Project Overview

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Co-funded by the European Union

Summary

01

Project Overview

Motivation behind MaJoR

Situation	Challenge	Consequence
Geopolitical events raised the importance of European **sovereignty, security and autonomy** when it comes to development of military platforms	Advancements in structural technologies tend to remain in domain specific (air, sea, or land) or national silos	Parallel development Reduced commonality in fleet technologies Inefficient use of resources to advance the structural technologies

Need

Collaborative cross-domain development of three unique demonstrator platforms for the Air, Sea and Land domains, to design, prototype, test and qualify candidate technologies for maintenance, joining and repair of multi-material structures

MaJoR objectives

1

To reduce the cost, weight, lead time, vehicle signature and increase the space efficiency and vehicle availability within the air, sea, and land domains. These improvements are demonstrated on three prototype platforms (one for each domain), with variants to accommodate multiple functions and technologies (including outcomes of the Innovation Techwatch).

2

To develop enabling technologies from **TRL3 to TRL6** and demonstrate them on each domain platform representing the relevant testing environments.

3

Establish an innovation Techwatch that searches for promising related technologies among small to medium enterprises (SMEs) and start-ups (including those from the civil market) and provide access to funding and facilities through the FSTP programme.

MaJoR impact

Maturisation of maintenance, joining, and repair technologies

Increased lifetime of defence systems

Reduced operating, maintenance, and repair cost

Increased sustainability and reduce environmental footprint

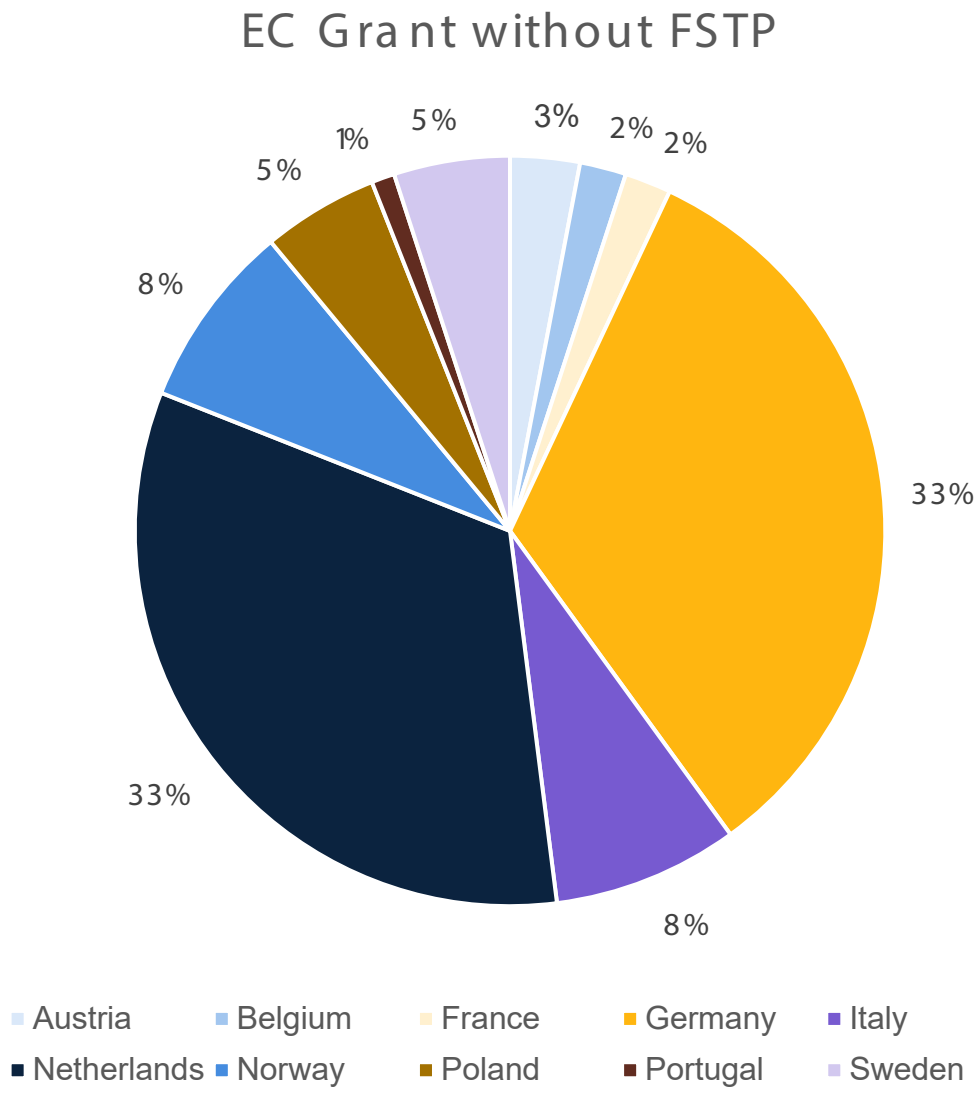
Supporting and accelerating SMEs and Start-ups in European defence

