bluecover
Location Based Technology

SURE5.0

"Learning from success: experiences of companies after SURE5.0's Acceleration Programme"

AI Computer Vision transformations at Bluecover

20-11-2024

Funded by the European Union

Please, turn off your camera and mute your microphone

bluecover
Location Based Technology

SURE5.0

Contents

- Company Background
- SURE Project Objectives
- SURE Project plan and transformations
- SURE Resulting products on MTA
- Conclusions
    - Opportunity leverage to other sectors

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Bluecover Background

- Specialized in geo location services since 2014
- Provide software solutions to aerospace, mobility and surveillance businesses based on real-time assets location and tracking technology.

Our services specializations

- IoT and Mobile development (Android and iPhone)
- Space services (GNSS, Earth Observation)

Offices in Lisbon and Portalegre

GPS WAYPOINTS

Mapping and Surveying

+600k installs
210 countries

2015

TRUESHOT

Sports & Golf

12k installs
77 countries

2017

MOB devices

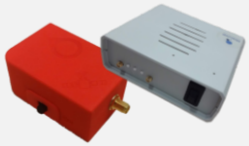
Mobility

2K installs
2 countries

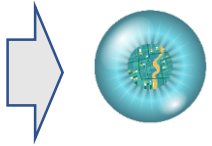
2018

GNSS receivers

Aviation and Surveying



2019 / 2021



Vision
Surveyor

2023/2024

Funded by the
European Union

Objectives

The SURE5.0 transformations were implemented with the latest product Vision Surveyor:

- Performs automatic surveys for detecting and mapping objects using AI-based computer vision on Smart Cities and Transportation sectors.

The two transformation activities supported by Industry 5.0 pillars aimed to

- improve the efficiency and flexibility of the camera solution,
- improve the AI modelling processes.

1 Camera with high precision positioning

2 AI-based computer vision object detection

3 Geo-reference the detected objects

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Project plan and execution

Ambition plan for the tight schedule and the short budget:

- Detailed Specification, breaking in several pieces
- Procurement of subcontractors
- Implementation with 5 subcontractors and internal effort

Project Plan

		December				January				February				March				April				May				June			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TASKS																													
T1	Support technology assessment on AI (FHG IPT), Photonics (AIMEN) & IoT (TalTech)																												
T2	Implementation and validation of technical solutions w/Tech Prov.																												
	T2.1 Specification of infrastructure and IoT improvements																												
	T2.2 Artificial Intelligence/Computer vision infrastructure improvement																												
	T2.3 IoT hardware design improvement (energy efficiency issues & interoperability review)																												
T3	Participation in training modules 1, 2, 3, 5, 6 & 7																												
T4	Business assessment with special focus on resilience																												
MILESTONES																													
M3	Midterm report 15 days after the end of reporting period																												
M6	Final report																												
PROGRESS MEETINGS																													
08/jan	Landing Meeting																												
28/fev	SURE5.0 ACC1 Phase 2 - Follow-up 2																												
26/mar	SURE5.0 ACC1 Phase 2 - Follow-up 3																												
04/jun	SURE5.0 ACC1 Phase 2 - Follow-up 4																												
25/jun	SURE5.0 ACC1 Phase 2- Follow-up 5																												

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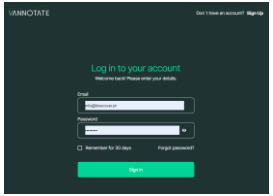
Activity 1: Improve AI infrastructure

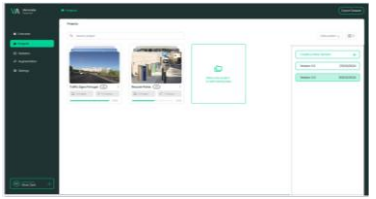
Improve AI/Computer Vision infrastructure for object detection and image segmentation with the development VAnnotate tools

- improve AI processes to be more agile for image annotation and classification (Resilience)
- allow users/customers to provide feedback for improving AI modelling process and thus increase accuracy (Human Centricity)

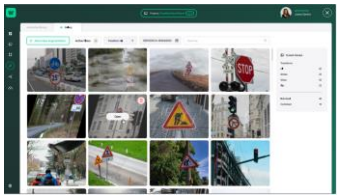
Login



Projects

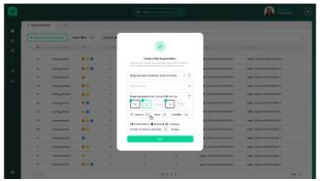


Gallery



Annotations

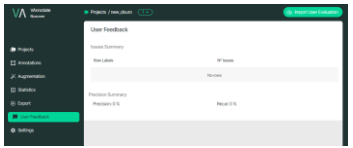
Augmentation



Rotate, shear, rain…

Statistics and Export

User Evaluation



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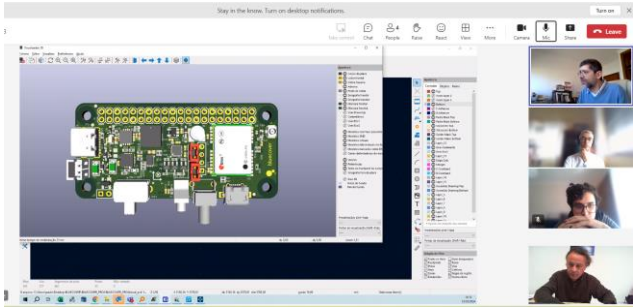
Activity 2: new PCB module for Cycam

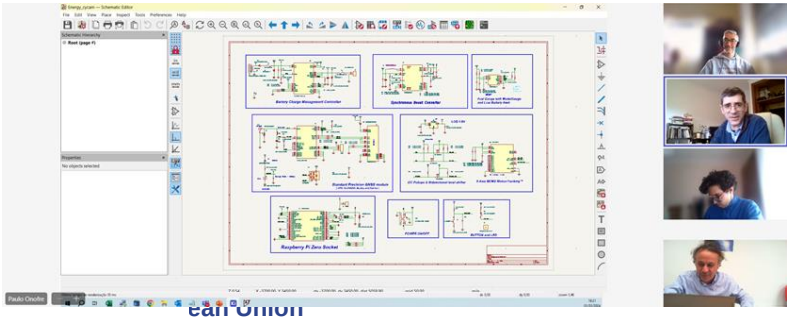
Produce a new PCB module to improve energy management

