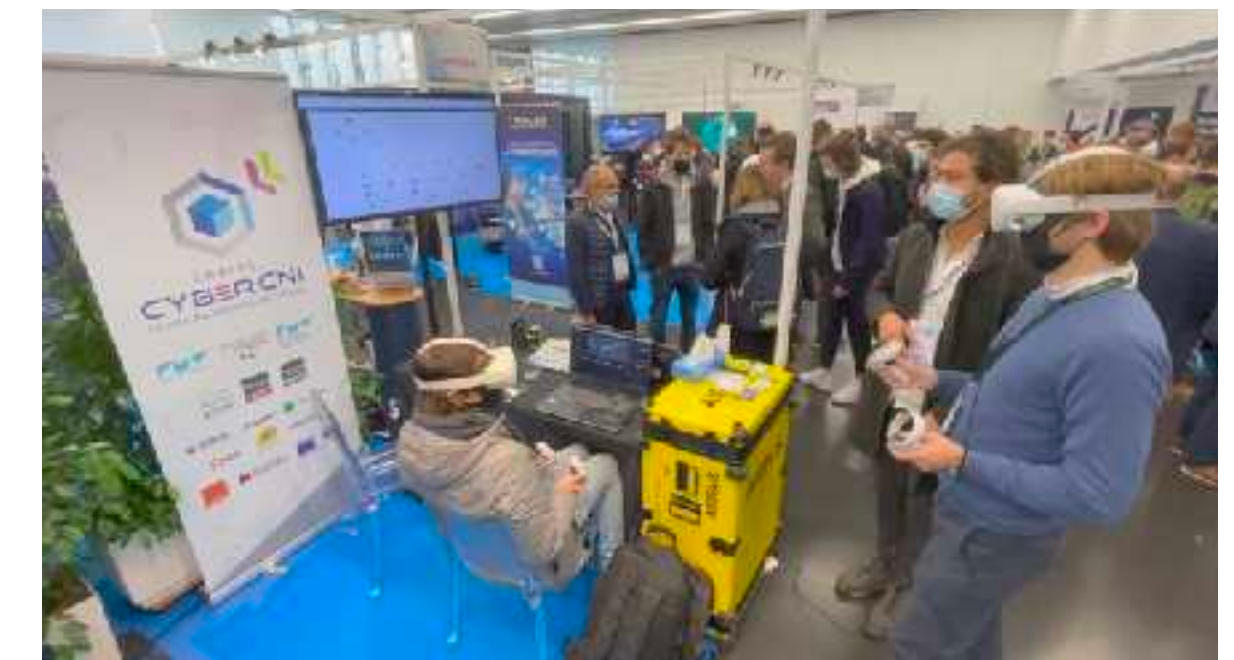
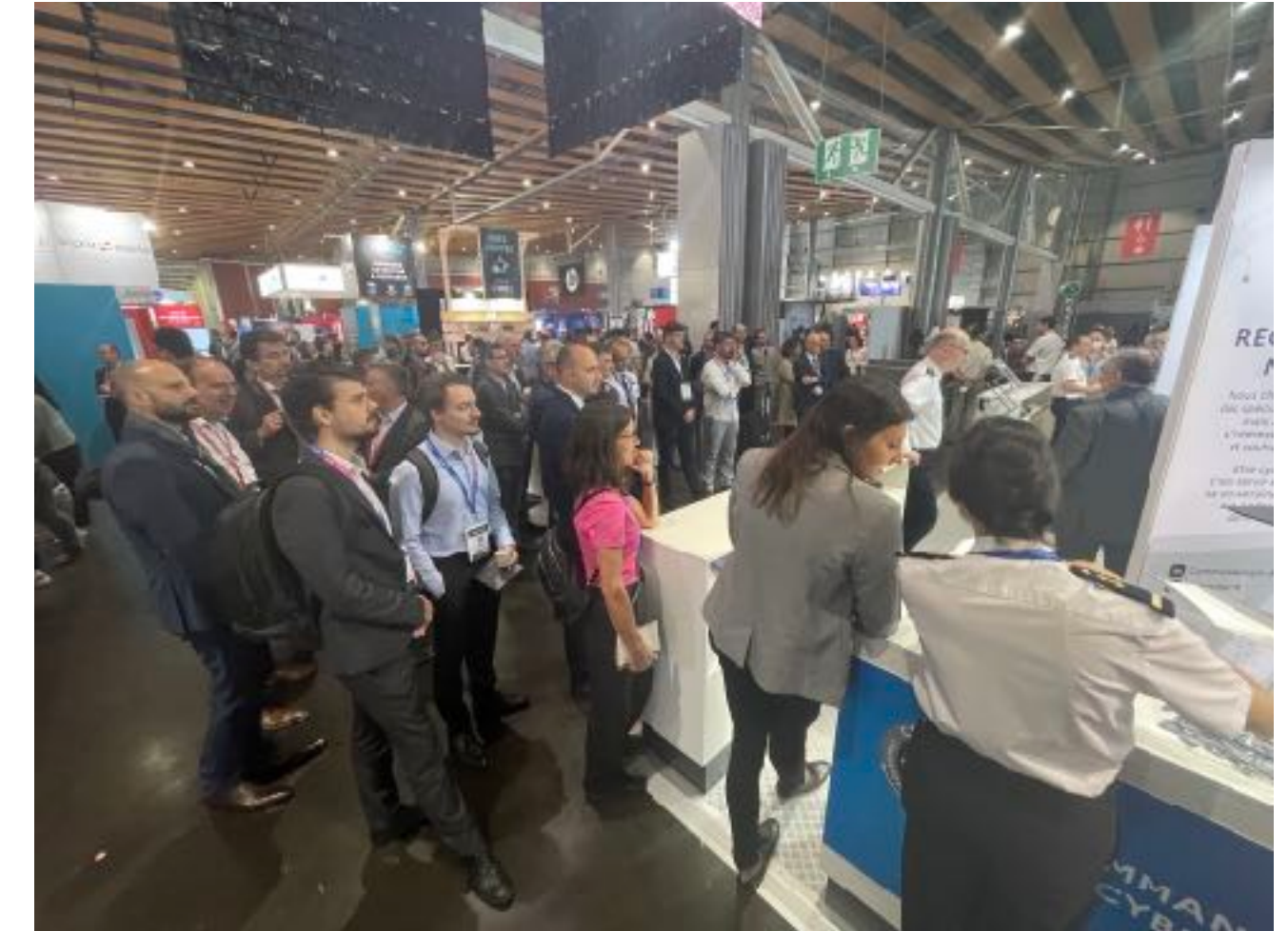
## IoT meets Autonomy