Cross-fertilisation across domains, industries, and nations

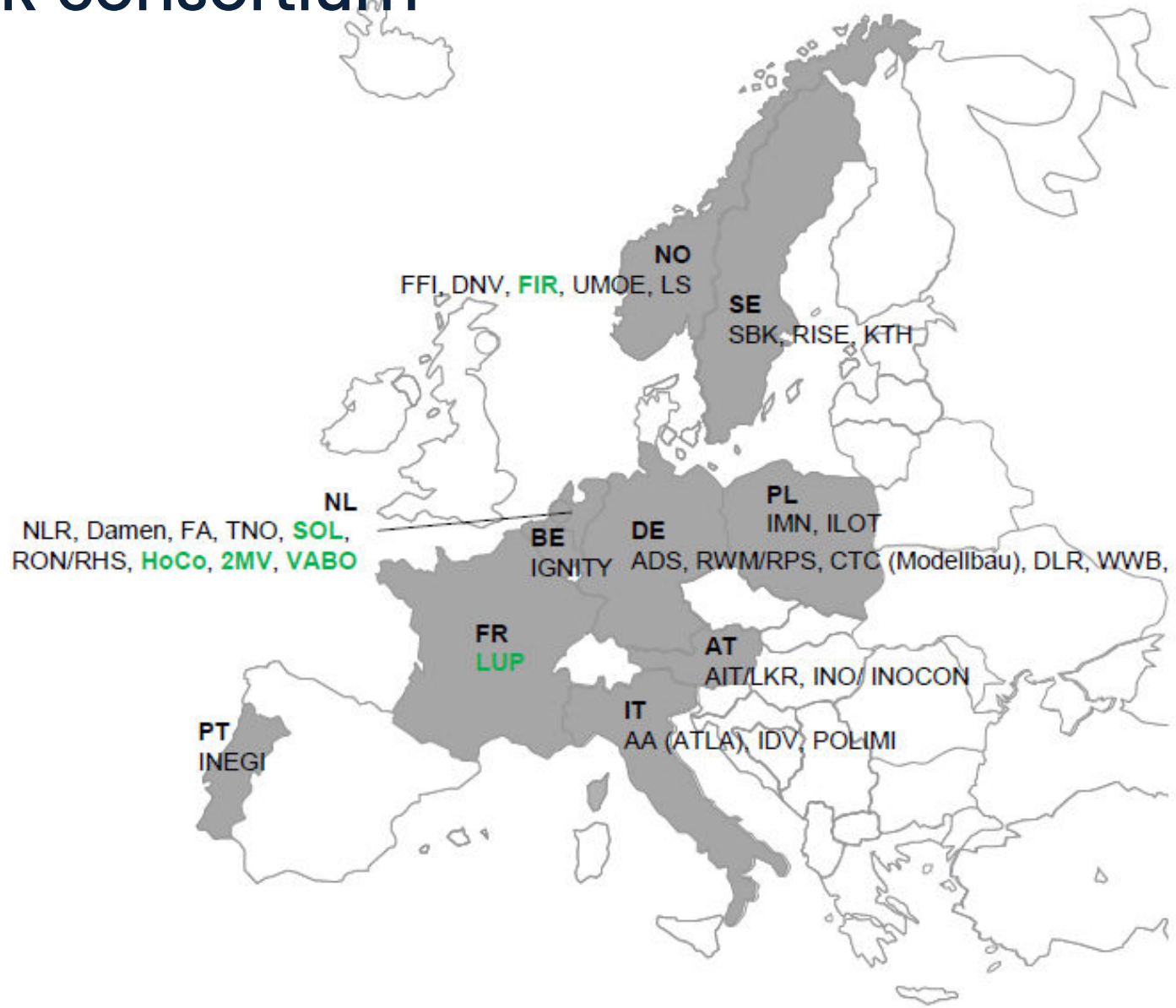
MaJoR impact

Project in a nutshell

DURATION 3.5 years	BUDGET €46.8mln
EDF grant €29 999 698	INCL. €3 197 023 for FSTP
NATIONS 10 AT, BE, FR, DE, IT, NL, NO, PL, PT, SE	BENEFICIARIES 35
AFFILIATES 3	



MaJoR consortium



Type of partner
SME = SOL, HoCo, 2MV, VABO, NM, LUP, FIR, LS

Project coordination and domain leads

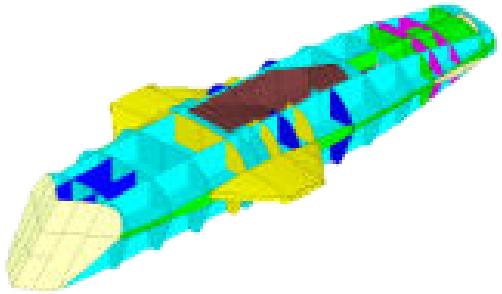
Project Coordinator

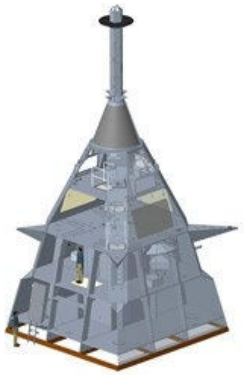
Fuselage of a UAV

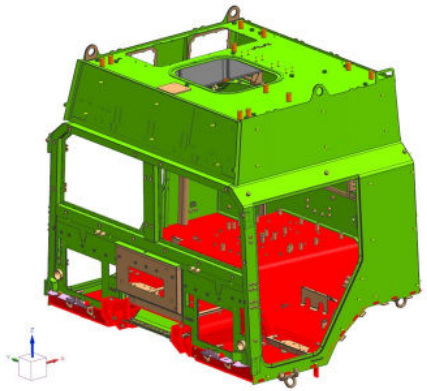
Mast structure of a navy ship

Cabin of a logistics support vehicle

The Air, Sea and Land demonstrators







Air domain

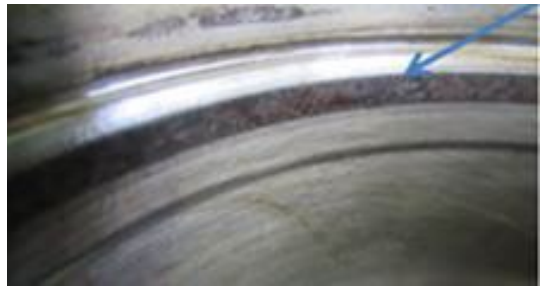
UAV fuselage joining and repair technologies

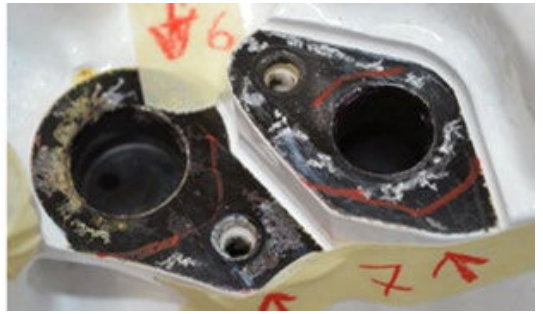
Requirements

- Significant striking power, adequate flight performance / maneuverability
- Great flexibility / modularity
- **Significantly lower cost** compared to the 6th Generation Fighter.
- "Attritable" aircraft, with reduced life span

Requirements

- Assuring structural integrity after repair
- **Increase availability of A/C** by increasing lifetime
- Reduced environmental footprint
- Multi-material composite & metallic repairs





Sea domain

Integrated Mast Module

Requirements

- Saving weight, for more payload in topside by carbon fiber composites module
- Saving space, in congested topside by functional integration within the structure
- Integration of functions like EMC signature, ballistic protection, sensors and fire safety
- Cost efficient assembly and outfitting with joints with integrated functions; inserts; assembly at steel yard conditions
- Operational effective in harsh naval loads environment with structural health monitoring, reparability, sustainability.

