



EASA
European Aviation Safety Agency

Data4Safety

The European Big Data Programme for Aviation Safety

EASA FDM Conference

13th of June 2017

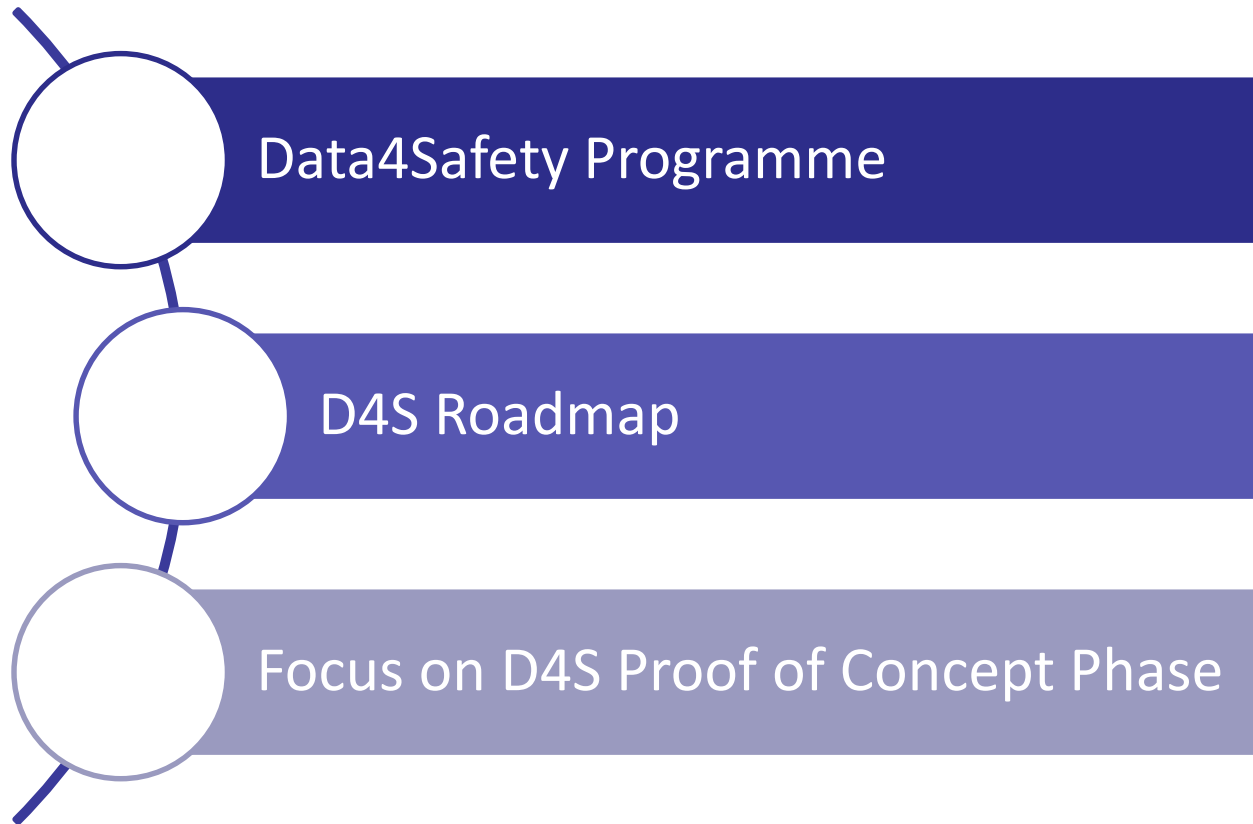
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An agency of the European Union 

TE.GEN.00409-001



Agenda





What is D4S?

D4S is a **data collection** and **analysis** programme



D4S will organise the collection of safety data that are currently scattered and fragmented all over different organisations in Europe




D4S will organise the analytical capacity in order to turn the massive amount of data into meaningful safety intelligence.







D4S will rely on **leading edge IT technologies**




**MACHINE
LEARNING**



TEXT MINING



**ARTIFICIAL
INTELLIGENCE**



**HIGH SPEED
COMPUTING**





What is D4S?

Data4Safety

1. Identification
of Safety Issues

2. Assessment
of Safety Issues

5. Safety
Performance

The safety risk management process is fundamentally
based on Data Collection and Analysis





What is D4S?