Aug 29-Sep 2, 2022, Berlin



# Big faires

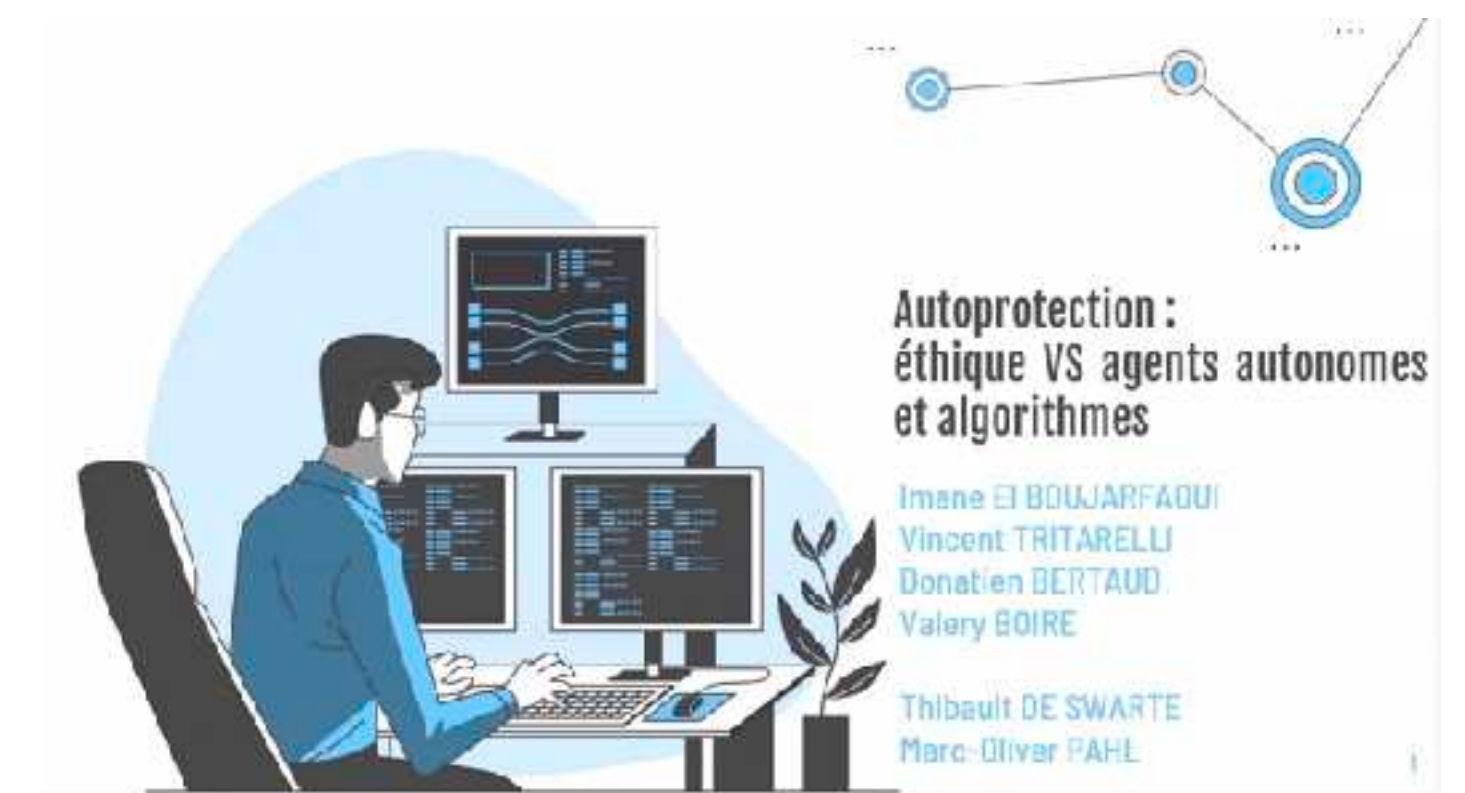
- The chaire participated at the **Forum International de la Cybersécurité (FIC)** in Lille in **June 2022**. The FIC is the biggest cybersecurity event in France, mainly targeting deciders in companies. The focus of the event was mainly on exchanging with potential future partners for the chaire. We had a lot of very interesting exchanges.
- In November 2022, **15.11.-17.11.2022 the chaire is participating at the European Cyber Week (ECW)**. The ECW is oriented more towards research than the FIC and the second biggest cybersecurity event in France. The chair will organize a dedicated session with the following program planned:
  - In addition, we are very happy and grateful to our partner Airbus that we can show our works at their stand throughout the three days.
  - We are looking forward to welcoming you at the ECW.





# January

- The chaire co-supervised a **student project** “Final year student project – Autoprotection : **éthique VS agents autonomes et algorithmes**” that had its presentation in January. The project looked at the ethical aspects of autonomous computing.
- Léo presented his thesis work on Federated Learning for defending Cyber-Attacks in a science popularization program on **French radio France Culture**.



# February

- In February, a delegation of the chaire visited the big crisis management exercise at the ENSIBS.



# March

- The chaire had a big presence at the **colloque “Gestion de crise et numérique : nouvelles menaces et nouvelles solutions”** of the Institut Mines Telecom. Marc-Oliver Pahl gave a presentation on “Cybersécurité collaborative renforcée par la réalité virtuelle pour les infrastructures critiques”. Manel, Zeinab, Leo, Awaleh, Nicolas
- The last PhD student of the phase 1 **Raphael Larsen defended** his thesis on “Traçabilité et intégrité de l’information au sein de systèmes critiques : analyse et proposition de méthodes statistiques“ successfully. Congratulations!



# April

- Marc-Oliver Pahl (IMT Atlantique) and Frédérick Benaben (IMT Mines Albi) were received by **Frédéric Simottel of BFM 01 Business**. Their topic was “comment utiliser la réalité virtuelle au service de la cybersécurité ?”



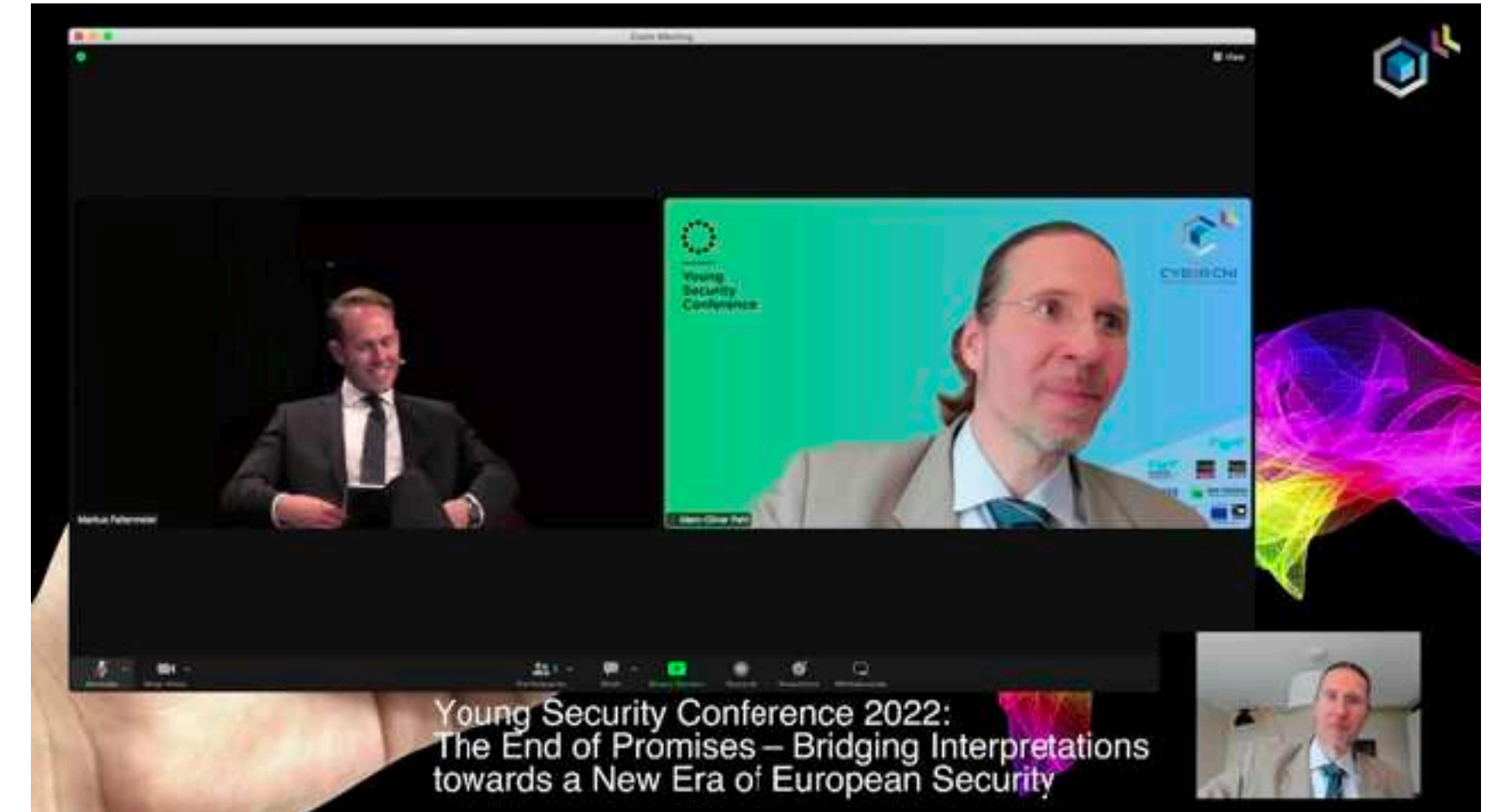
# May

- The chair participated at the Rendez-vous de la **Recherche et de l'Enseignement de la Sécurité des Systèmes d'Information (RESSI)** at Chambon-sur-Lac, France from 10-12 mai 2022. Marc-Oliver Pahl presented the chaire. Léo Lavaur presented his PhD work.
- The chair was part of the organizing committee of the **Network Operations and Management Symposium (NOMS)**.
- At the NOMS, the chair co-organized a **panel on cybersecurity**.
- Also at the NOMS, the chair co-organized a **workshop on IoT Management**.
- **Research Update Spring** in Rennes with keynote of Youssef Laarouchi (EDF)



