



# SME RTD Partner Profile

ETNA2020 Pitching Event @ Shift2Rail's 2020 Information Day

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## Who We Are

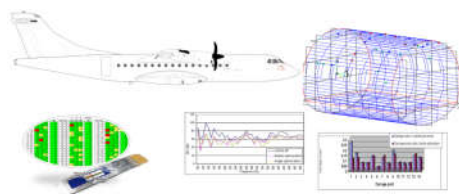
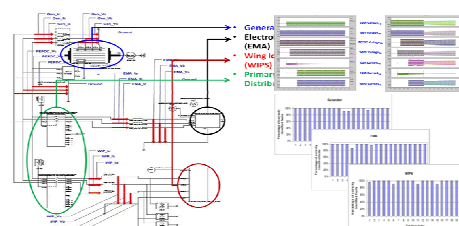
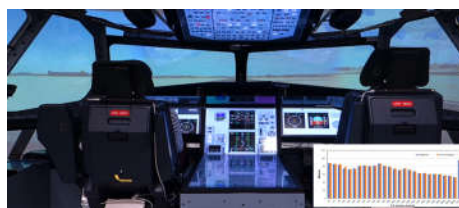
- PARAGON S.A. (ISO 9001 certified) is a Research & Technology Development SME (micro-SME) active in R&D and Commercial services, established 1995 in Athens, Greece.
- RTD activities range from in-house development projects, to solutions and applications development provision, and participation to RTD consortia as an SME Research partner. PARAGON has participated (to date) to 30 research initiatives from EC FP4 through to H2020 in Aeronautics (including Clean Sky), Transport, ICT, Factories of the Future, Energy & Environment, and Security.
- Commercial activities comprise of a range of services, that include scientific and measurement applications and support (experimental, industrial, occupational safety & health), specialized applications development, and commercial representation of major manufacturers of industrial & scientific instrumentation (sensors, daq/dsp, portable measurement & analysis, control, actuation, software) from the EU and USA to markets in Greece and S.E. Europe.
- PARAGON is active in dissemination & events organization, and is sponsor to the biennial international conferences IC-SCCE ([www.scce.gr](http://www.scce.gr)) and IC-EpsMsO ([www.epsmsso.gr](http://www.epsmsso.gr)).

# Areas of Expertise & Applications development



- Computational - Artificial Intelligence
- Evolutionary Computation – Multi-objective Optimization Algorithms
- Acoustics (incl. beamforming) & Vibration -related applications (measurement - monitoring - analysis - condition - diagnostics - active control - optimization)
- A.I. -based Centralized / De-centralized on-line Condition Monitoring - Diagnostics - Etc. applications (acoustic/vibration, electrical, and electro-mechanical applications)
- 3D Sound Generation Systems (including vibration) | Simulators – Training
- Multi-parameter Human Fatigue – Performance – Well-being (subjective + objective) modeling - simulation - monitoring - control applications | Aviation - Passengers / Crews
- Active Control / Monitoring Systems | Evolutionary Algorithms and/or A.I. (automated system building) -based:  
Active Vibration Control (AVC) • Active Structural Acoustic Control (ASAC) • Active Noise Control (ANC) • Active Flow Control (AFC) | Active Aerodynamics • Structural Health Monitoring (SHM) | Active / Passive • Integrated - Simultaneously Optimized- Active Control/Monitoring networks | Combined SHM + AVC/ASAC
- Smart & Sustainable Manufacturing operations – Multi-objective Triple-Bottom-Line (Energy + Emissions + Social factors) Production Planning – Scheduling Optimization
- Product Development Process – Multi-objective Simulation Workflow Optimization (heterogeneous, distributed)
- Multi-objective Optimization for Smart & Rapid Process / Product development - configuration - optimization
- ICT for Radar -based applications – Harmonic and/or Conventional radar - (processing (raw sensor data) - monitoring - object detection - object tracking - object trajectory prediction).

