SURE5.0

Industry 5.0 webinar

Autonomous Drones for Building Maintenance

Pedro Fraga

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DRONEMIST

Please, turn off your camera and mute your microphone

AGENDA

1. The Power of Autonomous Robots
2. Automation in Civil Construction
3. Introducing DroneMist
4. Our Journey with SURE5.0 (transformation)
5. Conclusions and Q&A

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The Power of Autonomous Robots

- Boston Dynamics, Tesla & Co are already reshaping the world through automation
- Mobile robots navigate rough terrain and take over hazardous tasks
- Delivery bots autonomously bring goods to our doors
- Vehicles perceive, decide and drive — without a human driver
- Autonomous drones and air taxis unlock urban air mobility

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Automation in Civil Construction

Challenges in Civil Construction

- **Unpredictable outdoor environments**
- **Labor-intensive, manual processes**
- **Safety concerns still handled manually**
- **Cost and regulatory complexity**

Low innovation adoption rate!

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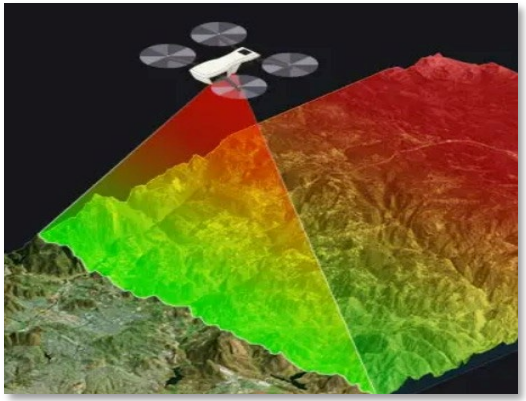
Automation in Civil Construction

3D-printed buildings

Inspection & safety;
AI systems improving
planning and execution



Autonomous drones for
scanning & maintenance

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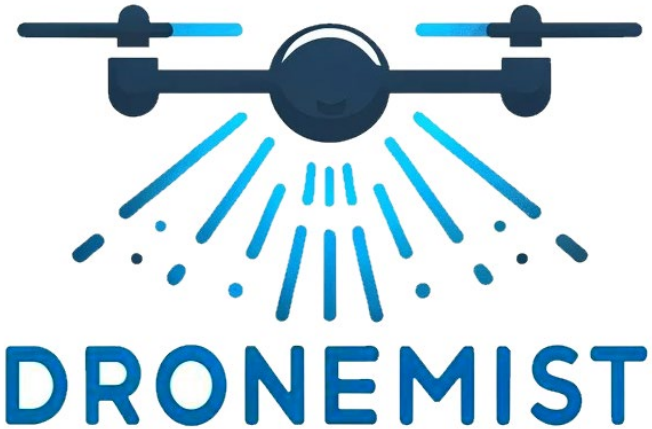
AND NOW, A NEW PLAYER IS ENTERING THE FIELD…

…smart, sustainable & autonomous…



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DRONEMIST – THE PROBLEM

High-risk factor (Human-centricity)
"Work-at-height" represents **25%** of work-related fatalities in Portugal

Expensive service
It costs more than **20.000€** to paint a 5-floor building in the Lisbon region

Limited by the availability of human resources
90.000 shortage of civil construction workers in Portugal

Not sustainable & **inconvenient**
Heavy equipment and scaffoldings

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DRONEMIST - SOLUTION

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THESE PROBLEMS LED US TO DEVELOP...

DRONEMIST

Fully autonomous
drone buildings' maintenance!

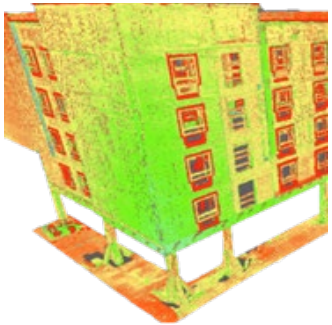
WASHING

PAINTING

FISSURE REPAIRMENT

DRONEMIST - SOLUTION

Misty
(our drone)



WASHING

PAINTING

FISSURE
REPAIRMENT

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OUR JOURNEY WITH SURE5.0

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OUR JOURNEY WITH SURE5.0 - Misty 1.0

Misty 1.0: Finishing our MVP

- Fully test navigation algorithms with different sensors (resilience)
- Design Interfaces for operators (Human-centricity)

