TREASURE

Supporting the transition of the automotive sector towards circular economy

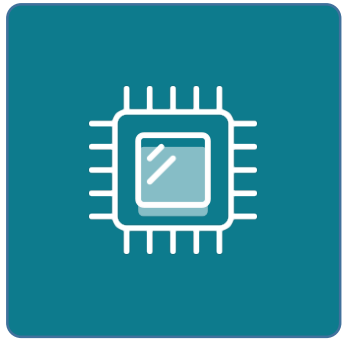
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003587

TREASURE

- **TREASURE is a 3-year- Research and Innovation Action** co-funded by the European Commission **under the H2020 programme** willing to offer new opportunities for testing innovative technologies to make the automotive sector more circular.
- **TREASURE consortium** is coordinated by Politecnico di Milano and it is **formed by a group of 15 organizations from 7 European countries**

Objectives

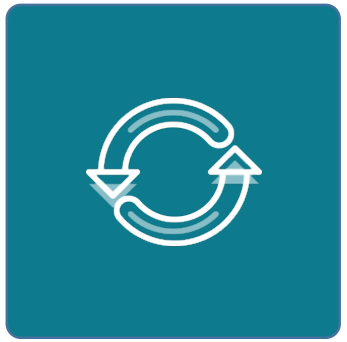
TREASURE



Guaranteeing a sustainable use of raw materials in the automotive sector, by reducing material supply risks

Offering better vehicle-related economic, environmental and social performances to all the end users

Adopting in practice the circular economy paradigm in the automotive sector, by acting as demonstrators for the manufacturing sector



Creating new supply chains around End-of-Life Vehicles (ELVs), by focusing on a circular exploitation of raw materials embedded into cars.

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Goals

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TREASURE solution **can assist both car parts suppliers and carmakers** in assessing their design decisions in terms of circularity level, also considering the effects of their decisions on EoL processes.
Vice versa, car dismantlers and shredders could benefit from the TREASURE solution by knowing about new design features of cars to be recycled in order to optimize their processes.

TREASURE solution will define and exploit a new sustainability and circularity assessment methodology to quantify environmental, economic, social and CE-related performances through a set of dedicated KPIs. Based on these indicators, the solution moreover offers an advisory framework that supports the decision-making process of designers, recyclers and dismantlers

TREASURE will support companies in the automotive sector, by demonstrating in practice the benefits that the adoption of the circular economy paradigm can provide, both from a business/supply chain and from a technological/sustainability point of view, through the adoption of Industry 4.0 technologies in ELV management processes.

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TREASURE is willing to reach three main results

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Developing a Digital Platform powered by an AI-based scenario assessment tool providing a digital layer supporting the information exchange and intelligence for the development of circular supply chains in the automotive sector.

Representing a set of success stories in three key value chains of the automotive industry, as dismantlers/shredders, recyclers and manufacturers, by demonstrating the benefits coming from the adoption of CE principles in the automotive sector.

Integrating Key Enabling Technologies (KETs) for the efficient design of car electronics and subsequent disassembly and materials recovery.

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Project structure – Work Packages

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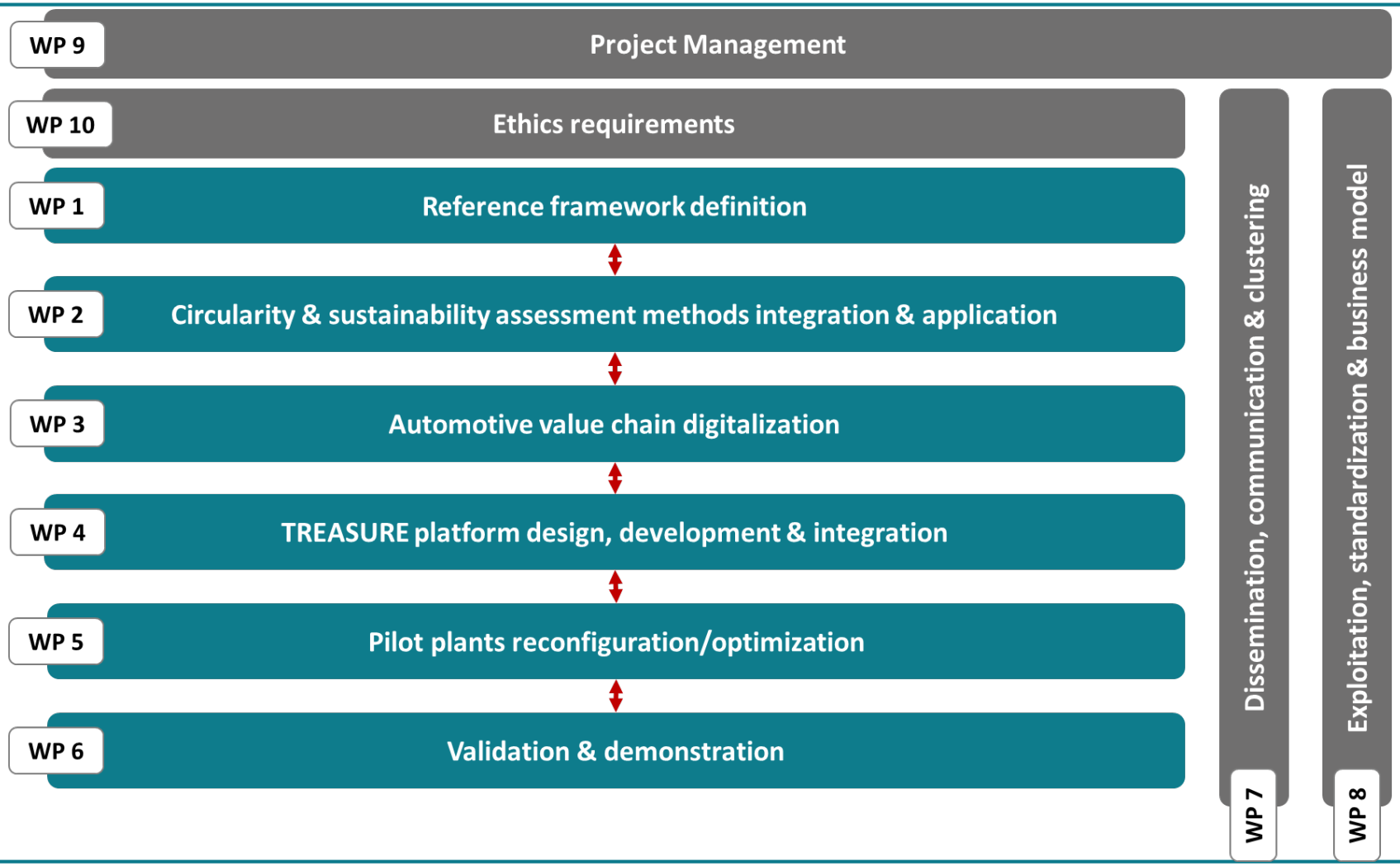