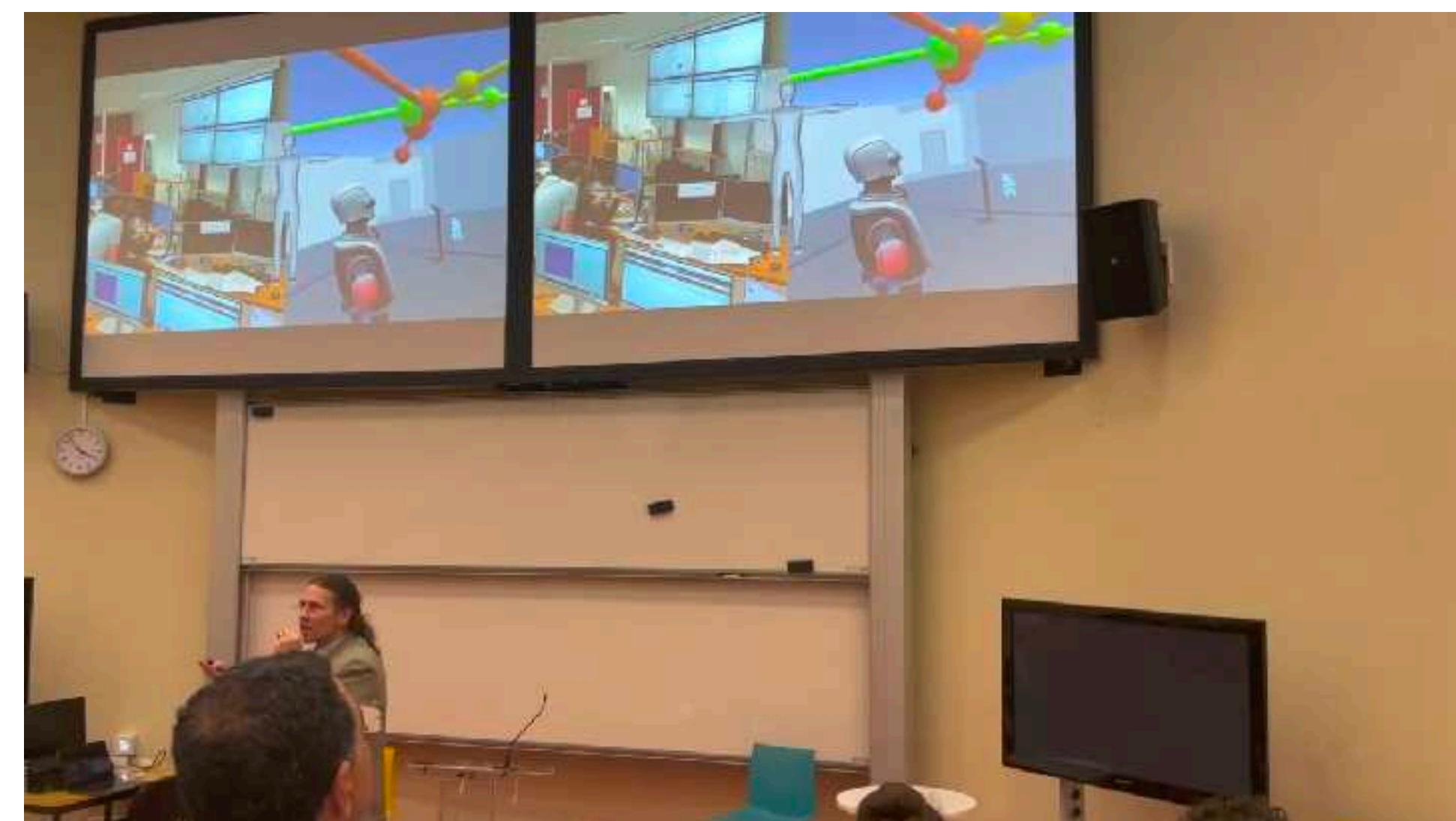
# June

- The chair (Marc-Oliver Pahl) participated at the **Young Security Conference (YSC)** ahead of the Munich Security Conference in a roundtable on **“Cybersecurity – Readjusting Institutional Strategy and the Role of AI”**.



# July

- The chair presented at the **research seminar of IMT Atlantique** with a presentation on “The chair presented at the research seminar of IMT Atlantique with a presentation on “A Security-Operation Center in the Metaverse”.



# August

- Holidays :-)





# September

- The chair organized the **IMT Webinaire Risques&Cybersécuritéés**: Marc-Oliver Pahl “Migrer le SOC vers le Metaverse – virtualiser le Security Operation Center”
- The chaire (Marc-Oliver Pahl) participated at an **interview with Deutschlandfunk on the European Data Act**.
- The chaire (Marc-Oliver Pahl) participated at the **Heidelberg Laureate Forum** with several Turing Award winners.
- The chaire participated at the **Bits and Pretzels** festival in Munich and co-organized a **round-table with the German-French Academy for the Industry of the Future on “ Metaverse – threat or opportunity for the French-German industry?”**



# October

- Research Update Fall SNCF



# November

- Organization of a **half-day event at the European Cyber Week**
- **Presence at the stand of Airbus** with Demos
- 2 presentations at C&ESAR



# December

- T.B.A.



# Testimonials of our partners

CHAIRE

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Sécurité des infrastructures critiques



“Let’s roll - cybersecurity for mobile infrastructures:  
a successful collaboration between SNCF and the chair CyberCNI”



**Cyril Cappi**

Team Leader Rail Safety System at SNCF  
VP R&D at Fédération Française de la  
Cybersécurité

**4:00**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr

“Cybersecurity as central element in the DNA of IMT Atlantique  
The chair CyberCNI in its heart”



**4:00**  
Stop

**Christophe LEROUGE**  
Director

Sécurité des infrastructures critiques

cyberCNI.fr



“Cybersecurity as central element in the DNA of IMT Atlantique  
The chair CyberCNI in its heart”



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

**Véronique STEPHAN**  
Development & Corporate  
Relations

Sécurité des infrastructures critiques

**4:00**  
Stop



“The Chair CyberCNI as key actor of the ecosystem of the Pôle d’Excellence Cyber (PEC)”

PÔLE D’EXCELLENCE  
**CYBER**

Colonel

Pierre-Arnaud BORRELLY

Délégué Général

**4:00**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr



“The role of academic partnerships within Airbus Defence and Space Cybersecurity at the example of the chair CyberCNI”



**AIRBUS**

**Nicolas Razy**

Head of Defence and Strategic Programmes France, Airbus

**4:00**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr

“The added value of the collaboration with the Chair CyberCNI for our bank”



**BNP PARIBAS**

La banque d'un monde qui change

**Marc-Michel STACK**

Head of Group IT Technology of  
Intelligence

**4:00**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr

# “Energy & CyberCNI : The role of the collaboration for EDF”



Etienne DECOSSIN

Responsable du programme Tech  
de l'information, simulation avancée

**4:00**  
Stop



Youssef LAAROUCHI

Cybersecurity Project Manager

“How to join the club ? 7 reasons for becoming a partner of the chair CyberCNI”



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

**Marc-Oliver PAHL**

Chairholder chair CyberCNI

Professor IMT Atlantique

Sécurité des infrastructures critiques

# Why should you engage as a partner at the chaire?

Well, there are at least 8 reasons...

