

Programme Cadre Horizon 2020

Appels à projets 2016-2017

Journée d'information « Transport »
28 septembre 2015, Marne la Vallée
Session « Transport aéronautique »

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Sommaire



1. Le « mode spécifique» Aviation
2. La JTI Clean Sky
3. Les dispositifs d'accompagnement



Le « mode spécifique » AVIATION



Défi 4 Transports intelligents, verts et intégrés

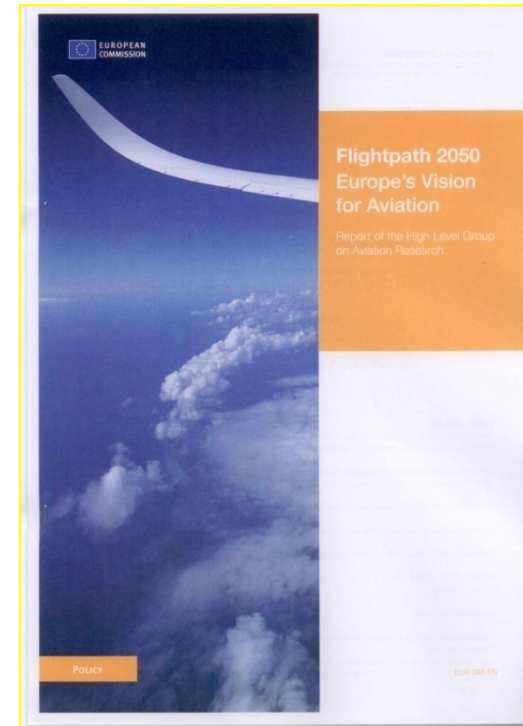
AVIATION

EUROPE NEEDS:

- ❖ Medium to long-term Research and Innovation actions with a bottom-up approach for innovative technologies, **complementing those carried out under Clean Sky and SESAR**



- ❖ Actions to improve the skills and knowledge base of European aviation, to support its R&I policy and to create durable links with targeted international cooperation partners



WP 2014-2015

Retour sur le premier appel 2014 - AVIATION

- Beaucoup de demandes mais peu de budget : globalement sur-souscription 9 fois supérieure au budget disponible
- Sur le volet « aéronautique », au total 182 projets (type RIA) soumis, dont 13 avec coordination FR
→ 59 projets retenus, dont 6 avec coordination FR
- Thales 5^e et Airbus 8^e bénéficiaires français (tout secteur et type d'acteur confondu), 1^{ère} PME : ARTTIC

WP2016-2017 - appel à projets

Transports intelligents, verts et intégrés (draft)

N°	Titre	Année	Action	Type	Budget total (M€)	Subv. max. par projet (M€)	Date limite de dépôt
Mobility for growth - Aviation							
MG.1.1	Reducing energy consumption and environmental impact of aviation	2016	RIA	2 étapes	40.0	5.0 – 9.0	1^{ère} étape: 20/01/2016
MG.1.2	Reducing aviation noise	2017	RIA		20.0	5.0 – 9.0	
MG.1.3	Maintaining industrial leadership in aeronautics	2017	RIA		45.0	5.0 – 9.0	
MG.1.4	Breakthrough innovation	2016 & 2017	RIA		15.0 (2016) 15.0 (2017)	2.0 – 4.0	2^{ème} étape: 29/09/2016
MG.1.5	Identification of gaps, barriers and needs in the aviation research	2016 & 2017	CSA	1 étape	4.0 (2016) 7.0 (2017)	1.0 – 2.0	26/01/2016

