# CELTIC EUROGIA Online Proposers Day

15th & 16th September 2020

## Pitch of the Project Proposal (ICT)

# AI and Robotics for Quality and Risk Management in Industrial Harsh Conditions

AIROHARSH

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# Teaser

CELTIC-NEXT eurogia 2020

## Solution from beneficial point of view

- **Pro-active maintenance** by real time remote inspection (via Drones, and Mobile robots) in complex industrial harsh conditions (Mines, Harbours etc) to improve **risk management**
- **Fault recognition & analysis** for **quality assurance** through **image analysis**
- **Environmental benefits** achieved by utilizing **robotized spraying technologies**
- **Inexpensive** and **versatile** material tracking to improve profitability in the mining industry
- Utilization of drones & mobile robots via 5G, IoT, AI, & image analysis technologies for **substantial time saving, boosting operational efficiency, cost effectiveness & safety.**

## Value addition

- **5G** developers will receive feedback from the AIROHARSH for further development of the 5G technology
- **Drone & mobile robotic developers** can integrate the developed technologies of AIROHARSH to solve further challenges in other domain areas including harsh conditions
- Considering the **Pandemic conditions**, these technologies can further be developed for pandemic conditions.
- Offer extensive possibilities for SMEs to collaborate with larger companies

## We are looking for companies with the following expertise

If you are interested and have expertise in the below technologies feel free to contact for collaboration.

- **Drone service providers**
- **Industrial maintenance service providers & Painting service providers**
- **We require more software productising companies.**

# Organisation Profile

Centria AMMATTIKORKEAKOULU

### Our Expertise

R&D institute with expertise in:

- Production technology
- Digitalisation
- Chemistry and Bio-economy
- Entrepreneurship and well being

### Goal

- Creating new knowledge, skills and technologies for businesses and industries
- To provide work-based learning environment

**Research, development and Innovation staff**
**73**

**Projects**
**96**

**International Projects**
**22**

**Three main Pillars**

(1) Project Activities
(2) R&D and production development services for business
(3) Training Services