Land domain

Logistics truck cabin

Lightweight fibre composite upper hull

Maintenance and repair of fibre composite hull

Structural Health - / Health & Usage Monitoring

Composite hull to metallic floor joint

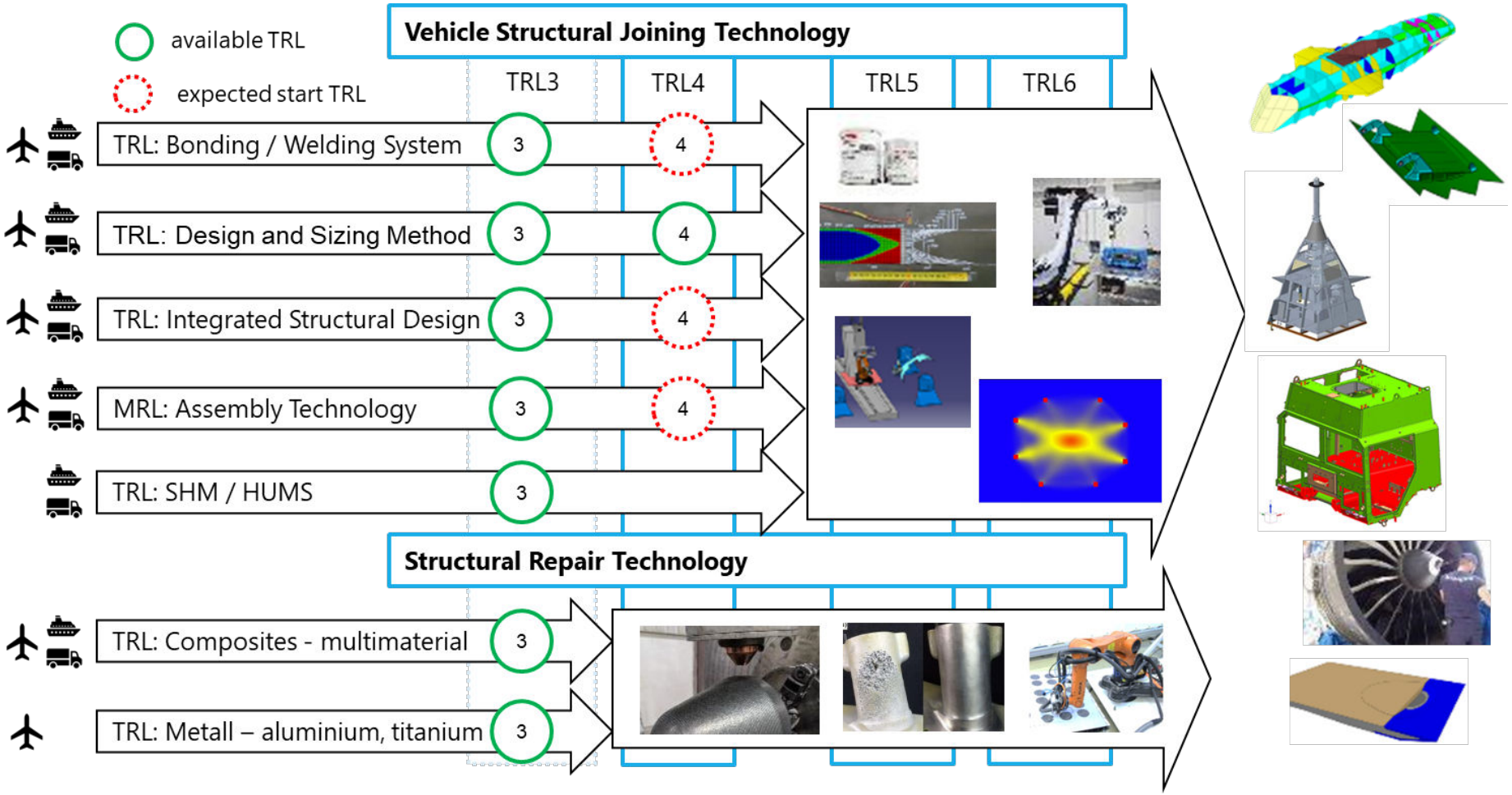
Acceptance / Certification test standards for adhesives & adhesive joints

