



European
Commission

eic

European

INNOVATION

Council

**EMPOWERING
EUROPEAN
INNOVATORS**

Research and
Innovation

EIC PATHFINDER PROACTIVE

Subtopic 1: human centric artificial Intelligence

TRUST-AI will employ 'explainable-by-design' symbolic models and learning algorithms, and adopt a human-centric, 'guided empirical' learning process that integrates cognition, machine learning and human-machine interaction for a new approach to AI.

MUHAI explores a radically new approach to push the envelope of human-centric AI technology to come to grips with meaning and understanding.

MAIA AI technology will decode human intentions and communicate the decoded targets to assistive devices and to the users, to ensure compliance and develop trust through natural interaction and mutual learning.

ALMA will leverage the properties of Algebraic Machine Learning for a new generation of interactive, human-centric machine learning systems with reduced bias and which encourage trust.

Subtopic 2: Implantable autonomous devices

AUTOCAPSULE will develop an autonomous multimodal implantable endoscopic capsule for the gastrointestinal tract.

FORGETDIABETES will develop an immuno-optimized, fully-implantable, fully automated, artificial pancreas for intraperitoneal hormone delivery, enabling an optimal glycemic control for type 1 diabetes patients.

BOW will develop magnetic bead devices coated with a layer that mimics extracellular vesicles for treating diseases such as cancer.

ANGIE will develop magnetically steerable wireless nanodevices for the targeted delivery of therapeutic agents in patients.

BoneFix will develop a novel class of bone adhesives that will allow for personalized surgical treatment of bone fractures via minimal invasive surgery under local anaesthesia.

REPAIR will develop cardiac assist devices that exploit smart materials to support or restore the cardiac mechanical function.

Subtopic 3: Breakthrough zero-emissions energy generation for full decarbonisation

LICROX will develop a new photoelectrochemical cell type that mimics photosynthesis, incorporating three complementary light absorbing elements driving water oxidation and CO₂ reduction.

NANO-EH will exploit the high frequency properties of emerging classes of nanomaterials for scalable miniaturized energy harvesting/storage submodules that are tailored for the specific needs of stand-alone, mobile or portable uses such as IoT devices.

CleanHME will develop a new, clean, safe, compact and very efficient energy source based on Hydrogen-Metal and plasma systems.

WASTE-NOT will demonstrate thermal energy recovery from, e.g., industry, transport, ICT processes by using electroluminescence and photovoltaic technologies.

MOST aims to develop and demonstrate a zero-emission solar energy storage system based on benign, all-renewable materials.

LESGO proposes to store energy in the C-H bond of reduced graphene oxide that can be stored safely and can be easily transported wherever electricity generation is needed.

HERMES will investigate zero-emissions heat generation with hydrogen-metal systems.

112CO₂ aims at developing a low temperature methane decomposition catalyst for producing hydrogen in a cost-effective way with no CO_x emissions.

HiPowAR will develop a reactor for the direct energy conversion of ammonia fuel to power.

FOXES will develop a clean, compact, low-cost and scalable high energy density solution for powering IoT devices such as wireless sensor nodes.

NANOSTACKS will develop new fuel cells for storing energy from solar cells and wind turbines.

MetaVEH will realise innovative lead-free electromechanical energy harvesters to power autonomous wireless sensing devices.