Case Studies on Synergies

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Joint Research Centre

CENTI's H2020 Projects Examples and their exploitation results at National and International level

European Commission

1. H2020 to National projects

Powerweave

www.powerweave.eu

development of textiles for electrical energy generation and storage

project coordinator: Ian Jones (ian.jones@twi.co.uk)

Objectives

Development of photovoltaic energy harvesting fibres and energy storage fibres (battery) integrated by weaving or knitting with control electronics into a textile.

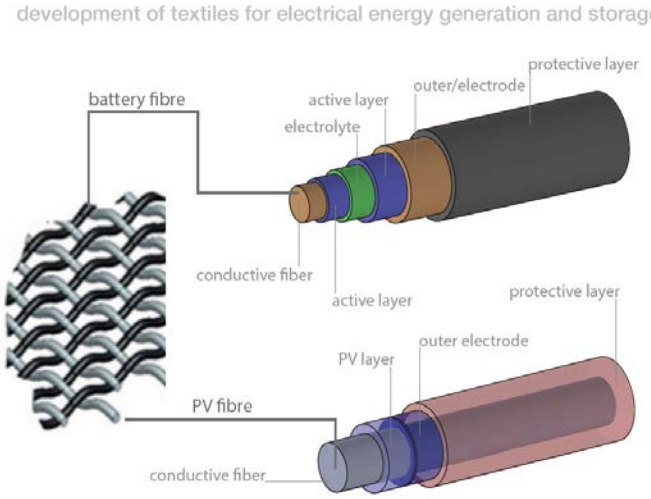
Challenge

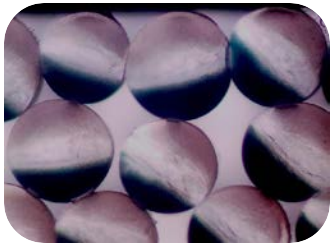
Development of a fabric that will generate and store electrical energy in its fibrous matrix.

Impact:

Large-area deformable products, including agricultural shading, automotive soft-tops, building facades, rollable shades, curtains and roofing, aerospace fabrics, and outdoor goods.

1. H2020 to National projects





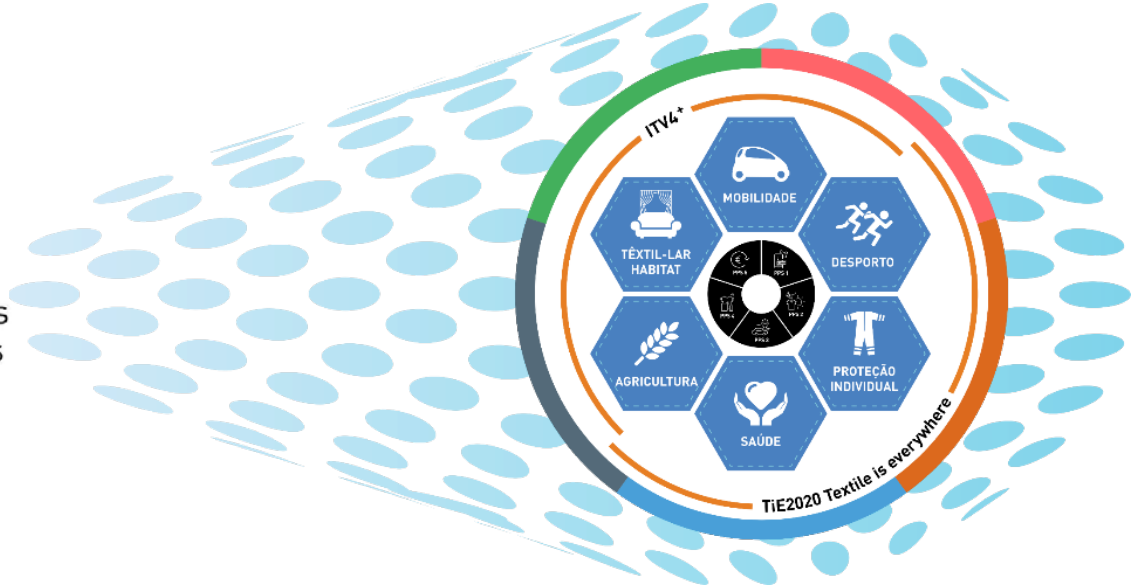
CENTI's role:

- Development of fibre structured electroactive materials (for both supercapacitors and PV fibres) (WP2);
- Development of multilayer coating methods for tricomponent meltspun fibres (WP4), and Yarn coating methods (WP5);
- Development of tricomponent fibre meltspinning for integrated semiconductor, conductor and dielectric materials into a single fibre structure (WP4);
- Leader of WP4;

1.1. Spillover into national funded projects:

Centre for Nanotechnology and Smart Materials

TexBoost | less Commodities more Specialities



COMPETE 2020 | PORTUGAL 2020 | UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

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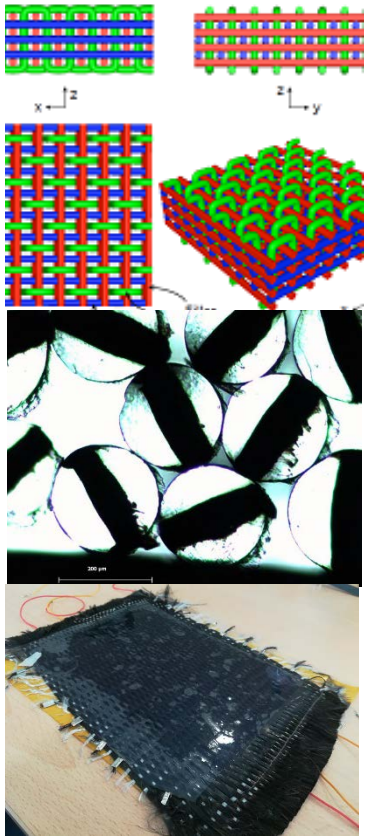
1.1. Spillover into national funded projects:



Mobilizador Project TexBoost is large structural project for the whole value chain of the Portuguese Textile Cluster: Technology and Fashion.

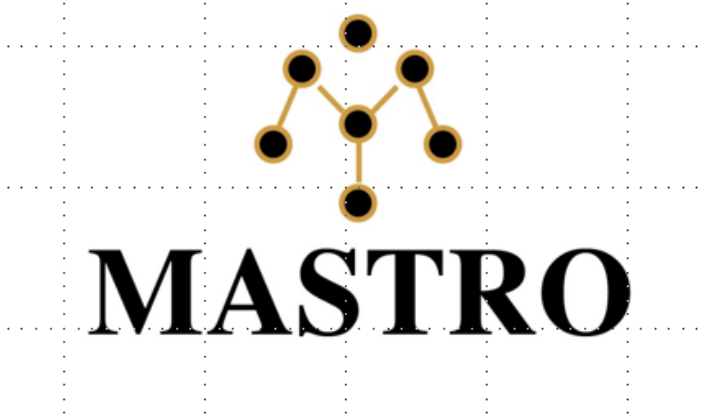
A spillover of project POWERWEAVE may identified by tasks in PPS3 of TEXBOOST, which aims to develop smart sensor-actuator tricomponent fibres, integrate the fibres into woven structures and subsequently integrate the sensing woven fabrics into a thermoset composite structure.

Partners of PPS3 are Simoldes Plásticos SA, TMG SA, INEGI, CITEVE and CENTI.

1.2. Spillover into national funded projects:

- INseamless project aims to develop seamless solutions that combine multi-functionality with eye-catching design with meet the growing demand from consumers;
- The project will integrate capacitive sensor fibres, and light-emitting fibres (based EL devices) based on tricomponent fibers.
- The tricomponent fibre active sensor structure, the capacitive device developed from fibre/yarn twisting have been developed in Powerweave;
- Partners of INSEAMLESS include SIT, CITEVE and CENTI.