LIDAR

STEREO

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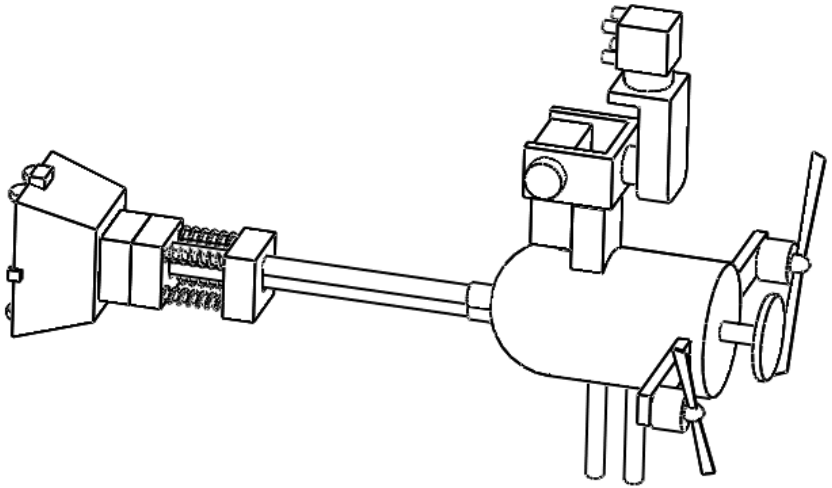
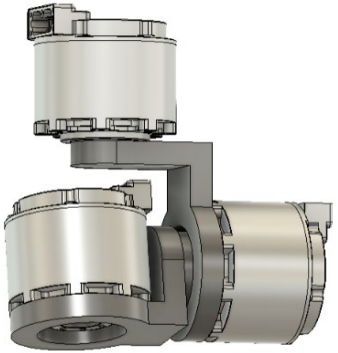
Misty 1.0: Finishing our MVP

- **Design and manufacture subsystems internally and with subcontractors**





MAB Robotics

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Misty 1.0: Finishing our MVP

- READY TO MOVE TO OPERATIONAL TESTING
- TESTED IN A CONTROLLED ENVIRONMENT

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OUR JOURNEY WITH SURE5.0 - Misty 2.0

Cybersecurity resilience: *Fraunhofer* helped define a safe, cable-based connection system

Smart-Manufacturing Plan: Support to set up our modular production process

Sustainability and Green Focus: Guidance on low-VOC paints, water-efficient spraying, and renewable energy use

Human-centricity training: Transition of construction workers to drone operators

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Industry 5.0 webinar

The Challenges of Industry 5.0: Towards a More Resilient, Sustainable, and Human-Centric Industrial Model

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ISTYA

Redefining Industry and Sustainability:

SURE5.0

New European Bauhaus

eit Community New European Bauhaus

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MONITORING AND IMPROVING AIR QUALITY WHILE OPTIMIZING ENERGY USE FOR HEALTHIER AND MORE SUSTAINABLE FACTORIES, BUILDINGS, AND CITIES.

PARIS 2024 PARIS 2024

AIRBUS

Métropole du Grand Paris

dalkia EDF GROUP

STATION F

Renault Group

SURE5.0

Poor air quality and inefficient HVAC management contribute to

- **8 TRILLION DOLLARS IMPACT ON GLOBAL GDP (6%)**
- **HVAC DRIVES 40% ENERGY COSTS**

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Our sensors: a smarter, greener way to monitor air

> Advanced Sensors, Smarter Data

- Precision monitoring of PM1 / PM2.5 / PM10, TVOC, NOx, CO_2, temperature & humidity
- Plug & Play
- Repairable and sustainable design

> 50% Fewer Sensors, Same Coverage

- Thanks to Istya's data extrapolation algorithm monitor 220 m^2 with just 1-2 sensors

