

A young girl is the central focus, smiling warmly. Her face is adorned with vibrant pink and yellow powder. Her hands are also covered in the same colors. Several other hands, also coated in the same vibrant powder, are gently touching her face and hair, creating a sense of affection and celebration. The background is softly blurred, showing more people in similar attire, suggesting a festive or cultural event.

We are CRF

A CANON GROUP COMPANY



For nearly 33 years, CRF conducts
RESEARCH for **CANON GROUP** ...

... in the domains of **IMAGE PROCESSING**,
NETWORKING and more recently **ARTIFICIAL
INTELLIGENCE**, ...

... leveraging specific location in **EUROPE**

CRF BY NUMBERS



Word-class cluster
"Image & Network"



Active participation to 4
major SDOs



Contributions: JPEG2000,
DECT, Web services, HEVC,
VVC, DASH, IEEE 802.11



33 years in
business



Located in rich
Academic
Research Area
Rennes (FR)



Around 50 permanent staff
(40 Engineers)



€ 7.9 million
revenue in 2022



80% Global R&D
20% BU specific

100% EU inspired

343 worldwide
subsidiaries in 2020

184,034 employees
worldwide in 2021

€26,920 million
net sales in 2021
€1,645 million net
income in 2021

Up to 8% of sales invested in
research and development
every year

Contribute to the EU R&D

Cluster 1	Cluster 4	Cluster 5	Cluster 6
Health	Digital Industry & Space	Climate Energy & Mobility	Food, Bioeconomy, Agriculture
€8.246 billion	€15.349 billion	€15.123 billion	€8.952 billion
Innovative Health Initiative	Key Digital Technologies	Clean Hydrogen	Rescuing Biodiversity to Safeguard Life on Earth
Global Health Partnership	Smart Network & Services	Clean Aviation	Climate Neutral Sustainable & Productive Blue Economy
Transformation of health Systems	High Performance Computing	Single European Sky ATM Research 3	Water4ALL
Chemical Risk assessment	European Metrology	Europe's Rail	Animla Health & Welfare
ERA for Health	AI-DATA-Robotics	Connected and Automated Mobility (CCAM)	Accelerating Farming System Transitions
Rare diseases	Photonics	Batteries	Agriculture of DATA
One-Health Anti Microbial Resistance	Made in Europe	Zero-emission waterborne transport	Safe & Sustainable Food Systems
Personalized Medicine	Clean steel-low carbon steelmaking	Zero-emission road transport	
	Process4Planet	Built4People	
	Global competitive space systems	Clean Energy Transition	
		Driving Urban Transitions	

5: 6G SNS open call
 STREAM#D (Phase 1 project) **6GSNS**
 IMAGINE B5G, FIDAL, TRAILSNET, ...

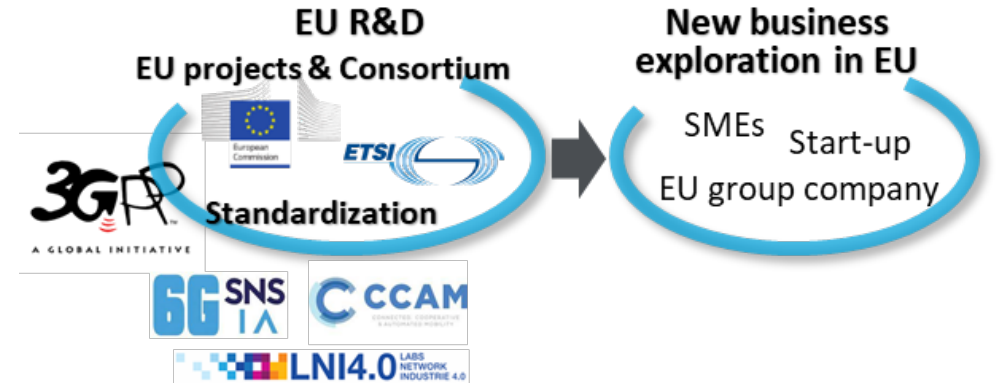
6: Call proposal (AI4SAFETY, IEXODDUS)