- Reduce hardware dependency and improve interoperability of firmware to become hardware agnostic (Resilience)
- Improve energy consumption of our IoT platform, by producing a new optimized PCB module that can extend the battery life. (Sustainability)

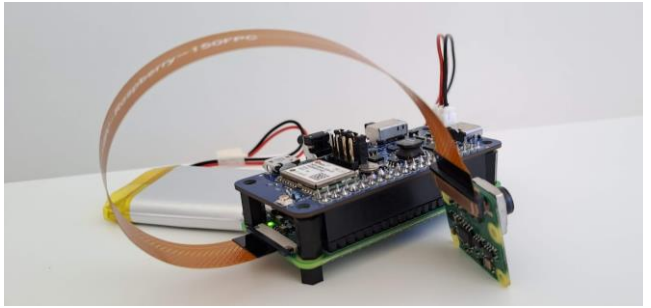
PCB layout Review



Schematics Review

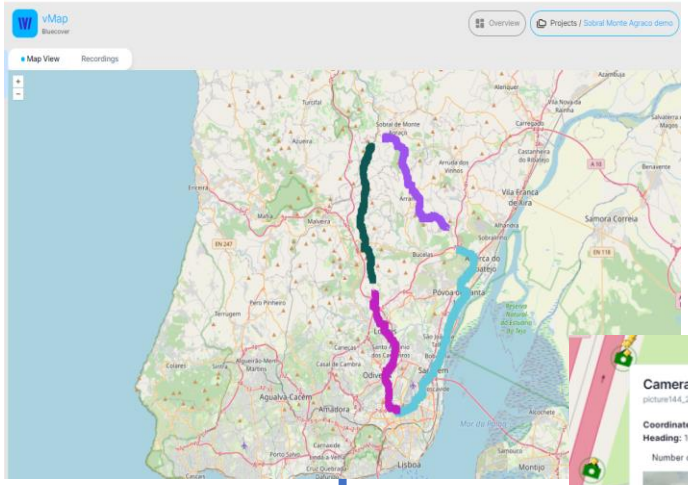


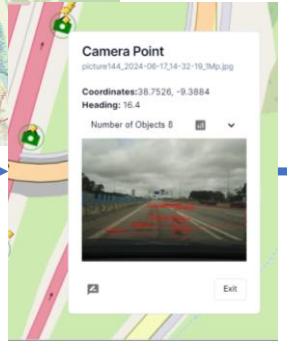
PCB assembled



Activity Testing and User evaluation

Operational surveys for testing the camera (with the new PCB module) and for evaluating two Bluecover's AI models.





User Evaluation

Feedback for the annotation tool

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Resulting Product

New VAnnotate tool enhances our product portfolio

- **VAnnotate** is the tool for making image annotations and collect feedback from user.
- **VSurvey**, is the core vision computing infrastructure, flexible for development of multiple object detection models and complemented with geolocation tools.
- **VMap** is the user's platform for analysis and visualization of object detections.