<https://ec.europa.eu/programmes/horizon2020/en/draft-work-programmes-2016-17>

MG.1.1-2016 - Reducing energy consumption and environmental impact of aviation

- **RIA, two-stage, expected EU contribution per proposal: 5 to 9 M€**
- **Challenge:** The **reduction of energy consumption** in aviation leads to high social, environmental and economic benefits. Improvement of the environmental impact of the aircraft can be achieved through better engine efficiency and advanced combustion technologies, improved aerodynamics or weight reduction.
- **Scope:**
 - Development of novel technologies contributing to **more electric aircraft**, including new power electronic devices, low energy systems, advanced power generators and actuation systems as well as innovative power and power management concepts.
 - Advancements in **core engine technologies** to develop new innovative concepts towards improving thermal efficiency by increasing the Operational Pressure Ratio.
 - Development and demonstration of **integrated aero-structures** with self-sensing, morphing or multi-functional capabilities towards reduced weight and better aerodynamic performance as well as decreased manufacturing and operational cost.
 - Development of screening and optimisation tools aiming at quantifying the added value of **alternative fuels** from the jet fuel as well as development of design tools aiming at assessing the impact of different fuel compositions on engine components and fuel systems
- **Expected impact :** Actions will ... mature technologies capable of:
 - Bringing measurable **reduction of environmental impact** towards the long-term goals of reducing CO₂ by 75% and NO_x by 90% (per passenger and per kilometre) by 2050 (baseline year 2000).
 - Facilitating the **introduction of alternative fuels in aviation** towards the long-term goal of 40% biofuels share in aviation fuels by 2050

MG.1.2-2017 – Reducing aviation noise

- **RIA, two-stage, expected EU contribution per proposal: 5 to 9 M€**
- **Challenge:** Exposure to aircraft noise has an adverse effect on population. Ensuring that airports will have the capability to respond to the growing traffic demand requires more systematic approaches to aviation noise management bringing together technological, operational and planning solutions. To address these challenges, **stronger coordination between national, international and EU research activities is necessary.**
- **Scope:** Actions should address the development of new technologies and methodologies to enable 24/7 operations, including new methods for assessing, monitoring and managing the impact of aviation noise. The actions should address one or several of the following areas:
 - Development of new aircraft/engine technologies for noise reduction at the source.
 - Novel approaches for assessing and managing the impact of aviation noise, including aspects such as new airport noise reduction strategies, novel cost-effective solutions for the monitoring of noise footprints and health impacts.
 - Integration of aviation-related environmental assessment approaches in land-use planning practices and tools with the aim of enabling a higher level of effectiveness in scenario-analysis and decision-support capability whilst allowing heightened proficiency for use by non-specialists.
 - Better understanding and testing of new emerging noise issues (e.g. sonic boom) towards international

MG.1.2-2017 – Reducing aviation noise

- **Expected impact** : Actions will lead to new and more holistic approaches for aviation noise reduction, coupling innovative airframe/engine technologies with operational aspects, airport infrastructure and connectivity, and land-use planning solutions.
- **International cooperation is encouraged**, in particular in relation to sonic boom, in order to contribute to the regulatory discussions at United Nations' International Civil Aviation Organisation.

MG.1.3 -2017 - Maintaining industrial leadership in aeronautics

- **RIA, two-stage, expected EU contribution per proposal: 5 to 9 M€**
- **Challenge:** European aeronautics has never been stronger, however new opportunities and challenges lie towards 2020 and beyond . Some technologies promising ones at low maturity levels that need to be further advanced. Primes, suppliers including SMEs, research laboratories and academia should collaborate in an efficient and timely manner to bring these innovative technologies to higher maturity levels for these advanced and cost-efficient products and services.
- **Scope: priority areas**
 - Condition-based health management, replacing scheduled inspections and thus decreasing maintenance costs and increasing safety and aircraft availability through accelerating the integration of innovative and existing sensor technologies, advancing data analysis methods and promoting standards for health sensing across dissimilar systems and structures, developing and validating multiple sensor technologies on systems and structures, and addressing relevant regulatory barriers.
 - Advancements in composite aero-structures that have the potential to offer alternative competitive technologies and methodologies and are presently at low Technology Readiness Levels (e.g. new generation materials and composite structures, validation of new simulation and design methodologies, advanced manufacturing methods, including out-of-autoclave, joining between composites similar or dissimilar media fatigue and damage tolerance behaviour and the related structural health monitoring and repair methodologies, long term behaviour and degradation of eco-efficient surface protection)

MG.1.3 -2017 - Maintaining industrial leadership in aeronautics

- **Scope: priority areas**

- Internal and external Electromagnetic Environment technologies addressing at large electromagnetic immunity problems stemming from the increasing complexity of on-board systems in a composite aero-structures and smart materials environment. Analysis of regulatory and standardisation issues should be provided and certification/qualification issues addressed.
- Development and validation of multi-disciplinary design tools that address key isolated or clustered industrial problems with low degree of confidence that need presently extensive experimental verification. Activities may contribute to advancing further physical understanding of multi-physics phenomena, simulation of manufacturing processes and design of experiments, uncertainty quantification, cross-cutting computational procedures as well as preparatory work for transition to high-performance computing.