1.3. Spillover onto other H2020 projects:



- Integration of tailored self-responsive functionalities into Smart lightweight polymer composites;
- Glass and carbon fibre reinforced polymers (CFRP and GFRP) and thermoplastic materials (including melt-spinning process for textiles used in the transport sector);
- Enabling critical sensing and data assessment transport sector components such as wing edges in aircrafts or car bumpers.
- Self-responsive functionalities are based on two physical phenomena: piezoresistivity and Joule effect.
- CENTI's role: develop sensor-actuator tricomponent fibres, and developing a sensing-actuator mesh via weaving and integration of the fabric into a thermoset composite.

2. H2020 to National projects

SKin Healthcare by Innovative NanoCAPsuleS

http://www.skhincaps.eu/

Objectives

Development of customised and safe nanocapsules to deliver novel products for skin healthcare applications, with increased efficiency and cost benefits, leading to ground-breaking innovations on the actual products.

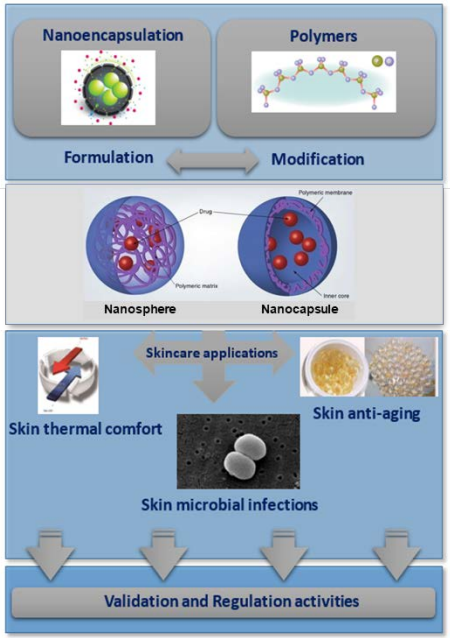
Challenge

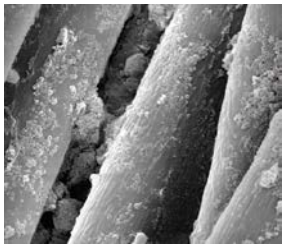
Development of sustainable, safe, cost-effective and highly stable nanocarriers with different encapsulated active ingredients (payload), with different release mechanisms.

Impact:

First layer garments with improved thermal management and skin comfort; creams with improved anti-ageing effect on end-users' skin; lotions and textiles for prevention or even mitigation of bacterial infections on end-users skin.

2. H2020 to National projects





CENTI's role:

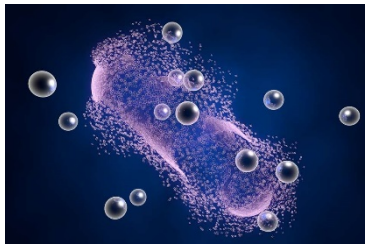
- Project coordinator (WP6)
- Preparation and morphological characterization of the nanocapsules (WP1, WP2)
- Coating of textiles with nanocapsules formulation and its characterization (WP3)
- Nanocapsules thermal, chemical and corneometry characterization. Release profile (WP3,WP4)
- Textiles characterization and validation in real usage scenarios (WP3,WP4)

2.1. Spillover for national funded projects:

PLASMAMED

Bionanocomposite coatings with controllable antibacterial activity using atmospheric-pressure plasma deposition

https://www.centi.pt/en/projects/academic-scientific/plasmamed-



- Assembling of the colloidal sol-gel modified NPs with the selected enzymes eventually using spacers and/or stabilizers;
- The atmospheric plasma assisted deposition of the bionanocomposite on safe polymers onto commercial dressing for pressure injury and hernia meshes;
- Study the physico-chemical mechanism of hybrid nanoparticle deposition, the effectivity of nanocoating in antimicrobial activity and the precise control of plasma conditions;
- Fully morphological, physico-chemical, thermo-mechanical, antimicrobial properties and cytotoxicity characterization of the the new hybrid NPs-based medical textiles.

3. JTI to National projects

WINS@HI

CELTIC-NEXT

Objective:

- Develop offer an ad-hoc, agile and reliable communication solution for both condition monitoring of the operations and safety of the workers in hazardous ‘Industry 4.0’ work environments

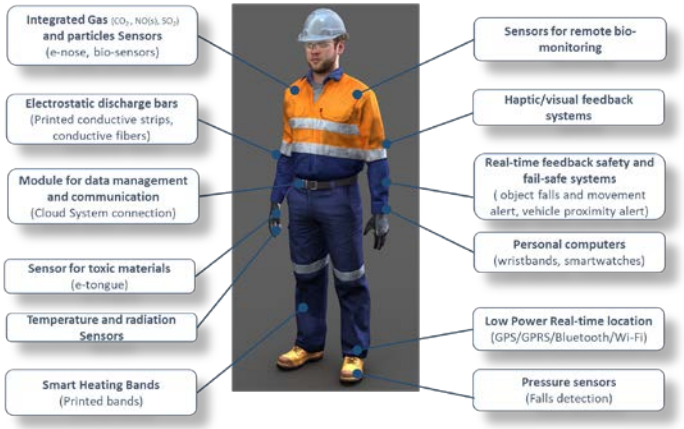
Challenge:

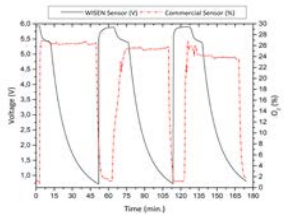
- Integrate Internet-of-Things (IoT) sensors, such as wearable devices, that capture data from work environment and vital parameters of work safety, and extract maximum amount of information from the hazardous production sites.

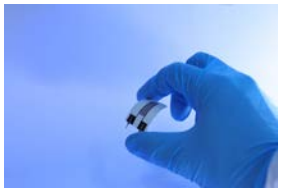
Impact:

- Solution for will focus on underground coal mines and tunnel/underground transportation construction sites
- Sites with challenging communication conditions challenging.

3. JTI to National projects







CENTI's role:

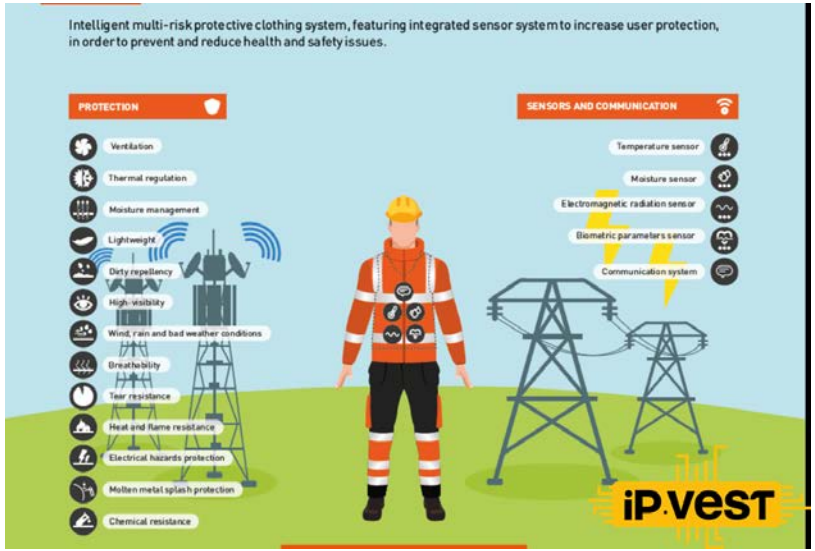
- Development of the sensor-actuator systems to be integrated into wearable PPEs, including indoor monitorization and geo-tracking systems.
- Development of the data acquisition and data management system to be integrated into PPE structures.
- Management of the Portuguese Case-Study at LIPOR – Urban Waste Management Plant

3.1. Spillover for national funded projects:

WISEN project aims to create an integrated solution of sensing and communication systems in industrial environments, namely for a waste management plant via:

- Optimization of a wireless data transmission architecture;
- Development of new sensors and respective integration solutions;
- Partners of WISEN include PROEF Group, LIPOR and CENTI.