VAnnotate

VSurvey

VMap

PCB enhanced the robustness of our cycam camera

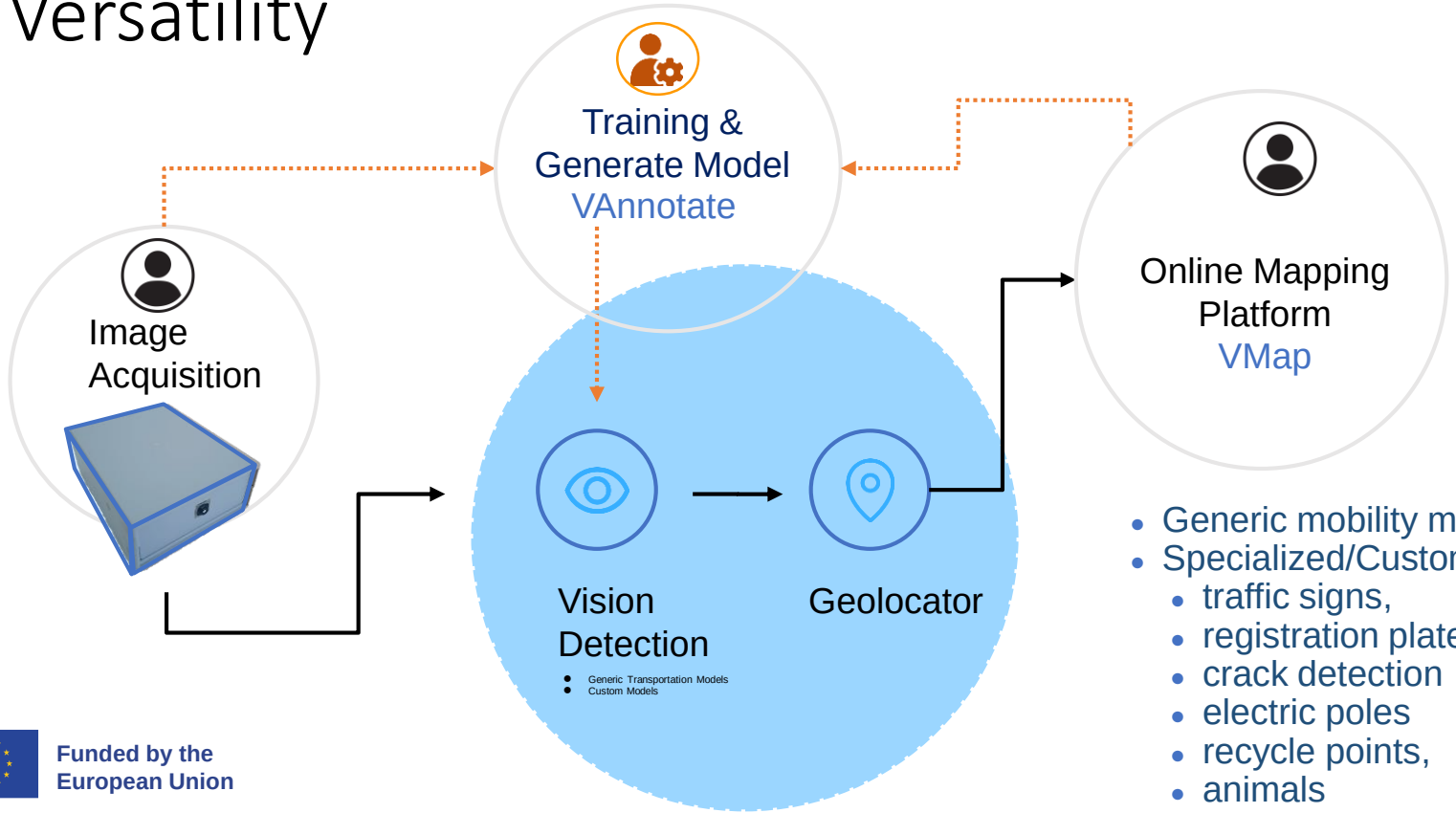
cycam

visioncam

Funded by the European Union

Resulting Product

AI Versatility



- Generic mobility models
- Specialized/Custom models
  - traffic signs,
  - registration plates
  - crack detection
  - electric poles
  - recycle points,
  - animals

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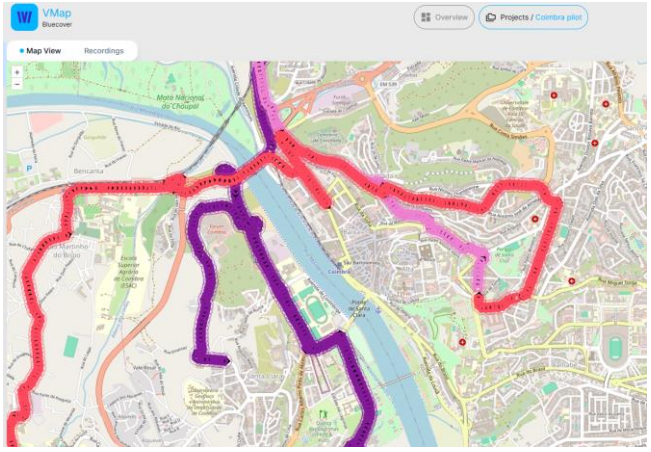
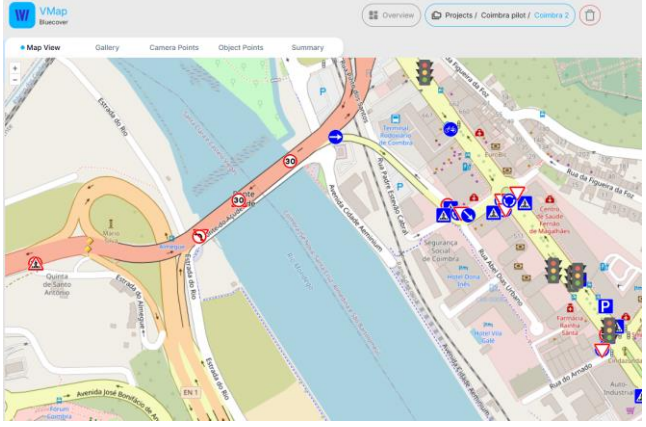
Traffic Signs & Registration Plates

Distance	22,76 km
Pictures	734
Objects Detected	340
Duration	01:01:14
Objects	
Crosswalk information	78
Traffic light	53
Give way	34
Parking	29
Speedlimit	29
Keep right	15
No stopping	15
No left turn	14
One way traffic	14
Intersection side road right	11
Pedal cycles only	11
Roundabout:	10
Prohibited direction	6
Turn right	5
Entry prohibited	3
Overtaking prohibited truck	3
Mandatory right	2
Stop	2
No right turn	1
Speed bump	1
Traffic light side	1
Turn left	1
Warning double curve	1
Warning roundabout	1





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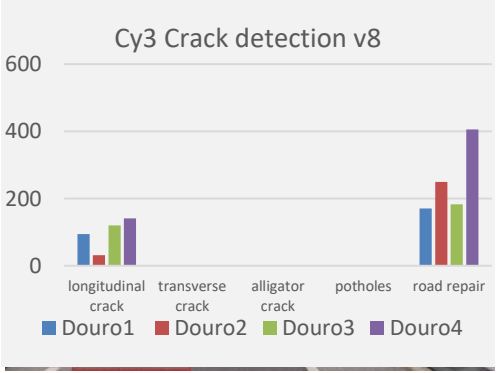
Crack detection