- **Expected impact :** The actions will contribute towards maintaining the leadership of the European aeronautics industry through increased availability of new innovative design tools, materials, manufacturing and service processes:

- For the condition-based health management, the actions will quantitatively demonstrate potential improvements towards weight benefits, systems complexity and reduced maintenance costs and demonstrate that European primes and suppliers have an agreed common roadmap towards potential exploitation of the results.
- For the novel composite aero-structures, the actions will demonstrate their capability to drive costs down and production rates up using new generation composites as well as nonconventional manufacturing methods.

MG.1.3 -2017 - Maintaining industrial leadership in aeronautics

- **Expected impact :** The actions will contribute towards maintaining the leadership of the European aeronautics industry through increased availability of new innovative design tools, materials, manufacturing and service processes:
 - ...
 - For the internal and external electromagnetic environment technologies, the actions will demonstrate that an increase up to 60% of the confidence in the electromagnetic assessment process is feasible. The proposals will also demonstrate that the proposed concepts and development of tools will contribute to substantial reduction of cost (including qualification and certification) and time-to-market.
 - For the development and validation of multi-disciplinary design tools, the actions will develop computing solutions for key industrial problems to facilitate the introduction of innovative products and services.
- Given the strong involvement of SMEs in the supply chain, this topic is particularly relevant for **SME participation**.

MG.1.4-2016 - Breakthrough innovation

- **RIA, two-stage, expected EU contribution: 2 to 4 M€**
- **Challenge:** Very ambitious long-term goals are addressed by Europe's vision for aviation Flightpath 2050, in particular for maintaining and extending industrial leadership and for protecting the environment. As many evolutionary technologies are mature near to their maximum potential, **new disruptive breakthrough** technologies are needed to reach these ambitious goals.
- **Scope:** The actions should target technologies and concepts that are at **low TRL today (up to 3)** and can potentially achieve TRL 6 by 2030-2035. The actions should focus to airframe, propulsion and on-board systems & equipment, including their integration and may challenge established practices. The actions should address one or several of the following areas:
 - **Innovative aircraft configurations** and airframes (e.g. short take-off and landing, long wing span; personal vehicles).
 - **Propulsion systems** (e.g. partially or fully embedded within the airframe; distributed propulsion technologies and revolutionary engine cycles; high-speed propulsion).
 - Novel and integrated **multifunctional systems**.
 - Autonomous, intelligent and evolving systems (e.g. Remotely Piloted Aircraft Systems).
- **Expected impact :** Actions will propose new or develop further highly innovative and exploitable breakthrough technologies for the medium term ... They should demonstrate the proof of concept and consider integration issues without assuming fundamental changes at airport level.

MG.1.5-2016 – Identification of gaps, barriers and needs in the aviation research

- **CSA, one-stage, expected EU contribution: 1 to 2 M€**
- **Challenge:** In order to leverage resources, mitigate risks and establish long term relationships, the European aeronautics sector should identify topics of common interest and mutual benefit with other regions of the world, in particular where these address societal challenges.
- **Scope:** In 2016, the actions should address one the following areas:
 - Identification of barriers for increased collaboration in aviation research at EU level involving countries and regions with lower participation in the EU Framework Programmes and recently Associated Countries such as Ukraine. The action should stimulate cooperation by creating and enhancing the links between the stakeholders of these countries and other aviation research intensive regions.
 - Identification and assessment of the needs, gaps and overlaps for strategic aviation research infrastructures in Europe. The actions should establish an overview of the existing situation taking into account the results of previous actions on this issue. They should involve analysis on the potential sustainable business models and funding schemes to maintain existing or to develop new aviation research infrastructures.
- **Expected impact:**

The actions will support to reach the goals set by the aviation sector in a more efficient and optimal way thorough assessment of the progress towards Flightpath 2050 goals, identification of future needs, gaps and barriers, and make recommendations for further actions.