1. Extending competencies in Cybersecurity / participating in excellent research from the very top Grandes Ecoles in France on this subject (IMT Atlantique, Telecom Paris, Telecom SudParis): At the chaire we do excellent research on diverse aspects of cybersecurity for distributed networked systems.
2. Access to many more research activities than you pay for: Besides that a big advantage for you could be that you will be able to follow all thesis obviously, which means though only paying for two PhD theses you have access to the many we will have, typically 10 in parallel.
3. More opportunities for joint research, e.g. with final year students, in teaching, priority in hiring interns, working on project proposals in the context of the EU, ANR, etc.
4. Recruitment option: At the end of each thesis, the partners receive the CV of the PhD and can try to recruit her/him. If the collaboration works well, it should be simple to recruit the person afterwards.

# Why should you engage as a partner at the chaire?

Well, there are at least 8 reasons...

5. „Neutral ground” exchange possibility with the other partners: In addition, an important aspect is the regular exchange on neutral terrain with the other partners.
6. Access to our Cyber CNI experimentation platform for making joint experimentation with us and possibly in-between multiple partners, and priority access to our facilities, including several cyber-physical research labs, etc.
7. Tax benefit: via mécénat. The Mines Telecom Foundation will be happy to answer any questions regarding this.
8. Additional Visibility: Joint publications, participation possibility in the diverse activities of the chaire, including:
  - <https://talk.cybercni.fr>, the cybersecurity speaker series
  - <https://school.future-iot.org>, the PhD school series on IoT
  - <https://being-human-with-algorithms.org>, the series on the digital transformation
  - regular visibility in the press through the chaire
  - possibilities for press interviews organized by the chaire
  - participation possibility in round-tables etc.
  - ...







## *Session II*

Excellent cybersecurity research around current challenges in cybersecurity for critical infrastructures

CYBERCNI

Sécurité des infrastructures critiques

11:00 am Cybersecurity as key factor in the ecosystem of Brittany and the role of the chair CyberCNI within *Jérôme Tré-Hardy, Conseiller régional délégué à la transition numérique et la cyber- Région Bretagne*



11:05 am Research Activities of the Chaire *Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*



11:10 am **90sec per PhD thesis**

11:30 am **Panel:** How safe are our critical infrastructures under the current geopolitical circumstances?

The recent geopolitical developments show us once more how fragile our critical infrastructures are. With the outbreak of the war in Ukraine, diverse disruptions in systems such as energy production or communication occurred. In this panel we discuss the new threat potential we are facing today.

- *Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes (Moderation)*
- *Cyril Cappi, Team Leader Rail Safety System at SNCF / VP R&D at Fédération Française de la Cybersécurité*
- *Gianluca Vannuccini, Director Dir Système Information, Infrastructures Technologiques et Innovation, Toscany*
- *Éric Labouré, Nokia Head of Business Operations, Managed Security Services, Nokia*
- *Alban Odrejeck, Co-founder/CTO & speaker chez ANOZR WAY*
- *Reda Yaich, Senior Researcher SystemX*



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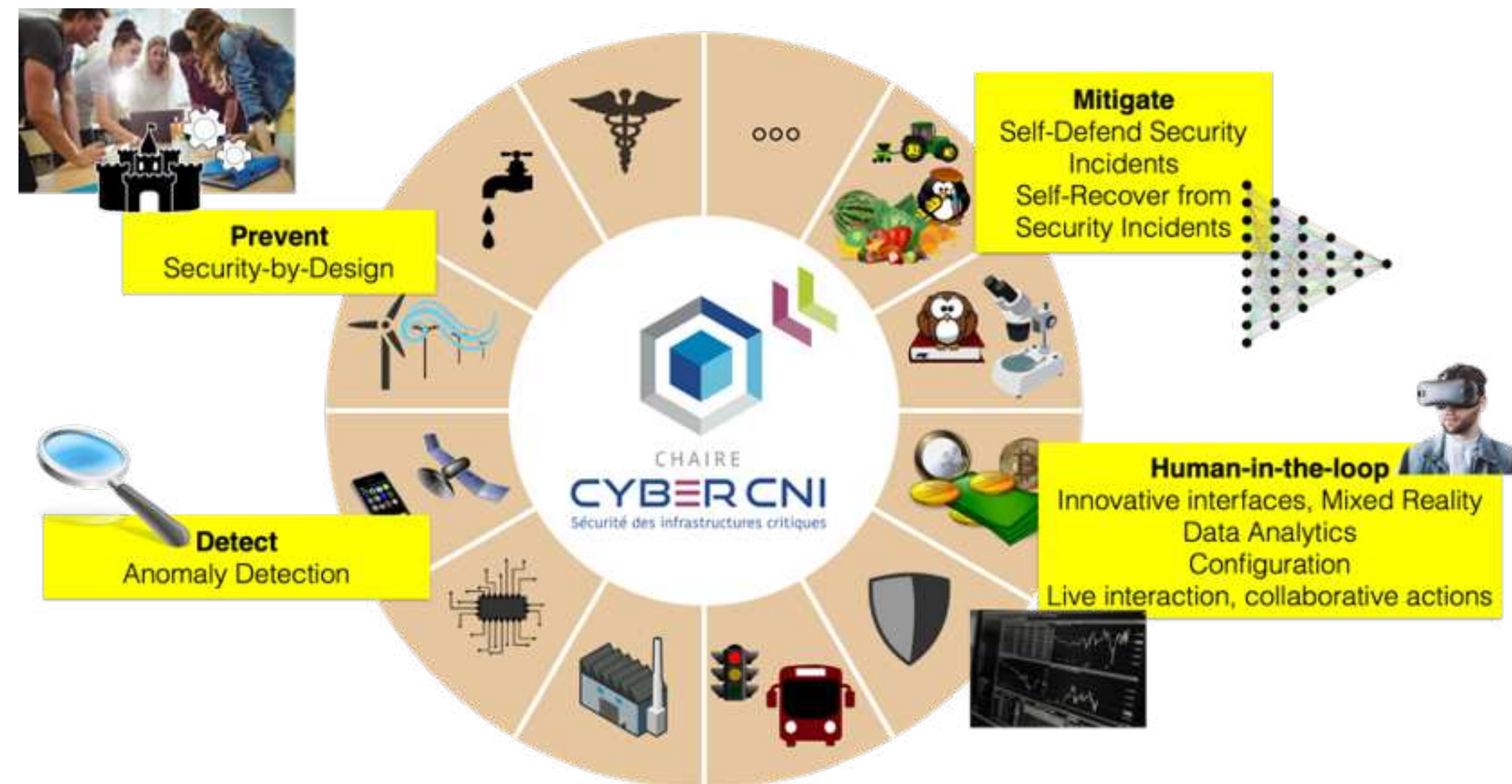
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Nicolas DELCOMBEL [PhD student] [IMT Atlantique]
- 11:26 am Immersive Cybersecurity  
Anthony DAVID [PhD student] [IMT Atlantique]



We continue at 11h00 CET

3

# Chair Cybersecurity for Critical Networked Infrastructures @ECW 2022

**Marc-Oliver Pahl**

Titulaire de la chaire cybersécurité des  
infrastructures critiques ([cyberCNI.fr](http://cyberCNI.fr))



Sécurité des infrastructures critiques



## *Session 1*

The chaire Cybersecurity of Critical Networked Infrastructures ([cyberCNI.fr](http://cyberCNI.fr)) as important pillar in the French and European cybersecurity ecosystem

CYBERCNI  
Sécurité des infrastructures critiques

09:30 am

Chaire cyberCNI.fr - Excellence in cybersecurity since 2016  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*



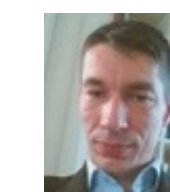
09:45 am

Cybersecurity as central element in the DNA of IMT Atlantique - the chair CyberCNI in its heart  
*Christophe Lerouge, Director of IMT Atlantique*  
*Veronique Stephan, Development and Corporate relations, IMT Atlantique*



