

The logo for SmartFAN features the word "Smart" in a blue, lowercase, sans-serif font. To its right, the word "FAN" is written in a bold, black, uppercase, sans-serif font. The letter "A" in "FAN" is replaced by a stylized black propeller icon with three blades. Above the right side of the propeller icon, there are three curved lines representing a radio signal or Wi-Fi symbol.

SmartFAN

**Smart by Design and
Intelligent by
Architecture for turbine
blade fan and
structural components
systems**



This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement n. 760779

PROJECT GENERAL INFORMATION

Full Title: “Smart by Design and Intelligent by Architecture for Turbine Blade Fan and Structural Components Systems”

Acronym: SMARTFAN

Call identifier: H2020-NMBP-04-2017

Topic: Architected/Advanced material concepts for intelligent bulk material structures

Number of partners: 18

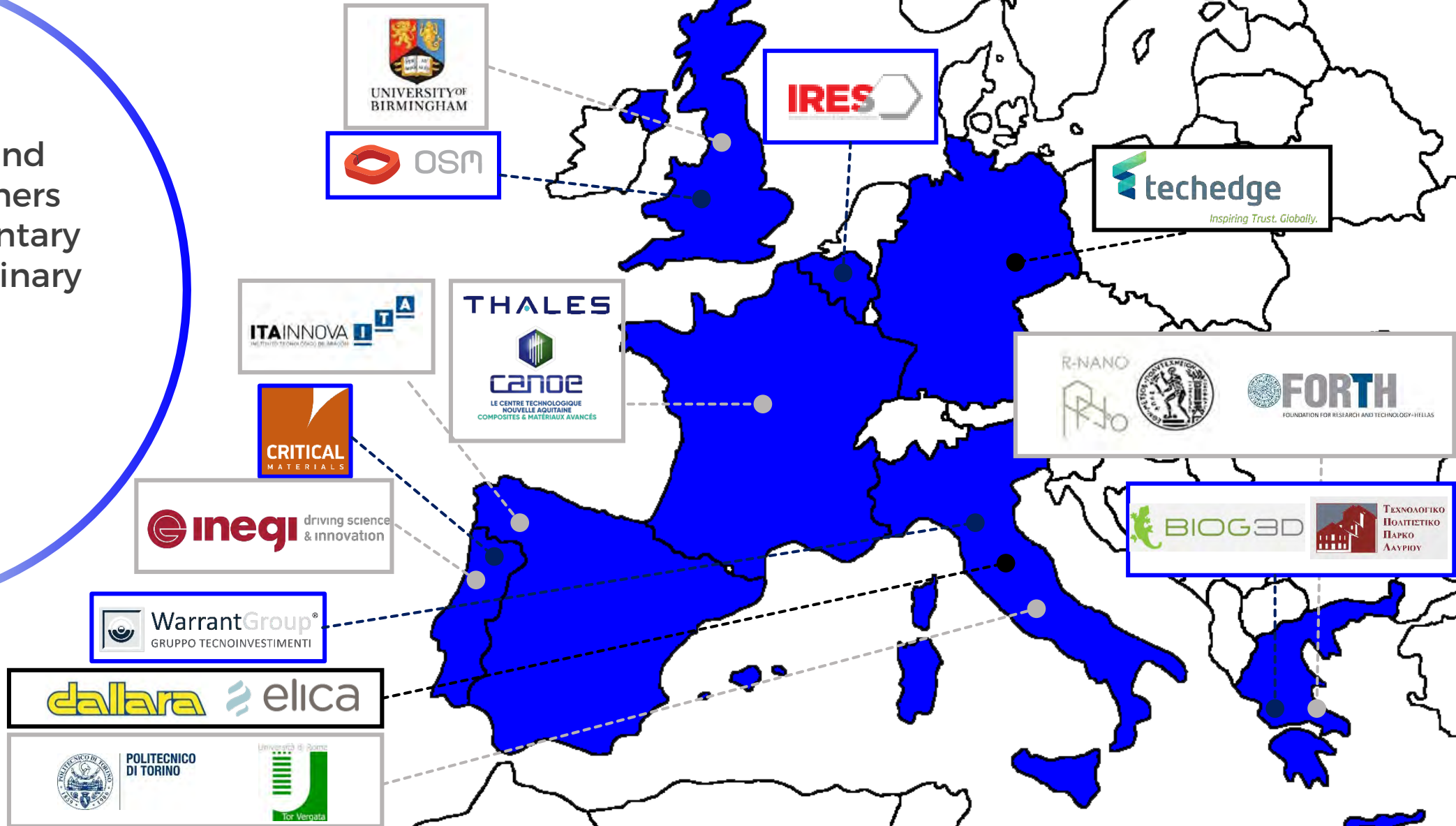
Duration: 48 months

Project Coordinator: Prof. C.A. Charitidis

PARTNERS

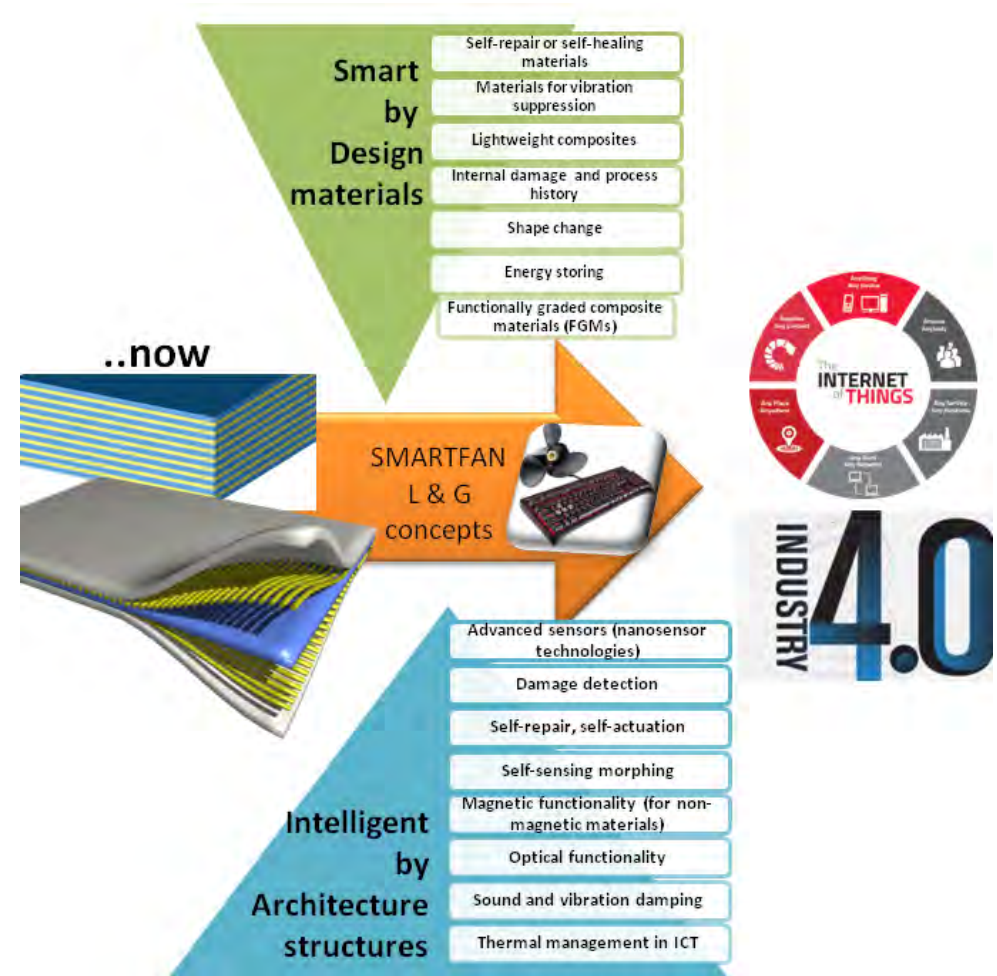
18 Industrial and academic partners with complementary and multidisciplinary expertise!

- ❖ 3 IND
- ❖ 9 RTO
- ❖ 6 SME



BASIC CONCEPT

SMARTFAN proposes the development of **“smart” material and product architectures with integrated functionalities**, that will interact with their environment and **react to stimuli**