Partners

TREASURE

- Politecnico di Milano (POLIMI)
- Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)
- Universidad de Zaragoza (UNIZAR)
- Scuola universitaria proffesionale della Svizzera italiana (SUPSI)
- Università degli Studi dell' Aquila (UNIVAQ)
- Material Recycling and Sustainability B.V. (MARAS)
- Edgeryders OU (EDGE)
- EuroLCDs SIA (EUROLCDS)
- Walter Pack SL (WALTER)
- Pollini Lorenzo e Figli srl (POLLINI)
- SEAT SA (SEAT)
- TXT E-Solutions Spa (TXT)
- Industrias Lopez Soriano SA (ILSSA)
- Ente Nazionale Italiano di Unificazione (UNI)
- MOV'EO (MOVEO)

Partners

Politecnico di Milano (POLIMI)

TREASURE

POLITECNICO MILANO 1863 | Manufacturing Group SCHOOL OF MANAGEMENT

Coordinator
Tasks leader in WP1, WP5, WP6 and WP8

- Responsible for the “Project Management and Coordination”, including the coordination among partners and Advisory board.
- POLIMI will apply its strong knowledge in Industry 4.0 technologies in order to develop, test and optimize a pilot station dedicated to car electronics disassembly.
- POLIMI will apply its knowledge in Circular Economy and Circular Business Models in order to identify and structure potentially new businesses (and related supply chains) focusing on car electronics.

Partners

Nederlandse Organisatie Voor Toegepast Natuurwetenschappelijk Onderzoek (TNO)

TREASURE

TNO innovation for life

WP5 leader
Tasks leader in WP5 and WP6

Within TREASURE, Holst Centre contributes with its expertise in Hybrid Printed Electronics

- Flexible and in-mould structural electronics
- Collaborating with industrial partners from automotive sector
- Flexible electronics pre-pilot line

Partners

Universidad de Zaragoza (UNIZAR)

TREASURE

Instituto Universitario de Investigación Mixto
CIRCE
UniversidadZaragoza

WP3 and WP7 leader
Tasks leader in WP3, WP4, WP6 and WP7

- IUIMC will apply its knowledge in eco-design, reusability and recyclability aspects to design and validate the corresponding modules of the TREASURE Platform.
- IUIMC is also in charge of the dissemination, communication and clustering aspects.

Partners

Scuola universitaria proffesionale della Svizzera italiana (SUPSI)

TREASURE

University of Applied Sciences and Arts of Southern Switzerland

SUPSI

WP1 leader

Tasks leader in WP1 and WP2

- SUPSI will build a holistic reference architecture for the whole project dealing with framework, software and pilots.
- SUPSI will target the development and the consolidation of the sustainability & circularity assessment and the advisory methodologies.
- SUPSI will be engaged in the development of the eco-design, dismantling and recycling modules (T4.4) that will integrate the Sustainability Assessment Application developed in previous European and national projects: SAM (Innosuisse) - MANUTELLIGENCE (H2020 proposal ID 636951) - MANUSQUARE (H2020 proposal ID 761145-2).