La JTI Clean Sky 2



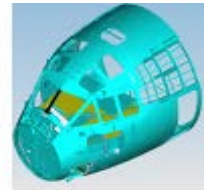
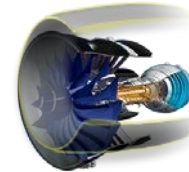
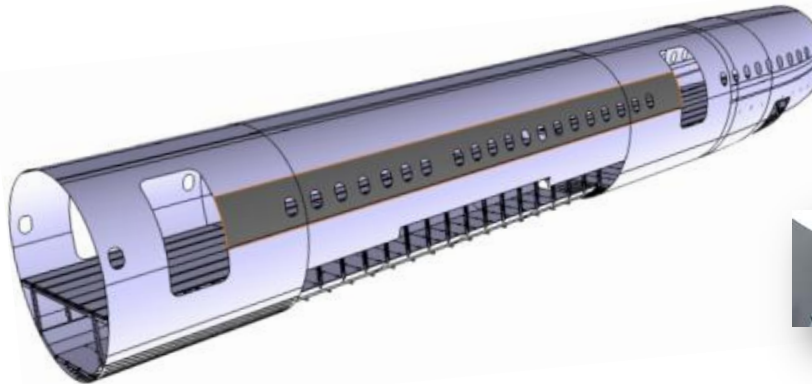
Energy Efficiency & Environment



Enabling Safe & Seamless Mobility



Building industrial leadership in Europe



Clean Sky 2: Les leaders



Clean Sky 2 – Nouvelle structure



Nouvelle organisation de Clean Sky 2 :

- **Trois Vehicle IADP (« Innovative Aircraft Demonstrator Platforms ») :**
 - Fast Rotorcraft (leader: Agusta Westland, **Airbus Helicopters**)
 - Large Passenger Aircraft (Airbus)
 - Regional Aircraft (Alenia Aermacchi)
- **Trois Large Systems ITD (“Integrated Technology Demonstrators”):**
 - Airframe (Dassault, Airbus D&S, Saab)
 - Engines (Safran, Rolls-Royce, MTU)
 - Systems (Thales, Liebherr Aerospace)
- **Activités transversales:**
 - Eco-design (Fraunhofer Gesellschaft)
 - SAT - Small Air Transport (Evktor, Piaggio)
 - TE - Technology Evaluator (DLR)
- **Objectifs 2035:** (base : meilleure performance en 2014)
 - Réduction CO₂: -30%
 - Réduction NOx: -40%
 - Population exposée / Empreinte sonore: jusqu'à -75%

Clean Sky 2 – Règles de participation ...



... différentes de celles du programme H2020 « classique » :

- **Participation possible comme « single entity » :**
 - pas d'obligation de créer un consortium européen
 - **2 ou 3 partenaires du même pays possible**
 - **En moyenne : 2.5 partenaires par projet**
 - **Conseil : projets avec deux partenaires, binôme industrie – recherche**
- **Taux de succès relativement élevé car il s'agit plutôt de cahiers de charge (que d'appels à projet) : 1 projet sur 3 (ou 4) retenu**
- **Un seul « winner » par topic, zéro winner n'est pas exclu**

... mais suivent les règles de financement d'H2020

TYPES OF ACTIONS

Type of organization	R&IA	IA
No-Profit	Direct costs: 100%	Direct costs:100%
	Indirect costs: 25%	Indirect costs: 25%
Profit	Direct costs: 100%	Direct costs: 70%
	Indirect costs: 25%	Indirect costs: 25%

CS2 Participation

- Up to 40% of EU funding available for CS2 Leaders
- At least 60% of EU funding open to competition:
Up to 30% for Core Partners (becoming Members once selected)
At least 30% for CfP (i.e. *Partners as in CS*) plus CfTs
- Meaning >1bn€ of EU funding in play, via open Calls



