



#InvestEUresearch

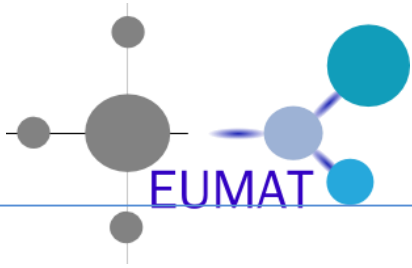
# Horizon 2020 Work Programme for Research & Innovation 2018-2020

EMRS Event  
Vienna, 29th October 2018

**Workshop:** Europe in Motion-EUMAT Session  
Time: 14:00-18:00  
Proponent: FIDAMC – María Rodríguez Gude  
Proposal title: Multifunctional carbon fiber composite parts with improved electrical conductivity

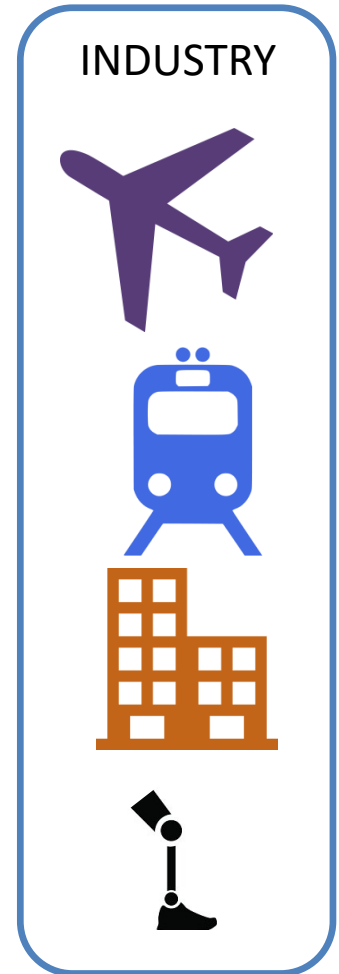
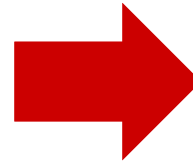
DG Research & Innovation

