KYKLOS 4.0 Project Overview

www.kyklos40project.eu

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KYKLOS 4.0 Factsheet

KYKLOS 4.0

KYKLOS 4.0	An Advanced Circular and Agile Manufacturing Ecosystem based on rapid reconfigurable manufacturing process and individualized consumer preferences
Project Number	872570
Starting Date	01/01/2020
Project Duration	48 months
Call (part) Identifier	H2020-DT-2019-1
Topic	Digital Manufacturing Platforms for Connected Smart Factories
Budget	€19.227.110

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KYKLOS 4.0 Consortium

KYKLOS 4.0

NO	PARTICIPANT	SHORT NAME	COUNTRY	TYPE
1	FUNDACION TECNALIA RESEARCH & INNOVATION	TECNALIA	ES	RI
2	MAGGIOLI SPA	MAGG	IT	LE
3	CENTRO DI RICERCHE EUROPEO DI TECNOLOGIE DESIGN E MATERIALI	CETMA	IT	RI
4	TWI ELLAS ASTIKI MI KERDOSKOPIKI ETAIREIA	TWI	GR	RI
5	JOTNE EPM TECHNOLOGY AS	Jotne	NO	SME
6	F6S NETWORK LIMITED	F6S	UK	SME
7	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	FOKUS	DE	RI
8	EUROPEAN DIGITAL SME ALLIANCE	DIGITAL SME	BE	NPO
9	CENTRE INTERNACIONAL DE METODES NUMERICS EN ENGINYERIA	CIMNE	ES	RI
10	CIRTES SRC	CIRTES	FR	SME
11	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS	CERTH	GR	RI
12	GFT ITALIA SRL	GFT	IT	SME
13	KONNEKT ABLE TECHNOLOGIES LIMITED	KT	IE	SME
14	ADVANTIC SISTEMAS Y SERVICIOS SL	ADSYS	ES	SME
15	UNIVERSIDAD POLITECNICA DE MADRID	UPM	ES	UNI
16	PDM E FC PROJECTO DESENVOLVIMENTO MANUTENCAO FORMACAO E CONSULTADORIALDA	PDMFC	PT	SME
17	ENGINEERS FOR BUSINESS IPIRESIES TECHNOLOGIAS KAI MICHANIKIS ANONIMI ETAIRIA	EfB	GR	SME
18	ALGOSYSTEMS ANONIMI TECHNIKI EMPORIKI ETAIRIA PLIROFORIKIS AUTOMATISMON KAI METROLOGIAS	ALGOSYSTEMS	GR	SME
19	UNIVERSIDADE DE COIMBRA	UC	PT	UNI
20	INNOV-ACTS LIMITED	INNOV-ACTS	CY	SME
	END USERS			
21	ASTILLEROS DE SANTANDER SA	AST	ES	LE
22	GE MEDICAL SYSTEMS ISRAEL LTD	GRC	IL	LE
23	VESTEL ELEKTRONIK SANAYI VE TICARET ANONIM SIRKETI	VESTEL	TR	LE
24	PRO MEDICARE SRL	Pro Medicare	IT	SME
25	DIAD GROUP SRL	DIGRO	IT	LE
26	AGROTIKOS PTINOTROFIKOS SYNETERISMOS IOANNINON "I PINDOS"	PINDOS	GR	LE
27	CONTINENTAL AUTOMOTIVE ROMANIA SRL	CONT	RO	LE
28	KANFIT3D LTD	KANFIT3D	IL	SME
29	SOFTWARE IMAGINATION & VISION SRL	SIMAVI	RO	LE