**Industry, SMEs, Academia, and Research Organizations eligible both for participation as Core Partners or Partners.
Participation may also take place via suitable Clusters / Consortia.**



800 - 1000 Participants expected across all tiers of the industrial supply chain and “R&I Chain”, with large investment leverage effect

2nd Call for Proposal at a glance

▪ Call Launch	30 July 2015
▪ Call Closure	18 November 2015
▪ Evaluation Phase	Dec. 2015 – Jan. 2016
▪ Q&A last publication*	28 October 2015
▪ Technical sessions & GAP preparation	Q1 2016
▪ Indicative Start date of activities	Q2 2016

*Questions received until 15th October will be analysed

The call contains **64 Topics** with total available funding of almost **58 Million Euro**

For questions : Info-Call-CFP-2015-01@cleansky.eu

Find out more:

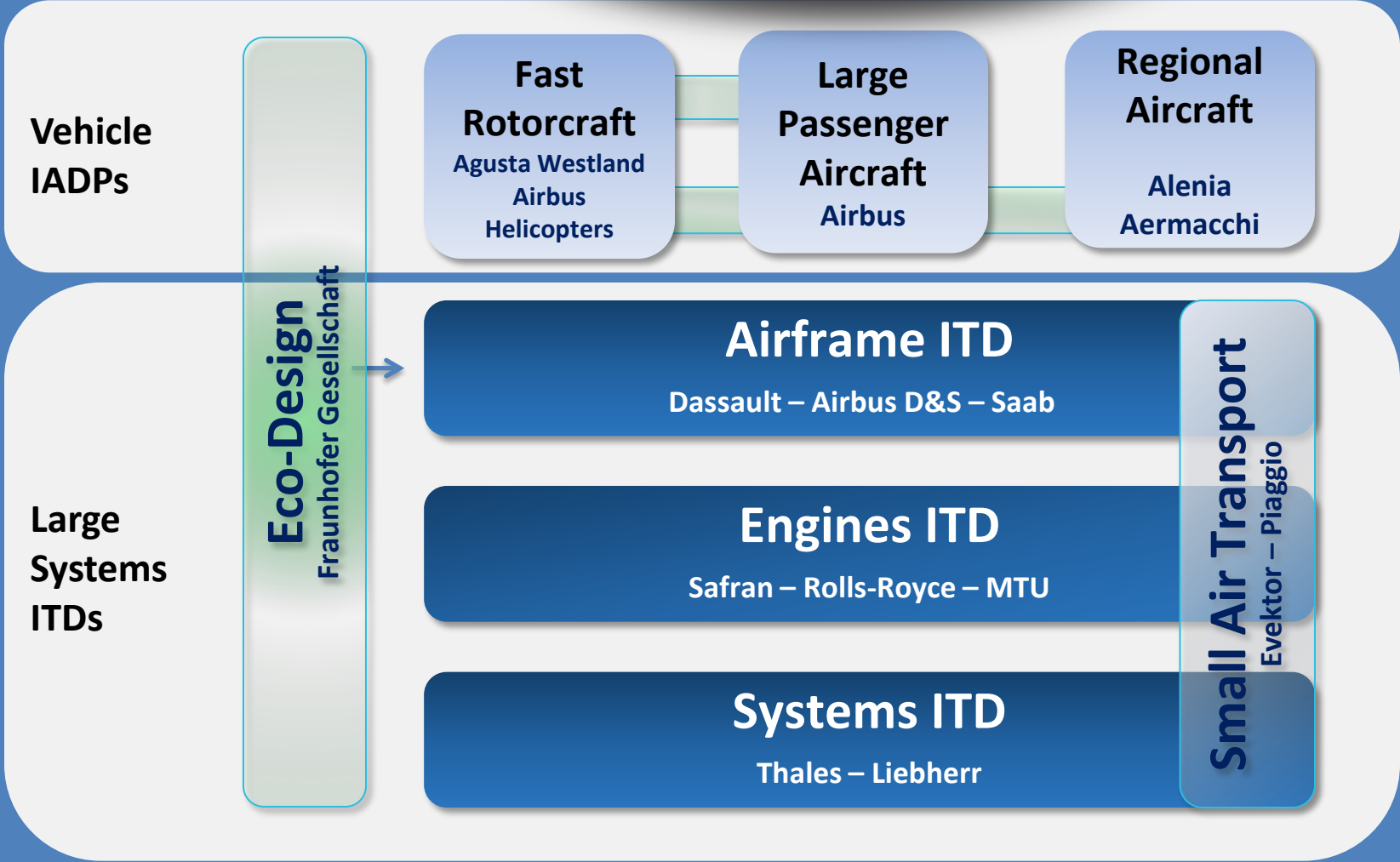
- Clean Sky 2 via www.cleansky.eu
- CfP02 via the EC Participant Portal:
<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/calls/h2020-cs2-cfp02-2015-01.html>