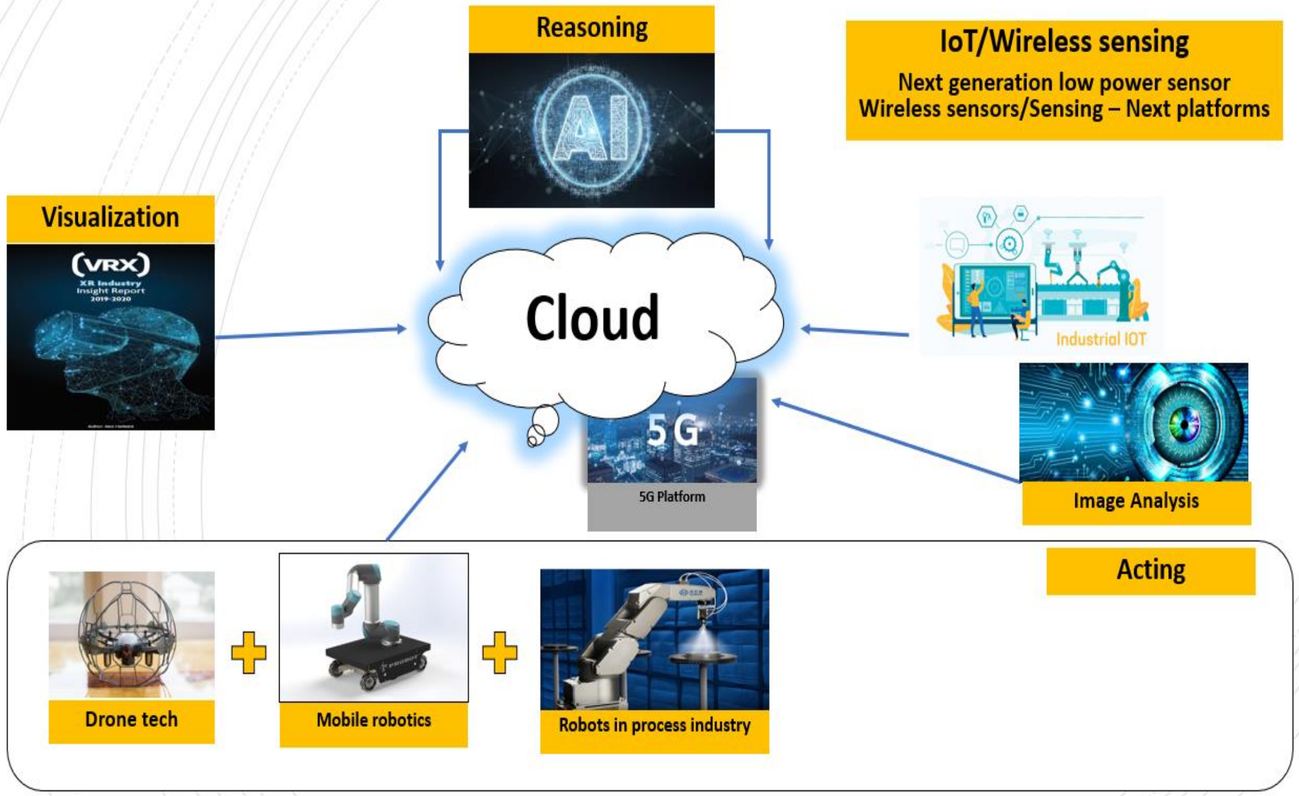
# Proposal Introduction

*Vision:*

- The overall goal of this project is to develop advanced technologies to enable monitoring and improve quality of processes to further ensure safety and quality for humans operating in complex harsh industrial conditions

*Motivation:*

- Safety for workers in industrial harsh conditions is a major concern (Example: Human health, & accidents).
