



**Innovative tools,
methods and indicators
for optimizing
the resource efficiency
in process industry**

PROJECT Presentation



"This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 604140"

PROJECT INFO



- **Project name:**
TOP-REF: Innovative tools methods and indicators for optimizing the resource efficiency in process industry
- **Duration:** 42 months (January 2014 – July 2017)
- **Total budget:** 5,7 million €
- **EU contribution:** 3.858.500 €
- **Topic :** “Tools for monitoring and assessing Resource-efficiency in the value Chain of Process Industry



PROJECT PARTNERS



GERMANY



TU Dortmund University

www.tu-dormund.de



Inosim Software GmbH

www.inosim.de

FRANCE



BIO by Deloitte

www.biois.com



Cosmo Company

www.thecosmocompany.com

DENMARK



Danish Standards Foundation

www.ds.dk

PORTUGAL



Petrogal

www.galpenergia.com

SPAIN



Tecnalia

www.tecnalia.es



Fertinagro

www.fertinagro.com



DCI Chemical Ibérica

www.dow.com/iberica



CIRCE Foundation

www.fcirce.es

Project coordinator



THE CHALLENGES



European Union challenges and main concerns



ECONOMIC CRISIS

The productivity and competitiveness of European Industry for securing growth and jobs.



SUSTAINABILITY

The efficient use of resources to deal with the climate change and other environmental issues



EMERGING ECONOMIES

The improvement of resource efficiency to secure Europe's supply of raw materials for making the EU economy more resilient to future increases of global energy and commodity prices



OBJECTIVES

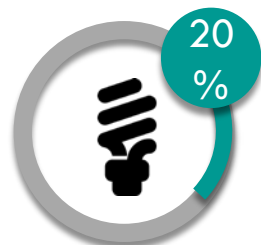


TOP-REF aims to develop and validate **specific indicators, methodologies and a non-invasive Monitoring and control system (M&CS)** devoted to the improvement of resource efficiency in energy intensive industrial sectors.

This methodology will allow the consecution of **TOP-REF final impacts.**



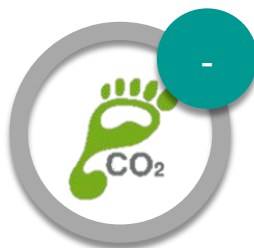
OBJECTIVES – Long term impacts



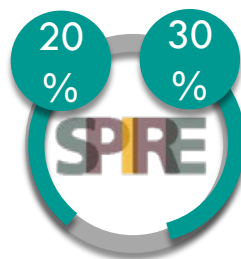
To improve **ENERGY AND RESOURCES EFFICIENCY** by 20%



To increase the **REUSABILITY AND RECYCLING OF MATERIALS** by 30%



A significant **reduction of the ENVIRONMENTAL IMPACTS** (CO₂ emissions, water footprint, pollutants, hazardous emissions, etc.)



To pave the way for achieving **SPIRE2030** objectives of **reducing non-renewable, primary raw material intensity up to 20% and fossil energy intensity up to 30%**