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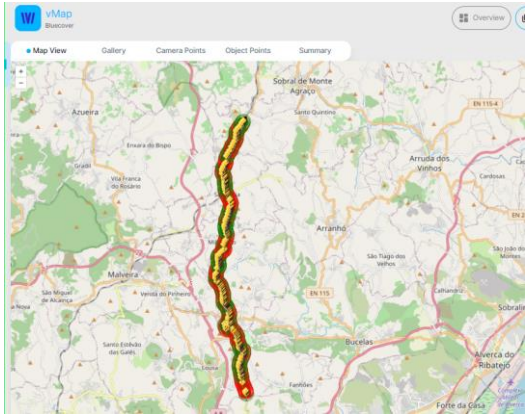
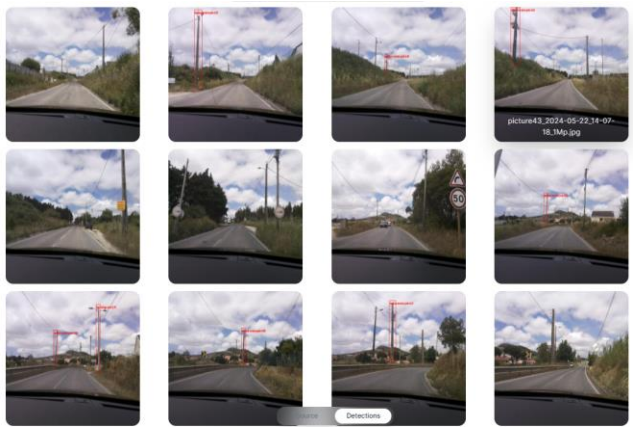
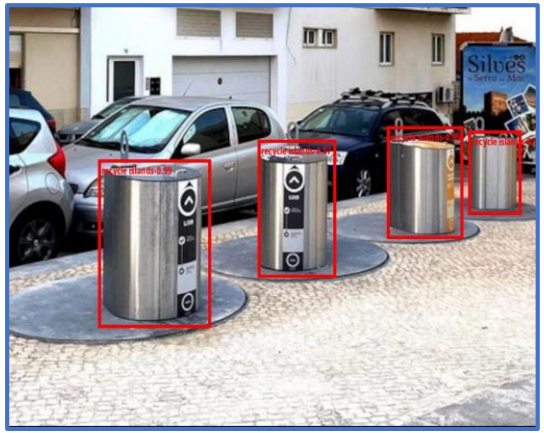
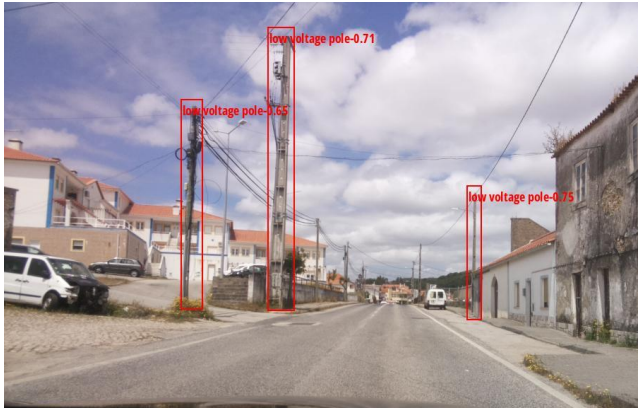
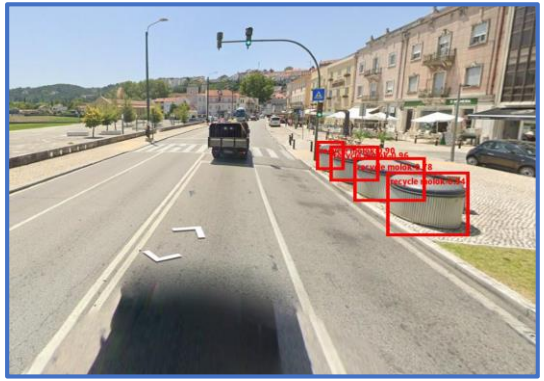
Electric Poles and Recycle Bins











Start Date:	5/22/2024, 1:59:07 PM
End Date:	5/22/2024, 2:28:32 PM
Duration:	00:29:25
Cumulative Distance	15.72km
Average Speed:	46.19
Total Pictures:	500
Total Objects:	332
low voltage pole:	263
medium tension pole	61
low voltage wood pole	8

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Animals and Debris on roads

Wild boar

Cow

Deer

Dog

Cat

Tracking with Count will be an evolution

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Conclusions

Upgrade our Vision Surveyor tools and improve the internal processes.

- Internal development process was definably improved with inputs from various subcontractors.
- Annotation tool is the core of the AI process
  - Provided us flexibility to develop custom models and with less dependencies from the AI external training tools.
  - New opportunities on other sectors
- New PCB provided more stability and resilience for the camera
  - Contributions from a PCB design specialists.
- The training and transformations had a good impact on our team motivation and enabled extending the company’s competences and technical specialization.

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VAnnotate opportunity on Health Care

Detect Meals on Care Services

Fall down

SafeCaring

SURE5.0

Thanks for your attention

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GreenTwin GmbH

get resilient and circular

WEBINAR - Learning from Success

SURE5.0

Experiences of Companies after SURE 5.0 Acceleration Programme

21-November-2024

Dr. Violeta Damjanovic-Behrendt

GreenTwin GmbH, Austria

Project details

Acceleration Programme:

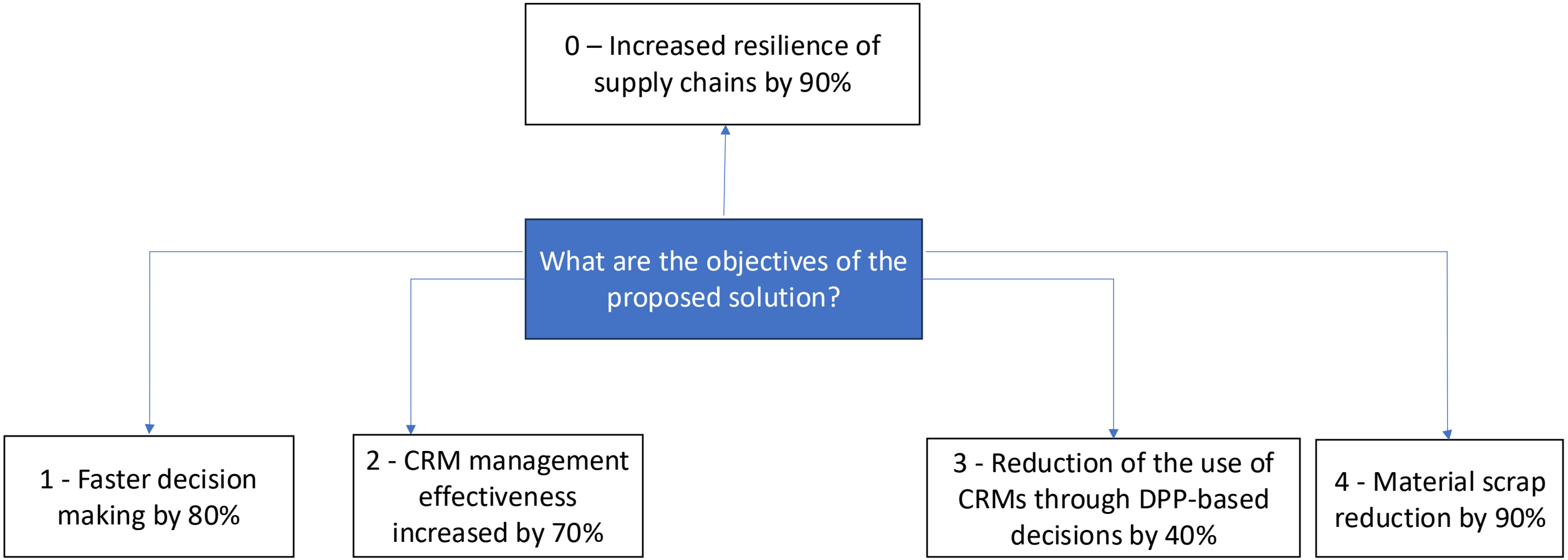
January 15, – July 15, 2024

Digital Product Passport: Assessing Materials Criticality – Is Your Product at Risk?