- Major challenges like GPS denied environment, & Lack of wireless network for drones in harsh conditions.
- Quality enhancement challenges during inspection in harsh conditions especially in the Coating and Finishing industry.
- Challenges existing in material logistics & ore tracking to improve profitability for the mining industry.



# Proposal Introduction

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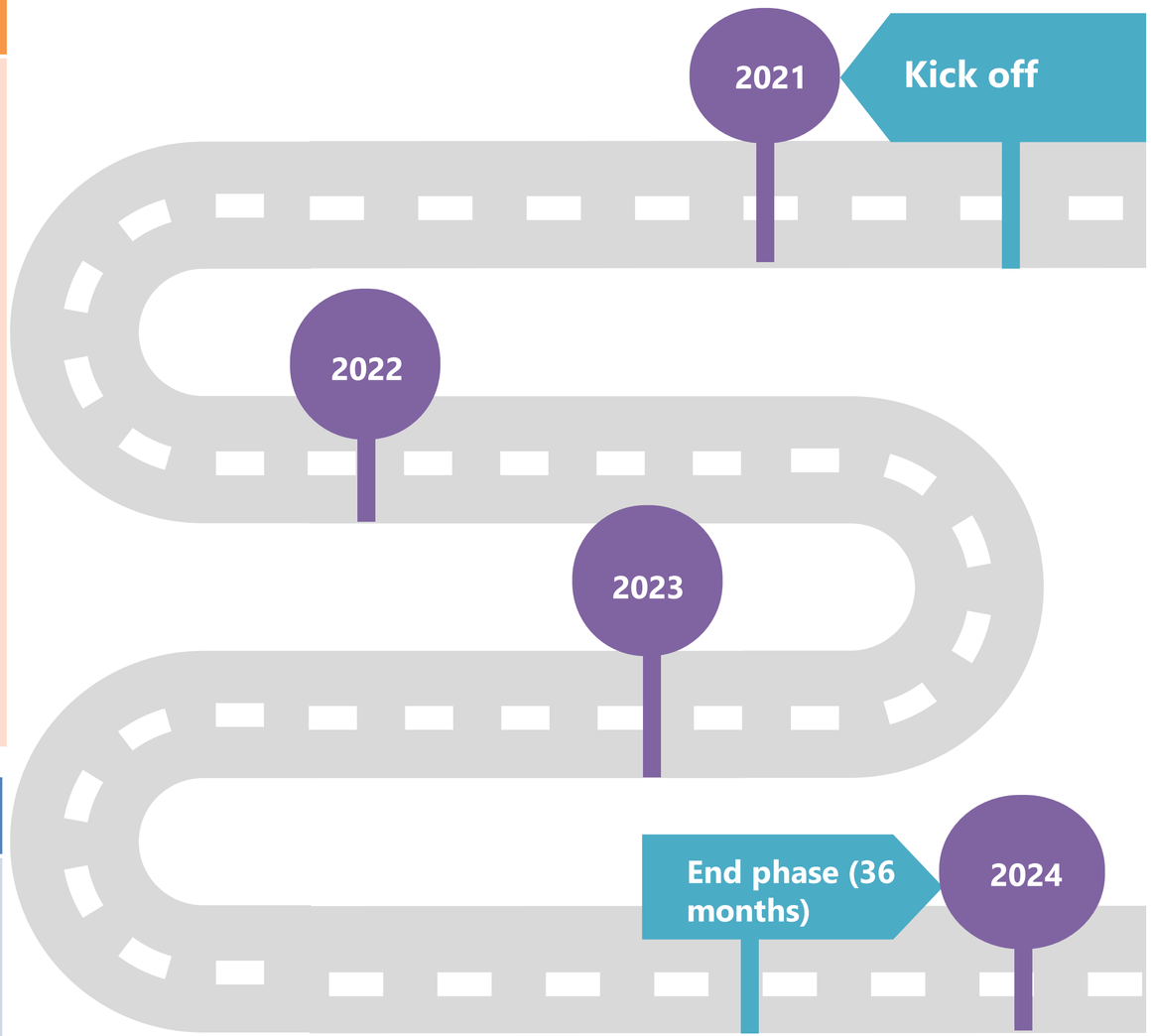
## Expected Outcomes