Research and  
Innovation

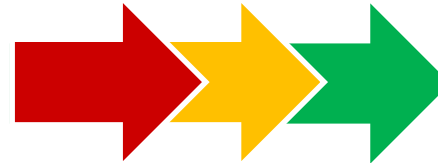


# Organisation / Company profile

**FUNDAMENTAL RESEARCH**

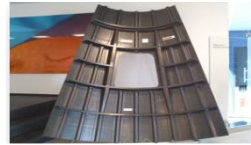


**F**oundation  
**I**nvestigation  
**D**evelopment  
**A**pplication  
**M**aterials  
**C**omposite



# Organisation / Company profile

## MAIN DEMONSTRATORS



### ATICA

ADVANCED TECHNOLOGY FOR INTEGRATION CURVED PANELS



### RIB TO SKIN

ADVANCED TECHNOLOGY FOR INTEGRATION CURVED PANELS



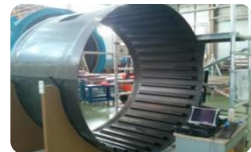
### TIP TO TIP

TIP TO TIP INTEGRATED BOX



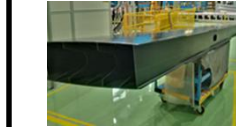
### HTP TORSION BOX

HTP TORSION BOX INTEGRATION



### FUSELAGE DEMONSTRATOR

BARREL STRUCTURE



### MULTISPAR

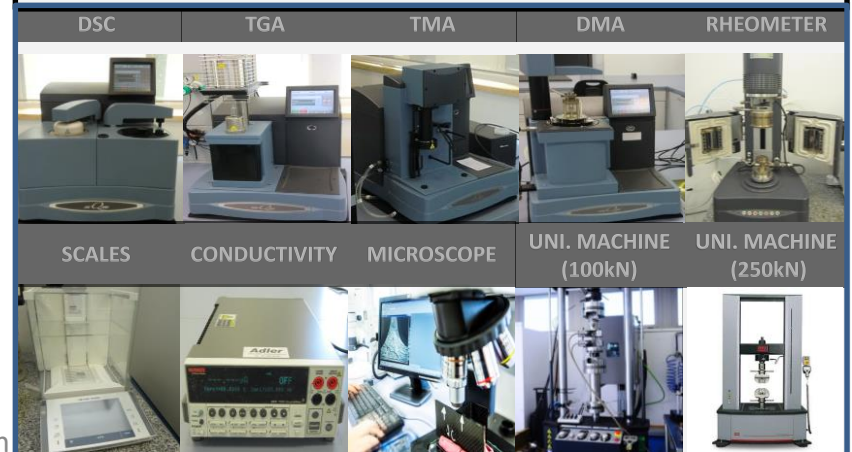
MULTI-SPAR AND MULTI-RIB TORSION BOX WITH ELASTOMERIC / METALLIC TOOLINGS

Capabilities of manufacturing: 8 x 6 m demonstrators

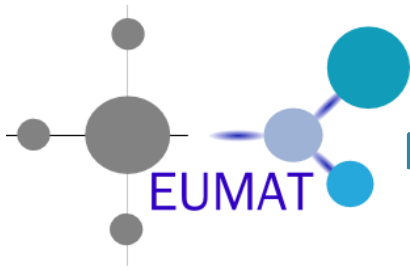
## FACILITIES: MACHINES



## FACILITIES: LABORATORY



# Project Idea



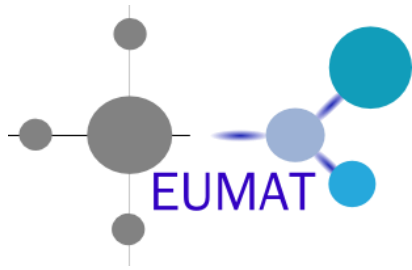
## MULTIFUNCTIONAL CARBON FIBER COMPOSITE PARTS WITH IMPROVED ELECTRICAL CONDUCTIVITY

**Electrical conductivity** required for several applications in aircraft structures:

- Lightning strike protection
- System integration

### Approaches:

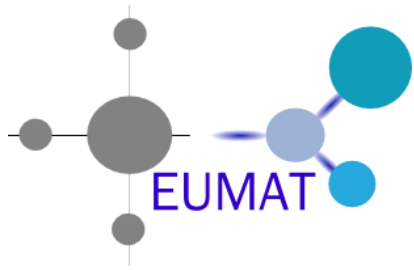
- **Lightning strike protection** → alternatives to thin Cu-based layers:
  - 1) Surface metallization: chemical deposition, physical vapor deposition, thermal/cold spray...
  - 2) Increase the conductivity of the composite:
    - Polymer matrix: addition of conductive nanofillers
    - Carbon fiber: metal coatings
- **System integration** → alternatives to standard cables for signal and electrical power transmission and electrical bonding:
  - 1) Conductive inks
  - 2) Metal coated carbon fibers



# Expected impact

The main benefits envisaged in this project include two of the main challenges for future developments in structural aircraft made of composite materials:

- Reduction of system installation cost and lead time
- Weight reduction



# Existing project consortium

Currently in collaboration for the development of surface metallic coatings with:



Physical vapour deposition

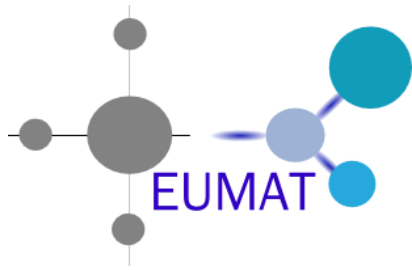


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Chemical deposition

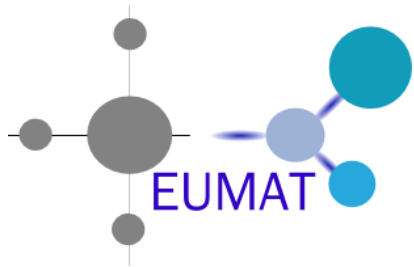
Requirements given by Airbus Group





# Looking for partners

- Manufacturers of conductive inks
- Experts in metal coated carbon fibers
- Experts in composite coating: preparation and characterization
- Final users



# Contact details

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