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Rationale

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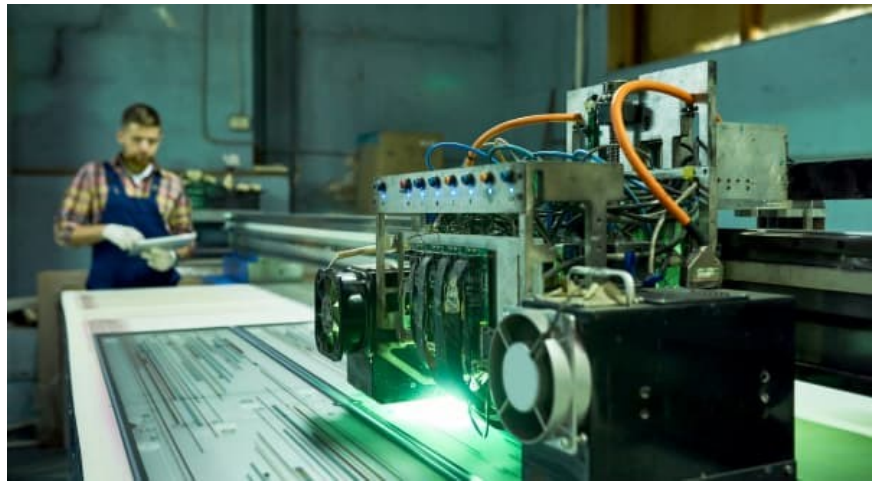
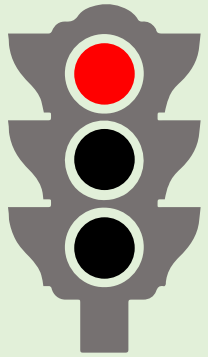
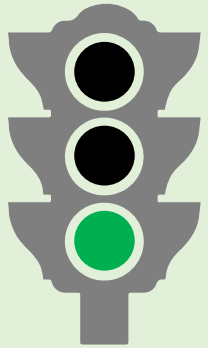


Manufacturing companies **consume** high amounts of energy as well as **natural resources** in their product-making processes:

- The respective amounts and overall costs of product making are increasing
- EU energy prizes are continuously increasing
- Raw materials price trend is ascending, increasing short term volatility



Optimizing the manufacturing processes becomes “a must” to ensure **sustainability**



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KYKLOS 4.0 Briefly

KYKLOS 4.0

KYKLOS 4.0 aims at providing a **Circular Technology Ecosystem** which creates and supports the configurations, methodologies, production techniques, decision and actions at all different levels and stages of the manufacturing value chain so as to achieve:

- **Increased energy efficiency**
- **Decreased use of raw materials (second use o parts or materials)**
- **Customer-centricity**
- **On-demand manufacturing**

Meeting Industry 4.0 objectives:

- **Operational excellence**
- **Mass customization and personalization**
- **Increasing efficiency**
- **Reducing waste**
- **Boosting competitiveness**

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KYKLOS 4.0 contribution to Circularity

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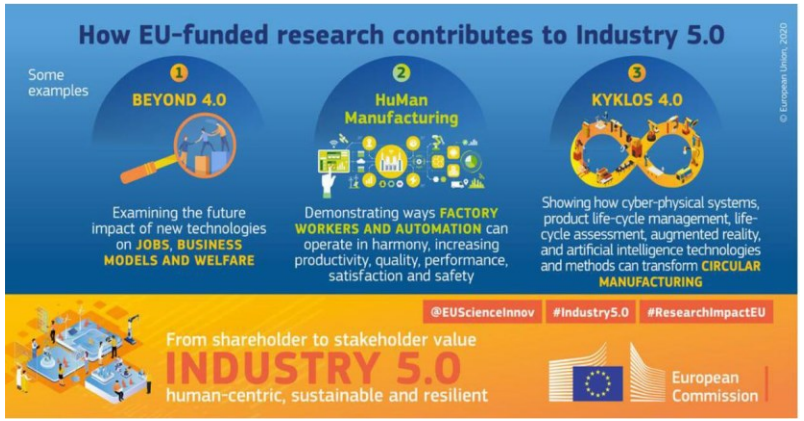
The future of manufacturing will see a gradual development towards a **high-quality circular manufacturing industry**, in which the demand for scarce raw materials is met by raw materials from the value chain wherever possible, considering the following five strategic goals

Five Strategic Goals of Circular Manufacturing

(Source: World Manufacturing Foundation)

In the global landscape, KYKLOS 4.0 is promoting low-cost and easy-to-use tools and data platforms, so that SMEs could adopt Circular Economy principles with limited investments from an ICT platform and data space point of view



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KYKLOS 4.0 Circular Manufacturing Framework