**(Before October
15th)**



Not legally binding

Budget : 1.755 Mrd €
(1.716 Mrd€ "net")*
*** Hors frais de fonctionnement**



Technology Evaluator (TE)
German Aerospace Center (DLR)

CfP02 Call @ Launch - Overview

Area	No. of topics	Funding (M€)
IADP Large Passenger Aircraft	15	14,40
IADP Regional Aircraft	2	3,30
IADP Fast Rotorcraft	12	10,75
ITD Airframe	16	7,65
ITD Engines	10	10,20
ITD Systems	9	11,65
Small Air Transport (SAT) Transverse Area	(4)	(2,05)
ECO Transverse Area	0	0
Technology Evaluator	0	0
TOTAL	64	57,95

- At least 30% of CS2 EU Funding open to competition via CfP / CfT,
- 12 – 15 CfP expected over the H2020 Funding period (2014 – 2020)
- The topics are roughly equally balanced across the 2 type of actions “RIA or IA”





Dispositifs d'accompagnement



Le consortium du « PCN Transport »

- Pilote : IFSTTAR
 - Patrick Malléjacq, DAEI
 - Marie-Françoise Sherratt-Roux, DAEI
- Copilotes : MESR, MEDDE, MRP
 - Philippe Toussaint
 - Michel-Louis Pasquier, MEDDE
 - Emmanuel Clause, MIEN
- Mov'eo représentant des 4 pôles de compétitivité automobile (Mov'eo, iD4CAR, Véhicule du Futur, LUTB) :
 - Mathilde Picco
- Aerospace Valley (aéronautique) :
 - Thilo Schönfeld
- GICAN (maritime et fluvial, logistique) :
 - Fabrice Theobald
- Mandatés par la CPU :
 - Ecole Centrale Lyon : Bénédicte Martin
 - Université Paris-Est Marne-la-Vallée : Bastien Pincanon



D'autres appuis

- Le PCN Affaires juridiques et financières :
pcn-jurfin@recherche.gouv.fr
- Le PCN PME : daveran@aerospace-valley.com
- Le PCN Accès au financement :
mc.taillandierthomas@bpifrance.fr
- **Le réseau Entreprises Europe Network (EEN)**
 - 600+ points de contact dans 54 pays
 - Une large gamme de services de soutien à proximité immédiate des PME
 - En France : réunit les Chambres de Commerces, les agences régionales de l'innovation, les délégations régionales de BPIFrance et des structures de transfert...
- Les pôles de compétitivité...
- Des cabinets privés spécialisés

Quelques sites officiels

A banner for Horizon 2020 featuring a globe on the left and the European Union flag on the right. The text 'HORIZON 2020' is prominently displayed in the center.