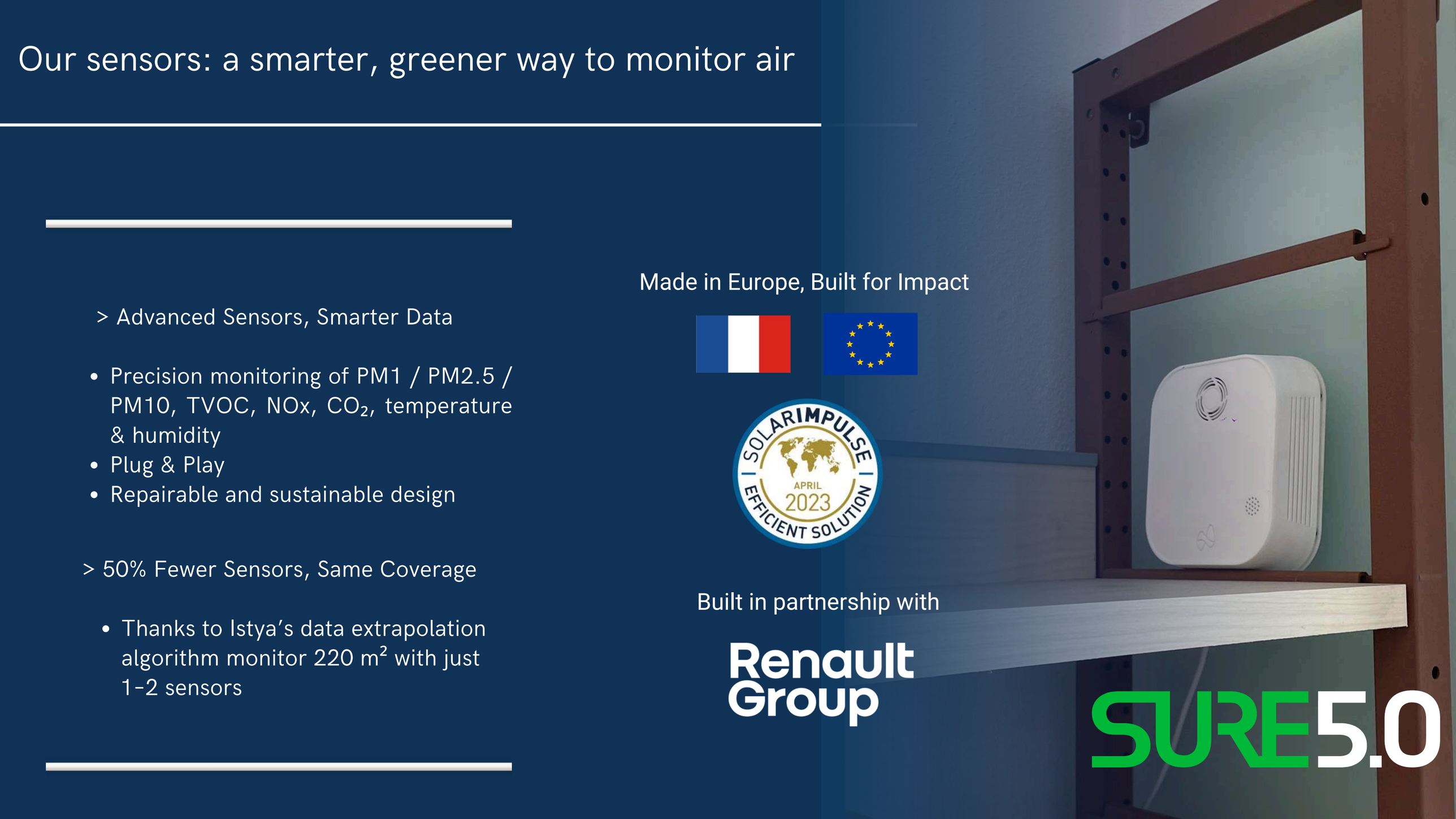
Made in Europe, Built for Impact

SOLAR IMPULSE EFFICIENT SOLUTION APRIL 2023

Built in partnership with

Renault Group

SURE5.0



Our AI-driven SaaS platform provides predictive insights and real-time monitoring to optimize air quality and energy use.

With advanced predictive and generative AI, Istya anticipates air quality needs and offers actionable insights to reduce environmental impact but also predicts the future for proactive management.