Service Provider: LogiicDev, Graz

GreenTwin GmbH
get resilient and circular

Project objectives within SURE5.0



GreenTwin GmbH
get resilient and circular

User stories

To build my supply chain resilience, I need to **facilitate collaboration with suppliers and other stakeholders involved in the sourcing, manufacturing, usage and recycling of CRMs**

To adjust my supply chain strategies and balance costs, I need **real-time updates on the availability and sourcing of CRMs contained in the products** I'm remanufacturing

I aim to access in-depth **information about the CRMs in the products** I'm remanufacturing

Manufacturing SME

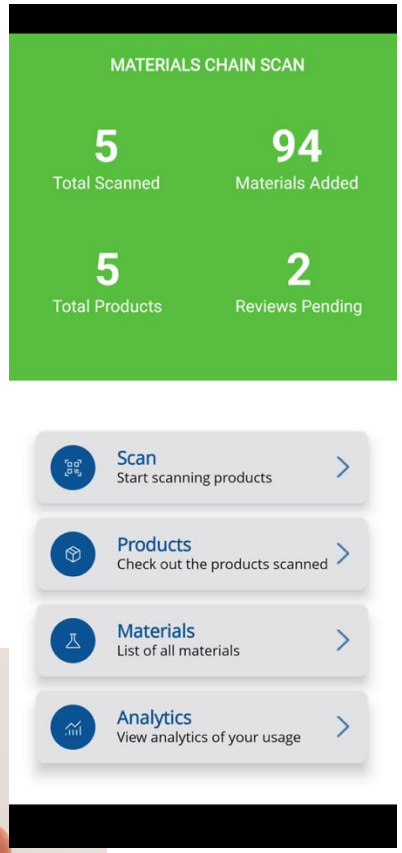
GreenTwin GmbH
get resilient and circular

