



**RECLAIM**

**Increased productivity,  
resource efficiency and  
a competitive edge**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 869884



# RECLAIM in a nutshell



## Call & Numbers

- Call ID: H2020-NMBP-TR-IND-2018-2020
- Refurbishment & remanufacturing of large industrial equipment
- 22 beneficiaries from 9 countries
- Budget: 15.725.187€
- Duration: 01.10.2019 - 30.09.2023 (6m ext.)
- Coordination: Harms&Wende GmbH & Co. KG



## Target & Approach

- Strategies for lifetime extension of large industrial equipment
- Industry-driven, demonstration major focus
- Digital retrofitting, degradation and performance modelling, decision-support



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# Our starting point

Well-functioning equipment is a key to industrial productivity and managing costs.

But a significant share of machinery in EU production lines is approaching the end of designed lifetime.

## What happens to it?



Left to rot



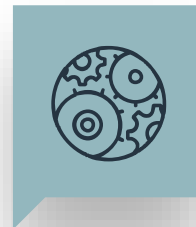
Disposed of



Sold



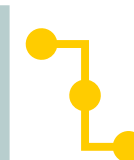
Take



Make



Dispose



Linear economy choices have significant economic and environmental implications



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# Our Vision





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# A circular economy approach

New re-use and refurbishment approaches are needed to ensure European manufacturing remains competitive and protects the environment.