Evaluation of adhesives for application in armour

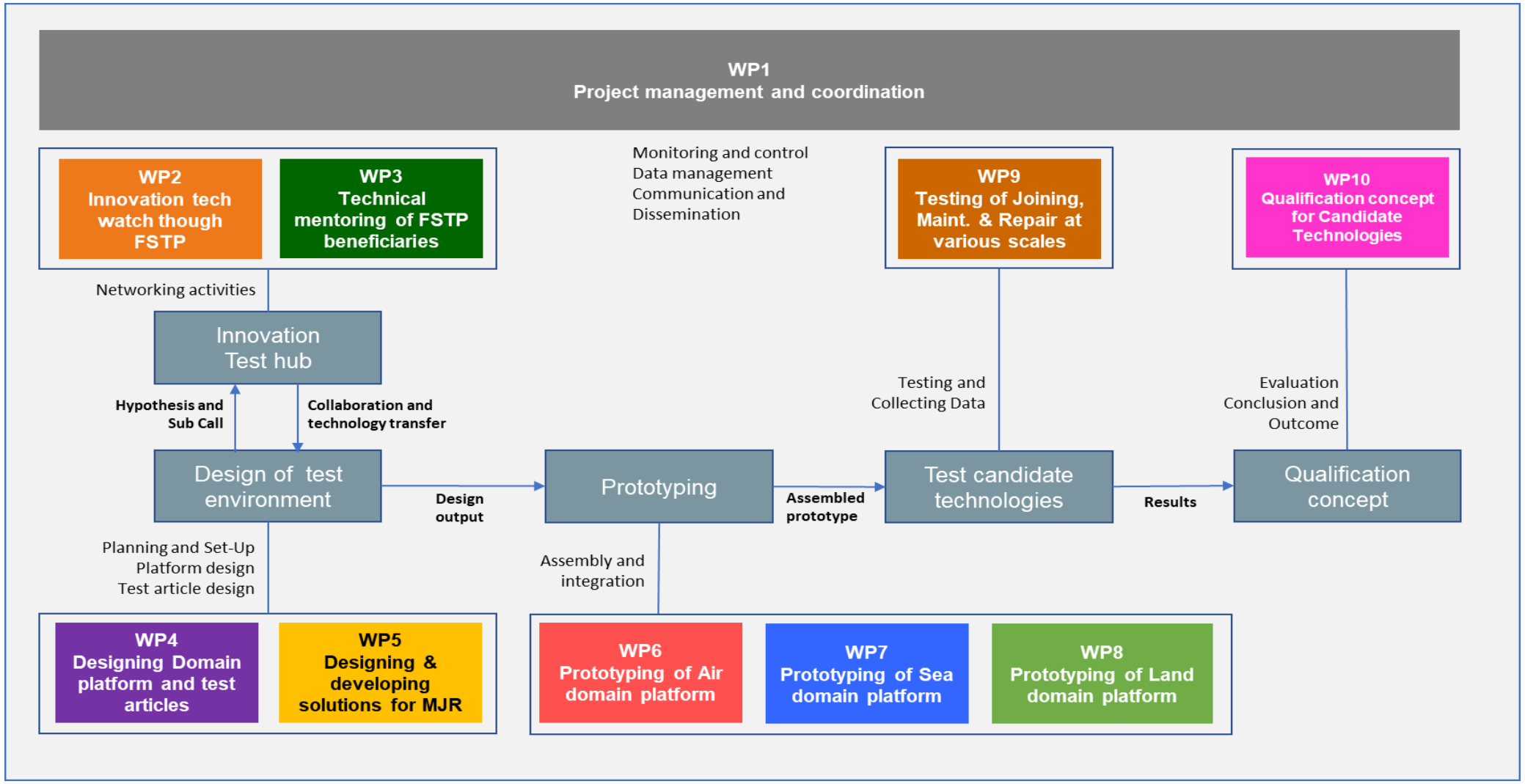
Automation of armour manufacture

Maintenance & repair techniques for armour

Common technology developments



Common technology developments



Thank you!

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MaJoR

Maintenance, Joining, and Repair innovation in multidomain defence

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