D4S is all about **safety** – **enabler of data-driven decision making**



D4S will enable data-driven decision making



D4S is an enabler of the Performance Based Environment



What is D4S?

D4S is a **voluntary and collaborative partnership with the industry**



Voluntary participation



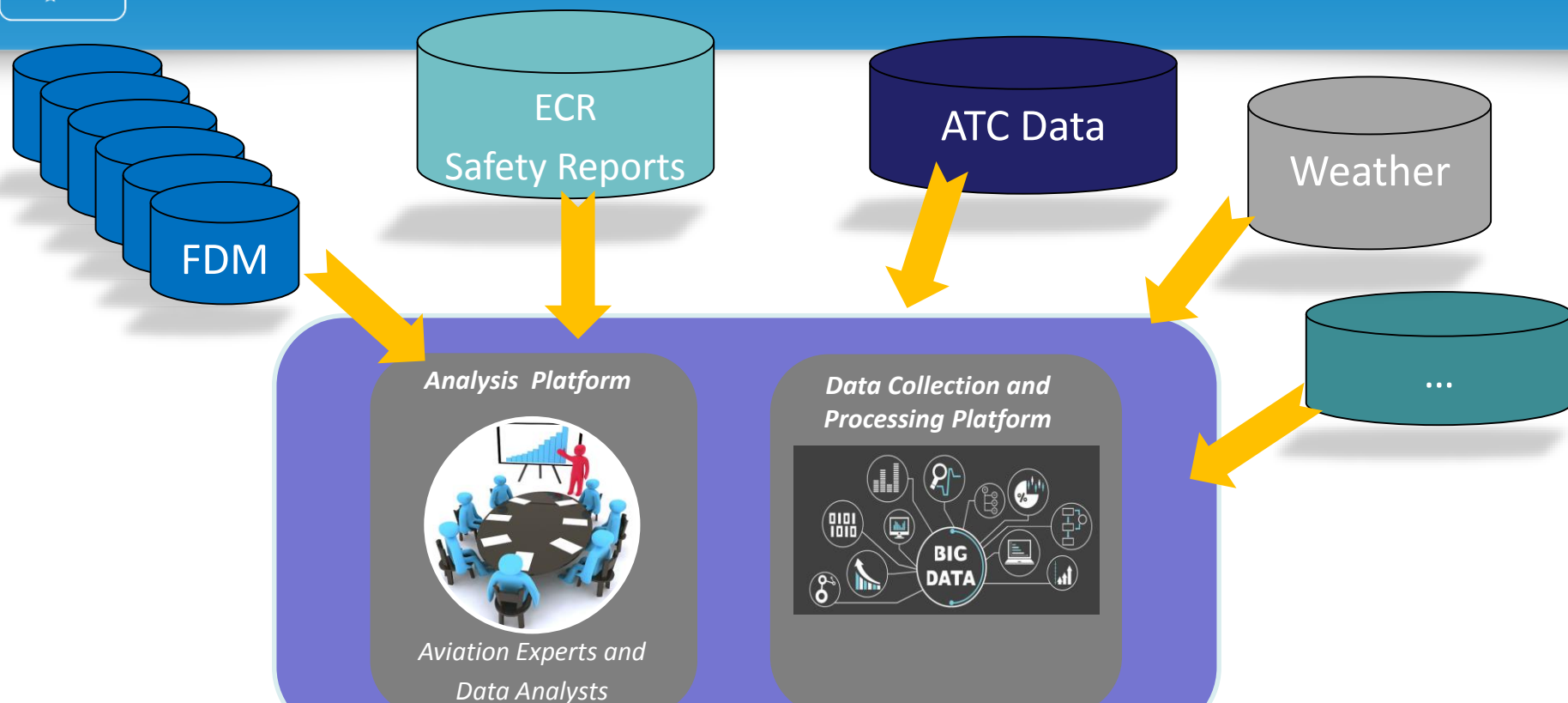
Independent governance



Governance co-chaired
by EASA and industry



What is D4S?



