



ENCONTRO
COM A CIÊNCIA
E TECNOLOGIA
EM PORTUGAL
16 a 18 MAIO 2022
#ciencia2022PT



Sistemas Inteligentes no contexto do projeto KYKLOS

Intelligent Systems in the context of the KYKLOS project



KYKLOS 4.0

Alberto Cardoso

alberto@dei.uc.pt

Centro de Informática e Sistemas da Universidade de Coimbra (CISUC)

Departamento de Engenharia Informática da FCTUC

Universidade de Coimbra



Centre for Informatics and Systems of the University of Coimbra (CISUC)

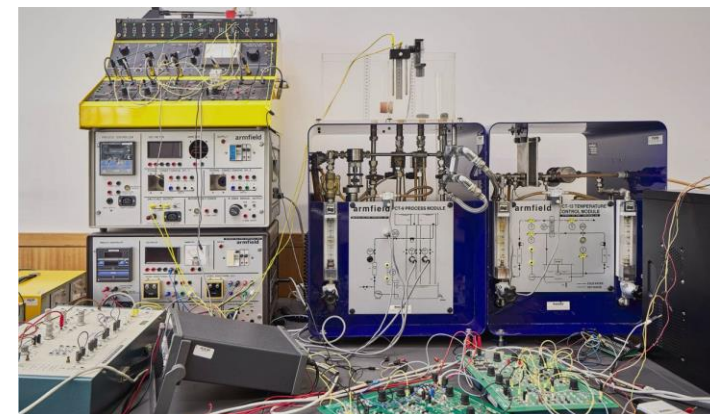
- One of the leading Portuguese research centres in the area of CS & IT
- Obtained the maximum grade (excellent) in the evaluation by FCT
- Composed of about 175 researchers (more than 100 PhD students)
- Founding member of the Intelligent Systems Associate Laboratory (LASI)

Adaptive Computation Group of CISUC

- Analysis and development of computational models and algorithms relying on data analytics and soft computing techniques for solving complex problems, namely in the context of intelligent systems

Laboratory of Industrial Informatics and Systems (LIIS)

- Intelligent Cyber-Physical Systems
- Smart heterogeneous systems
- Resilient and robustness enhancement of industrial systems



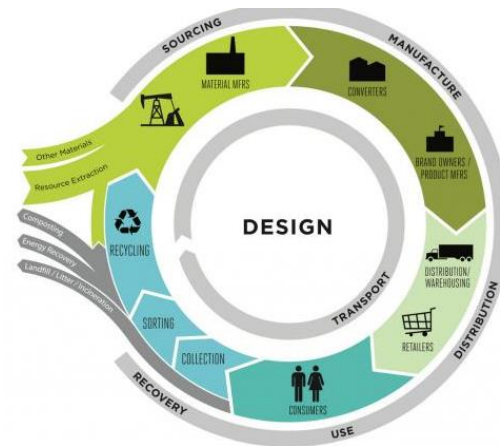


H2020 KYKLOS 4.0 Project – An Advanced Circular and Agile Manufacturing Ecosystem based on rapid reconfigurable manufacturing process and individualized consumer preferences

Project URL	https://kyklos40project.eu/
Project Duration	01/01/2020 – 31/12/2023
Topic	Digital Manufacturing Platforms for Connected Smart Factories
Budget	€19 227 110
Partners	20 institutions and 9 end users

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

- Increased energy efficiency
- Decrease raw material (second life of parts or material)
- Customer centricity
- On-demand manufacturing



KYKLOS 4.0 aims to meet Industry 4.0 objectives:

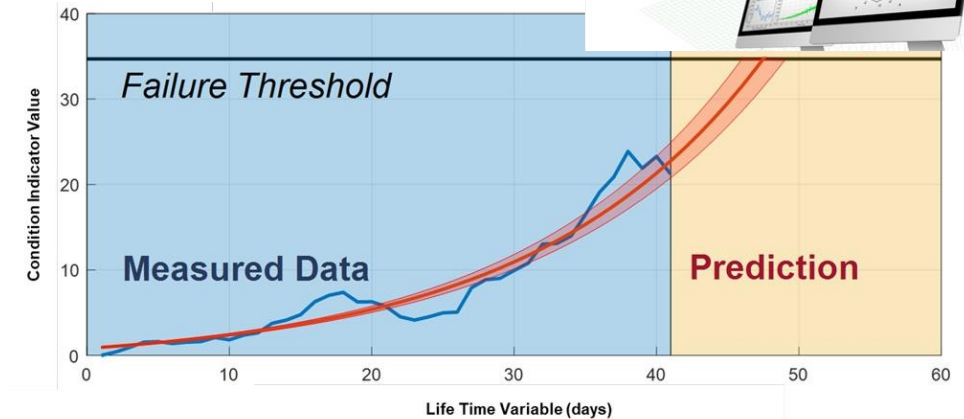
- Operational excellence
- Mass customization and personalization
- Increasing efficiency
- Reducing waste
- Boosting competitiveness