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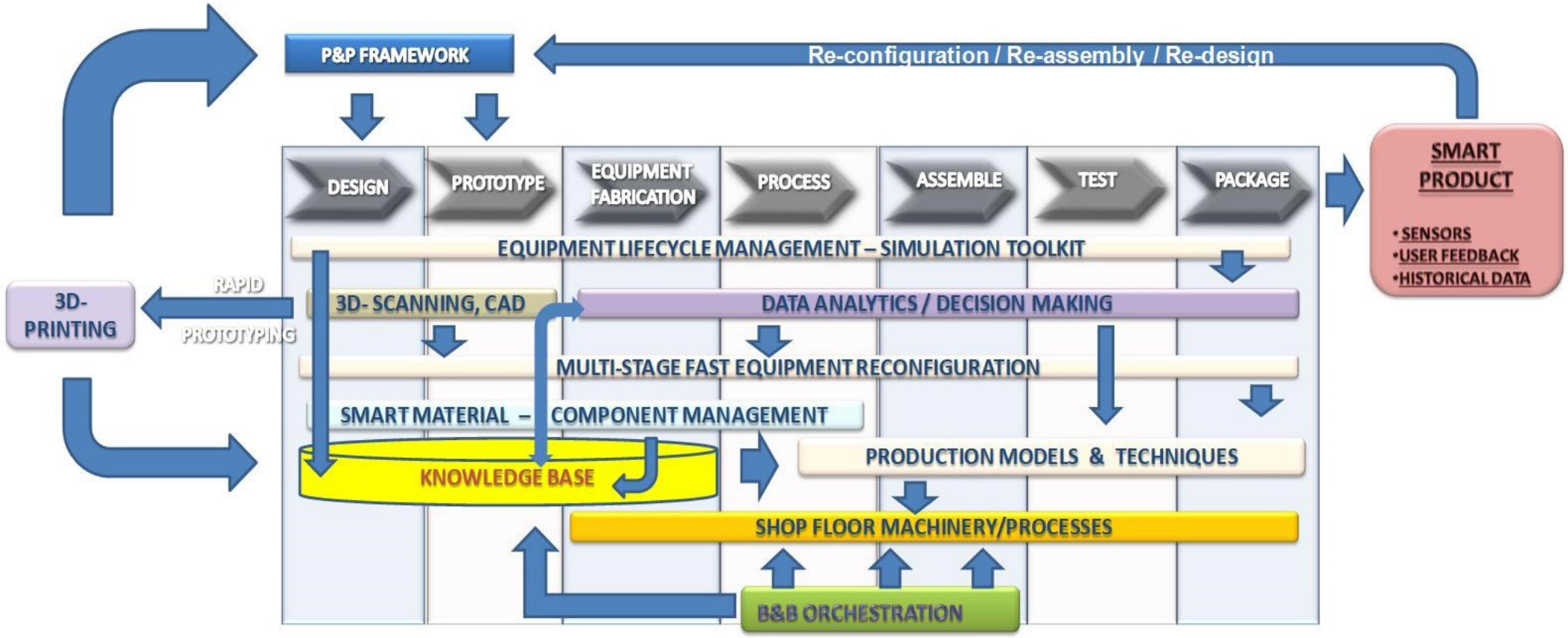
KYKLOS 4.0 will deliver an advanced configuration variants' framework and state-of-the-art production paradigm, embedding **key technologies** into a unified platform Ecosystem to **manage live product circular innovation**



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KYKLOS 4.0 Objectives

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The following set of objectives are set, covering the project's **scientific and technological aspects** throughout its duration as well as the **exploitation of the project's results** after its end:

01 Decentralized Interoperable Agent-Based B2B Marketplace Platform

02 Virtual Production Line Orchestration Module & Interoperative Fog Architecture Framework

03 Continuous Deep Learning Toolkit for Operational Metrics

04 Tailored Circular Manufacturing and Mass Customization Services

05 Big Data Aggregation and Integrated DSS for Optimizing Production Capacity

06 KYKLOS 4.0 Auditing Mechanisms

07 Product Data Management

08 Product Life Cycle Monitoring / Customer Feedback

09 KYKLOS 4.0 Production Line "Smartification" System

10 Additive Manufacturing Simulation Modules

11 KYKLOS 4.0 Automated Refurbishment Certification

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KYKLOS 4.0 Services

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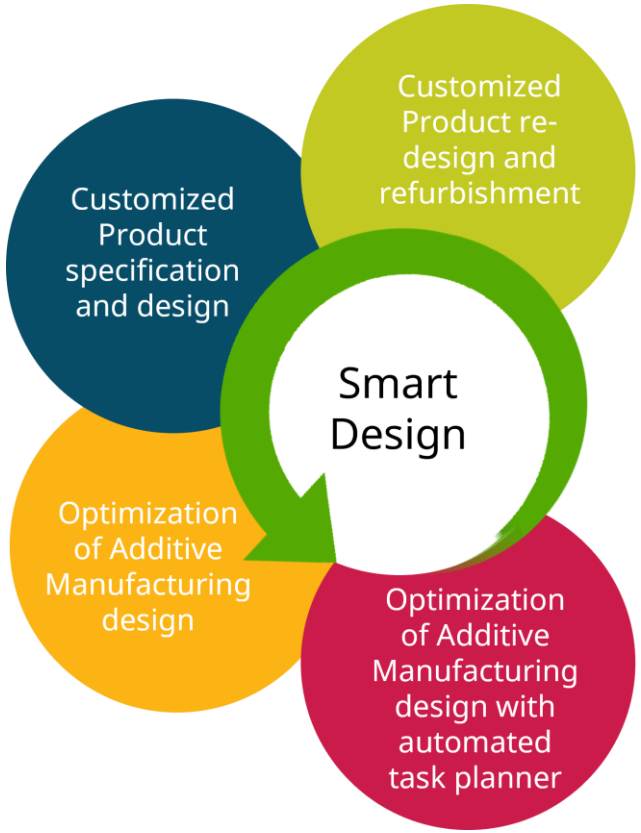
KYKLOS 4.0 technology involves a set of **intelligent tools** for **real-time analytics & prediction, and recommendation systems**, integrated into the KYKLOS 4.0 configuration environment

Rapid Reconfigurable Manufacturing Process

Individualization of Consumer Preferences



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KYKLOS 4.0 Pilots

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KYKLOS 4.0 will **demonstrate** the transformative effects that Circular Production System (CPS), Product Life Management (PLM), Life Cycle Analysis (LCA), Augmented Reality (AR) and Artificial Intelligence (AI) technologies and methodologies will have to the **Circular Manufacturing** framework

Large-scale piloting in 8 pilots to demonstrate the technical, environmental and economic viability of KYKLOS 4.0 Ecosystem

KYKLOS 4.0 Smart and Circular Manufacturing Pilots

01 Medical Pilot
PRO MEDICARE facilities– Italy

02 Aerospace Pilot
KANFIT3D facilities – Israel

03 Aerospace Pilot
GRC facilities – Israel

04 Electronic Devices/Equipment Pilot
VESTEL facilities – Turkey

05 Electronic Equipment Pilot
CONTINENTAL facilities – Romania

06 Shipyard Pilot
ASTANDER facilities – Spain

07 Food Industry Pilot
PINDOS Cooperative facilities – Greece

08 Automotive Pilot
DIGRO facilities – Italy

VESTEL

Continental

KANFIT

πίνδος

DIGRO GROUP
BRINGING GREEN DESIGN IN MANUFACTURING

Medicare
Real Answer to Special Needs

ASTANDER

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KYKLOS 4.0 Marketplace

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The KYKLOS 4.0 Marketplace will use an ontology that can represent all **offers** from **suppliers**, and all **requests** from **clients**, while being small enough to be workable

KYKLOS 4.0 Marketplace will provide the following:

- A **catalogue** of products and services enriched with contextual and semantic information
- Improved searching results by finding close **matches** that are still semantically relevant but would otherwise be ignored
- Focus on **circular economy** of materials, creating specific handling for greener alternatives
- Specific **LCA** information related to materials and services available in the market

Image by Pete Linforth from Pixabay

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KYKLOS 4.0 Standards

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Standards are pursued in the project **pilots**

- Standards are a powerful **marketing tool** by:
  - Providing trust and demonstrating the quality of components and services to customers
  - Unlocking customers (end-users and service providers) from vendor-specific solutions
- **Best practice** guides for the standards will assist future providers of components and services to benefit from the KYKLOS 4.0 Platform
- Providers of KYKLOS 4.0 component and services can actively be involved in the maintenance and development of the standards to **improve** further their performance and tailor them to their need

Image by OpenClipart-Vectors from Pixabay

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KYKLOS 4.0 Open Calls

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KYKLOS 4.0 will organize two Open Calls during the project with the objective of **engaging European SMEs** in the design and implementation of highly innovative experiments/prototypes using research infrastructure available within the framework of the project

Several events, including online webinars and local face-to-face events across Europe will implemented within the framework of the two Open Calls