09:55 am

The chaire CyberCNI as key actor of the ecosystem of the Pôle d'Excellence Cyber (PEC)  
Colonel Pierre-Arnaud Borrelly, Délégué général du PEC,  
Commandant du Groupement de cyberdéfense des Armées (COMCYBER/GCA)



10:00 am

The role of academic partnerships within Airbus Defence and Space Cybersecurity at the example of the chair  
*CyberCNI, Nicolas Razy, Head of Defence and Strategic Programmes France, Airbus*



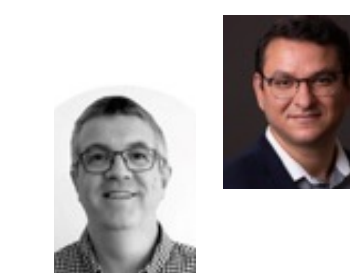
10:05 am

The added value of the collaboration with the chair CyberCNI for our bank  
*Marc-Michel Stack, Head of Group IT Technology Intelligence, BNP PARIBAS*



10:10 am

Energy and CyberCNI - the role of the collaboration for EDF  
Etienne Decossin, Responsable du programme Tech de l'information - Simulation avancée, EDF R&D  
Youssef Laarouchi, Cybersecurity Project Manager, EDF



10:15 am

Let's roll - cybersecurity for mobile infrastructures: a successful collaboration between SNCF and the chair  
CyberCNI, Cyril Cappi, Team Leader Rail Safety System at SNCF /  
VP R&D at Fédération Française de la Cybersécurité

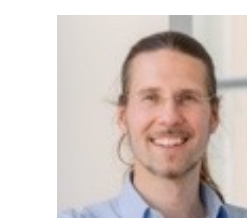


10:20 am

How to join the club? 7 Reasons for becoming a partner of the chair CyberCNI  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*

10:25 am

Outlook to the research session at 11h00  
Networking





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Excellent cybersecurity research around current challenges in cybersecurity for critical infrastructures

CYBERCNI

Sécurité des infrastructures critiques

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- *Reda Yaich, Senior Researcher SystemX*





“Cybersecurity as key factor in the ecosystem of Brittany and the role of the chair CyberCNI within”



UNION EUROPÉENNE  
UNANIEZH EUROPA



L'Europe s'engage  
en Bretagne / Avec le Fonds européen  
de développement régional



Jérôme TRE-HARDY  
Conseiller régional  
Région Bretagne

Sécurité des infrastructures critiques

4:00  
Stop



# 90 Sec Research Pitches

CHAIRE

CYBERCNI

Sécurité des infrastructures critiques

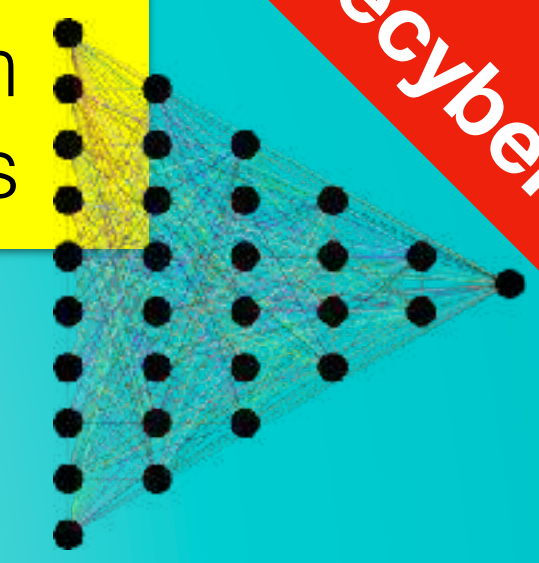
<https://www.chairecyber-cni.org/>



**Prevent**  
Security-by-Design



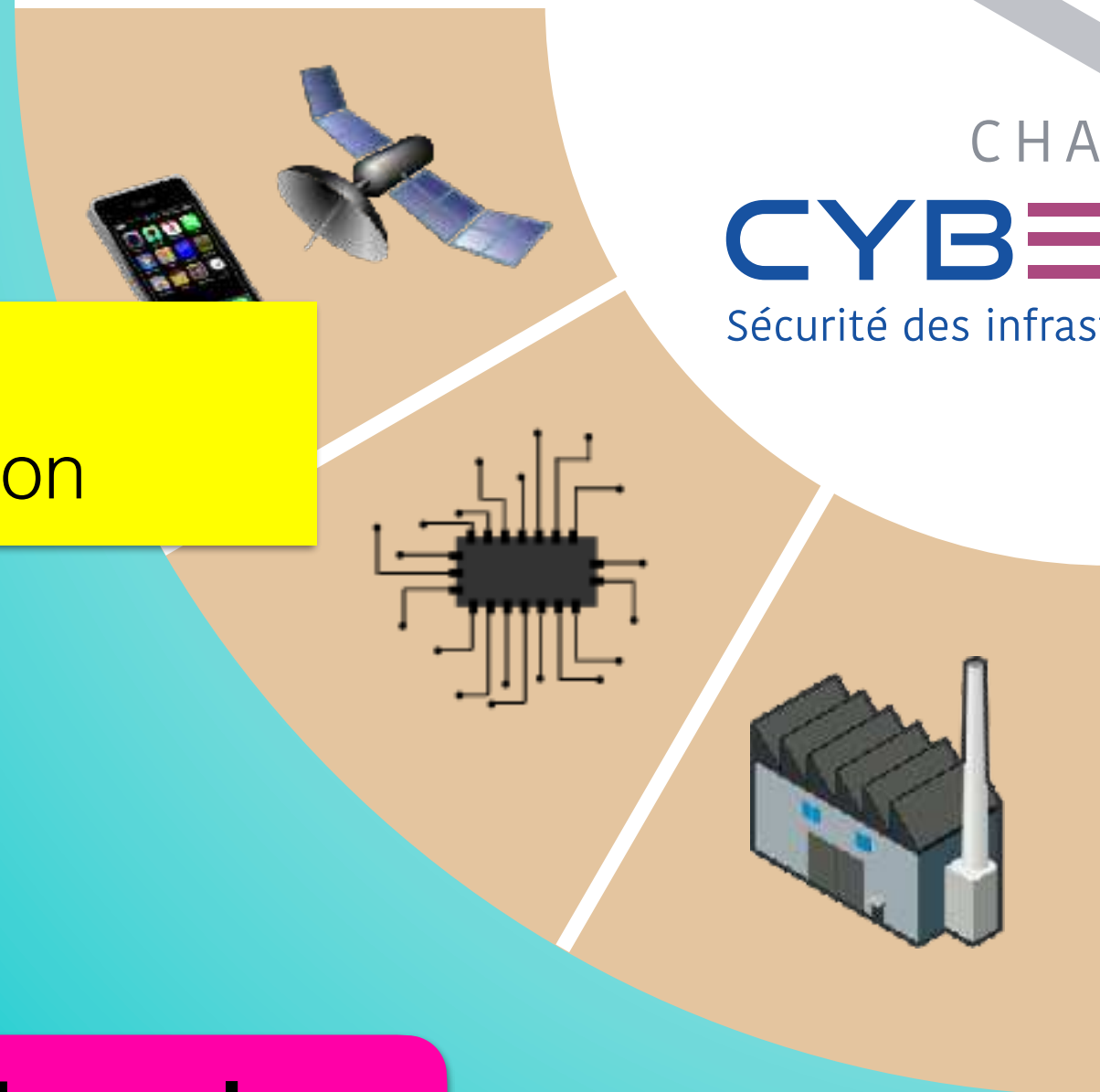
**Mitigate**  
Self-Defend Security Incidents  
Self-Recover from Security Incidents



**Human-in-the-loop**  
Innovative interfaces, Mixed Reality  
Data Analytics  
Configuration  
Live interaction, collaborative actions



**Detect**  
Anomaly Detection



Ethical Algorithms Machine Learning  
Distributed Ledgers Digital Twins



 **Prevent**

 **Detect**


 **Mitigate**


 **Human-in-the-loop**


 T5 : Software Defined Security for Internet of Things

 T9 : Federated threat detection and defense

**AI**

T2: 3D interfaces for Cybersecurity 

 T4: Optimisation of security risks through learning on heterogeneous data


T1 : Automated learning and handling of Cyber-Physical Attacks 


T6' : Jumeaux numériques pour la cyber-sécurité 

 Cybersecurity for connected mobile systems

 Collaborative Cybersecurity

 [IMTA] P3-1-Digital-Twin: Modular Digital Twin-based cyber resilience

**TP**  
 [TP] P3-3-Codeledger: CodeLedger: tracking the provenance of critical open source components

 [IMTA] P3-2-Piloting: Real-world detection and mitigation of AI-based cyberattacks and defence mechanisms

 [TSP] P3-4: How can crypto-watermarking-DLTs improve trust in the use of AI for cybersecurity? 

