Consortium

DLR

CIRA Italian Aerospace Research Centre

deepblue CONSULTING & RESEARCH

DNW German-Dutch Wind Tunnels

Gobierno de España · Ministerio de Defensa · Secretaría de Estado de Defensa · INTA Instituto Nacional de Técnica Aeroespacial

AIRBUS

Piaggio Aerospace

ONERA The French Aerospace Lab

Roland Berger

evalue

TU Delft

etsiae UPM

ILR Institute of Flight Guidance · RWTH Aachen University

easn Technology Innovation Services

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RINGO

Identification of **Aviation Research Infrastructure Needs, Gaps** and **Overlaps**

EU Coordination and Support Action H2020
March 2017 - February 2020

www.ringo-project.eu

Motivation

A harmonised approach to investing, operating and maintaining key aviation research infrastructures is needed at European level, as investments and maintenance costs are reaching levels that cannot be easily covered by individual organisations or countries.

Goals

RINGO is a Coordination and Support Action providing a cohesive and coordinated approach for the identification and assessment of the aviation research infrastructures needed in Europe. It aims at:

- identifying **needs for aviation research infrastructures** according to FlightPath 2050 goals and challenges at European level.
- building a **catalogue of existing aviation research infrastructures** in Europe.
- identifying **Gaps** (needed aviation research infrastructures currently not existing) and **Overlaps** among existing aviation research infrastructures by matching the identified needs with the catalogue.
- proposing **sustainable and innovative operating business models** for large aviation research infrastructures.

Methodology and Approach

The RINGO methodology for the identification and assessment of needs, gaps and overlaps for strategic aviation research infrastructure for fulfilment of Flightpath 2050 Goals, is based on a coordinated approach applied at project level and on individual methodologies for investigation concerning the "Research Infrastructure Needs Identification", the "Identification of existing Research Infrastructure" and the following "Synthesis and Matching".

Impact

RINGO will finally provide the European Commission with a description of the demands for future Research Infrastructures. It will provide an elaborated overall concept of infrastructures and timelines, which will facilitate research activities, create scope for new solutions, and provide significant innovation to prepare the aviation sector in Europe for achieving the long-term goals.

Methodology and Approach

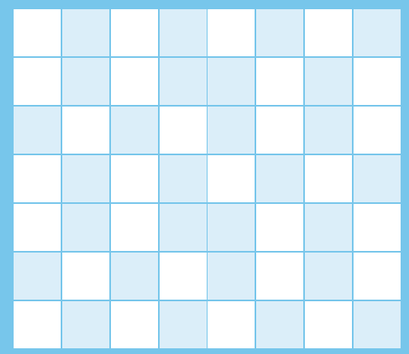
Challenges | FlightPath 2050

- Meeting market and societal needs
- Protecting the environment and the energy supply
- Maintaining and extending industrial leadership
- Ensuring safety and security
- Prioritising research, testing capabilities and education

NEEDS
of Aviation Research Infrastructure

GAPS /// OVERLAPS /// OPERATIONAL BUSINESS MODELS
for aviation research infrastructures

LANDSCAPE
of available Aviation Research Infrastructures



Landscape of Research Infrastructures

An interactive version of the map is available at **www.ringo-project.eu/maps**
Please have a look and feel free to contribute.