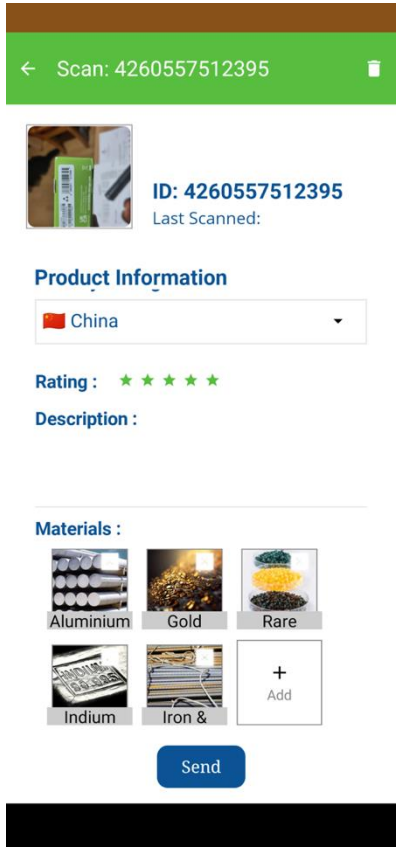
Part 1 - Product design

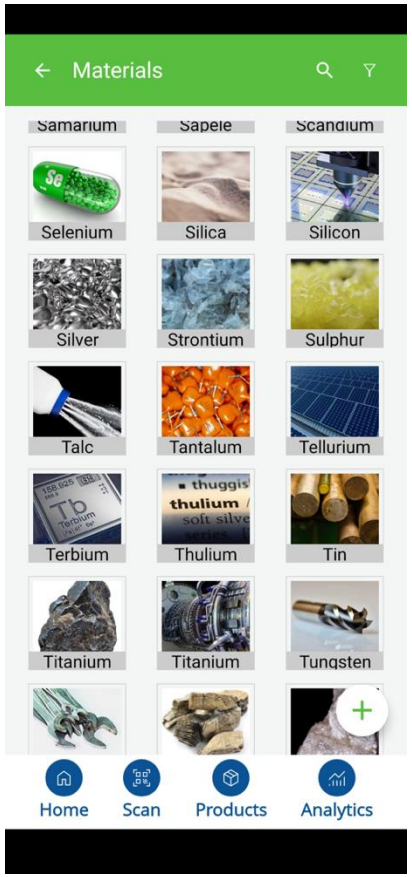
SURE5.0

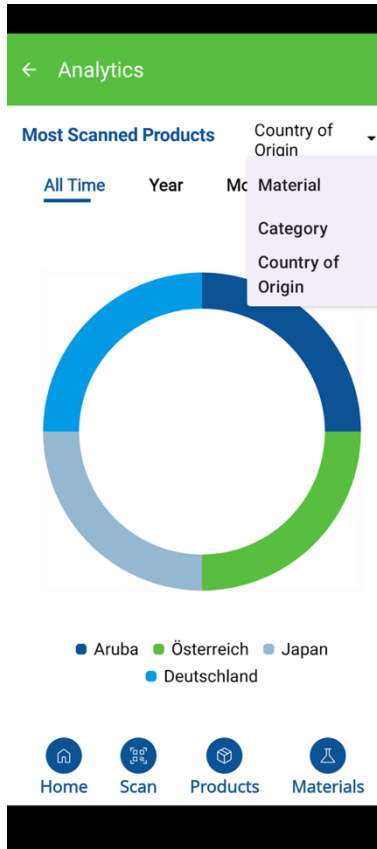
logiicdev

Manufacturing SME – Warehouse









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Part 2 - Product design

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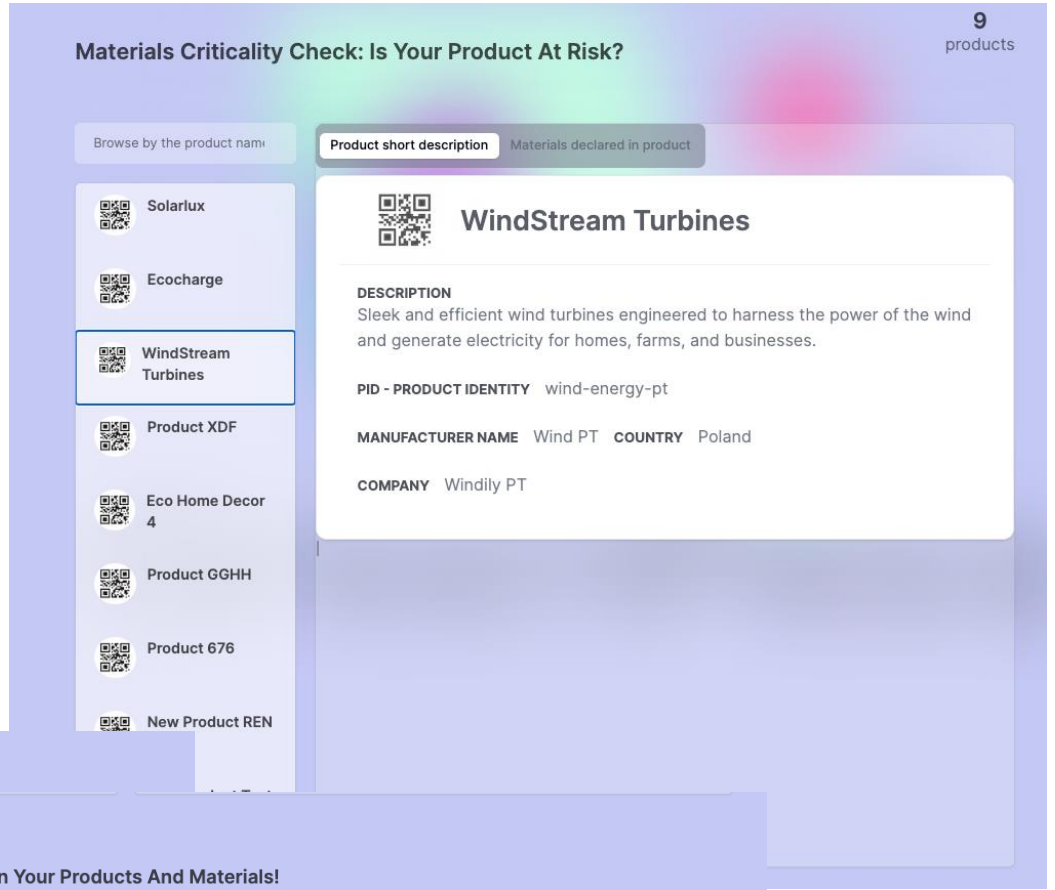
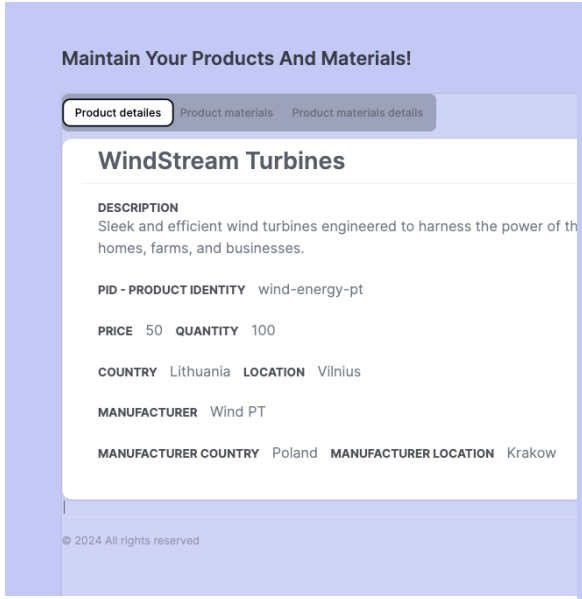
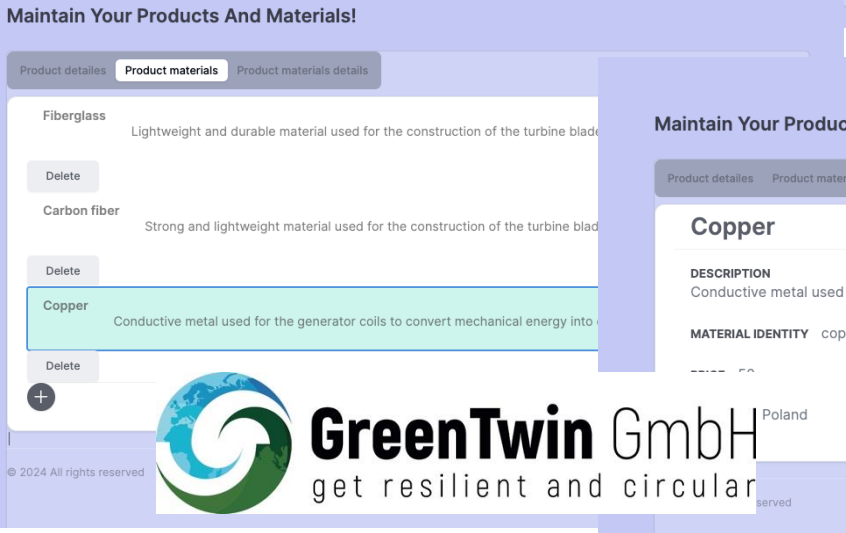
GreenPass
Sustainable Materials