3: SELFY (2022) **SELFY**

2: ROADVIEW (2022) **ROADVIEW**

1: SECREDAS (2019) **SECREDAS**

4: MYRTUS (2024) **MYRTUS**



HORIZON EUROPE PILLAR II – Global challenges & European Industrial competitiveness

Role in SELFY - ROADVIEW



Toolbox for Self awareness, Self protection, Self healing in Trusty CCAM

CRF in charge of RSU* toolset

Technologies related to the collection of information on the state of the different components of the CCAM ecosystem and in-the-field testing of security controls :

- Sensor data aggregation,
- Sensor fusion,
- Situation analysis

Situational Awareness and Collaborative Perception

SITUATIONAL AWARENESS concept focuses on the self-assessment mechanisms of the CCAM ecosystem systems.

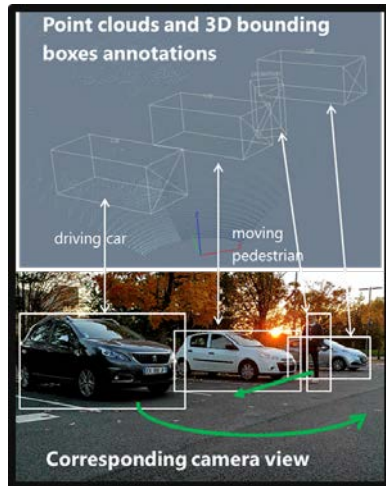
Test environment & demo

- IDIADA (Spain)
- Other under discussion



Fixed cars
Moving pedestrian,
driving cars

*RSU: Road Side Unit

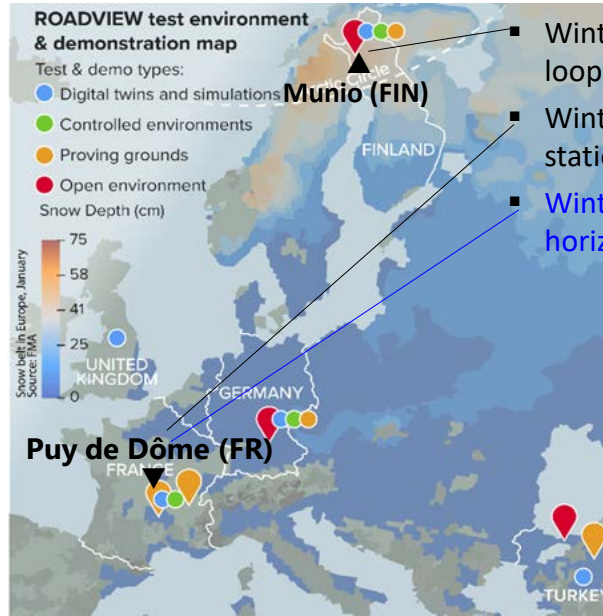


Perception system in hard weather conditions*

*High humidity, strong snow, low temperature, low light