Funding will be provided to projects led by small consortia (third parties) and targeting **innovative concepts**. Each project is expected to define their own project objectives while adhering to the larger objectives and vision of the KYKLOS 4.0 project

A total of **€3M** has been budgeted for the KYKLOS 4.0 Open Calls. In principle, €1M for the 1st and €2M for the 2nd Open Call. **Awarded projects may receive up to €150.000**, with each third party receiving a maximum of €60.000

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KYKLOS 4.0 on IoT Catalogue

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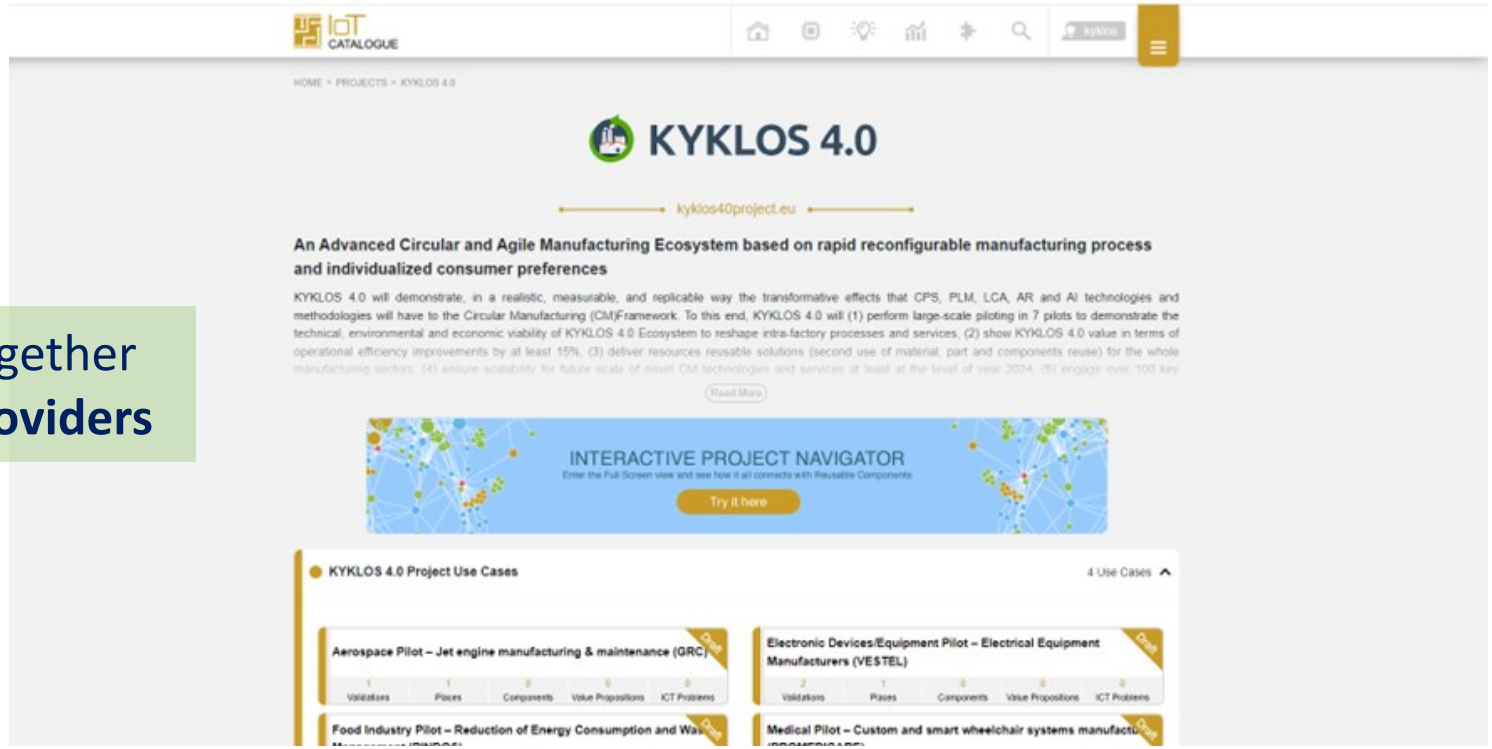
The IoT Catalogue brings together IoT users and **technology providers**



Learn more about **KYKLOS 4.0 Use Cases** and **Components** on https://www.iot-catalogue.com/projects/61eecf88120630002afdfef6

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https://www.youtube.com/channel/UCjExattPrmLOetNPI4OxD0g

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