Increasing production efficiency



Environmental recovery efficiency



Re-use of production equipment



Extension of Lifetime



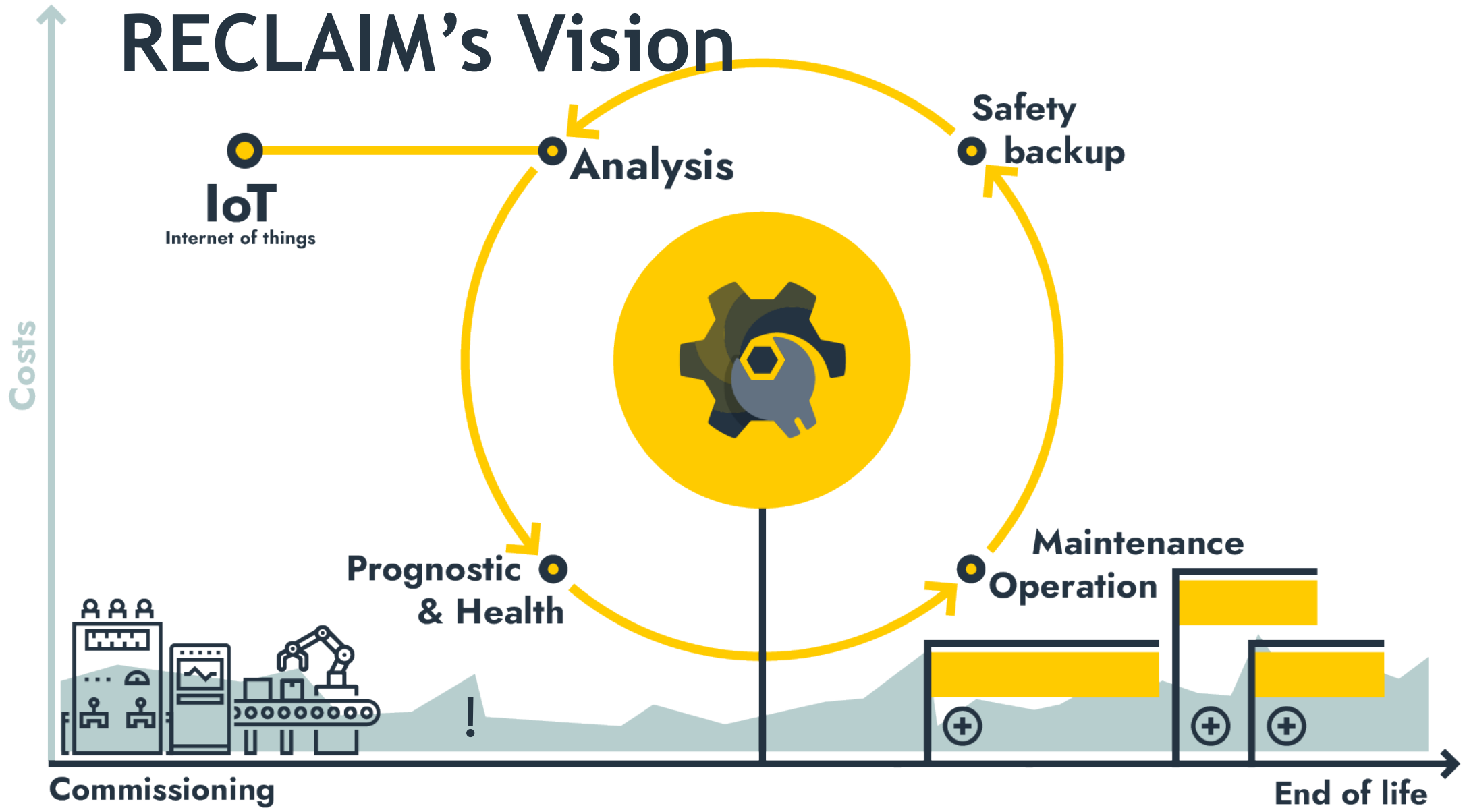




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The RECLAIM added value & concept

# RECLAIM's Vision





### Current Status



- ? Who to contact ?
- ↗ Time for maintenance
- ↗ Risk of failure
- ↗ Cost of reparation

Machine near to its **End-of-Life**

### RECLAIM's Core Technical Elements



Refurbishment and Re-manufacturing process

#### User Layer



Visualization



DSS Files

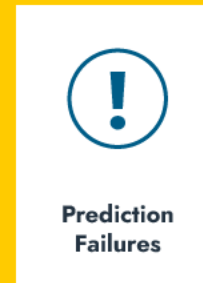
#### Real Time Decision-Making Layer



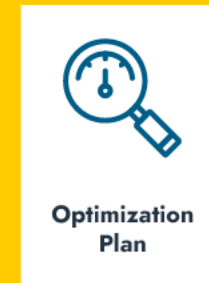
Cost Modelling



Prognostic & Health



Prediction Failures



Optimization Plan

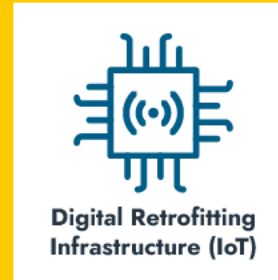
#### Physical Layer



Circular economy strategies



Repository information



Digital Retrofitting Infrastructure (IoT)

### RECLAIM's Vision

Analytics

IoT

DSS

↘ Time for refurbishment re-manufacturing

↗ Profit



Machine lifetime **Extension**



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# Demonstration cases in multiple industries across Europe