Able to adapt to weather condition

- Multi sensor detection
- Connection to weather station
- "Weather aware" VCA

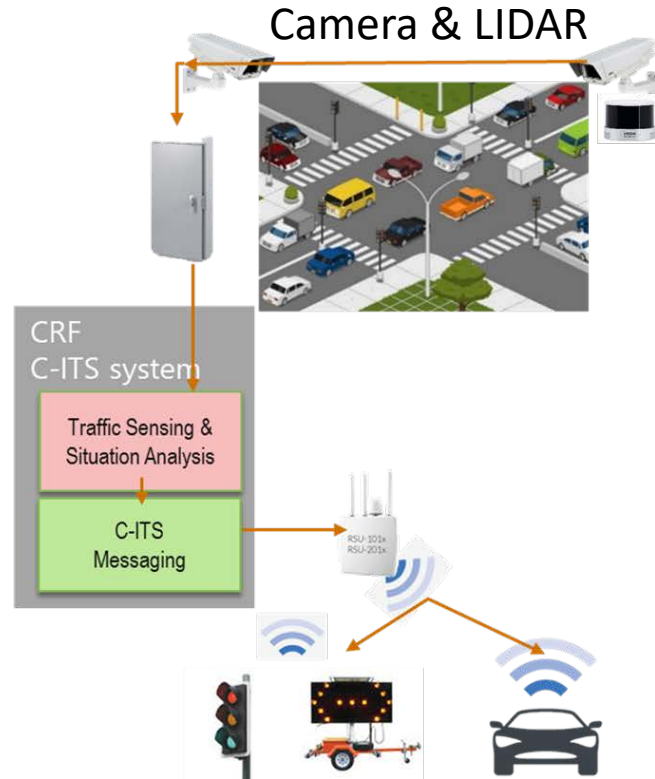


- Winter 2024-25: Final test with vehicle in-the-loop (5G connection)
- Winter 2023-24: Using Q1656-LE and weather station
- Winter 2022-23: P1377-LE, experiencing horizontal snow



Puy de Dôme, winter climatic conditions, snow on P1377-LE camera glass

(OUR ASSETS) ITS R&D PLATFORM



Scenario

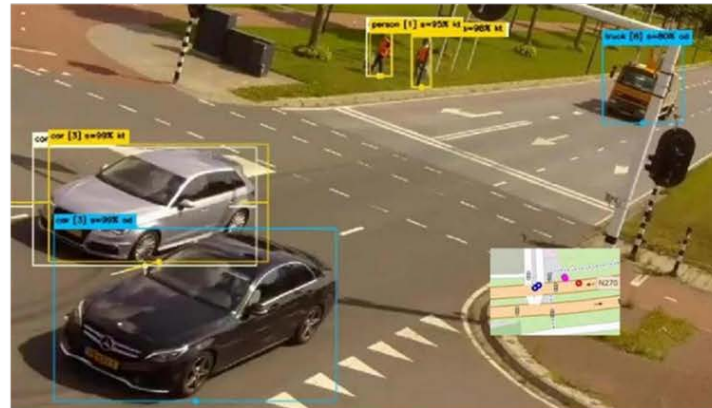
Road intersection

Highway access road, construction & maintenance

... construction sites (workers safety, ..)

... autonomous vehicle (AGV, AMR, ..)

... Public area protection (vulnerable people)



Refresh rate < 10fps (150ms)

Position accuracy < 50cm

(OUR ASSETS) ITS TOOL SET

Technology

Misbehavior, abnormal situation detection

Accurate geo mapping

Precise time & space positioning



3 roadside cameras at one road intersection (Helmond City video surveillance system)

Pose estimation

Sensor fusion (LiDAR)