BASIC CONCEPT

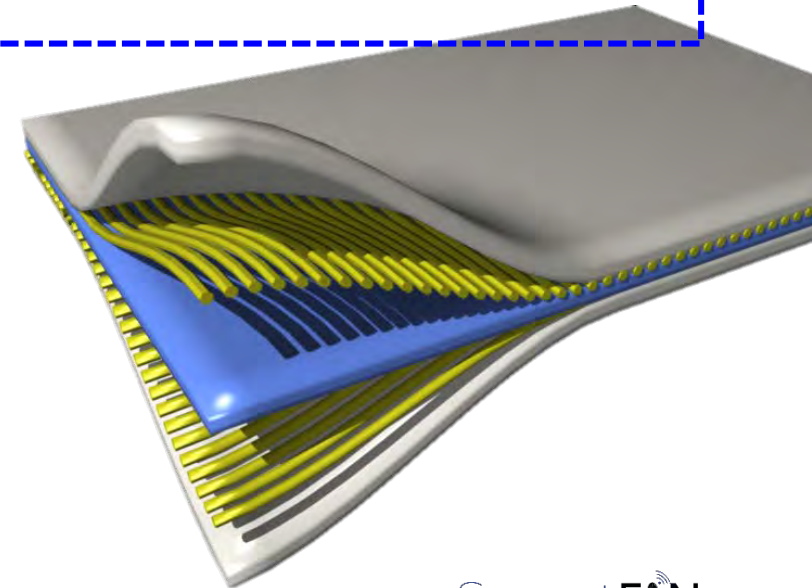


Development of
“smart and green”
chemical composites

● RECYCLABLE

● REUSABLE

**Smart-by-Design
and Intelligent-by-
Architecture**



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SmartF&N

BASIC CONCEPT

Development of intelligent components through the optimal combination of novel technologies and **bio-inspired engineering**

Self-sensing

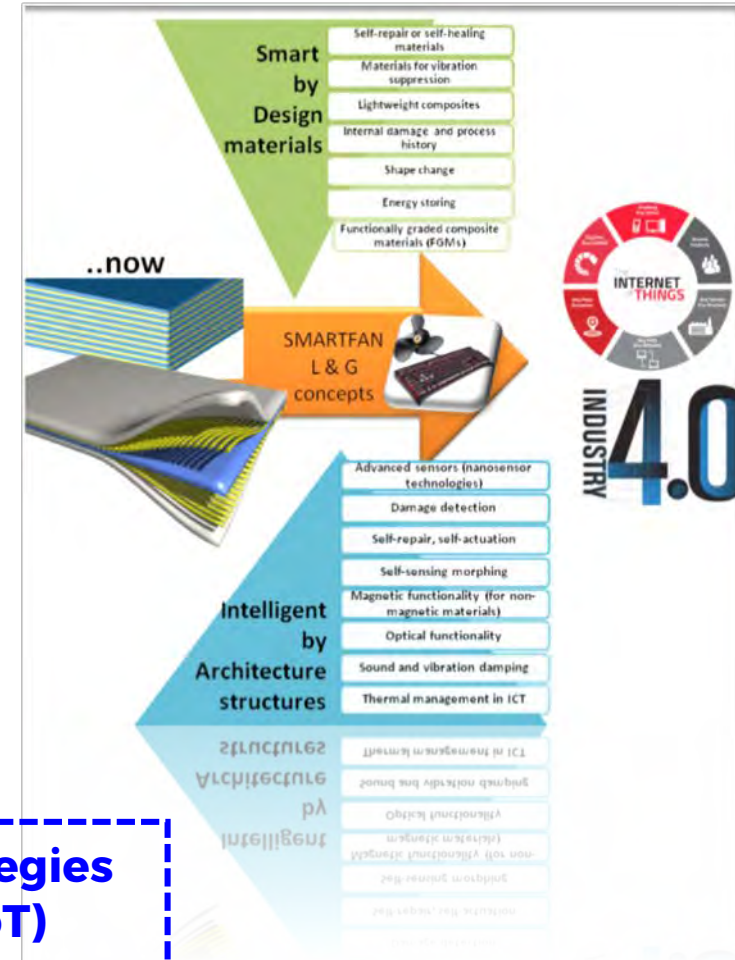
Self-healing

Self-morphing

Self-monitoring capabilities

Self-deciding structures

Intelligent communication strategies through Internet of Things (IoT)