GENERATIVE AI

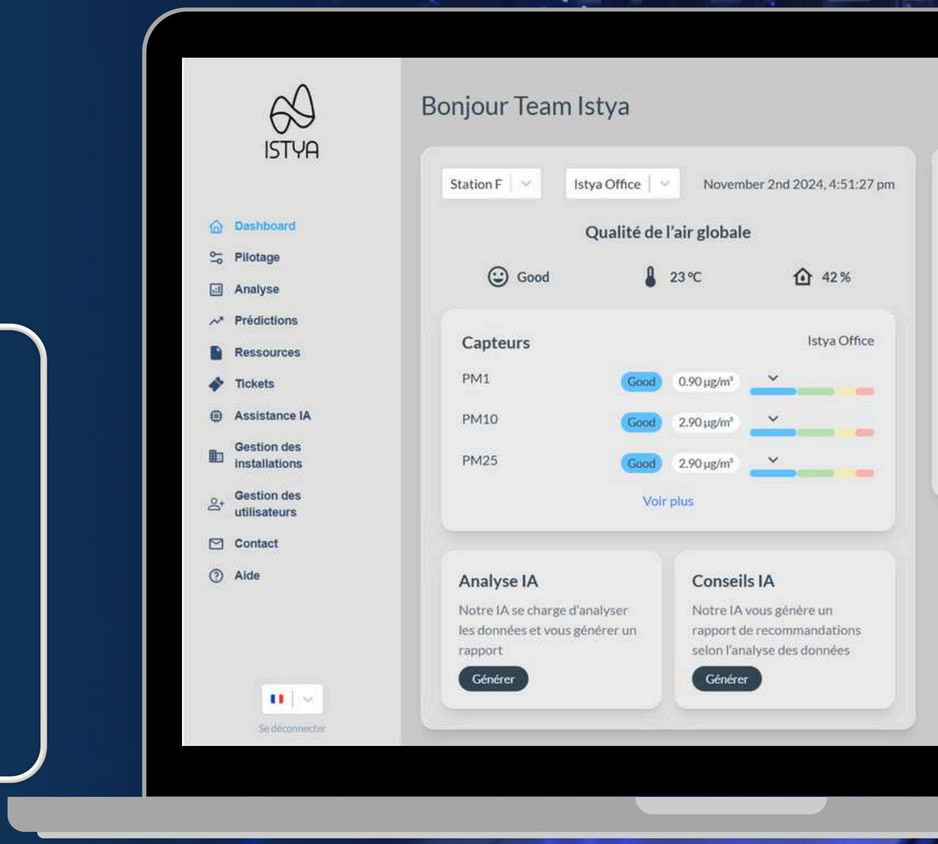
- Advanced Models: Our generative AI leverages diverse data to create personalized reports and action plans daily.
- Natural Language Interface: This technology transforms data into intuitive interactions.

Generative AI for SRI Certification

- Istya has developed a generative AI designed to manage the Smart Readiness Indicator (SRI) certification required by European regulations.
- This technology enables buildings to adapt dynamically, reduce energy consumption, and Generates real-time certification and audit reports for SRI adherence

PREDICTIVE AI

- High Precision Forecasts (97%) : The predictive component of our AI analyzes trends to provide accurate air quality forecasts up to 3 days in advance.



Istya Industry - AMENS

SURE5.0

We believe Industry 5.0 is more than a buzzword — it's a call to redesign how we produce, live, and work.

- ✅ Smarter buildings with predictive AI
- ✅ Cleaner air and lower emissions
- ✅ Stronger ecosystems through industrial collaboration
- ✅ Technology that serves people and the planet

Let’s build this future — together.

Istya Industry 5.0 - Our Three Strategic Pillars

SUSTAINABILITY

Protecting resources and reducing impact

RESILIENCE

Adapting to change and building long-term value

INDUSTRY 5.0

Technology that serves both humans and the environment

Istya Industry 5.0 - Core Pilars

ECO-DESIGN BREAKTHROUGH

- By redesigning our PCB, we’ve cut its carbon footprint by 50%, while maintaining full performance.
-
- Recycling

- This is part of our broader effort to minimize environmental impact from production to reuse.

SURE5.0

Istya Industry 5.0 - Core Pilars

BUILDING STRENGTH THROUGH COLLABORATION AND LOCAL PRODUCTION

Decentralized production model:
→ PCB assembly and manufacturing split across multiple sites in France, reducing dependencies and increasing flexibility.

Strategic industrial partnership:
→ Collaboration with Groupe Renault on a new model of industrial innovation, blending startup agility with corporate scale.

Industrial coworking:
→ Development within shared spaces designed for co-innovation, accelerating prototyping, scaling, and local impact.

Istya Industry 5.0 - Core Pilars

TECH AS AN ENABLER OF SMART, SUSTAINABLE PRODUCTION

- Integration of IoT, AI, and training into our industrial approach
- Deployment of a training and upskilling module to support teams working with AI-enhanced systems
- Automated quality control system powered by AI, reducing manual checks by 90%
- Our AI system now detects anomalies and triggers alerts in real time, improving traceability and reducing waste

🔧 Result: A leaner, smarter process that boosts performance while freeing up human time for high-value tasks.