HORIZON 2020

LE PORTAIL FRANÇAIS DU PROGRAMME EUROPÉEN
POUR LA RECHERCHE ET L'INNOVATION

- Site officiel français : www.horizon2020.gouv.fr
- www.ec.europa.eu/research/horizon2020
- www.ec.europa.eu/research/participants/portal
- www.transport-ncps.net/ (projet européen ETNA+)

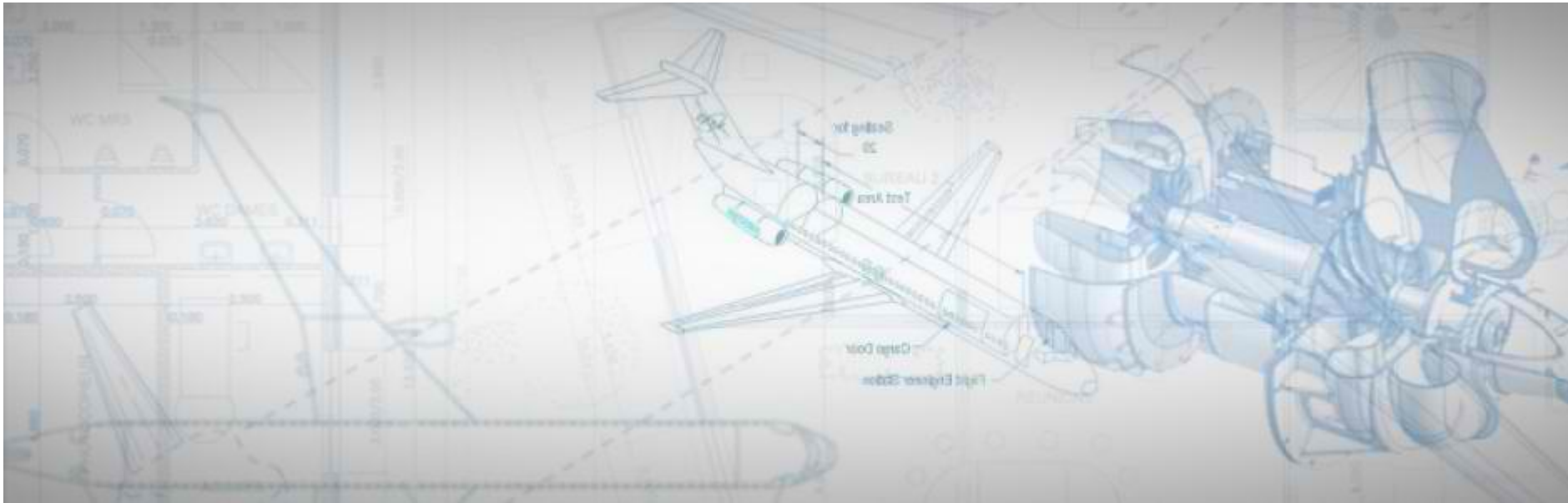
H2020 infoday & brokerage event

“Smart, green and integrated transport”

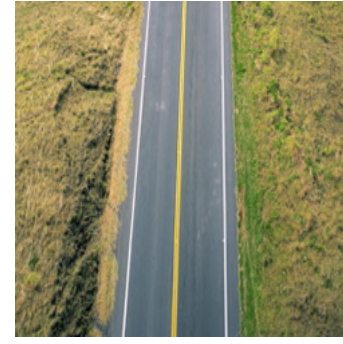
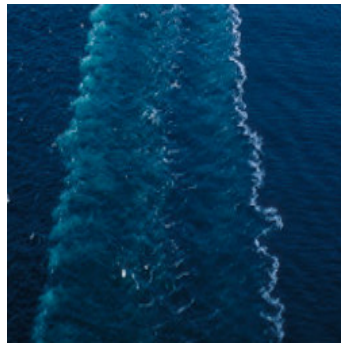
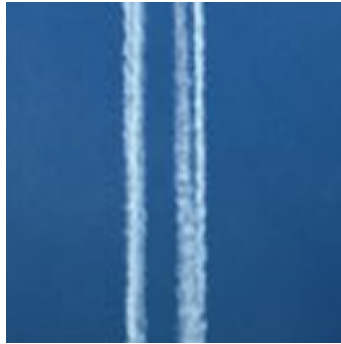
5 novembre 2015

Bruxelles

<https://scic.ec.europa.eu/fmi/ezreg/TRANSPORTINEA2015/registration>



*Merci pour votre
attention !*



Contact :

pcn-transport@recherche.gouv.fr