- **5G** will be tested as the critical enabler to solve the use cases & further develop other use cases
- **AI & Image analysis** for complex industrial harsh conditions
- **Autonomous drones** in environments without geo positioning by utilising image analysis
- **Autonomous drone system** without remote operator
- **Autonomous drones** with AI & Image analysis to support **RFID in Ore-tracking**
- **Robotised spraying** to enhance quality and provide **environmental benefits**
- AI for **quality management** via **Image & Quantitative analysis** for finished products

## Impacts

- Increased international business opportunities
- Business opportunities between SMEs will improve
- 5G network and other technological developments can take the next leap
- Positive impact to Risk Management, Quality and Environmental standards




**2021 – 2022**

- Monitoring, evaluation & tactical plans by project management
- Further partnership creation
- Developing the idea further as per the market needs and the partner requirements
- R&D of technologies and prototypes will be aimed to be developed

**2022-2023**

- Further R&D of the technologies
- Integration of the technologies & alignment of workpackages
- Perform trial testing of the developed technologies
- Demo in customer environment

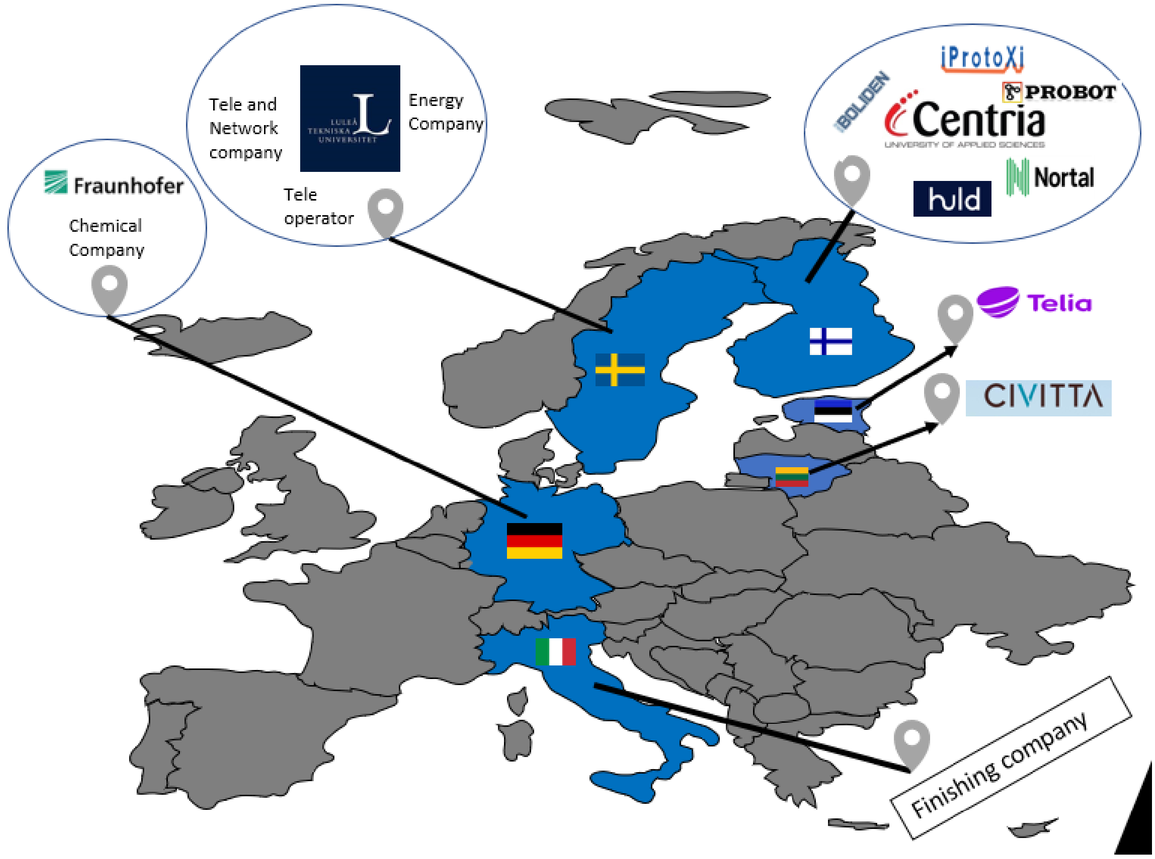
**2023-2024**

- Demostrations for global outreach
- Reporting and Dissemination
- Plan for further steps
- Companies can improve their international business with the results of the project through dissemination

# Partners

| Research Institutes | |
|---|---|
| *Name* | *Type* |
| Centria University of Applied Sciences, Finland | R&D Organisation |
| Luleå University of Technology, Sweden | R&D Organisation |
| Fraunhofer IPA, Germany | R&D Organisation |

| Name/Type of company | Country |
|---|---|
| Networking and Telecommunications company *(Negotiation on going)* | Sweden |
| *Tele operator company (Negotiation on going)* | Sweden |
| Energy company – *(Negotiation on going)* | Sweden |
| Telia (Telecommunications & Mobile network operator) | Estonia |
| Finishing systems company *(Negotiation on going)* | Italy |
| Civitta (Business planning, commercialization, Dissemination & Communication) | Lithuania |
| Boliden (Mining and smelting company) | Finland |
| IproToXi (Customizable IoT services and solutions) | Finland |
| Nortal (Strategic change and technology company) | Finland |
| Huld (Software and Product development expertise) | Finland |
| Probot (Custom mobile robots and integration) | Finland |
| Chemical Company *(Negotiation on going)* | Germany |



# Contact Info

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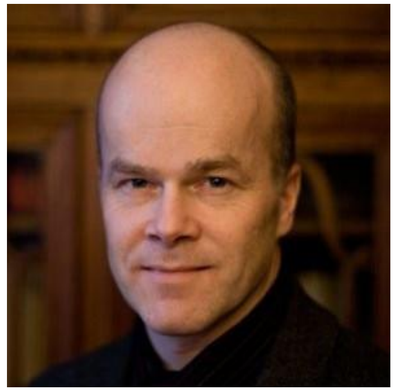

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**Presentation Available**

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# 17 Sept. 15.00 CET
# Join the follow-up Telco

Join Webex meeting
Meeting number (access code): **163 971 4359**
Meeting password: **GPfM3beW2F2**

Join by phone
**+49-6925511-4400** Germany toll
Global call-in numbers

Can't join the meeting?