Awards

Innovation and Entrepreneurship Award (2023)
PARIS OUEST LA DEFENSE (POLD)

Top 10 Energy Efficiency Companies in Paris (2023)
F6S

Participation in Las Vegas CES (2022)
PARIS REGION COMPETITION

"Pépite" Prize - Régional and National level (2021)
French ministry of research x BPI FRANCE

Invisible Beauty Maker (2021)
Puig x Ashoka Foundation

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Labels

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SURE5.0

Using AI in Non Destructive Testing -Transforming NDT for the Digital Future

Dr. Vladan Zdravkovic
Tech Trinity

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Tech Trinity

About Us

Tech Trinity is an SME specializing in Non-Destructive Testing (NDT) solutions for industrial and research applications. We offer advanced inspection services, equipment calibration, and consulting.

Our key advantage is advance AI NLP solutions

Why SURE 5.0:

We joined SURE 5.0 to accelerate our digital transformation, integrate AI and data analytics into our NDT workflows, integrate IoT in our processes, implement AR and VR in our services o and develop new, competitive service models for Industry 5.0 demands.

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Transformation Needs

1 **AI & Data Integration Support**

2 **Interoperability & IoT Readiness**

3 **Workforce Upskilling & Change Management**

4 **Standardization & Data Sharing Protocols**

5 **Partnerships & Innovation Ecosystems**

6 **Funding & Scaling Mechanisms**

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Transformation Needs

1 **AI & Data Integration Support**

• Access to modular AI tools tailored for NDT signal/image analysis and anomaly detection.

• Support in developing **Explainable AI (XAI)** models to maintain trust and regulatory compliance.

2 **Interoperability & IoT Readiness**

• Solutions to bridge legacy NDT equipment with **IoT-enabled platforms** for real-time monitoring and cloud data storage.

3 **Workforce Upskilling & Change Management**

• Training programs in AI, data science, and digital tools specifically designed for our needs.

• Change management frameworks to ease cultural and operational transitions.

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Transformation Needs

4 **Standardization & Data Sharing Protocols**

• ISO and CE accreditaion

5 **Partnerships & Innovation Ecosystems**

• Opportunities to collaborate with **academic researchers, AI developers, and industrial partners** to co-develop next-gen NDT solutions.

6 **Funding & Scaling Mechanisms**

• Access to follow-on funding and support for **piloting and scaling innovations** validated during the SURE 5.0 program.

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Transformation Challenges

Challenge	Description
Digital Transformation Barriers	Difficulty integrating AI and cloud technologies with existing equipment.
Workforce & Skills Gap	Lack of personnel skilled in both traditional NDT and advanced digital tools.
Market Pressures	Clients expect real-time, data-driven insights, not just defect detection.
Regulatory Complexity	Navigating EU data and AI regulations while maintaining trust and compliance.
Funding & Scale-Up Risks	Limited resources for R&D and risk of over-investment without market validation.

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Solutions & Progress

Challenge	How We Addressed It
Digital Barriers	Identified AI tools and implemented middleware to bridge legacy and modern systems.
Skills Gap	Participated in SURE 5.0 training programs and organized in-house upskilling workshops.
Market Pressures	Developed new services offering predictive diagnostics and real-time reporting.
Regulatory Complexity	Adopted Explainable AI models and consulted SURE 5.0 regulatory experts.
Funding & Scaling	Leveraged SURE 5.0 resources for market validation and investor networking.

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Results & Benefits

Technological Advancements (partly executed):

• AI-enhanced NDT analysis tools operational.

• Cloud integration for remote data access and monitoring.

Operational Improvements (solid progress):

• Faster, more accurate diagnostics.

• Fully integrated lean production principles - reduced manual workload and human error.

Business Growth (partly):

• New revenue streams through predictive maintenance services.

• Increased competitiveness in Industry 5.0 markets.

Sustainability Impact:

• Extended asset lifespans.

• Reduced waste and resource consumption.

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Lessons Learned & Recommendations

Key Lessons:

• Our timing should be different and we should be much more proactive – aggressive with the Sure5.0 partners

• Interdisciplinary collaboration accelerates problem-solving.

• AI integration requires flexibility and continuous learning.

Recommendations to Other SMEs:

• More proactively - aggressively leverage support networks like SURE 5.0.

• Start small, validate early, and scale strategically.

• Invest equally in technology and workforce development.

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Thanks for your attention

Any Questions?

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