Welding :  
**HWH**



Robotics and  
Enamelling :  
**gorenje**



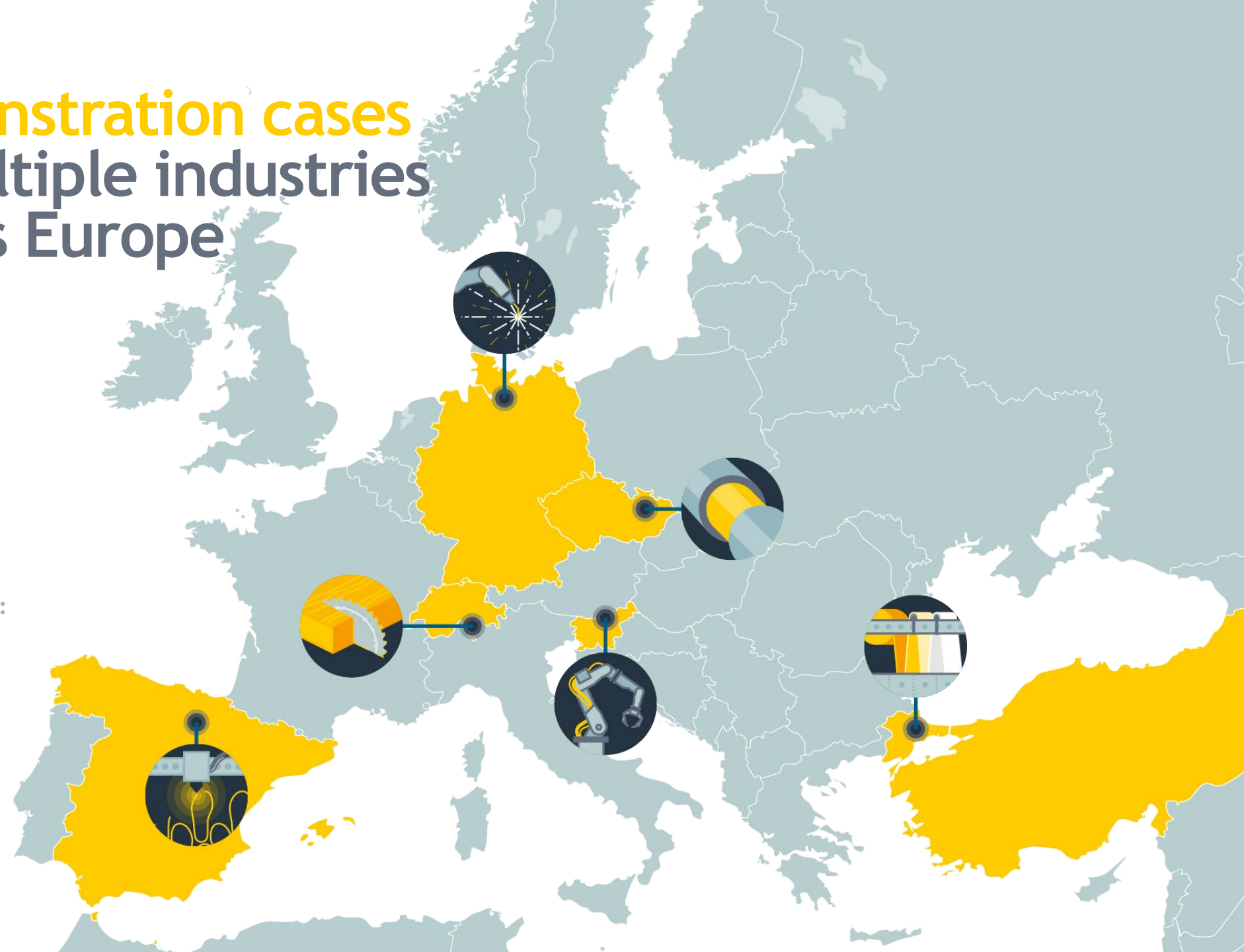
Wood Working :  
**PODIUM**



Shoe Making :  
**Fluchos**



Textiles :  
**ZORLUTEKS**







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# Lifetime Extension of Friction Welding Machines



## Selected technical improvements:



Machine adaptability to different welding tasks



Online monitoring and predictive maintenance features



Human machine interface visualisation and in-situ repair, including remote access and remote services

## Expected outcomes:

**+8 years** increase in lifetime

**50% less incidents**

**Maintenance costs halved**



# Modernisation and Refurbishment of a **White Enameling Line**

**gorenje**

## Selected technical improvements:



Lower maintenance and spare part expenses



Cycle time reduction and increased operational effectiveness



Increased material and resource efficiency and reduced emissions

## Expected outcomes:

10% less emissions

+15 years lifetime extension

30% decrease in maintenance costs



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# Refurbishment and Renovation of Robot Cells for Making Tubs

**gorenje**

## Selected technical improvements:



Improved production stability, with higher operational and equipment effectiveness



Increased cost-effectiveness



Extended machine lifetime



Increased material and resource efficiency to manage environmental impact

## Expected outcomes:

**+15 years lifetime extension**

**Up to 10% more effective**

**50% decrease in maintenance costs**



# Predictive Maintenance and Refurbishment of a large Woodworking Production Line



## Selected technical improvements:



Extended connectivity and interaction capabilities of the machinery



Additional sensors to monitor product quality and identify deviation causes



Failure and breakdown predictions

## Expected outcomes:

50% less incidents

Halved repair costs

+60% in operational effectiveness



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# Maintenance and Upgrades in the Shoemaking Industry



## Selected technical improvements:



Maintenance and production process optimisation



Production or service scheduling



Data driven diagnosis and prognosis



Refurbishment or re-manufacturing of predefined electromechanical machinery

## Expected outcomes:

40% less safety incidents

Maintenance costs halved

+10 years useful lifetime





# Maintenance, Refurbishment and Upgrading of a **Bleaching Machine**

ZORLUTEKS

## Selected technical improvements:



Identification of the best process settings and product mixes



Monitoring and control tool for a safe and stable operation



Improved resource efficiency



Easy-to-understand resource use indicators and machine operator behavior change

## Expected outcomes:

10% less incidents

10% less repair costs

10% reduction in wasted materials



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# Our partners

## Research and Academic Centres



## Non-Profit Organisations





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# Our partners

Industrial and SMEs





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# Our partners

End-users





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# See RECLAIM Pilots and technology **live!**

Meet us in room **Galilei** (ground floor) during the lunch break and join the RECLAIM tour.



Pilot showcases



Industry-proven technology



Academic research







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