3.2. Spillover for national funded projects:



Development of multi-functional textile structures focused on field services to Telecommunications and Energy professionals:

- Multi-risk protection clothing (thermal and chemical resistance, electric hazard etc.);
- Integrated sensors (temperature, moisture, electromagnetic) for user monitorization;
- Electronic control (hardware and firmware) and user interface system (software and communication);
- Partners of IPVEST include SCOOP, VIATEL, CITEVE and CENTI.

Cofinanciado por:
COMPETE 2020
PORTUGAL 2020
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Fundos Europeus Estruturais e de Investimento

European Commission

The European Commission's science and knowledge service

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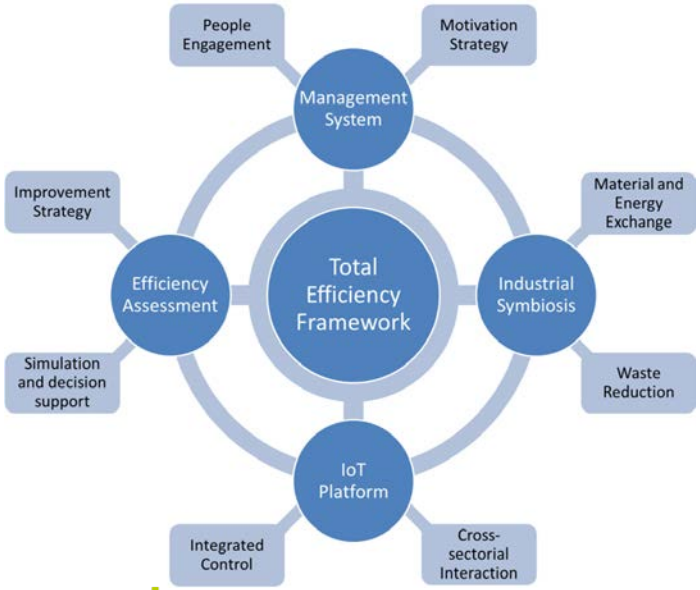
INEGI's H2020 Projects Examples and their exploitation results at National and International level

Reference Project: MAESTRI (SPIRE)

WORK DONE IN THE PAST (aligning EU and NR projects)
EXAMPLE: First step – The european research project

- **Project Name:** MAESTRI - Total Resource and Energy Efficiency Management System for Process Industries (2015-2019)
- **H2020 Process Industries based project (Call SPIRE 06-2015)** lead by ISQ, focused on Resource Efficiency, Industry 4.0 enabler via IoT Platform, Lean Management and Industrial Symbiosis.
- **MAESTRI origins began with a QREN Portuguese R&D Cluster Project – PRODUTECH PSI – PPS5 Eco-Efficiency**. ISQ and INEGI endeavor to further develop the conceptual results in a H2020 project



MAESTRI

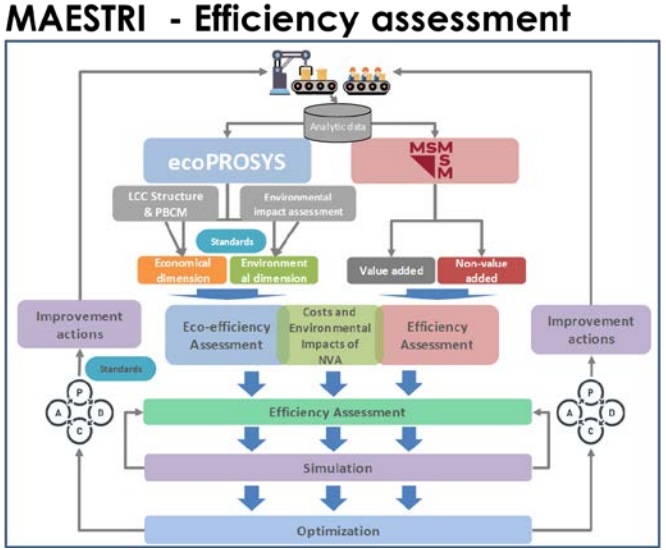
Coordenador

European Commission

WORK DONE IN THE PAST (aligning EU and NR projects)
EXAMPLE: First step – The european research project

KEY RESULTS of MAESTRI to INEGI and ISQ

- **EFFICIENCY FRAMEWORK:** Integrated approach for production system assessment of Efficiency (Resource Efficiency, Material & Energy; Operational Efficiency) and Eco-Efficiency (Economic Value and Enviromental Impact)
- **New softwares: MSM-Multi-Layer Stream Mapping** (For overall Efficiency assessment) and **ecoPROSYS** (for eco-efficiency and LCA assessment)
- **Integration of MSM and ecoPROSYS modules as SaaS connected to IoT-Platforms**
- **Demonstration in multiple pilots,** including Use Cases in Germany for support decision in complex planning of batch production (with ATB)
- **Integration of Efficiency Framework to Industrial Symbiosis framework** (with UCAMBRIDGE)



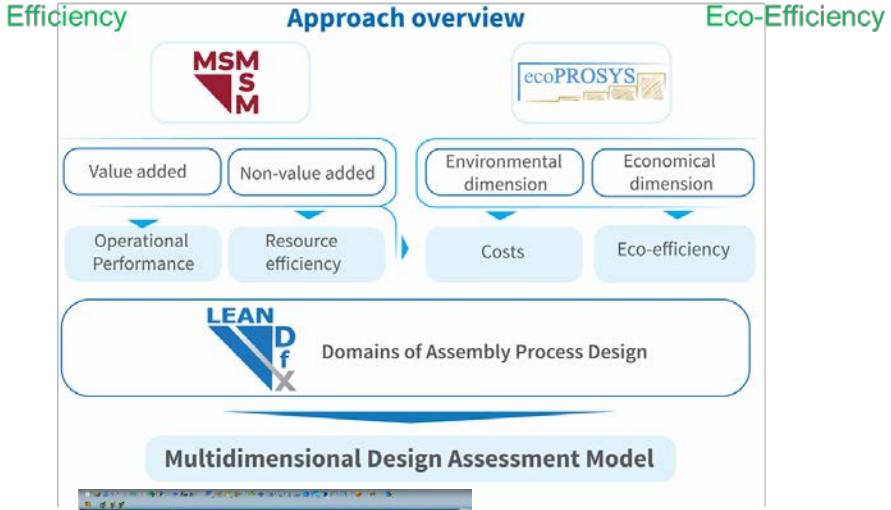
MSM multi- layer stream mapping

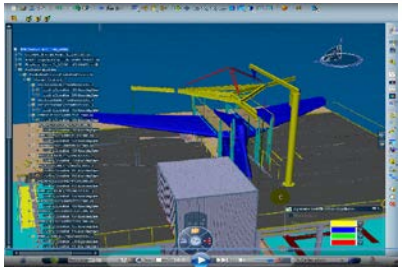
ecoPROSYS

European Commission

WORK DONE IN THE PAST (aligning EU and NR projects)
Result 1: H2020 JTU–Clean Sky 2 – PASSARO (R&D Project)