D4S will rely on two main platforms to collect and analyse the aviation safety data and infer knowledge



Safety Performance Indicators



Benchmarking



Directed Studies



Vulnerabilities Discoveries



D4S and international cooperation

D4S is connected with other international Big Data initiatives



Cooperation with the ASIAs
(FAA/Mitre)



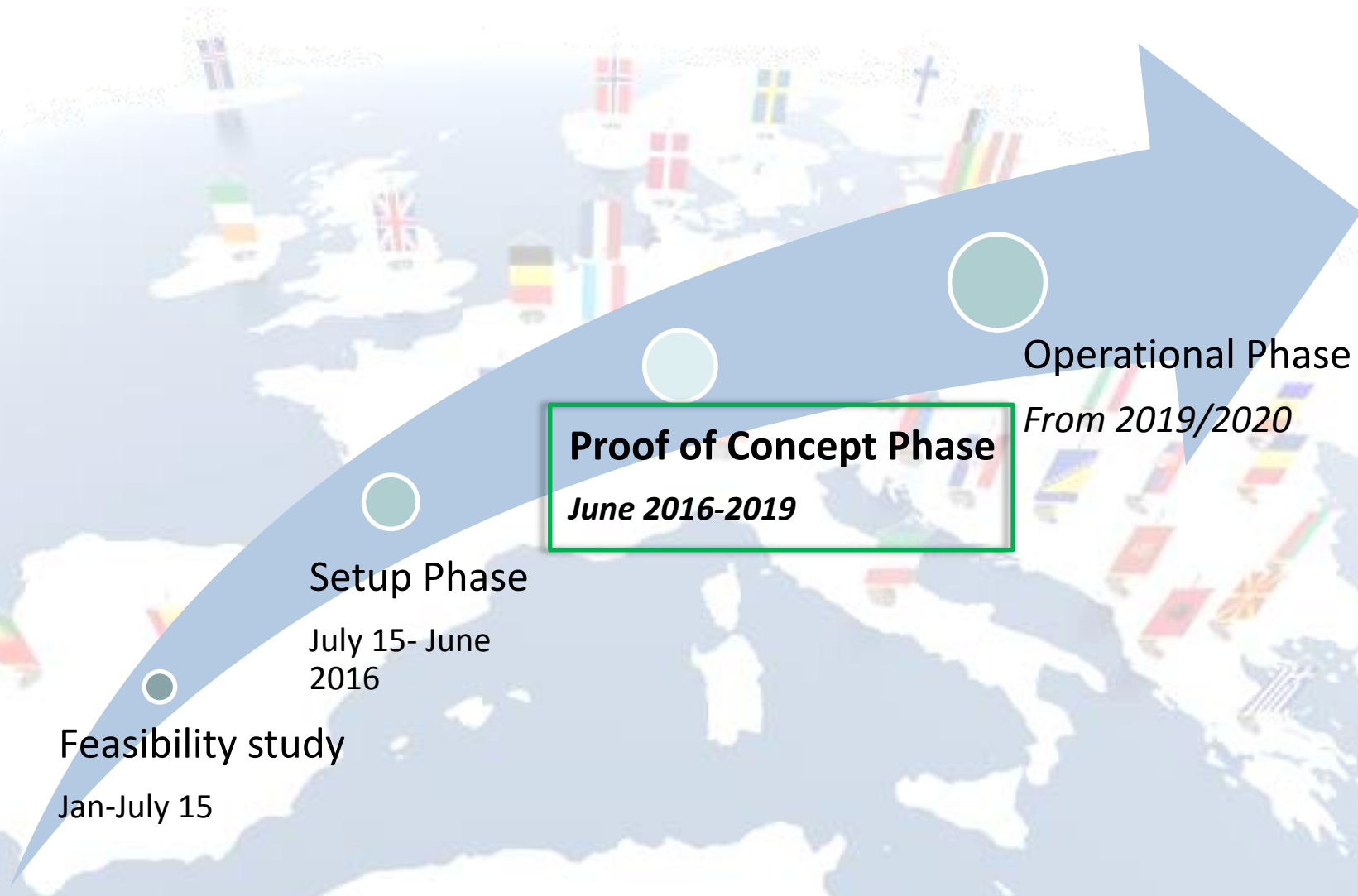
Cooperation with the FDX (IATA)



Others (ICAO, other Transport modes,
Research and University entities)