# Applications (EC Projects) - Examples



- 3D Sound Generation System - Simulators | ASCENT (H2020, CS 2).
- Active Control / Monitoring Systems - Active SHM, AVC, ASAC, Energy Harvesting, Combined SHM + AVC/ASAC, AFC | MESEMA (FP6), MOET (FP6), AVERT (FP6).
- Centralized / De-centralized Fault detection - Diagnostics – Etc. (on-line/off-line, design phase) | ACTUATION 2015 (FP7), CRESCENDO (FP7), MOET (FP6), TATEM (FP6).
- Multi-objective Aero-acoustic Arrays – Tests Configuration and Optimization | WENEMOR (FP7, CS 1).
- Multi-parameter Human Fatigue & Well-being modeling - processing - simulation | CRESCENDO (FP7), HEACE (FP5).
  - Subjective + Objective
  - Environmental + Physiological + Psychological parameters

# S2R 2020 Call – Project idea & Topics of interest



## **S2R-OC-CCA-01-2020: Noise and Vibration**

- Consortium building – Intent for submission (early stage). SME main partners currently from Hellas (EL), Italy (IT), other member states (from aerospace – simulators domain).
- Partner search open (both call topic Work-streams, particularly Work-stream 1). Open to collaboration – merge with other teams aiming for this call topic.

## **S2R-OC-IP3-02-2020: Technology Development for Railway Systems Asset Management**

- Interest – participation as SME RTD partner to work area ‘Multi-objective decisions optimization tools...’

## **S2R-OC-IP1-01-2020: Support to Development of next generation of Traction systems**

- Interest – participation as SME RTD partner to work area ‘Big Data, Artificial Intelligence (AI)...’

## **S2R-OC-IP1-03-2020 Innovative technologies for Carbodies and Running Gear of the future**

- Interest – participation as SME RTD partner to various areas listed in the call topic.

## **S2R-OC-IP3-01-2020: Next Generation Track Transition Zones**

- Interest – participation as SME RTD partner to various areas listed in the call topic such as (but not exclusive to) integrated/embedded condition monitoring solutions, design and materials to provide sustainable, whole system solutions, optimum maintenance regimes...

## **S2R-OC-IP3-03-2020: Advanced tools and equipment: collaborative robots & wearable mobile machines**

- Interest – participation as SME RTD partner to various areas listed in the call topic.

## EC Research participations (indicative listing)

### | AERONAUTICS |

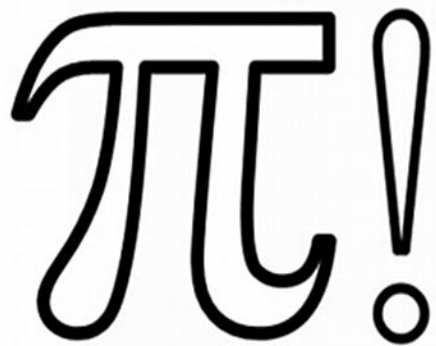
ASCENT: Active Simulator Cockpit Enhancement (CS2, Large Passenger Aircraft, Topic Manager - Airbus Defence & Space, ES) • WENEMOR: Wind Tunnel Tests for the Evaluation of the Installation Effects of Noise Emissions of an Open Rotor Advanced Regional Aircraft (CS 1, Green Regional Aircraft, Topic Manager - Leonardo Aircraft) • ACTUATION 2015: Modular Electro Mechanical Actuators for ACARE 2020 Aircraft and Helicopters (FP7, Goodrich Actuation Systems) • CRESCENDO: Collaborative and Robust Engineering using Simulation Capability Enabling Next Design Optimisation (FP7, Airbus) • MOET: More Open Electrical Technologies (FP6, Airbus) • TATEM: Technologies and Techniques for New Maintenance Concepts (FP6, GE Aviation Systems) • AVERT: Aerodynamic Validation of Emission Reducing Technologies | Active Flow Control technologies (FP6, Airbus) • MESEMA: Magneto-Elastic Energy Systems for Even More Electric Aircraft | Active Vibration Control | Active Structural Acoustic Control | Structural Health Monitoring | Energy Harvesting (FP6) • HEACE: Health Effects in Aircraft Cabin Environment | Multi-parameter Passengers / Crew Fatigue – Performance – Well-Being modeling - processing - simulation (FP5).

### | FACTORIES OF THE FUTURE |

PRECOM: Predictive Cognitive Maintenance Decision Support System (H2020) • FOFDATION: The Foundation for the Smart Factory of the Future (FP7, Airbus) • INTEFIX: Intelligent Fixtures for the Manufacturing of Low Rigidity Components (FP7, I4MS).

### | ICT / IST-NMP / SECURITY |

IPROD: Integrated Management of Product Heterogeneous Data (FP7, ICT) • SWOP: Semantic Web-based Open Engineering Platform (FP6, IST-NMP) • SENSE: Smart Embedded Network of Sensing Entities | Airports - Civil Security Monitoring, Critical Infrastructure Protection (FP6, IST).



**PARAGON S.A.**

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