- **Project Name: Clean Sky 2 - PASSARO** WP9 (2016-2019)
- **C-3.7: Innovative Manufacturing and Functional Testing of Aerostructures - "Test of Efficient use of Materials and Energy"**
- **Application of Efficiency Framework and INEGI's Lean Design-for-X for the evaluation of (eco-)efficient Assembly Design Assessment.** The tools were adapted to the context of Assembly Design, with a pilot case with AIRBUS DEFENSE & SPACE.
- **Software development for costumized solver to be used by AIRBUS at assembly process design;** Integration as SaaS with AIRBUS ARAS Innovator PLM system and Inputs in Dassault CATIA



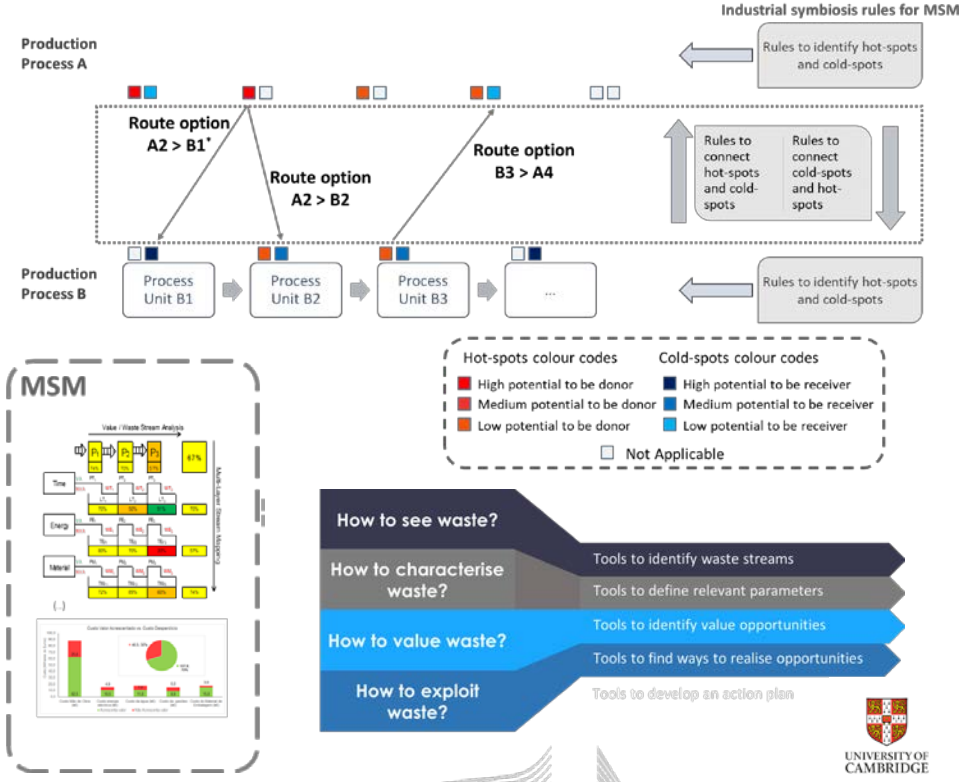


Clean Sky 2

AIRBUS DEFENCE & SPACE inegi ISQ PASSARO European Commission

WORK DONE IN THE PAST (aligning EU and NR projects)
Result 2: Portugal 2020: CoCereal Value (R&D Project)

- **Project Name: P2020 CoCereal Value** (2018>2021)
- **Focus on circular economy,** by assessing namely the wheat residues and co-products, in order to be valued by means of Industrial Symbiosis and the Efficiency Framework.
- **INEGI is partner, Silos de Leixões the lead partner, Germen and U Católica, partners. UCAMBRIGDE is external stakeholder in the Advisory Board.**
- **Application of Efficiency Framework, MSM for waste hot-spots detection/quantification; new INEGI's framework "Hot-Cold Spots Assessment" and UCAM based T4IS framework**
- **New Industrial Symbiosis Case Study for cereal subproducts and residues**



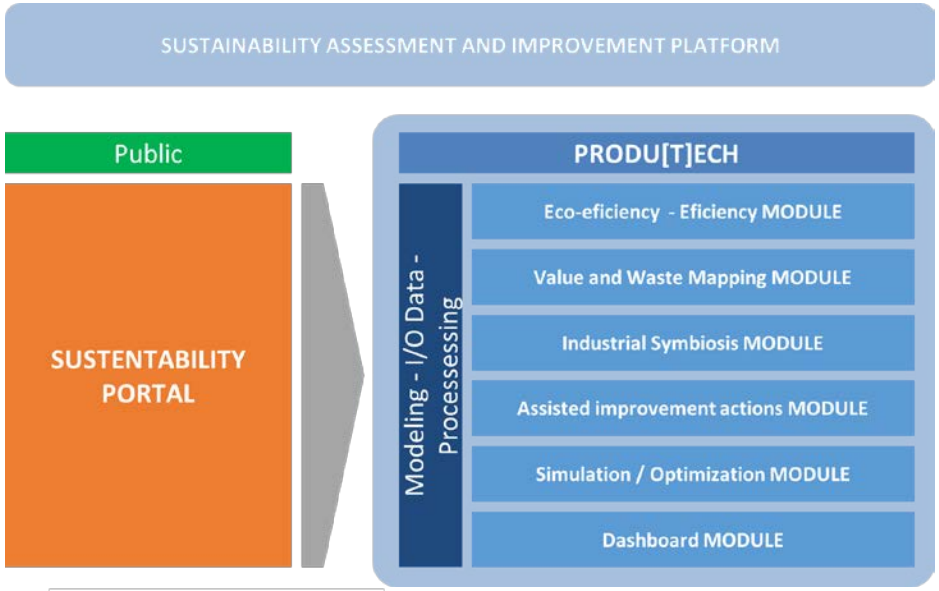
WORK DONE IN THE PAST (aligning EU and NR projects)
Result 3: Portugal 2020: E.I.B i4.0 (Inov.Contract Project)

- **Project Name: P2020 CoCereal Value** (2018>2019)
- **Innovation project, P2020 "Inovação Produtiva", focused on industrial demonstration, either of i4.0 IoT Platform and MSM-Multi-Layer Stream Mapping in SaaS component**
- **INEGI was contracted to this Technology Transfer project to SME company E.I.B. in Marinha Grande (rubber tire components).**
- **New features to MSM SW; automatic reporting; new drill-down capabilities (Prod_id > Batch SN)**
- **New performance indicators for Operative Variables (Temperature, Speed, Quality, etc.)**
- **Four Pilot Areas of E.I.B**

European Commission

WORK DONE IN THE PAST (aligning EU and NR projects)
Result 4: P2020: PRODUTECH SIF – Sustainability WP (Cluster R&D Project)

- **Project Name: P2020 PRODUTECH SIF – PPS3 – Sustainability** (2017>2020)
- **R&D P2020 project, from Cluster Produtech – Capital Goods Cluster, where INEGI is leader and ISQ partner. The focus is to further develop the Efficiency Framework and Industrial Symbiosis new approaches in the context of Machine-Tools and Productions Systems improvement.**
- **17 Partners, 2 technology providers (MicroProcessador SA and SISTRADE SA), 4 Pilots (COLEP SA, SONAE MC, SILAMPOS, BTL), 11 RTO (Universities and Technology Centers)**
- **The overall result depicts a platform solution, integrated or as a Sustainability Tool-Kit for different industrial sectors; and a new approach for Industrial Symbiosis Potential Assessment Tool.**