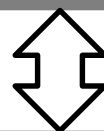
D4S Roadmap





STEERING BOARD

Co-Chaired by EASA Executive Director and British Airways Director of Safety and Security



TECHNICAL BOARD

Co-Chaired by EASA and the ECA



Link with the wider aviation community





D4S Founding Members



Number initially limited for efficiency reasons



Airlines, Manufacturers, NAAs, Unions



Linked by a Charter



Not frozen: more partners may join during the PoC



D4S Founding Members

British Airways

easyJet

Iberia

LH Group

Ryanair

ECA

European Cockpit Association



EASA

AESA Spain

DGAC France

IAA Ireland

UK CAA

Airbus

Boeing



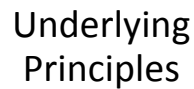
Main milestones passed?



D4S Charter signed by Founding Members



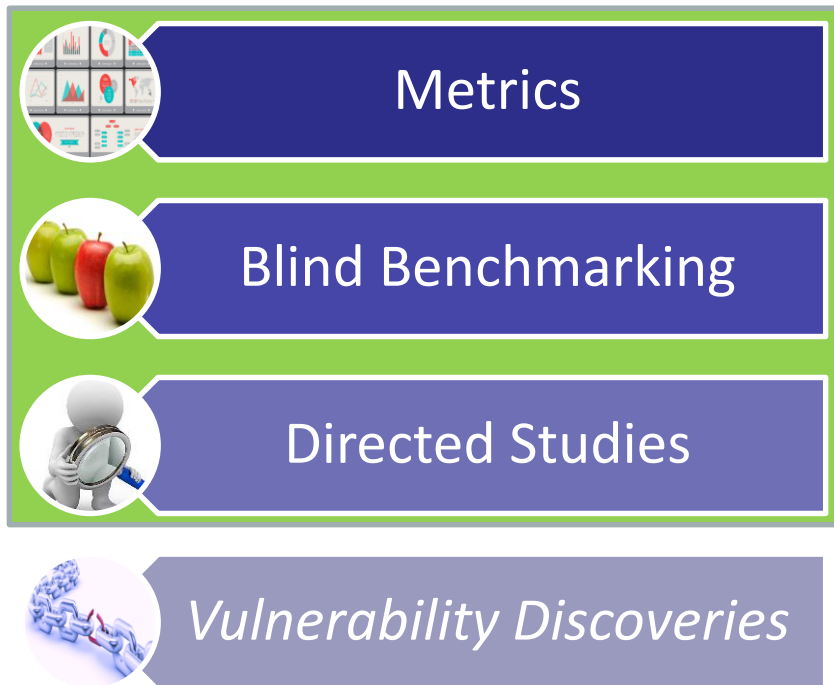
Tender for the Data Processing and Protecting Organisation (DPPO) published



