



D8.2 – Communication Kit: Project LOGO, press release, leaflet and poster

Project Information

Grant Agreement Number	760779
Project Full Title	Smart by Design and Intelligent by Architecture for turbine blade fan and structural components systems
Project Acronym	SMARTFAN
Funding scheme	RIA
Start date of the project	January 1 st , 2018
Duration	48 months
Project Coordinator	Costas CHARITIDIS (NTUA)
Project Website	http://www.smartfan-project.eu

Deliverable Information

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WP no.	8
WP Leader	WG
Contributing Partners	NTUA, OSM
Nature	Websites, patents, filling, etc.
Authors	Sara ATTANÀ (WG)
Contributors	Costas CHARITIDIS (NTUA), Emmanuel Sofianopoulos (OSM)
Reviewers	
Contractual Deadline	30/04/2018
Delivery date to EC	

Dissemination Level

PU	Public	✓
PP	Restricted to other programme participants (incl. Commission Services)	
RE	Restricted to a group specified by the consortium (incl. Commission Services)	
CO	Confidential, only for the members of the consortium (incl. Commission Services)	



Document Log

Version	Date	Author	Description of Change
1.0	20/04/2018	Sara ATTANÀ (WG)	First Draft



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1 Executive Summary

The Communication Kit is a public instrument that can be used for communication/dissemination purposes without asking prior advice on contents; project partners are always required to inform the Communication and Dissemination Manager about the specific channel where the Communication KIT will be used (Event, articles, conferences, meetings, social media) and the contact details to be currently used is:

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The Communication KIT comprises:

- Logo, Background and Symbol;
- Leaflet;
- Poster 100x70;
- Press Release;
- Meeting Template;
- Deliverable and minutes Template;
- Work Package Presentation Template;
- News Template;
- Project Presentation.

Only promotional material (Leaflet, Newsletters, Press Release, Project Presentation and Poster) related to the project will be available for download at the following link: <http://www.smartfan-project.eu/download/>



2 SMARTFAN Logo

Figure 1: SMARTFAN Logo



3 SMARTFAN Symbol

Figure 2: SMARTFAN Symbol





4 SMARTFAN Background

Figure 3: SMARTFAN Background





5 SMARTFAN Leaflet

Figure 4: SMARTFAN Leaflet

PARTNERS



DETAILS

PROJECT REFERENCE: 760779

START/END: Jan 2018 – Dec 2021

EU CONTRIBUTION: EUR 7,989,601.25

PROGRAMME ACRONYM: SMARTFAN

CALL IDENTIFIER: H2020-NMBP-2017-two-stage

TOPIC: NMBP-04-2017 Architecture/
Advanced material concepts for intelligent
bulk material structures

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

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Union's Horizon2020 research and innovation
programme under grant agreement n. 760779

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OBJECTIVES

SMARTFAN proposes the development of "smart" material and product architectures, with integrated functionalities, that will interact with their environment and react to stimuli by employing biomimetic, self-sensing, actuating and damage-repairing technologies.

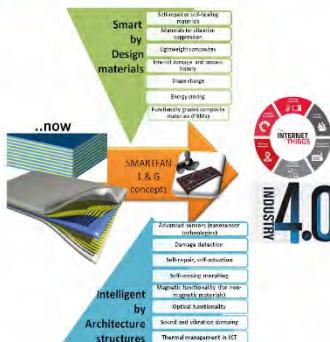
Their smartness is based on bio-inspired engineering and the use of:

- Low and high grade carbon fibres (CF)
- CF reinforced polymers (CFRPs)
- Nano-/micro- composites with special physicochemical properties, in order to develop smart (bulk) materials, applied on intelligent structures

Special functions of the smart materials involve:

- CFs for reinforcement of the structure and creation of conductivity gradients
- Carbon Nano Tubes (CNTs) and Carbon Nano Fibres (CNFs) for sensing, micro-hollow particles for self-healing
- Electro-magnetic nanoparticles that enable field detection and shielding
- Coloring agents or marking cracks and defects
- Intelligent communication through Internet of Things (IoT).

THE FRAMEWORK



MAIN CHALLENGES

1. Novel concepts for intelligent components and structures with integrated functionalities that are able to communicate and interact with their environment, store data about their condition and react accordingly to external stimuli
2. Development of materials that can alter their physical properties and shape
3. Intelligent structures and components that provide information of their in-service conditions
4. Self-repair, self-healing, lightweight composites that inform the user of any internal damage without the need of time consuming measurement techniques
5. Non-destructive examination
6. Materials or structures that can undergo shape change either passively or by activation. Functionally Graded composite Materials (FGMs), energy storing components
7. Predictive modelling of materials functionalities for those materials for which there are currently no accurate commercial or open-source codes available

EXPECTED GOALS





6 SMARTFAN Poster

Figure 5: SMARTFAN Poster

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

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- Materials or structures that can undergo shape change either passively or by activation. Functionally Graded composite Materials (FGMs), energy storing components
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EXPECTED GOALS

- Development of "smart and green" chemical composites
- Production of CFs using renewable resources
- Development of system design strategies
- Development of new strategies and processes for pilot scale production

DETAILS

- PROJECT REFERENCE: 760779
- START/END: Jan 2018 – Dec 2021
- EU CONTRIBUTION: EUR 7,989,601.25
- PROGRAMME ACRONYM: SMARTFAN
- CALL IDENTIFIER: H2020-NMBP-2017-two-stage
- TOPIC: NMBP-04-2017 Architected/Advanced material concepts for intelligent bulk material structures