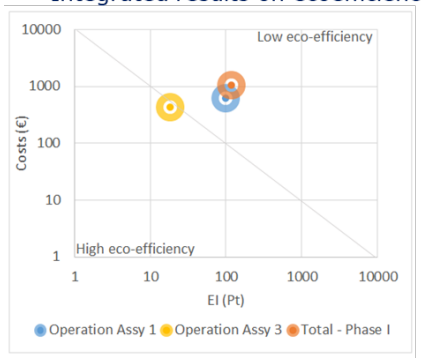
PRODU[T]ECH SIF
PROGRAMA MOBILIZADOR 2017-2020 Soluções para a Indústria de Futuro

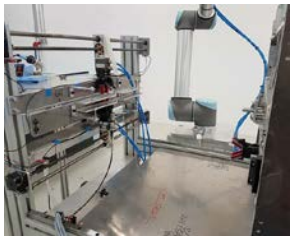
European Commission

WORK DONE IN THE PAST (aligning EU and NR projects)
Result 5: P2020: MOSHO – Sustainability (R&D Project)

- **Project Name: P2020 MOSHO – Sustainability Assessment** (2018>2021)
- **R&D Project, as a further development of H2020 JTU CLEAN SKY 2 – PASSARO**
- **The PASSARO's developed tools and Multi-Dimensional Assessment Model, will be further developed and applied in new Process Technologies for Aeronautical Components Reparation Processes.**

Integrated results on ecoefficiency





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CTCP's H2020 Projects Examples and their exploitation results at National and International level

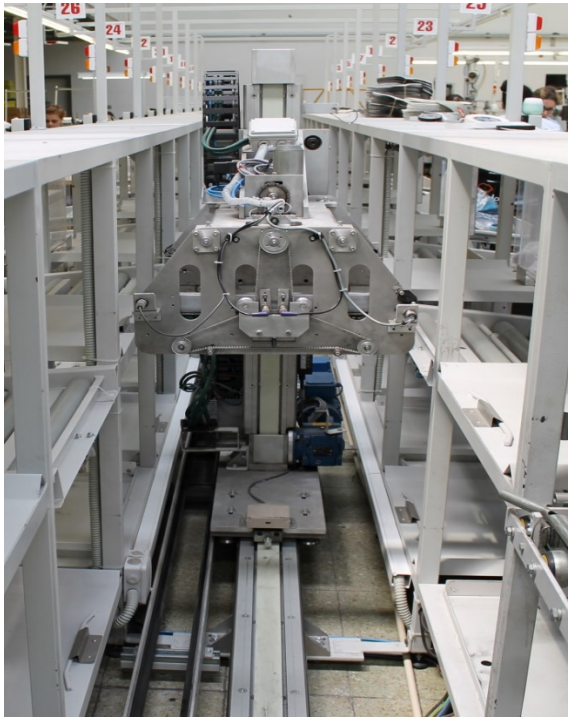
European Commission

1 Footwear Digital Manufacturing

BEINCPPS

INTEGRATE A CPS-ORIENTED FUTURE INTERNET-BASED MACHINE-FACTORY-CLOUD SERVICE PLATFORM AT 5 SELECTED SMART SPECIALISATION VANGUARD REGIONS WITHIN EUROPE

THE NORTE DO PORTUGAL DRIVE THE **PREVIOUSLY DEVELOPED HIGH SPEED SHOE FACTORY** NATIONAL PROJECT TO A 'SMARTER' LEVEL (HTTP://WWW.BEINCPPS.EU/)



BEINCPPS CO-FINANCED BY THE EUROPEAN UNION FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION HORIZON 2020 GRANT AGREEMENT N° 680633

1 Footwear Digital Manufacturing

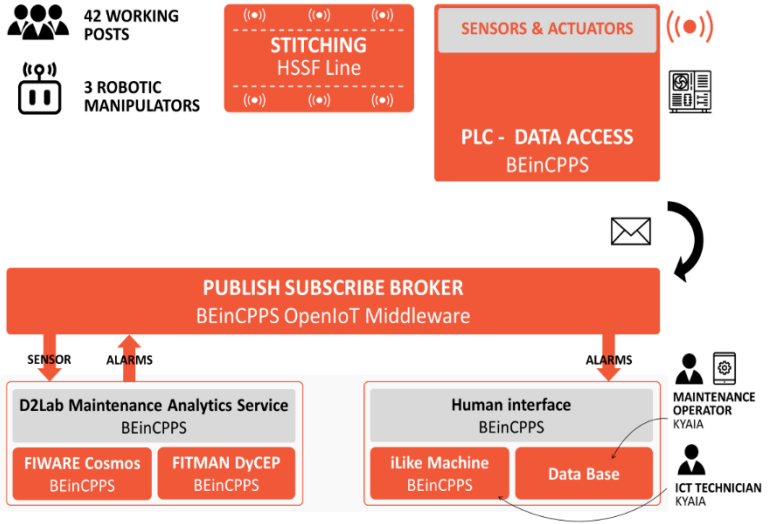
BEINCPPS

CYBER PHYSICAL PRODUCTION

PLC DEVICES CONNECTED WITH SENSORS AND ACTUATORS ON THE SHOP FLOOR

DATA STORAGE (CLOUD) & ANALYTICS

INNOVATIVE ICT APPLICATIONS: **PRODUCTION MONITORING & DIAGNOSTIC AND PREDICTIVE MAINTENANCE**



BEINCPPS CO-FINANCED BY THE EUROPEAN UNION FRAMEWORK PROGRAMME FOR RESEARCH AND INNOVATION HORIZON 2020 GRANT AGREEMENT N° 680633

1 Footwear Digital Manufacturing

BeInCPPS some spillovers

Digital Innovation Hub for Customer-Driven Manufacturing @ Norte - **iMan Norte Hub** (EC Digital Innovation Hubs Catalogue, Partner of I4MS, www.imannortehub.com)

Demonstration and Technological Transference project targeting the Footwear Industry **Step 2 Footure**

R&D Project FAMEST

PRODUTECH, INESC TEC, UPTEC, CATIM, CITEVE, CTCP, CTCOR
Research centers Technological centers Laboratories and experimental facilities
Business Incubators Science and technological parks
Industrial Associations Clusters
Companies offering technologies for production, digitization, robotics, engineering and industrial consulting
Demonstrators
Higher education institutions Business Schools Vocational training schools
European, National and Regional Authorities

Project Step2Footure co-financed by Compete 2020, Portugal 2020, EU FEDER, grant nº 26777

2 Footwear Sustainable Manufacturing

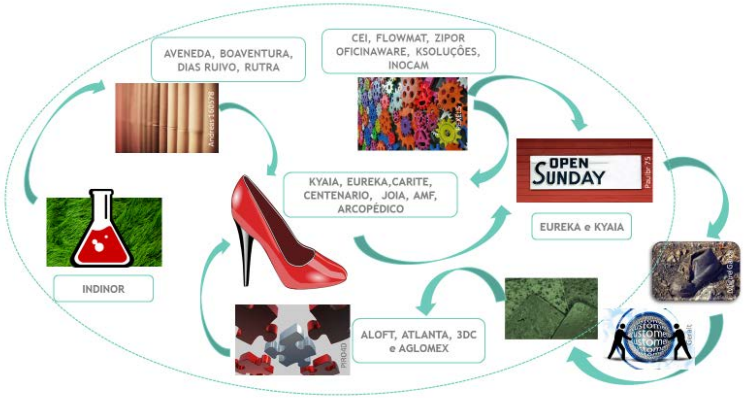
ctcp centro tecnológico do calçado de portugal

FAMEST

FOOTWEAR, **A**DVANCED **M**ATERIALS, **E**QUIPMENT & **S**OFTWARE **T**ECHNOLOGIES, PORTUGAL 2020 R&D COLLABORATIVE PROJECT

23 COMPANIES COVERING THE WHOLE FOOTWEAR VALUE CHAIN: LEATHER, INSOLES, SOLES, CHEMICALS, SOFTWARE, PRODUCTION EQUIPMENT, LOGISTICS AND FOOTWEAR