- Designed for the long term not just for the Proof of Concept phase



Selection of the Use Cases for the PoC





Agreed Selection Principles

- Leverage on ASIAs experience
- Adapt to European system

Metrics



- Based on Metrics
- Apply visualization rules

Blind Benchmarking



- Focus on 2 Directed Studies
- Serve the PoC objectives

Directed Studies



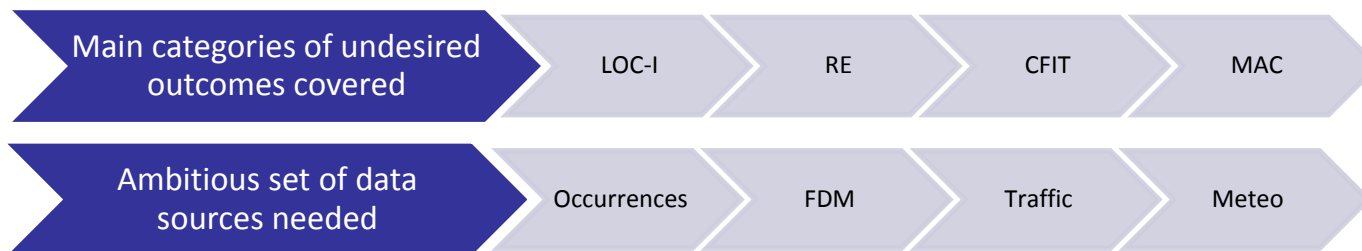
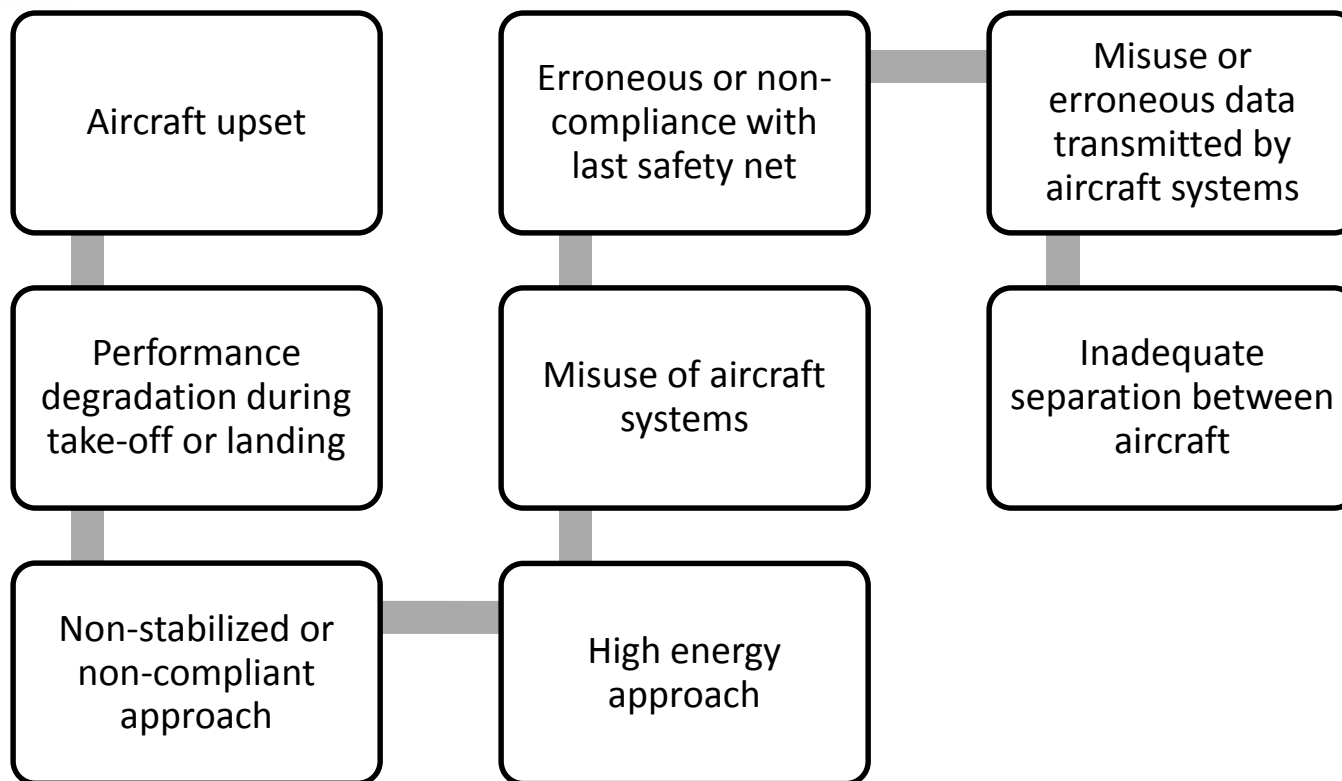
- Addressed in a second phase
- Synergies with research partners

Vulnerability Discoveries





Metrics for the Proof of Concept phase





Directed Studies for the PoC phase

➤ GO-AROUND MANAGEMENT

- Procedure execution and compliance
- Trajectory management
- Assessment of risks associated to Inadequate Handling of Go-Around
- Correlation with approach and go-around scenario, with training, with sensorial illusions

➤ ADVERSE WEATHER

- High priority items: Icing, Turbulence encounter, Wind Shear
- Thunderstorm
- Cross/tail wind operations at take-off and landing
- Vertical wind gradients in cruise
- Clear air turbulence and in-cloud turbulence
- Wake-vortex encounter
- Evolution of turbulence encounter risk over time
- Environment
- Associated risk of loss of control
- Turbulence prediction techniques