 [IMTA] P3-6-Software: Improving resilience through securing connected software in IT and OT (PostDoc)

 [IMTA] P3-5-Interface: Multi-Modal Collaborative Cybersecurity Operation Center

Engineer

PostDoc

PhD student

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## Axe 4: Human-in-the-loop

- 11:24 am Cyber Sécurité en Réalité Virtuelle,  
Nicolas DELCOMBEL [PhD student] [IMT Atlantique]
- 11:26 am Immersive Cybersecurity  
Anthony DAVID [PhD student] [IMT Atlantique]



Axe 1 : Prevent

“Software-defined security for network function virtualization”



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

**Manel SMINE**

PhD Student

**1:30**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr



Marc-Oliver Pahl | cyberCNI.fr

## Axe 1 : Prevent

“Optimization of security risk for learning on heterogeneous data”



TELECOM  
Paris



Hassan CHAITOU

PhD Student

**1:30**  
Stop

CHAIRE  
CYBERCNI  
Sécurité des infrastructures critiques

Axe 1 : Prevent

“Digital Twins for Cybersecurity”



Zeinab RAHAL

PhD Student

**1:30**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr



Marc-Oliver Pahl | cyberCNI.fr



## Axe 1 : Prevent

“CodeLedger : tracking the provenance of critical open source components”



TELECOM  
Paris



Luis SOEIRO  
PhD Student

**1:30**  
Stop

Sécurité des infrastructures critiques

cyberCNI.fr

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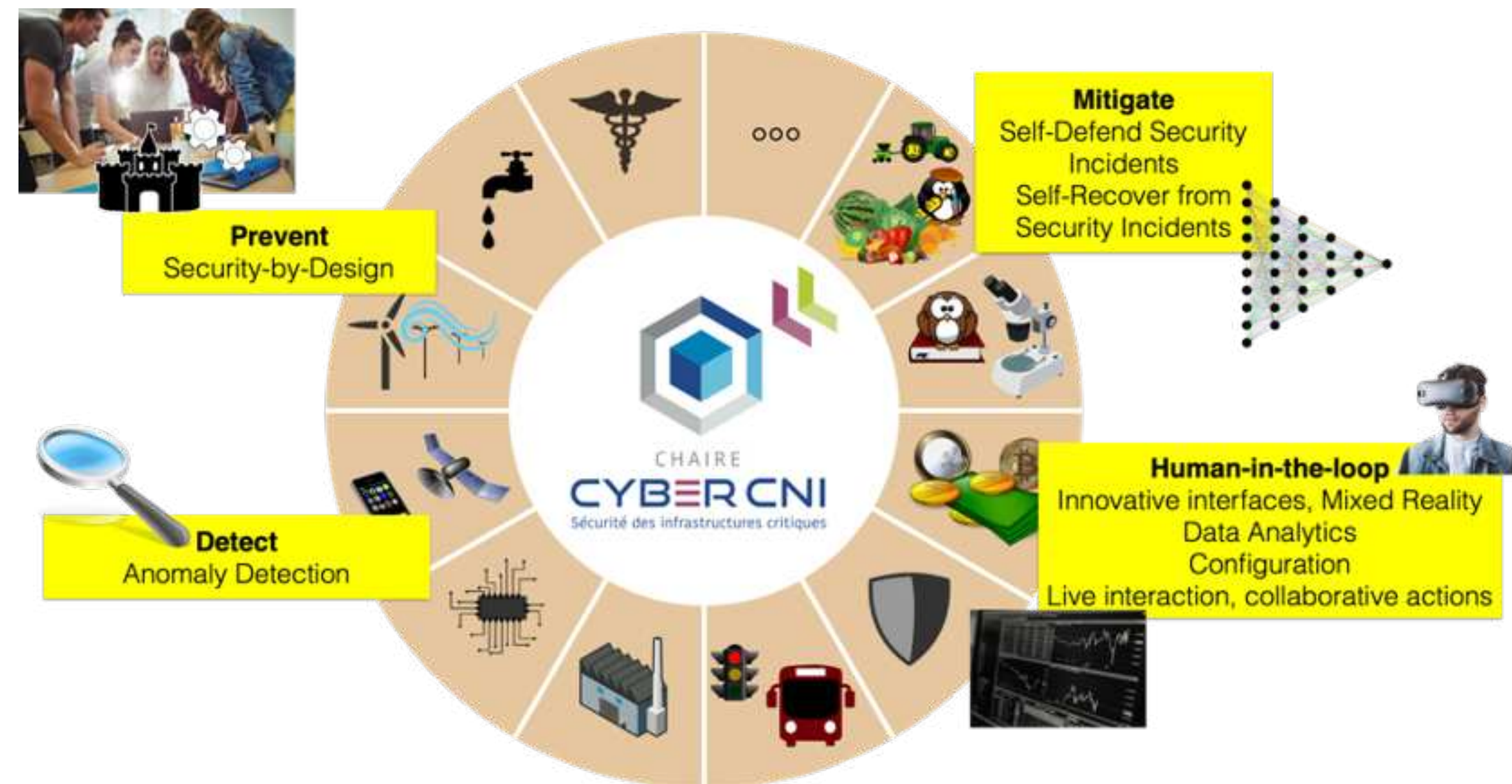
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Anthony DAVID [PhD student] [IMT Atlantique]