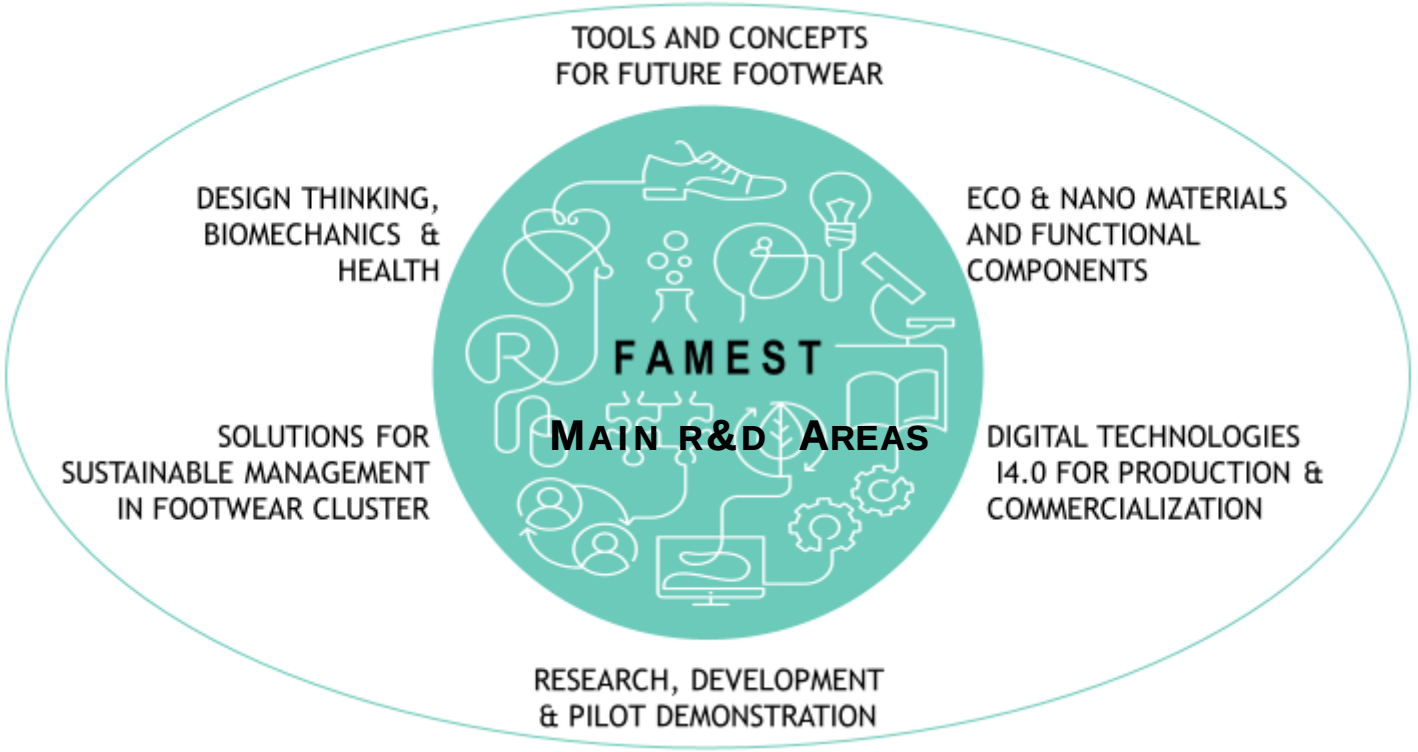
9 R&D BODIES WITH COMPLEMENTARY ABILITIES (HTTPS://FAMEST.CTCP.PT)



FAMEST CONSORTIUM CO-FINANCED BY COMPETE 2020, PORTUGAL 2020 AND EU FEDER UNDER GRANT Nº 24529

European Commission

2 Footwear Sustainable Manufacturing



2 Footwear Sustainable Manufacturing

ctcp centro tecnológico do calçado de portugal

FOOTWEAR & RETAIL	KYAIA, AMF, Fontanário, CARITÉ, Jefar, JOIA calçado, s.a., eureka, ARCOPEDICO
CHEMICALS, MATERIALS & COMPONENTS	Curumes Aveniense, Curumes Boaventura, DIAS RUIVO, Aloft, Alfasta, AGLOMEX - COMPONENTES PARA CALÇADO, 3D CORK, INDINOR
SOFTWARE & EQUIPMENT	cei, flowmat, inocam, KYAIA - SOLUÇÕES INFORMÁTICAS., oficinaware, Pegusil
R&D ENTITIES	ctcp centro tecnológico do calçado de portugal, CTIC Centro Tecnológico das Indústrias do Couro, Centro de Computação Gráfica, U.PORTO, U.PORTO FC, U.PORTO FEUP, U.PORTO, Universidade do Minho, isep Instituto Superior de Engenharia do Porto, inegi driving science & innovation, INESCTEC, ipb INSTITUTO POLITÉCNICO DE BRAGANÇA
FAMEST	FAMEST IS CO-FINANCED BY PORTUGAL 2020 R&D PROJECTS GRANT AGREMMENT N. 24529, ANI AGÊNCIA NACIONAL DE INOVAÇÃO, Cofinanciado por: COMPETE 2020, PORTUGAL 2020, UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

European Commission

2 Footwear Sustainable Manufacturing

centro tecnológico do calçado de portugal

FAMEST SPILLOVER

LIFE GREEN SHOES 4 ALL

FOOTWEAR ENVIRONMENTAL FOOTPRINT CATEGORY RULES IMPLEMENTATION

INNOVATIVE GREEN FOOTWEAR ECODESIGN

WASTE RECYCLING

EXPERIMENT, DEMONSTRATE, DISSEMINATE

PROJECT LIFE GREEN SHOES 4 ALL, GRANT AGREEMENT NO. LIFE17 ENV/PT/000337, 2018 – 2022.
CALL: LIFE + 2017 ENV RESOURCE EFFICIENCY

European Commission

3 Nanotechnology @ Footwear

NANOFOOT

NANOTECHNOLOGY-BASED SOLUTIONS FOR LEATHERS AND POLYMERS COMPONENTS FOR FOOTWEAR PRODUCTS

THE CONSORTIUM INCLUDED 9 MEMBERS (5 SMES): CURTUMES AVENEDA (PT), INDINOR (PT), EVATHINK (ES), TPSP (ES), CAMMINA LEGGERO (IT), FCUP (PT), INESCOP (ES), CNR-ITIA (IT) & CTCP (PT)

3 Nanotechnology @ Footwear

NANOFOOT SPILLOVER

EXTRA LIGHT SAFE SHOE PROJECT

NEW MATERIALS, PROCESSES AND TECHNICAL FOOTWEAR

ULTRALIGHT MICROCELLULAR POLYURETHANES FOR MIDSOLES

PERFORMING CORK COMPOSITES FOR INSOLES

EXTRA LIGHT CO-FINANCED BY PROJECT EXTRALIGHTSAFESHOE, COMPETE 2020, PORTUGAL 2020, EU FEDER GRANT Nº 17570, CONSORTIUM: TECHNOLOGICAL AND INNOVATION CENTRE CTCP, RESEARCH INSTITUTE CIMO/LSRE-LCM/IPB, SAFETY SHOES MANUFACTURER AMF (BRAND 2W4) AND CORK INSOLES MANUFACTURER 3DC (BRAND 3DCORK)