Distributed AI



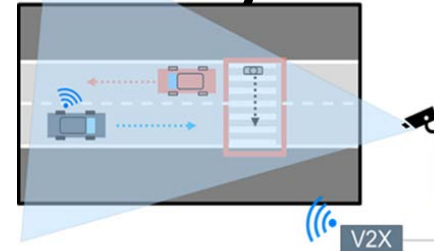
Camera calibration

RTK GNSS

Object detection / recognition

Application examples

Safety



Security

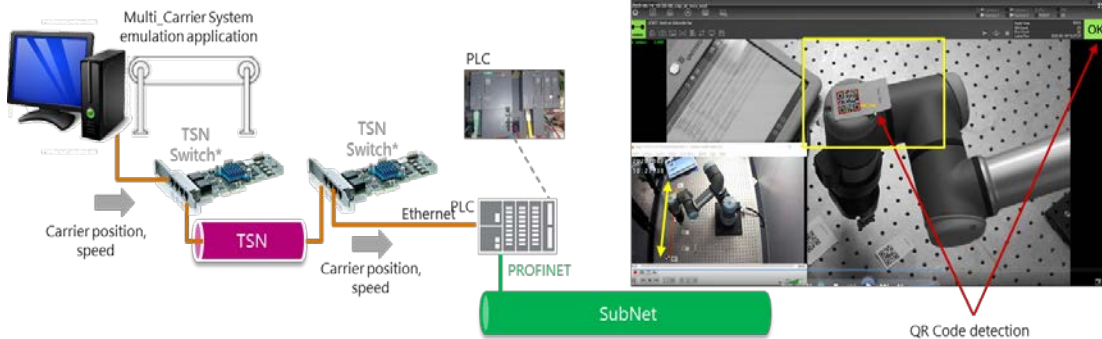
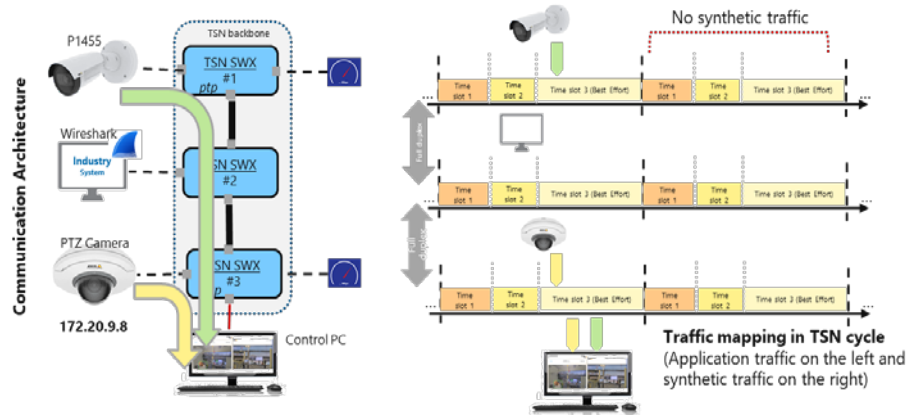
Discrepancies & anomalies detection
Self healing

Vulnerable road users
(feedback to the car, to the pedestrian, ..)

Protection of LEA agent on the field (proposal to FIDAL)

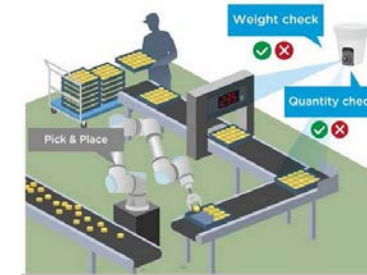
(OUR ASSETS) NETWORK CAMERA SYSTEM

Technology

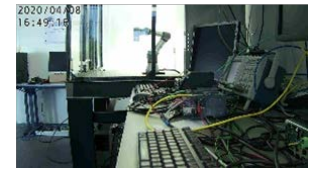


Applications

Process & factory monitoring



UR3e VBH-710 view



OPC/TSN camera

Network camera synchronization

Precise time positioning, "process cycle" accurate

Uplink video transmission

802.1 fast networking

TSN testbed



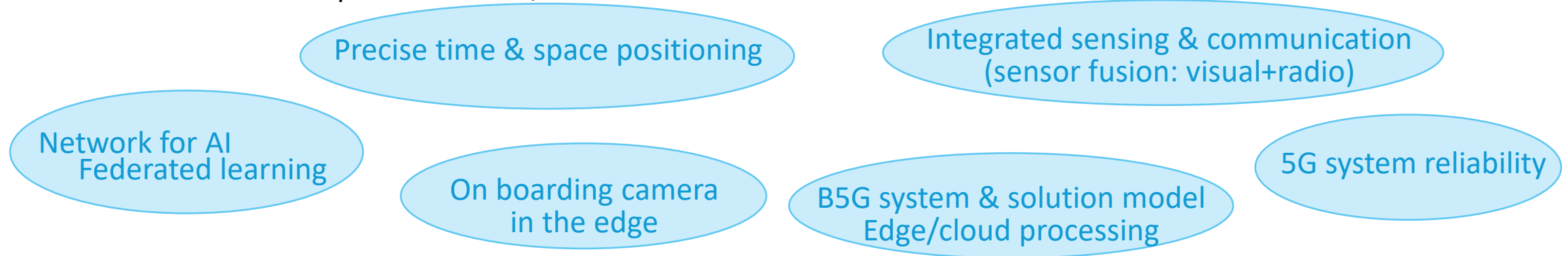
For us, to understand both the practical and the research path to 6G

STREAM#D, Phase 1 Open Call, ...

Assess 5G platform, identify some technical gap
Feedback to product and system design
Identify new opportunities

STREAM#B, SNS R&I WP 2024 ...

Join some research initiative in 6G, but not lead
Proposing/nurturing ideas from our experience
Some topics of interest, such as below





Thank you

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