CLUSTERS

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7 SMARTFAN Press Release

Figure 6: SMARTFAN Press Release

**Project Full Title**

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

Project Acronym

SMARTFAN

Grant Agreement Number

760779

Topic

NMBP-04-2017 Architectured/Advanced material concepts for intelligent bulk material structures

Total cost and EU contribution

EUR 7,989,601.25

Start date of the project

January 1st, 2018

Duration

48 months

Project Coordinator

National Technical University of Athens

Project Website

<http://www.smartfan-project.eu>



SmartFAN

New European Horizon 2020 Research and Innovation action project launched on Architected /Advanced material concepts for intelligent bulk material structures

In Fall 2017 SMARTFAN project has been approved and commenced on January 2018 aiming to **develop smart materials for final application on intelligent structures**. This will be done through **two main concepts**: Layer (L) concept and Grid (G) concept. Different micro- and nano-components, will be used due to their extraordinary physico-chemical properties, to achieve smart functionalities, e.g.:

- Selective sizing of CFs for reinforcement and conductivity variance and sensing;
- Carbon nanotubes (CNTs) and carbon nanofibers (CNFs) for self-sensing properties and conductivity enhancement;
- Micro-containers for self-healing;
- Graphene for electromagnetic fields detection and shielding;
- Colouring agents for marking cracks and defects;
- Piezoelectric materials that will be the base for manufacturing new smart materials.

In order to develop **lightweight composite materials** and transfer the properties of smart components into **bulk materials**, polymer-based matrices, such as Epoxy, PLA, Acrylics etc., will be used due to their compatibility with the above-mentioned components, their **low cost** and their **recyclability/reusability**.

SMARTFAN will develop materials and product architectures, with integrated functionalities, that will interact with their environment and react to stimuli by employing biomimetic, self-sensing, actuating and damage-repairing technologies. Their smartness is based on bio-inspired engineering and intelligent communication through **Internet of Things (IoT)**.

Another goal of SMARTFAN is to develop "**smart**" **intelligent composites that will be recyclable and reusable**. Innovative processes will be carried out in order to preserve the special physico-chemical properties of smart materials composites (e.g. suitable for the dispersion of their functional components). For example, by doping with carbon-based structures, any damage or deformation in the structure will result in a change of the electrical conductivity of the material, thus, converting the material functions into piezoelectric ones. The performance of the latter depends on the physical characteristics of the carbon structure (i.e., number of layers, geometry, etc.). Conferring smart properties is possible also by using carbon fibres which, in addition to their reinforcement ability, can provide conductivity. A carbon fibre composite, can also adapt its shape according to given external loads or constraints.

The SMARTFAN consortium is **complementary**, including 3 industries, 9 research institutes and 6 SMEs. By this way SMARTFAN covers **all required expertise and infrastructure** from academic, applied research and industry from **8 different EU countries** (for a detailed overview of the consortium, see <http://www.smartfan-project.eu/>).

SMARTFAN is an **H2020 project**, meaning that it is co-funded by the European Union (grant of 8 million €). It started on January 1st, 2018 and will last **48 months**. It is coordinated by R-NanoLab of the NATIONAL TECHNICAL UNIVERSITY OF ATHENS.

Further information:

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8 SMARTFAN Meeting Template

Figure 7: SMARTFAN Meeting Template





9 SMARTFAN News Template

Figure 8: SMARTFAN News Template

SmartFAN
Smart by Design and Intelligent by Architecture for Turbine Blade
Fan and Structural Components Systems

NEWS FORM ACQUISITION

Please write a short paragraph on achievements so far, or work you are planning for the next period.

You may write how this will affect your work and the project.

How will this impact science and technology if this is the case.

Mention the time period where the research was carried.

Describe the next steps you will carry after this research finishes.

If you like state the names and functions of the people carried out the work.

Mention who is the partner responsible for this result or what you describe.

Define a contact person with contact details for anybody interested for more information.

REMEMBER TO INCLUDE ONLY INFORMATION THAT IS NOT CONFIDENTIAL AS THE NEWSLETTER WILL GO PUBLIC!

REMEMBER TO INCLUDE ALWAYS THE PROJECT ACKNOWLEDGMENT IN ALL THE DOCUMENTS AND COMMUNICATION MATERIAL RELATED TO THE PROJECT

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10 SMARTFAN Project Presentation

Figure 9: SMARTFAN Project Presentation

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

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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: Architecture/Advanced material concepts for intelligent bulk material structures

Number of partners: 18

Duration: 48 months

Project Coordinator: Prof. C.A. Charitidis

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

The diagram shows a flow from "now" to "HORIZON 4.0". It highlights the transition from "Intelligent by Architecture" to "Smart by Design and Intelligent by Architecture". Key components include "Smart by Design materials" (e.g., self-healing, shape memory, conductive) and "Intelligent by Architecture structures" (e.g., sensors, actuators, motors). A central node represents "Material design with architecture".

APPLICATIONS

Smart composite demonstrators:

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

The slide features a large image of a turbine blade. To its right, two arrows point to "Products" (a small device) and "Applications" (a list of technologies). The applications list includes: Design and intelligent by Architecture, turbine blade fan and structural component systems; Smart (bulk) materials for final application to intelligent structures; smart composite systems for self-healing applications, shape memory components or conductivity nanoparticles; Transducers; Actuators; Motors; Structural materials; Aerospace; Automotive; Consumer electronics.

CONTACTS

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A large image of a modern windmill sculpture against a blue sky. To the right, the SmartFAN logo is shown above the text "Thanks for your attention!". At the bottom right, there is a small EU flag and the text "This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement n° 760779".

11 Conclusion

The Communication Kit will be up-dated with a dedicated section on "SMARTFAN key goals" where data and imagines of the achieved results will be described.