The European Commission's science and knowledge service

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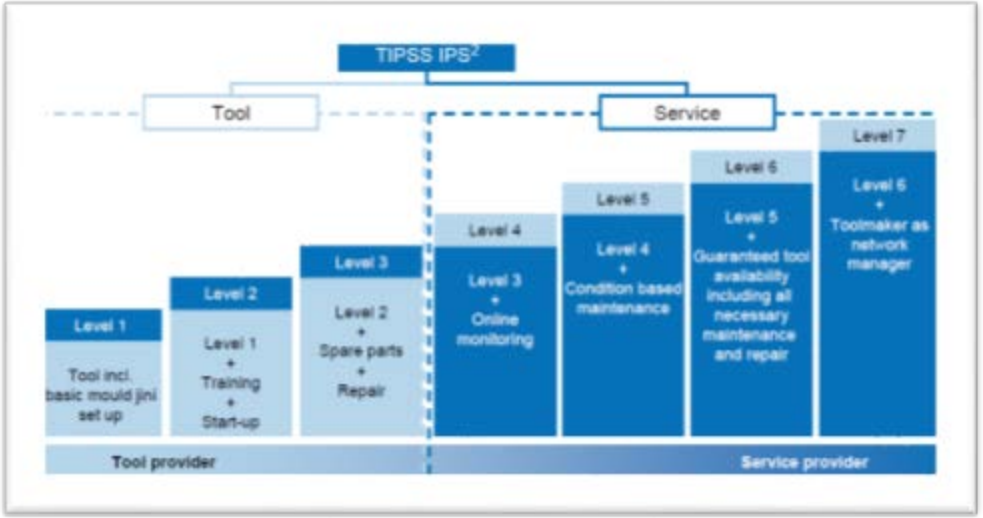
CENTIMFE's H2020 Projects Examples and their exploitation results at National and International level

EXAMPLE 1: 1st step – The european research project

- European Project: TIPSS - Tools for Innovative Product-Service-Systems for Global Tool and Die Networks
- Ancillary concept of Industry 4.0
- R&D of mould black box
- R&D of software for mould remote monitoring and alert system, and service platform
- Study of new business models bases on Product-Service-Systems



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EXAMPLE 1: 2nd step – The european research project

- TransConTech: Integration between mould sensor data and part quality data in an automated modular cell
  Project Nº POCI-01-0246-FEDER-026787
- SAM: development of thin films-based sensors in moulds
  Project Nº POCI-01-0247-FEDER-017620
  Partners: Moldit, TEandM, IPCA, Centimfe, IPN, U. Minho, IST
- #SIMOLDES 4.0: Communication infrastructure and data analysis for predictive maintenance
  Project Nº POCI-01-0247-FEDER-017639
  Partners: Simoldes Aços, Centimfe, U. Minho

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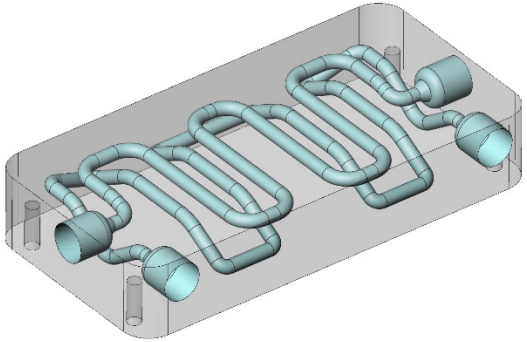
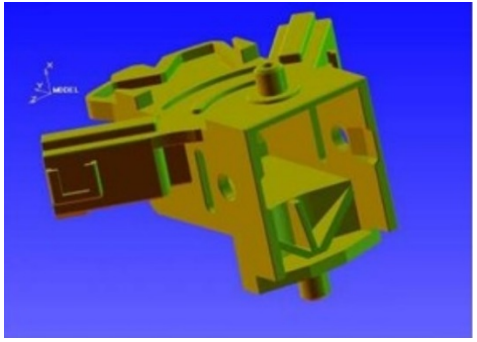
EXAMPLE 2: 1st step – The european research project

- European Project: HIPERMOULDING - Advanced termal performance in injection moulding (6th FP)
- R&D on Additive Manufacturing Technologies
- Software Development – Cooling Channel Planner
- R&D on injection moulding parameters
- Industrial Case Study - Comparisson with conventional mould





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EXAMPLE 2: 2nd step – The european research project

- HYBRIDMOULD21: engineering solution for large plastic parts in small series

  Project Nº 13307 - Co-Promoção

  Partners: 3DTECH, Moliporex, CENTIMFE, U.Minho

- BigPROTO: Advanced Manufacturing of Large and Technical Prototypes

  Project Nº 11440 - Co-Promoção

  Partners: MT TOOL, Distrim 2, TJ Moldes, CENTIMFE, U. Minho, IPL–CDRSP

- ADD.ADDITIVE : material-process relationship in Additive Manufacturing

  Project Nº POCI-01-0247-FEDER-024533

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The European Commission's science and knowledge service

Joint Research Centre

ISQ's H2020 Projects Examples and their exploitation results at National and International level

The european research project - PASSARO

H2020 Clean Sky 2 PASSARO [2016-2019]

- PASSARO– “Capabilities for Innovative Structural and Functional Testing of Aerostructures”
- Core-partner of ITD Airframe from Clean Sky 2
- Grant agreement No 807083

Areas identified by Airbus D&S:

- Multi-functional aerostructure design,
- aerostructures testing and innovative SHM,NDI & repair
- application of new information & automation technologies to manufacturing & maintenance

Partners - http://passaro.inegi.up.pt/consortium.asp

European Commission

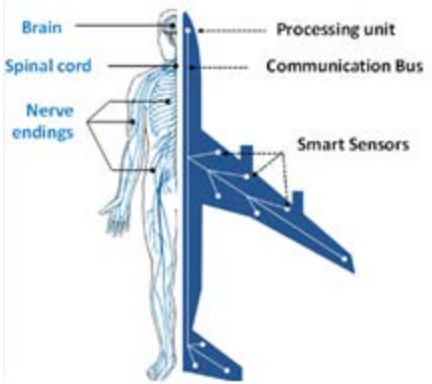
The european research project - PASSARO

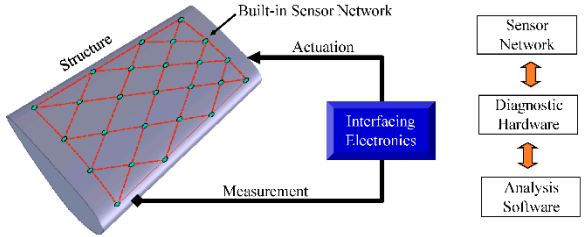
SHM - Structural Health Monitoring System

- Validate a SHM system that will monitor defined event occurrences and will indicate the possible existence of damages with a probability higher than 90%.

- Use of more reliable and better system integration capabilities with appropriate V&V methodologies.

- Enable monitoring of a sort of event occurrence and damage existence to reduce the risk of unpredicted structural failure





Architecture:

- Diagnosis system design
- Prognosis system design
- Test, qualification and validation

European Commission

The development of research projects at national level - MOSHO

- MOSHO - “Advanced solutions for impact materials, repair of composite aero-structures and their monitoring”, is supported as a complementary ESIF proposal (in the context of the MoU), linked to Clean Sky 2 PASSARO project

- Funding awarded by the National PT2020 call for projects, under Programa Interface, R&DT projects in co-promotion and co-funded by PT2020/Compete2020.

