Ambition

The anticipated results of this project will lead to a proactive approach for dealing with materials degradation, greater reliability for the existing plants as they age, and reliability for plants that will be built. Some of the expected benefits are:

- Improving the service lifetime of the austenitic weld alloys by reducing microstructural and stress-related factors that contribute to EAC.
- Reducing the scheduled in-service inspections and maintenance costs through the use of more EAC-resistant components.
- Ecological benefits, due to the reduction or possible elimination of lubricating fluids based on petroleum products.
- Other additional benefits include (i) potential reduction in machining costs by reducing machining time and increasing the cutting tool lifetime and (ii) cross-cutting benefits, as these improvements in manufacturing processes can be applied to other industries such as food, petrochemical and pharmaceutical.

This project receives funding from the Euratom research and training programme 2014-2018 under grant agreement no. 755151.

The project has received the label of the NUGENIA Nuclear Gen II & III Association and tackles key issues of their roadmap.

NUGENIA
NUclear GENeration II & III Association

Project consortium

Ciemat – Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
VTT
MANCHESTER 1824 – The University of Manchester
PAUL SCHERRER INSTITUT PSI
SCK•CEN – STUDIECENTRUM VOOR KERNENERGIE CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE
EDF
ensa
wood.
Centrum výzkumu Řež s.r.o. Research Centre Rez
framatome
STU – SLOVAK UNIVERSITY OF TECHNOLOGY IN BRATISLAVA
ZAG – ZAVOD ZA GRADBENIŠTVO SLOVENIJE
SLOVENIAN NATIONAL BUILDING AND CIVIL ENGINEERING INSTITUTE
European Commission
iDeTra
NUCLEAR AMRC
RATEN – REGIA AUTONOMĂ TEHNOLOGII pentru ENERGIA NUCLEARĂ

Project coordinator: CIEMAT, Spain

info@meactos.eu

www.meactos.eu

MEACTOS

www.meactos.eu Horizon 2020

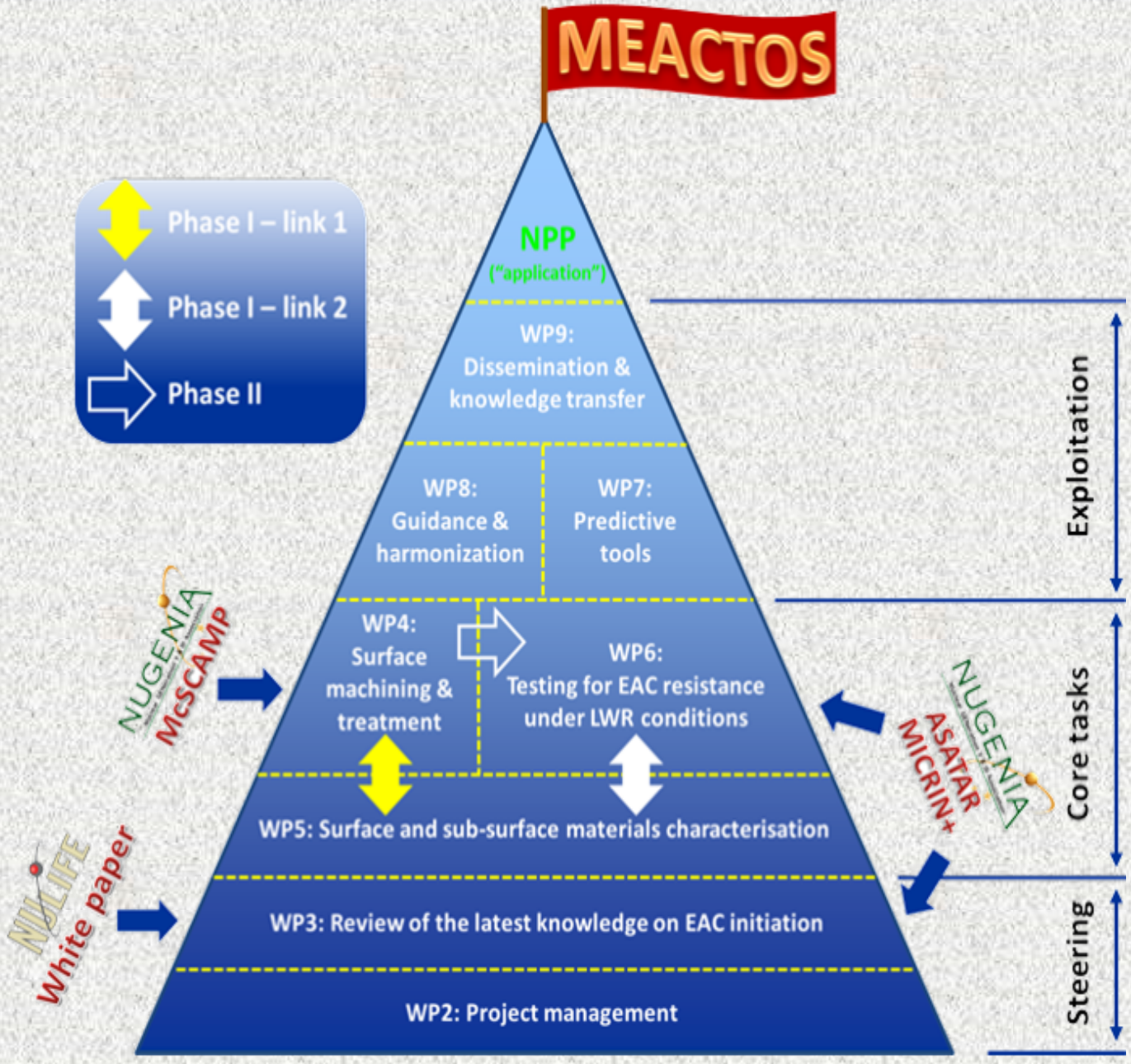
Mitigating Environmentally-Assisted Cracking Through Optimisation of Surface Condition – MEACTOS

Objectives

The goal of the MEACTOS project is to improve the safety and reliability of Generation II and III nuclear power plants by improving the resistance of critical locations, including welds, to environmentally-assisted cracking (EAC) through the application of optimized surface machining and improved surface treatments.

Project consortium: 16 partners from 12 European countries
Project duration: September 1, 2017 – August 31, 2021

Schematic project structure



Concept & methodology

The effect of surface machining and treatment techniques on the material's EAC initiation behaviour will be quantified using accelerated testing methods developed in NUGENIA+ projects MICRIN+ and ASATAR, e.g., constant extension rate tensile (CERT) testing using tapered specimens. The link between laboratory testing and component behaviour will be examined in terms of EAC models.

The MEACTOS project will contain two phases: (1) qualitative screening phase and (2) verification phase to demonstrate quantitatively improved EAC initiation performance. As illustrated in the schematic project structure (left), the link between surface machining/treatment parameters and EAC initiation performance is the characterisation of the material surface and sub-surface regions in terms of properties (hardness), residual stress and microstructure.

Finally, both the screening and verification phase will produce technically-relevant information on mitigation of EAC initiation. This information will be incorporated into guidelines for modern surface machining and treatment techniques.