BASIC CONCEPT

“Smart” materials
with bio-mimetically
oriented and
bioinspired
functionalities

Unconventional
nanostructures with
tailored properties

“Smartness” created
during formulations
development

L CONCEPT:
multilayer architectures
of composite materials

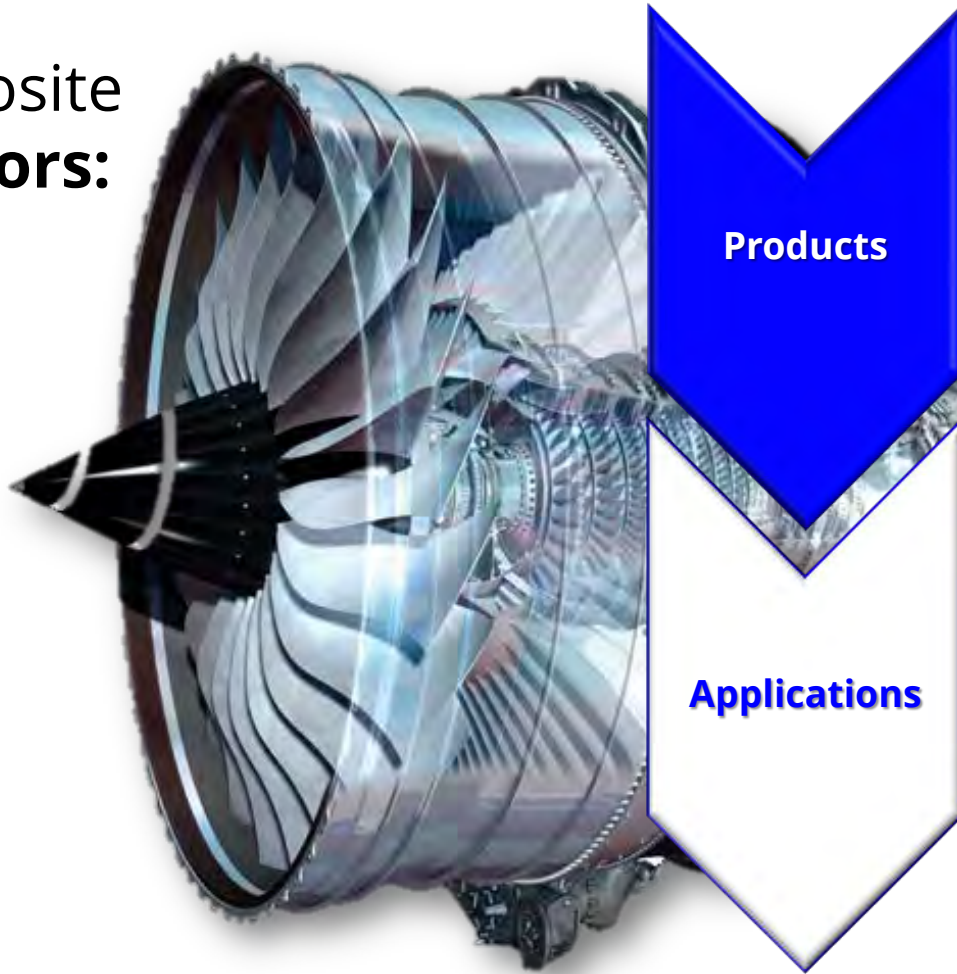
G CONCEPT:
composite architectures
with variable fiber grids



APPLICATIONS

Smart composite demonstrators:

- ❖ UNITV
- ❖ DALLARA
- ❖ THALES
- ❖ ELICA SPA
- ❖ BIOG3D



Products

- ✓ Design and Intelligent by Architecture **turbine blade fan and structural component systems**
- ✓ Smart (bulk) materials for final application to **intelligent structures**
- ✓ **Stimuli-responsive systems**, for **self-healing applications, shape memory components or conductivity nanoparticles**

Applications

- ❖ **Transducers**
- ❖ **Actuators**
- ❖ **Motors**
- ❖ **Structural materials**
- ❖ **Aerospace**
- ❖ **Automotive**
- ❖ **Consumer electronics**



RESEARCH AND INNOVATION HIGHLIGHTS

**BEYOND THE
STATE-OF-THE-ART**

Automated production of components with **highly improved** physical and mechanical properties within the framework of the **digital manufacturing concept**

Manufacturing of **Functionally Graded composite Materials**



CONTACTS



Prof. COSTAS A. CHARITIDIS

Project Coordinator

National Technical University of Athens
School of Chemical Engineering

Mail: charitidis@chemeng.ntua.gr



ISELLA VICINI

Dissemination Manager

Warrant Group S.r.l.
European Funding Division

Mail: isella.vicini@warrantgroup.it

www.smartfan-project.eu



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**Thanks for your
attention!**



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