Partners

Università degli Studi dell' Aquila (UNIVAQ)

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Tasks leader in WP5, WP6 and WP8

- Simulation and lab-scale activities for the recovery of materials from selected critical components of cars.
- Reconfiguration of pilot plant, tests and optimization of the processes on pilot scale.
- Training activities on pilot plant.
- Exploitation routes: definition of the exploitation strategy, the exploitation of the results to identify the targeted market
- Exploitation plan development, preparation of blueprint for commercialization of project results.
- IPR strategy & management

Partners

Material Recycling and Sustainability B. V. (MARAS)

TREASURE

MARAS
Material Recycling and Sustainability

Tasks leader in WP3
Contributor in WP4 and WP5

- Innovative physics-based recycling system models for the calculation of recycling/recovery rates (total product and all materials/elements) and optimization for the system archictecture of the physical and metallurgical recycling processes linked to improved disassembly strategy (new approaches in recycling technology)
- Recycling options of conventional versus printed flexible electronics by defining and exploiting the recycling process simulations
- Digital twins and digitalization of the automotive recycling system (link design to recycling)
- Recycling Labels : physics-based recycling standards

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Partners

Edgeryders OU (EDGE)

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Tasks leader in WP2 and WP4

- EDGE will use Semantic Social Network Analysis (SSNA) to understand the role of circular economy focusing on the automotive sector. With our own unique methodology, we are to explore how CE plays out in society, economy and everyday life and the points of view of the people directly affected by CE.
- EDGE will launch online conversations on the existing Edgeryders platform, outreach and engagement, community management, ethnographic coding and technical support.
- EDGE will combine and analyse primary and secondary data gathered from the online conversations and creating navigable version of the conversation's semantic social network

Partners

EuroLCDs SIA (EUROLCDS)

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EuroLCDs

Contributor in WP5, WP6 and WP7

- EuroLCDs will dismantle displays (current models and under development) and in first step will investigate liquid crystal mixture reclaiming options.
- The remaining parts (e.g. ITO glass, flexible connectors and PCBs), containing CRMs will be shipped to partners for extraction. If suitable quantity of metals is extracted (e.g. Ag, Au, In, Sn), they can be processed into PVD sputtering targets.
- Display materials will be manufactured by using these targets, and new displays from recovered metals will be produced at validation stage.

Partners

Walter Pack SL (WALTER)

TREASURE

- Involved in the development of the demonstration action 3 and as contributors in the definition of requirements and specifications.

Contributor in WP5 and WP6

Partners

Pollini Lorenzo e Figli srl (POLLINI)

TREASURE

AUTODEMOLIZIONE POLLINI rottamiamo per l'ambiente

- POLLINI, thanks to its wide computerised warehouses where it selects and catalogs automotive components by type and brand of all over car manufacturers and its specialized operators it will supply obsolete parts and workforce in order to test new disassembly processes.

Contributor in WP5 and WP6

Partners

SEAT SA (SEAT)

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SEAT S.A.

Task leader in WP3
Contributor in WP4, WP5 and WP6

- SEAT will contribute with its expertise analyzing valuable car parts.
- SEAT has been researching the metal composition of several SEAT models, for identifying the most valuable car parts in terms of strategic metal content. The developed methodology, using Thermodynamic Rarity as resource use indicator, will be applied in TREASURE, for feeding the IT tool

Partners

TXT E-Solutions Spa (TXT)

TREASURE

- TXT will participate in the platform design, development & integration.

Task leader in WP1 and WP4

Partners

Industrias Lopez Soriano SA (ILSSA)

TREASURE

Task leader in WP3
Contributor in WP5, WP6 and WP8

- To implement improvements in the recovery processes of materials from treatment.
- Accelerate improving the circular economy of these recovered materials.
- Integrate digital technologies in ELV disassembly and shredders processes to increase circularity performance and reduce recycling processes costs considering lower operation time, lower need for manual work, higher purity levels of recovered materials and higher process efficiency.
- Update and optimize new material recycling processes able to recover valuable and critical materials, other than base metals.

Partners

Ente Nazionale Italiano di Unificazione (UNI)

TREASURE

Contributor in WP8

- UNI will develop a standardisation strategic plan integrating project activities and outcomes spotting future international, European standardization activities (e.g. CEN Workshop agreement) and contributing to existing standards, whether necessary (e.g. introducing innovation, contradictory standards …). The document will codify project innovative metrics, requirements, methodologies and approaches resulting from project, focusing on risk assessment and safety issue. UNI will develop such document enhancing consortium skills.
- UNI will contribute to dissemination and exploitation activities enhancing national, European and International standardization communities and related experts.

Partners

MOV'EO (MOVEO)

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collaboration is the driver

Task leader in WP7

- MOVEO will support the sharing and spreading of the project results through our network.
- Coordination of participation in clustering events and inter-project exchanges.
- Establishment of communication channels with past and on-going projects, as well as linkages with EUCAR, EIP Raw Materials and EIT Manufacturing. Evaluation of impact of TREASURE recycling technology and philosophy to other value chains.
- Organization of one 3-days workshop and summer school in M36.

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Thank you for your attention

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