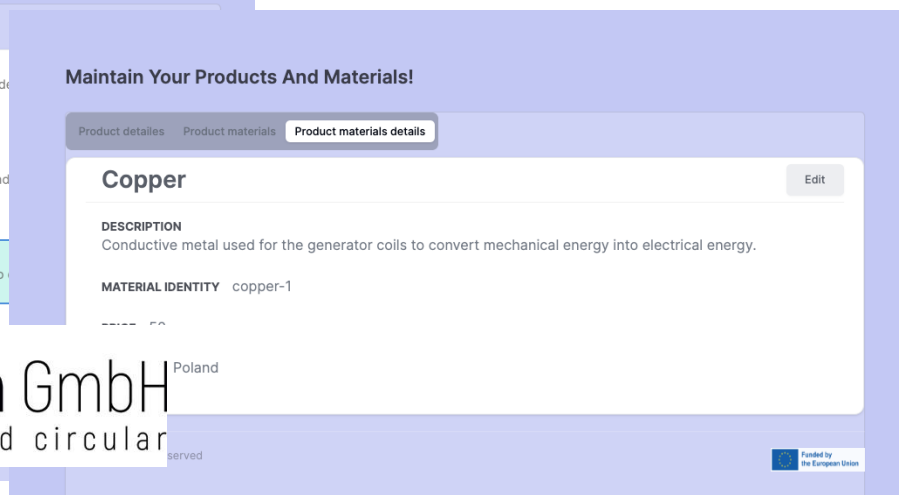
SURE5.0

Manufacturing SME
- Decision making









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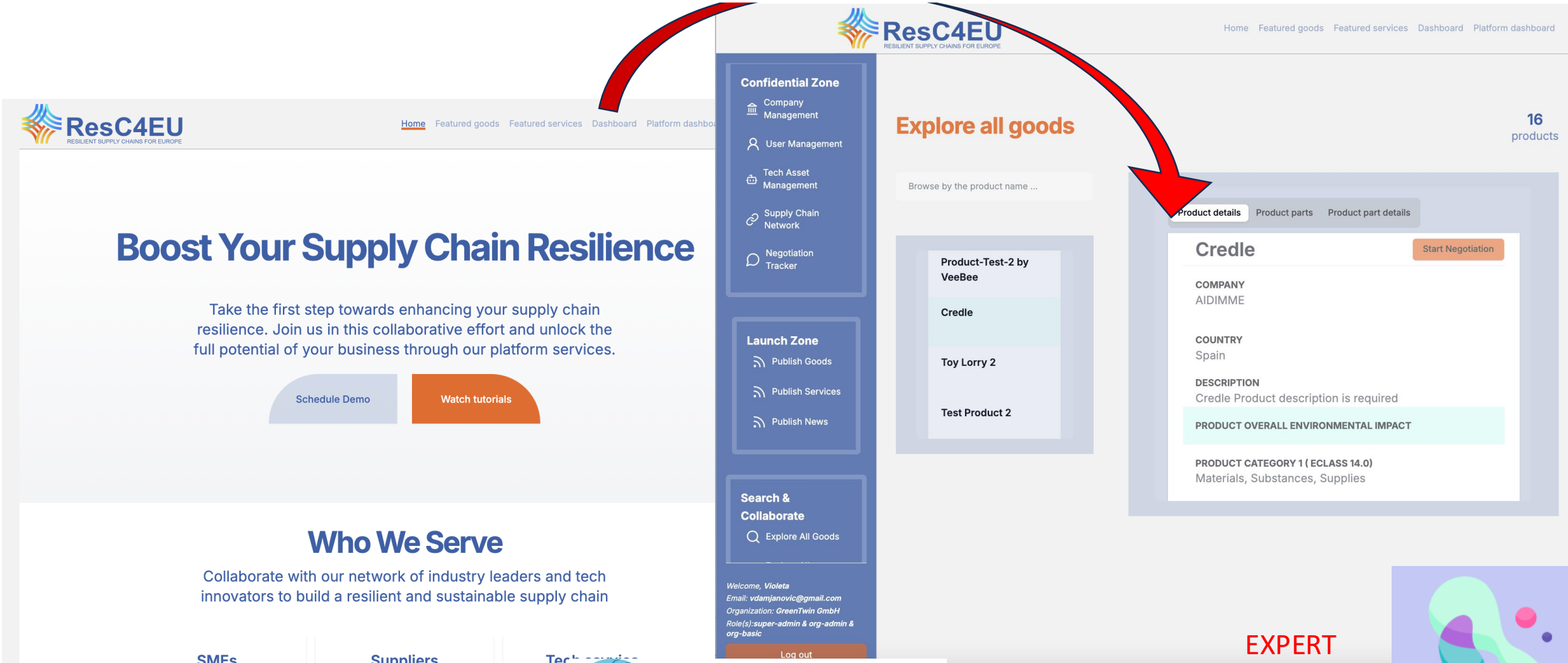
Part 3 – After SURE5.0 Acceleration Programme – Demonstrator for Resource and Material Savings - resc4eu.greentwin.app

SURE5.0



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EXPERT SYSTEM FOR CRMs

GreenPass
Sustainable Materials

THANK YOU

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office@greentwin.at

https://www.linkedin.com/company/greentwin-gmbh/

https://greentwin.space/

TRY IT AT:

https://resc4eu.greentwin.app/

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Industry 5.0 webinar

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Please, turn off your camera
and mute your microphone

AGENDA

- Welcome speech and overall presentation of SURE5.0 (10min)
- Keynote: Laura Roman, Policy officer, DG Research & Innovation E.4 – Industry 5.0, European Commission (25min)
- SURE5.0 current opportunities: Practice Alliance (10min)
- Q&A (10min)