Main milestones of the Proof of Concept

Charter
Finalised



Data
Scientists
Team
Formed



First Metrics available

Development of all Use Cases



2017

2018

2019



DPPO
Selected



Initial Big Data IT
Platform operational
Data processing starts



First Directed Study

End of PoC



PPP takes
over



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Thank you for your attention

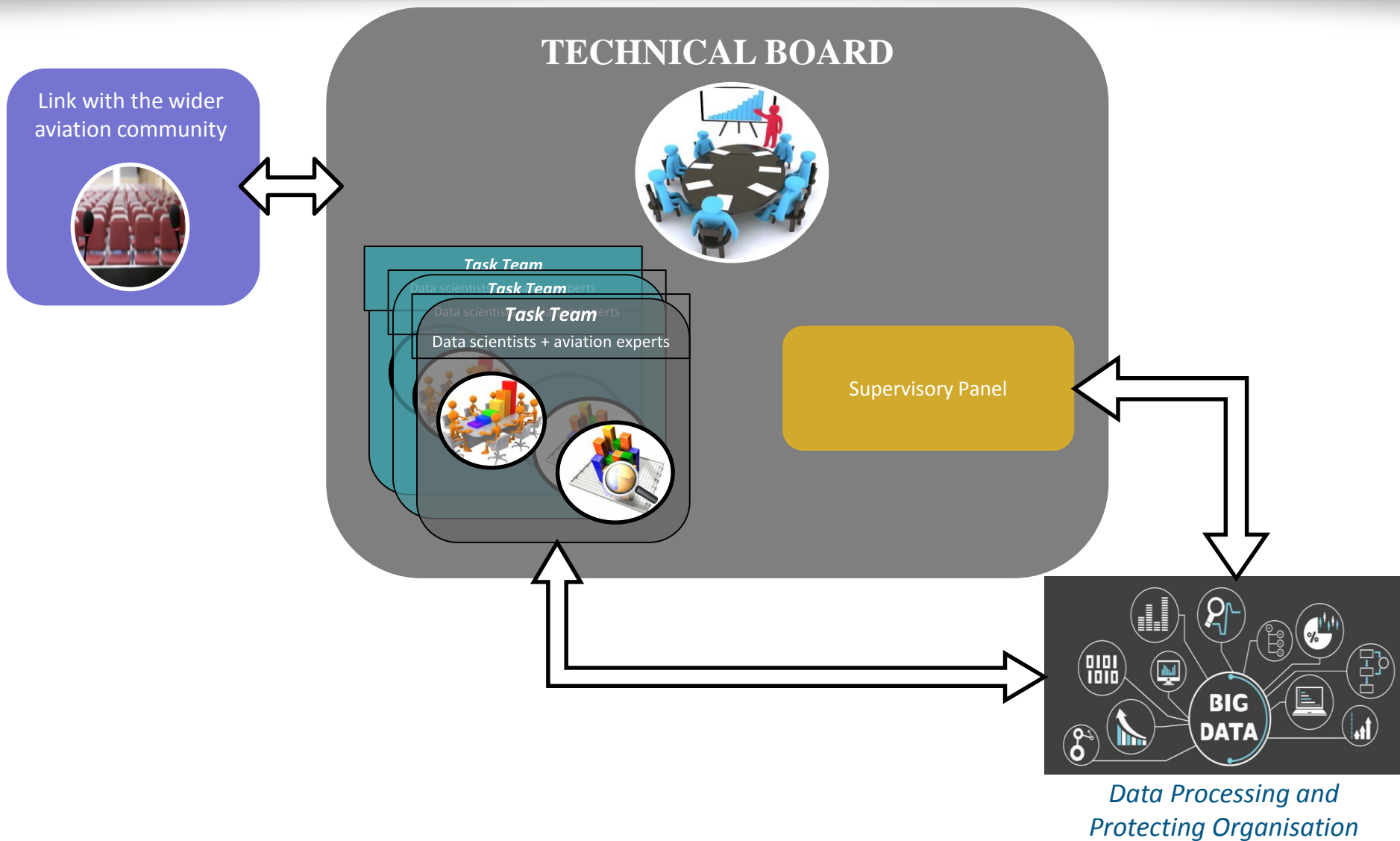
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D4S Technical Set-up



*Data Processing and
Protecting Organisation*