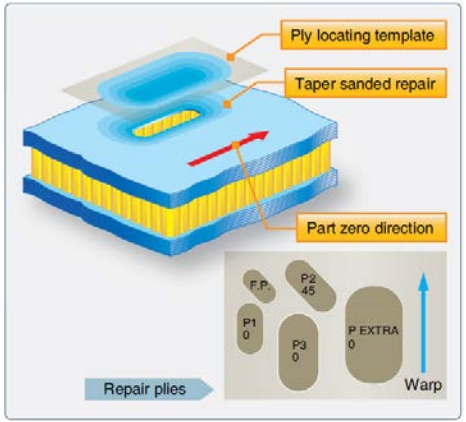
Participants: Critical Materials SA (coordinator), INEGI, ISQ, TAP
https://mosho-project.pt/

European Commission

The development of research projects at national level - MOSHO

One of main Passaro's results is a system/methodology of structural condition monitoring for detection of impacts in new composite structures.

This result was the base of project MOSHO in which the system/methodology is being adapted/reconfigured to monitor the structural condition of repaired composite structures and its evolution overtime.



European Commission

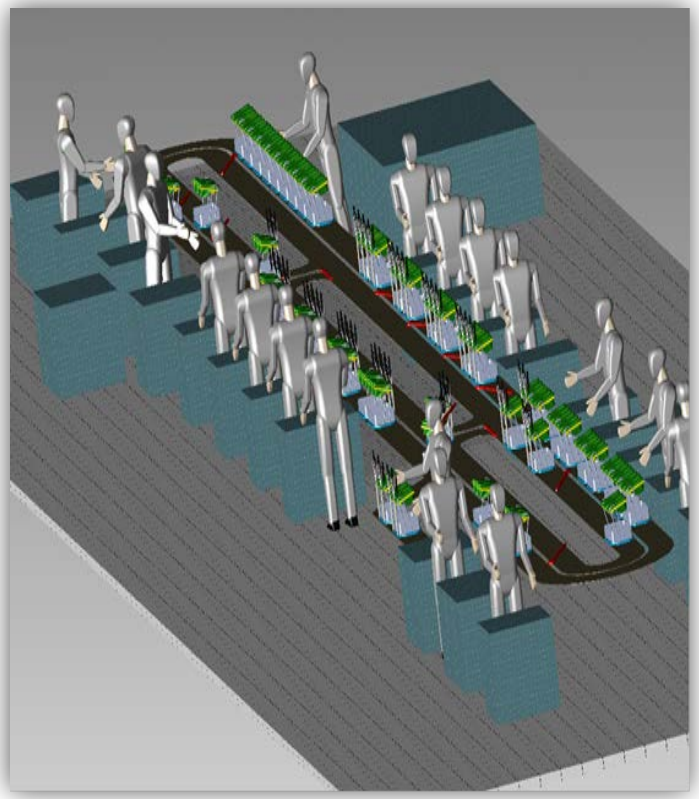
Case Studies on Synergies

The European Commission's science and knowledge service

Joint Research Centre

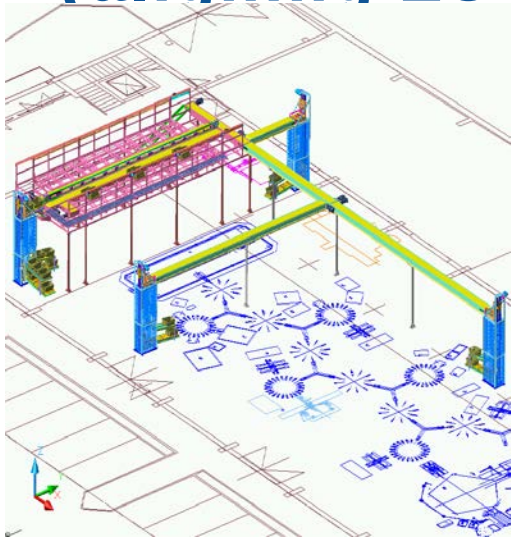
European Commission

- ONE STEP – Logistic System for Customised Productions and Small Series
- European Project CEC Made Shoe
- R&D activities in Work Organization, Internal Logistics and Process Optimization
- Radically new concept was developed and validated (using simulation tools and a small pre-competitive prototype (4 working posts)
- Involved a Logistic Systems Producer, a Research Organization and the Shoe Sector Technological Center



- Further Research, Development and Integration of other Technologies (pilot line - industrial prototype)
- Validation and Demonstration in Real Production Environment
- Funded by the national programmes (COMPETE/QREN), using structural funds
- Previous consortia + a shoes manufacturing company
- Significant productivity impact + international patent

WORK DONE IN THE PAST (aligning EU and NR projects)

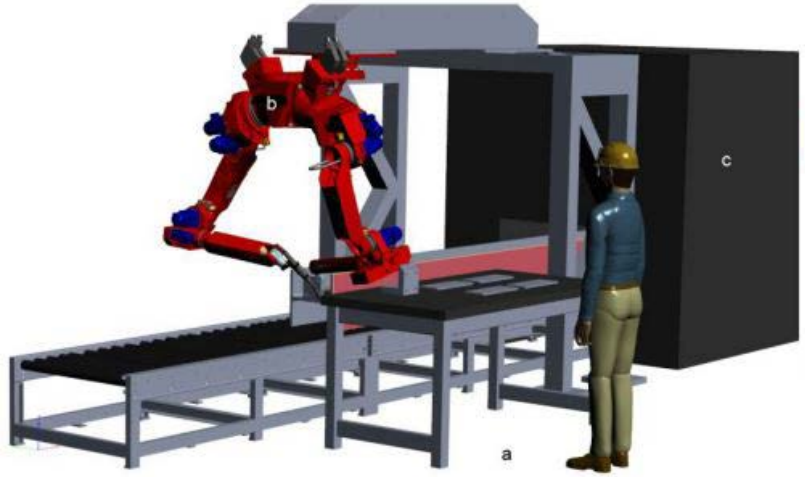


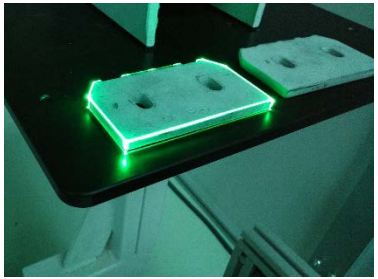
Development of a Highly Flexible Logistic System for Customized Products
EU Funded Project

IPP Pilot Plant
Shoe Sector
Vigevano – Italy
Funded by National Funds

Cross Fertilization
Metalworking Sector
(Company)
Demonstrator
Porto – Portugal
Funded with Structural Funds

- CLARiSSA– Demonstrator
- European Project SMErobotics
- R&D activities in CAD/BIM file processing, advanced sensing, automatic path planning, and projection mapping.
- Feasibility was demonstrated, and the industrialization potential from the diferent technologies identified.
- Involved a software company, a Research Organization and the end-user.





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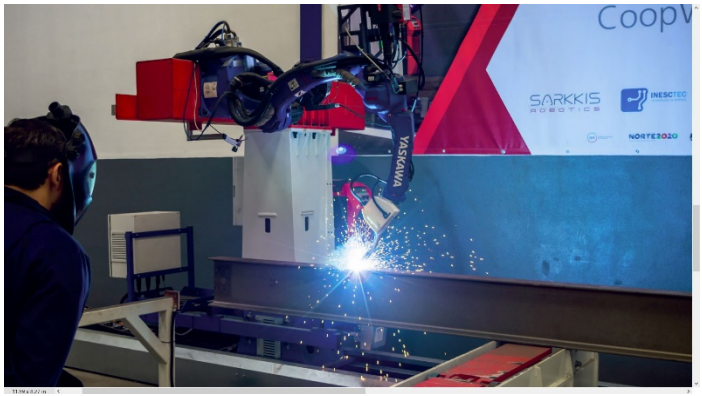

- Further Research, Development and Integration of other Technologies (pilot line - industrial prototype)
- Validation and Demonstration in Real Production Environment
- Funded by the national programmes (P2020), using structural funds
- Previous consortia + welding research center
- New product lauched in the market.