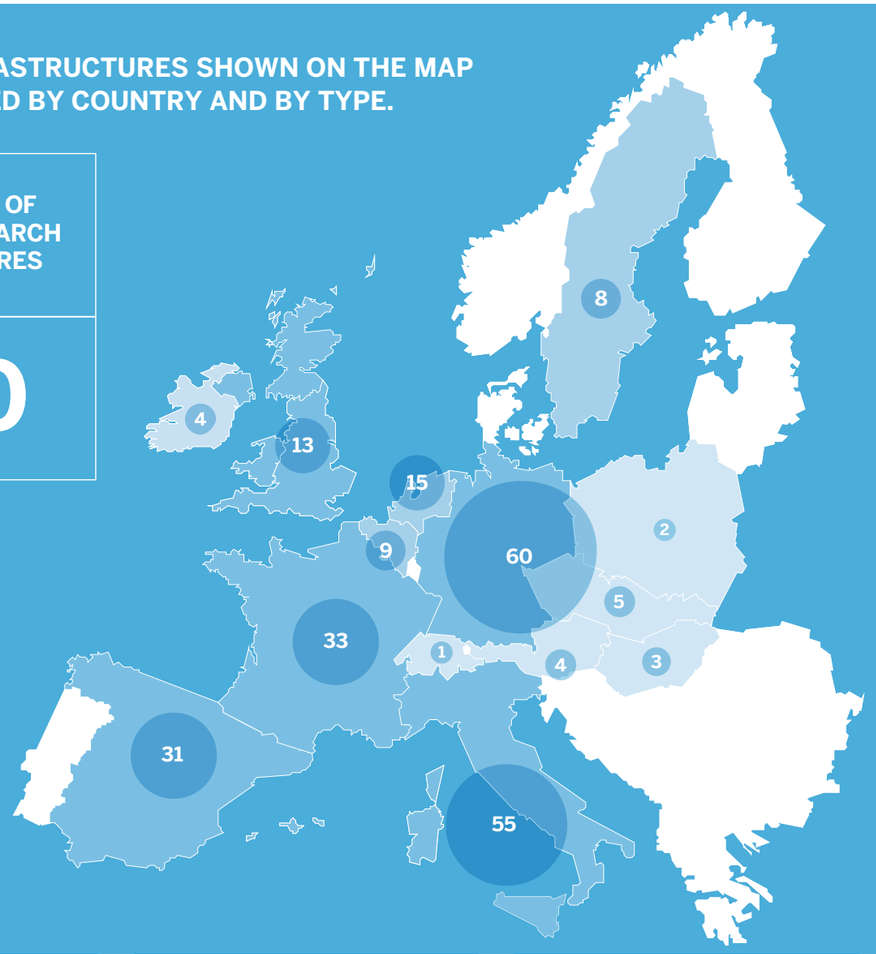
Preliminary results

The following infographic provides an overview of the results collected in the first year of the project. More results are being collected. ***Stay tuned for the final report to be issued at the end of 2019.***

RESEARCH INFRASTRUCTURES SHOWN ON THE MAP ARE AGGREGATED BY COUNTRY AND BY TYPE.

TOTAL NUMBER OF AVIATION RESEARCH INFRASTRUCTURES

250



ENVIRONMENTAL RIs		FLIGHT TEST BEDS		MATERIALS	
1	equal to 0,5%	26	equal to 11%	18	equal to 6%

PROPULSION BENCHES		SIMULATORS		STRUCTURES	
26	equal to 11%	20	equal to 8%	27	equal to 11%

SUPERCOMPUTERS		WIND TUNNELS		OTHERS	
13	equal to 5,5%	69	equal to 27%	50	equal to 20%

76 RESEARCH INFRASTRUCTURE NEEDS SELECTED, OUT OF MORE THAN 240 IDENTIFIED IN THE FIRST YEAR OF THE PROJECT.

Needs are classified into three main categories: capability gaps, asset gaps and identities.

ASSET GAPS		CAPABILITY GAPS		IDENTITIES	
30	equal to 40%	25	equal to 33%	21	equal to 27%

IMPORTANCE AND TEMPORAL SIGNIFICANCE

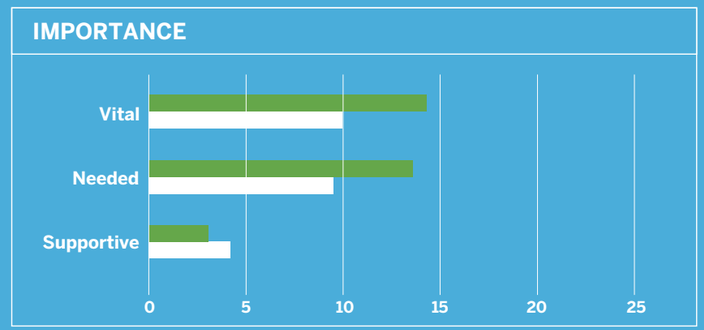
Most asset and capability gaps identified in Year 1 concern needs for aviation research infrastructures that are considered important and quite urgent to address FP2050 goals.

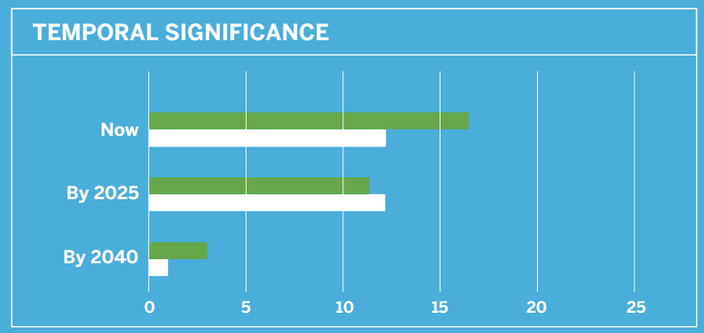
Asset gaps refer to aviation research infrastructures that are necessary but do not exist at all.

Capability gaps identify enhancements to be introduced in already existing aviation research infrastructures.

Identities refer to needs that can be addressed by aviation research infrastructures that already exist.

asset gaps capability gaps





AREA OF IMPROVEMENT

The gaps identified in the first year of the project, define an area of improvement over the 9 research fields.