# “Federated learning for defending cyber-attacks”



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

**Léo LAVAUUR**  
PhD Student

**1:30**  
Stop

CHAIRE  
CYBERCNI  
Sécurité des infrastructures critiques

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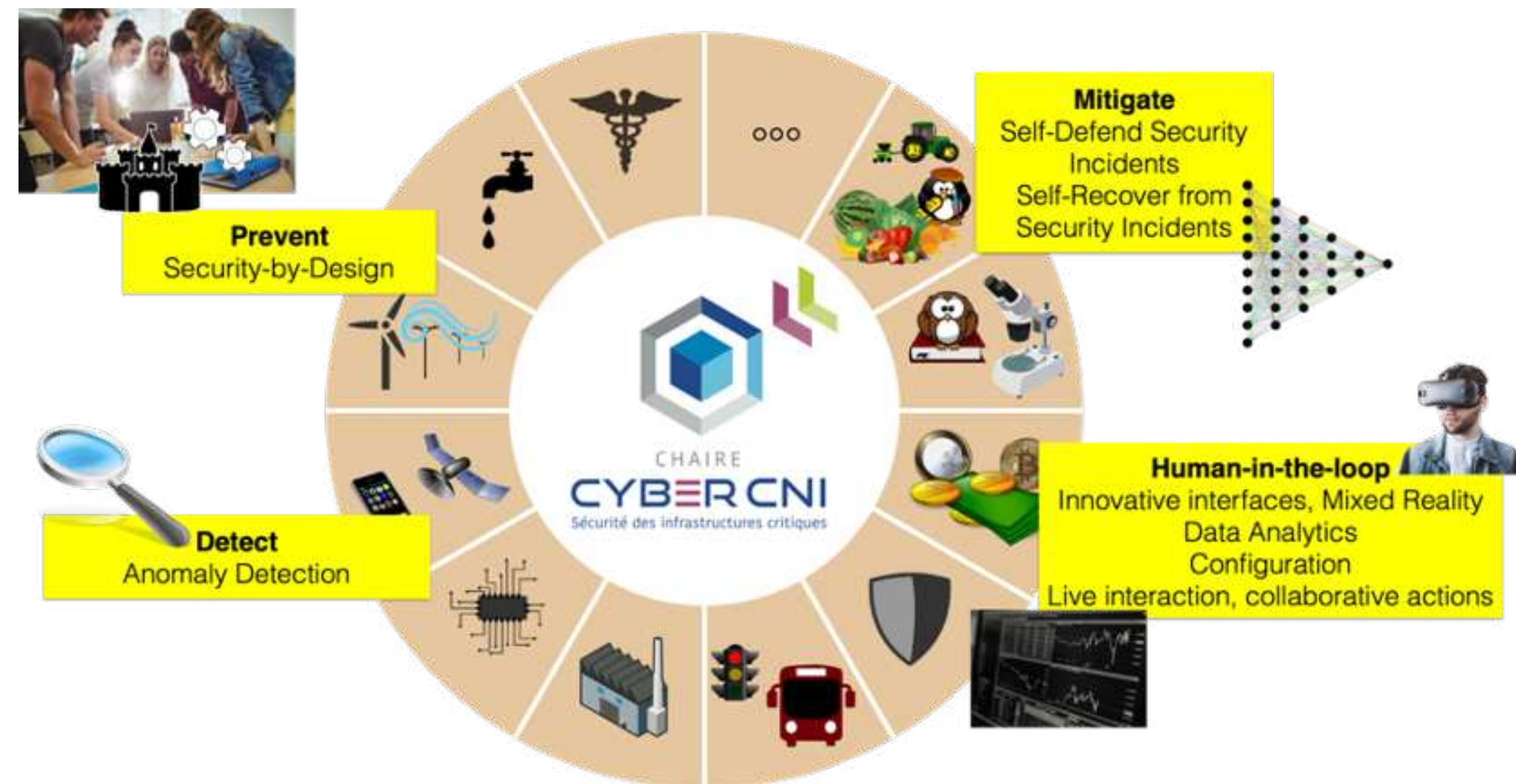
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“Collaborative cybersecurity”



**IMT Atlantique**  
Bretagne-Pays de la Loire  
École Mines-Télécom

**Loïc MILLER**  
Postdoc

**1:30**  
Stop

Sécurité des infrastructures critiques

“Securing mobile infrastructures”



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

**Nisrine IBADAH**

Postdoc

**1:30**  
Stop

Sécurité des infrastructures critiques

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Anthony DAVID [PhD student] [IMT Atlantique]



“Cyber sécurité en réalité virtuelle”



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

**1:30**  
Stop

Nicolas DELCOMBEL  
PhD Student

Sécurité des infrastructures critiques



“Immersive cybersecurity”



**IMT Atlantique**

Bretagne-Pays de la Loire  
École Mines-Télécom

Anthony DAVID

PhD Student

**1:30**  
Stop

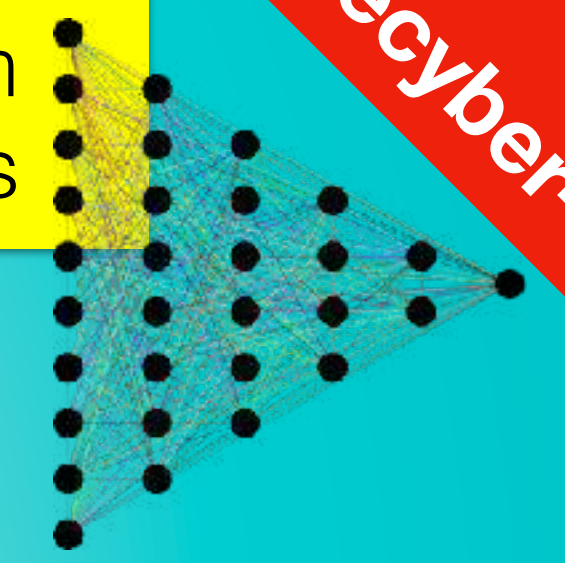
Sécurité des infrastructures critiques

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**Prevent**  
Security-by-Design

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Self-Defend Security Incidents  
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**Human-in-the-loop**  
Innovative interfaces, Mixed Reality  
Data Analytics  
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Live interaction, collaborative actions

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Anomaly Detection

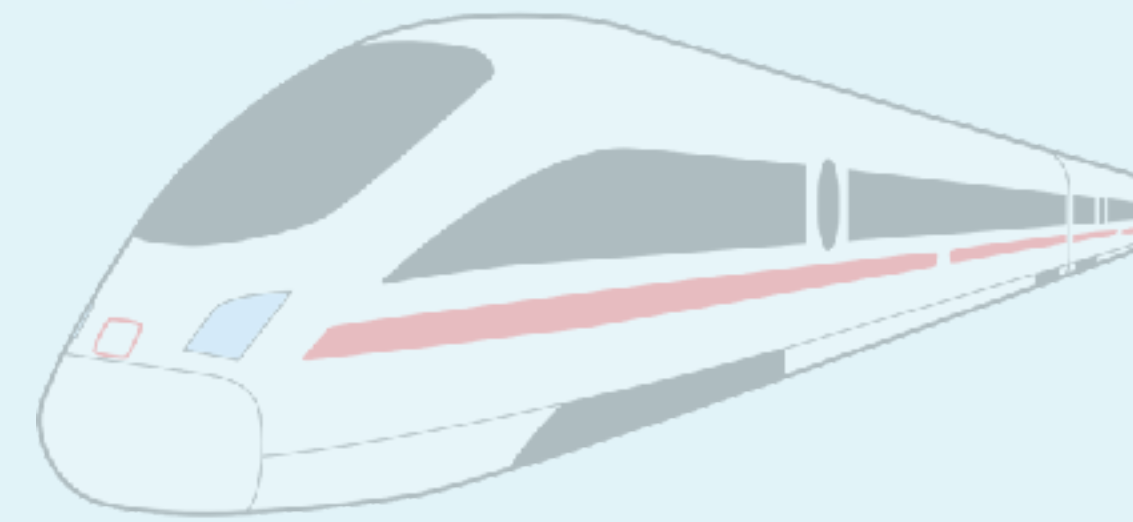


Ethical Algorithms Machine Learning  
Distributed Ledgers Digital Twins



“How safe are our critical infrastructures under the current geopolitical circumstances ?”