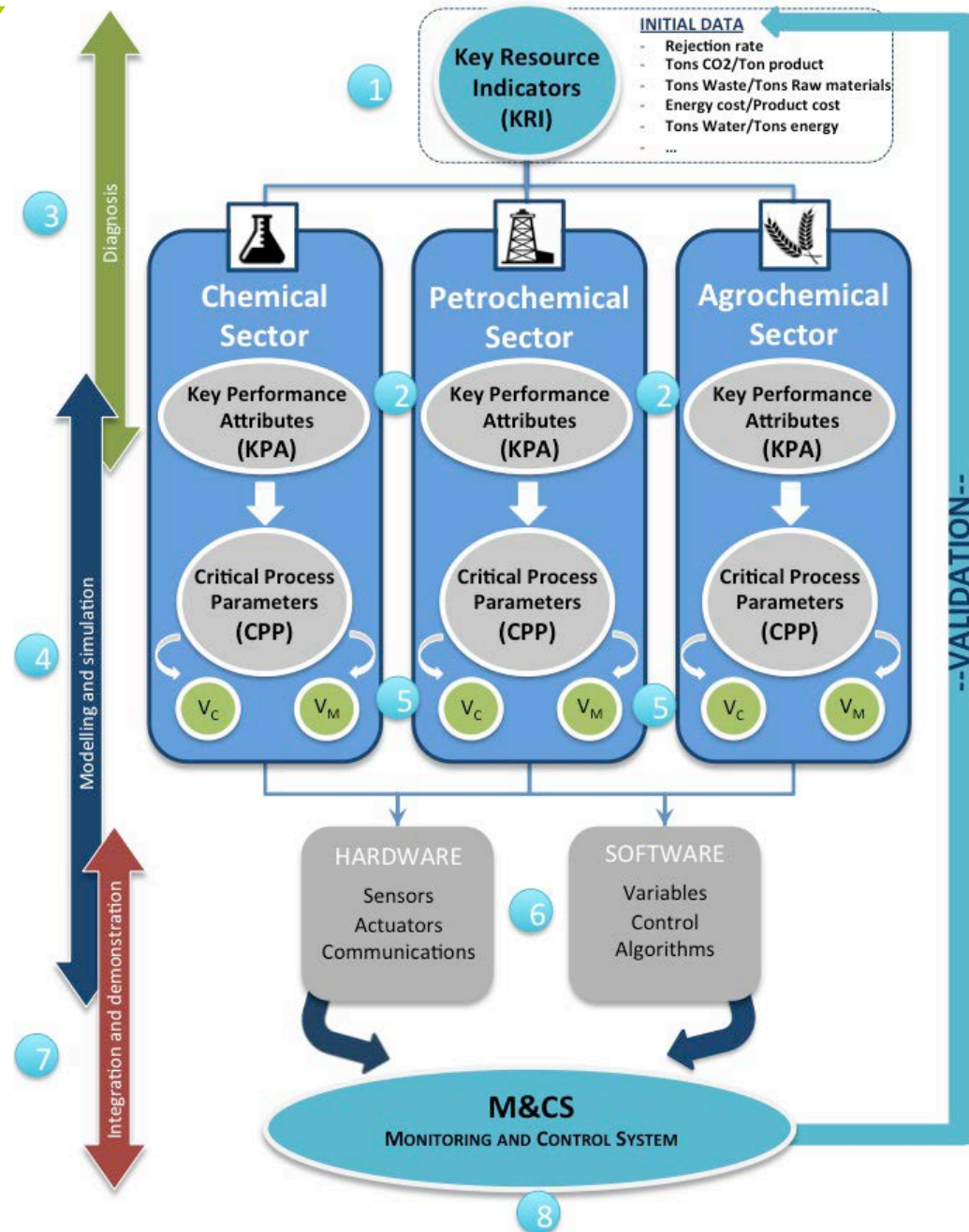


Reduce **PRODUCTION COSTS** up to 15 %



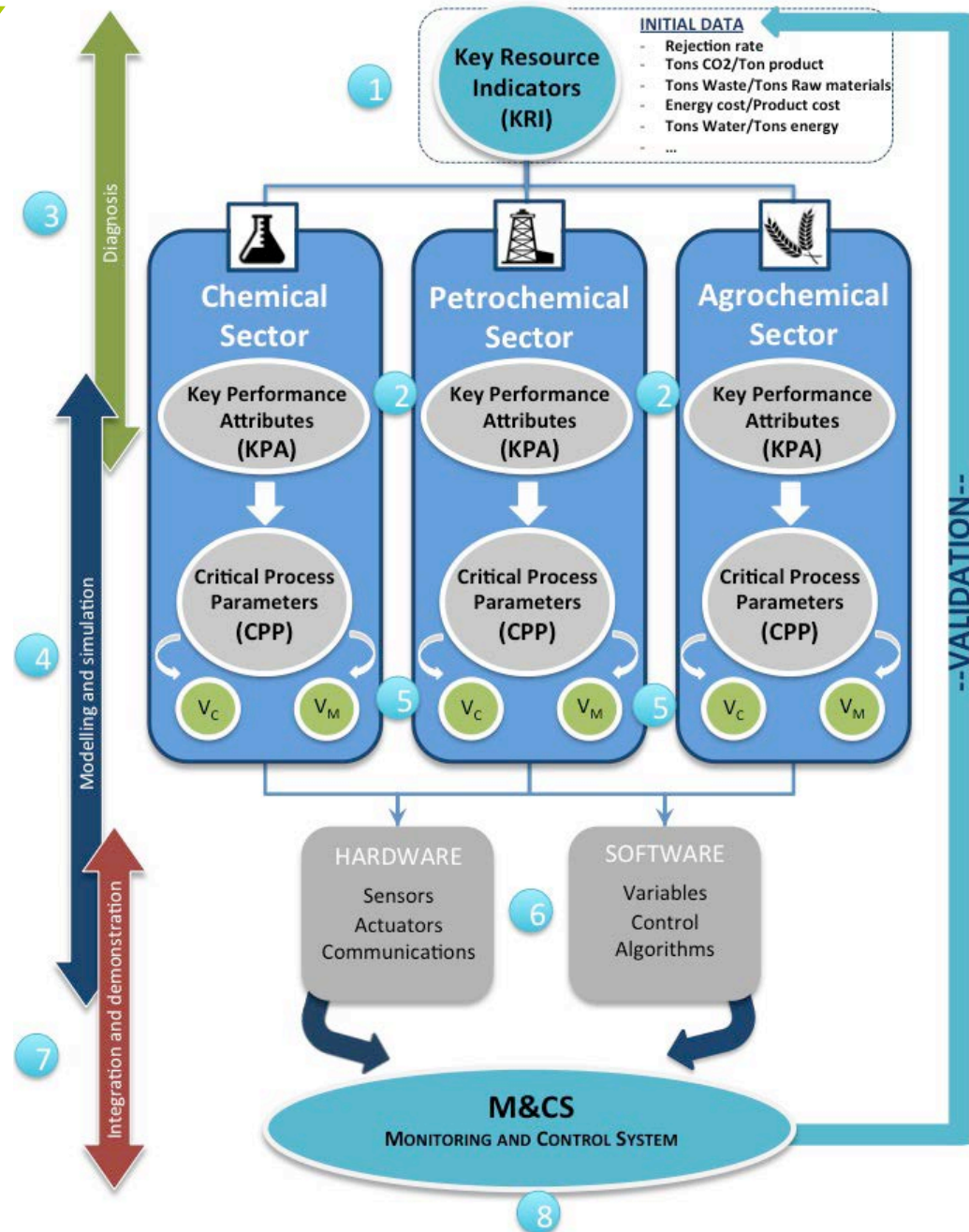
METHODOLOGY

1. Development of **Key Resources Indicators (KRI)**.
2. Definition of **Key Performance Attributes (KPA)** for each sector addressing Quality, Safety, Costs.
3. Evaluation of the **resource efficiency potential** of the global process by performing audits and diagnosis over the sub-processes and equipment.
4. Modelling and simulation of the identified highest resource-efficiency improvement points to establish the **Critical Process Parameters (CPP)**, (residence time, T° of the raw materials, cooling water flow rate..) and understand their relation with the KPA. This step will allow the identification of the **variables for the monitoring (VM) and control (VC) of the CPP**.



METHODOLOGY

5. Development of the **monitoring and control strategies** attending to different prioritization schemes of the targeted KPAs.
6. Design and implementation of the **monitoring and control tools** attending to the previously established strategies, defining the required hardware and software.
7. Integration of the results, **pilots deployment plan, proofs of concept demonstration** and final optimization of the methodology and the monitoring and control tools.
8. Finally a methodology for developing environmental product declarations will be established based on these KRI.



MULTISECTORIAL APPROACH



CREATION OF A MULTISECTORIAL ADVISORY BOARD

to provide feedback and consensus about the potential and next steps, to speed up the implementation of TOP-REF solutions in other Resource Intensive Industries

Although TOP-REF will be focused on the fertilizer, refining and chemical sectors, it is expected that all developments will benefit **many other sectors**



Industrial pilots



1. Chemistry



Tarragona, Spain
Dow Chemical Ibérica, S.L

2. Refining



Sines, Portugal
Petrogal Energía

3. Fertilizer



Utrillas, Spain
Fertinagro

Three large scale industrial pilot plants
driving the change towards sustainability



THANK YOU VERY MUCH FOR YOUR ATTENTION

www.toprefproject.eu



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