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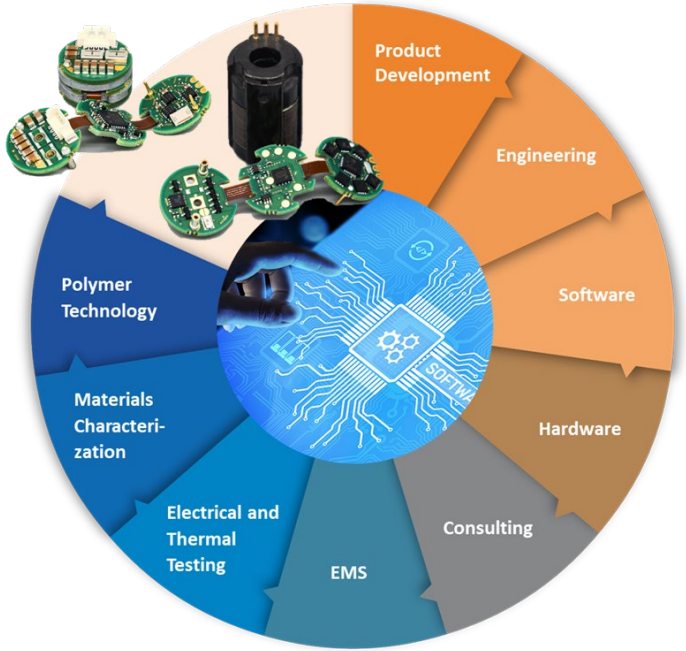
Ottronic E-Systems

Since more than 35 years Ottronic is a reliable partner for the development and production of **special electronics** and **high-performance drives** in harsh environments:

The combination of **material knowledge** and **electronic / electric drive competence** together with long-term experience in **medical and industrial applications** is unique at Ottronic.



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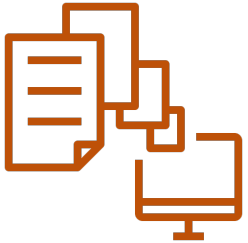
Challenges

Ottronic is currently facing **three main production challenges**:

Most of **production tasks** are carried out **manually**. These are repetitive, monotonous and do not promote learning.

High product quality is based almost on **experience and tacit knowledge**. This is difficult to transfer and replicate.



Analogue process documentation is available. **Tracking and traceability** of the products is therefore very complex.

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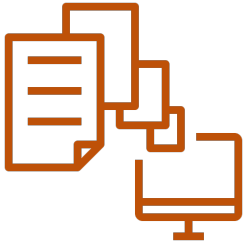
Topic within SURE5.0

Low-Cost Intelligent Automation is addressing these challenges:

Manual Work

Tacit knowledge



Analogue documentation

Low-Cost Intelligent Automation

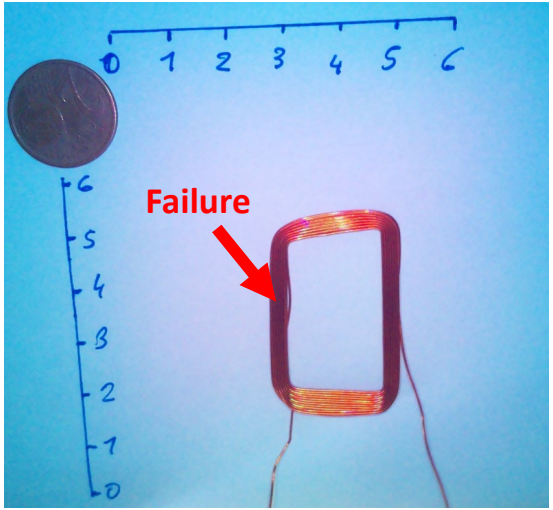
Human-Centered	Smart	Digital

Funded by the European Union

Application Case 1: Winding Manufacturing

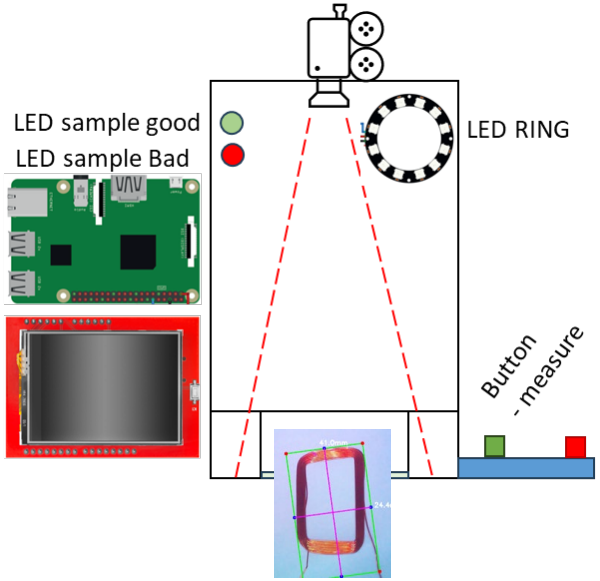
Current Task:

Manual operations and visual quality control in winding manufacturing.



Project Solution:

Digital quality control and feedback via object detection.



Hardware Costs: <500€

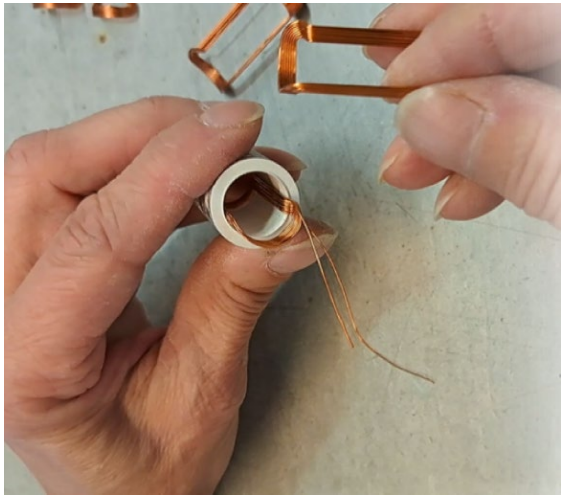
Funded by the European Union

Application Case 2: Stator Assembly

SURE5.0

Current Task:

Manual insertion of the windings into the stator housing.



Project Solution:

Digital, easy-to-understand and clear work instructions including quality control.

Hardware Costs: <800€

OTTRONiC E-SYSTEMS

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Outlook

The following tasks have **already been carried out**:

- Employees included
- Ideas generated
- Concepts developed
- Proof of concept developed

The following project steps are **currently in progress**:

- Demonstrator built
- Demonstrator implemented
- Benefits evaluated

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Thanks for your attention

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