# Panel Discussion



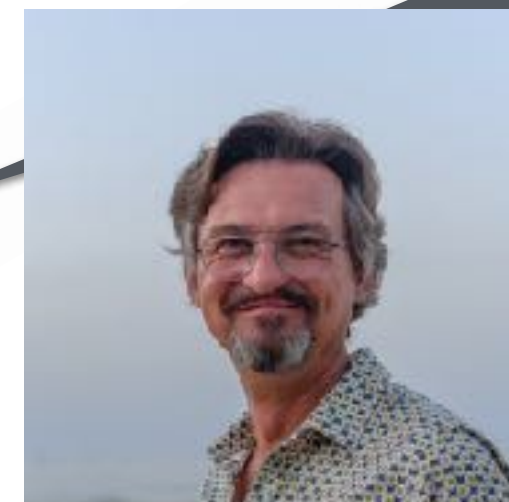
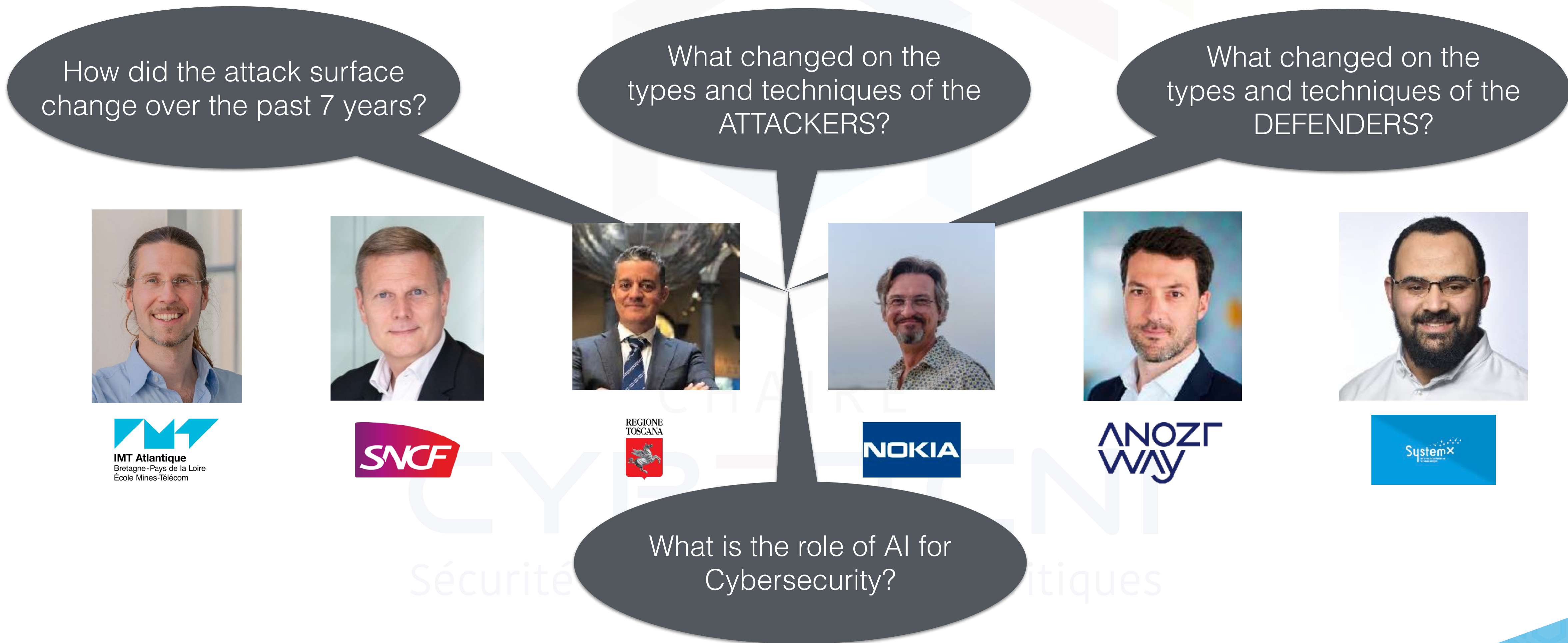
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# “How safe are our critical infrastructures under the current geopolitical circumstances ?”



- **Marc-Oliver Pahl**, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes (Moderation)
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# “How safe are our critical infrastructures under the current geopolitical circumstances ?”



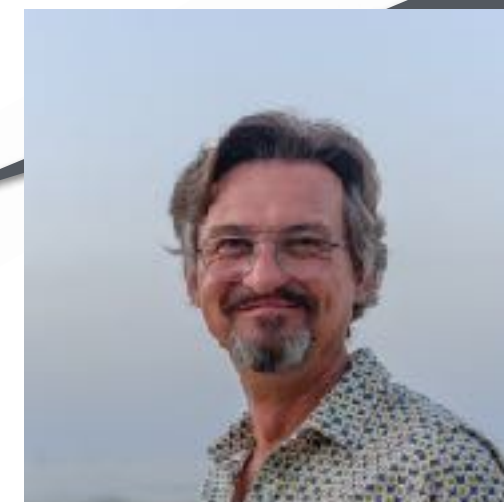
# “How safe are our critical infrastructures under the current geopolitical circumstances ?”

How did the attack surface change over the past 7 years?

What changed on the types and techniques of the ATTACKERS?

What changed on the types and techniques of the DEFENDERS?

What is the role of AI for Cybersecurity?



# “How safe are our critical infrastructures under the current geopolitical circumstances ?”

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# Chair Cybersecurity for Critical Networked Infrastructures @ECW 2022

**Marc-Oliver Pahl**

Titulaire de la chaire cybersécurité des  
infrastructures critiques ([cyberCNI.fr](http://cyberCNI.fr))



Sécurité des infrastructures critiques

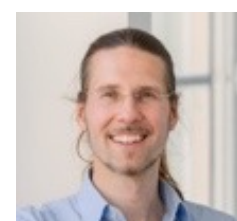
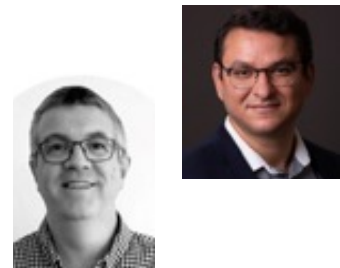


## *Session 1*

The chaire Cybersecurity of Critical Networked Infrastructures (cyberCNI.fr) as important pillar in the French and European cybersecurity ecosystem

CYBERCNI  
Sécurité des infrastructures critiques

- 09:30 am Chaire cyberCNI.fr - Excellence in cybersecurity since 2016  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*
- 09:45 am Cybersecurity as central element in the DNA of IMT Atlantique - the chair CyberCNI in its heart  
*Christophe Lerouge, Director of IMT Atlantique*  
*Veronique Stephan, Development and Corporate relations, IMT Atlantique*
- 09:55 am The chaire CyberCNI as key actor of the ecosystem of the Pôle d'Excellence Cyber (PEC)  
Colonel Pierre-Arnaud Borrelly, Délégué général du PEC,  
Commandant du Groupement de cyberdéfense des Armées (COMCYBER/GCA)
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*CyberCNI, Nicolas Razy, Head of Defence and Strategic Programmes France, Airbus*
- 10:05 am The added value of the collaboration with the chair CyberCNI for our bank  
*Marc-Michel Stack, Head of Group IT Technology Intelligence, BNP PARIBAS*
- 10:10 am Energy and CyberCNI - the role of the collaboration for EDF  
Etienne Decossin, Responsable du programme Tech de l'information - Simulation avancée, EDF R&D  
Youssef Laarouchi, Cybersecurity Project Manager, EDF
- 10:15 am Let's roll - cybersecurity for mobile infrastructures: a successful collaboration between SNCF and the chair  
CyberCNI, Cyril Cappi, Team Leader Rail Safety System at SNCF /  
VP R&D at Fédération Française de la Cybersécurité
- 10:20 am How to join the club? 7 Reasons for becoming a partner of the chair CyberCNI  
Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes
- 10:25 am Outlook to the research session at 11h00  
Networking





## *Session II*

Excellent cybersecurity research around current challenges in cybersecurity for critical infrastructures

CYBERCNI

Sécurité des infrastructures critiques

11:00 am Cybersecurity as key factor in the ecosystem of Brittany and the role of the chair CyberCNI within *Jérôme Tré-Hardy, Conseiller régional délégué à la transition numérique et la cyber- Région Bretagne*



11:05 am Research Activities of the Chaire  
*Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes*



11:10 am **90sec per PhD thesis**

11:30 am **Panel:** How safe are our critical infrastructures under the current geopolitical circumstances?

The recent geopolitical developments show us once more how fragile our critical infrastructures are. With the outbreak of the war in Ukraine, diverse disruptions in systems such as energy production or communication occurred. In this panel we discuss the new threat potential we are facing today.

- *Marc-Oliver Pahl, Titulaire de la chaire cyberCNI.fr, IMT Atlantique, Rennes (Moderation)*
- *Cyril Cappi, Team Leader Rail Safety System at SNCF / VP R&D at Fédération Française de la Cybersécurité*
- *Gianluca Vannuccini, Director Dir Système Information, Infrastructures Technologiques et Innovation, Toscany*
- *Éric Labouré, Nokia Head of Business Operations, Managed Security Services, Nokia*
- *Alban Odrejeck, Co-founder/CTO & speaker chez ANOZR WAY*
- *Reda Yaich, Senior Researcher SystemX*



For more  
info  
take a look  
at  
[https://  
cyberCNI.fr/](https://cyberCNI.fr/)