CISUC participates in KYKLOS 4.0 project developing intelligent cyber-physical systems that contribute to a Circular Manufacturing with technical components for:

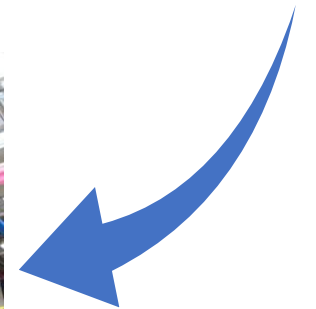
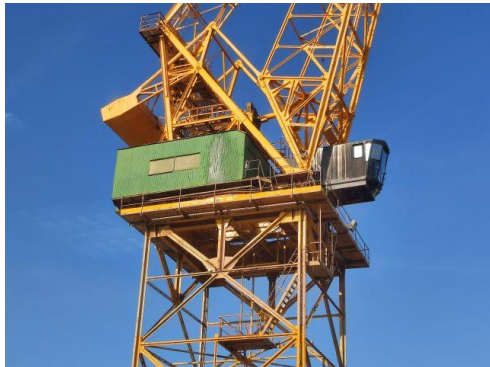
- *Data Dimension Reduction & Data Pre-Processing*
- *Fault Diagnosis & Health Condition Estimation*
- *Remaining Useful Life (RUL) Prognostics*
- *Predictive Maintenance Support*
- *Specification of Interoperability Requirements for Compliance to International Standards*

Predictive Maintenance Remaining Useful Life



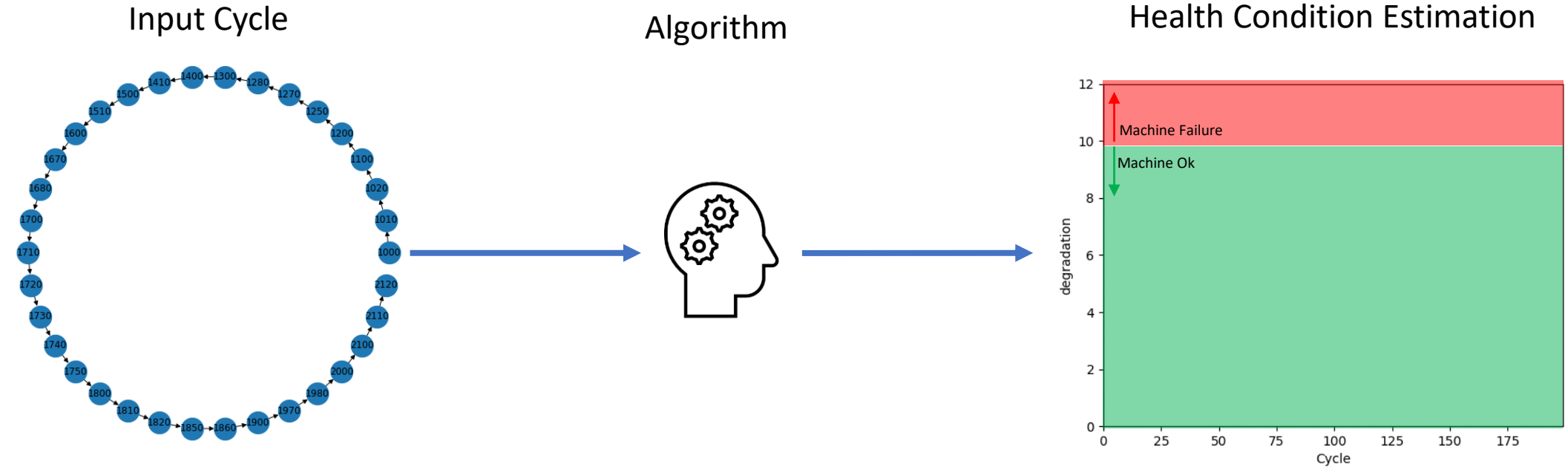
Maintenance Planning & Scheduling

Different industrial application areas (cranes, presses, engines, ...)





Demonstration of the Health Indicator Estimation using computational intelligent techniques



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



<https://www.facebook.com/Kyklos40Project>



<https://twitter.com/Kyklos40Project>



<https://www.linkedin.com/company/kyklos-4-0-eu-project>



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