



FROM INNOVATION TO SOLUTION

THE SESAR STORY SO FAR

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SESAR Innovation Days

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founding members



Why SESAR?

- European ATM - Essential component in air transport system (worth €8.4 billion/year*)



58.000
Employees*



17.200
Air Traffic Controllers*



11.5
million km²
of airspace*



63
En route centres*

- Complex infrastructure = Inefficiencies



In 2010 en-route flights were delayed by an estimated **19.4 million minutes**.**



On average, each flight was **49 km longer** than direct flights.**



Estimated costs of airspace fragmentation amounts to **€4 billion a year**.**



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The Single European Sky High Level Performance Goals



Increase current capacity **X 3**



Increase safety by a factor of **10**

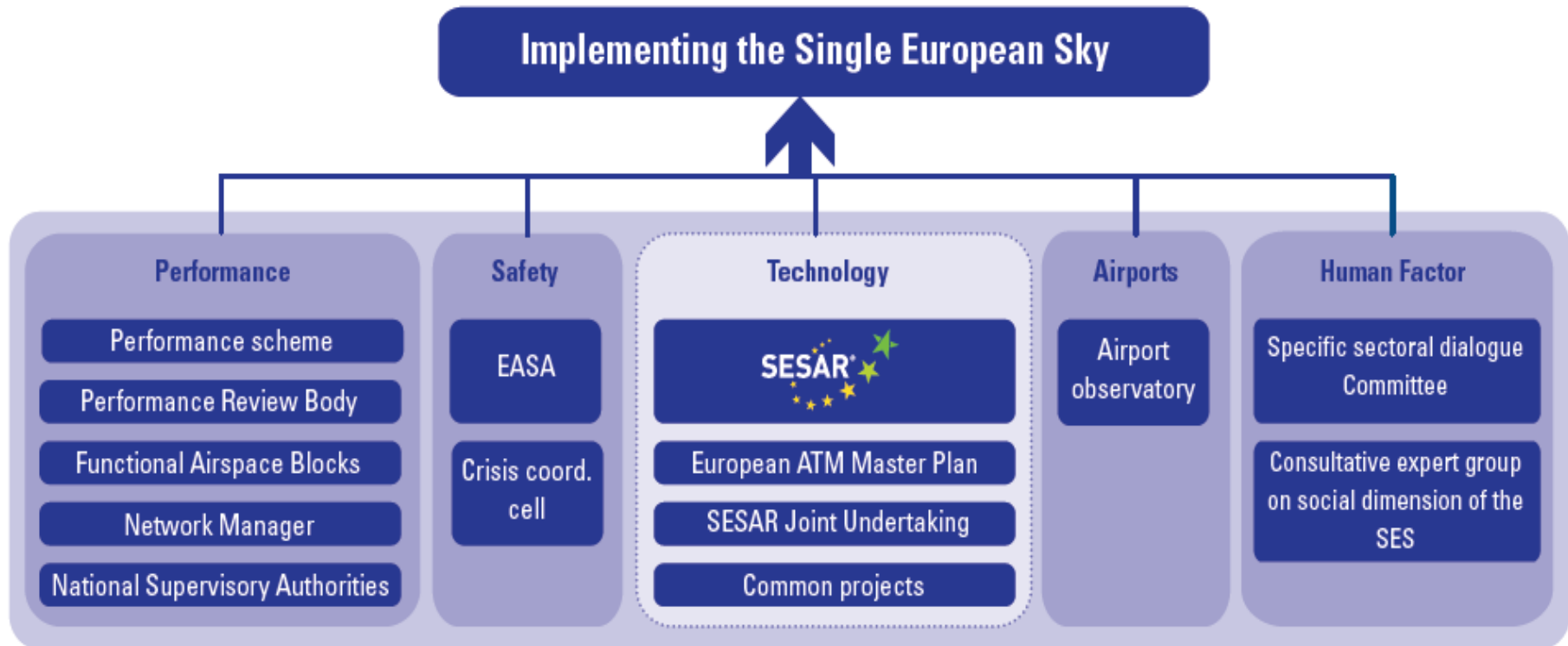


Reduce the environmental impact
by **10% per flight**



Reduce ATM costs by **50%**

The Single European Sky



A PPP involving all actors required to change ATM



Research for the benefit of our stakeholders



ANSPS

- Deliver a better quality of service at a lower unit cost for airspace users
- Seamlessly interoperate with service providers across the network



Suppliers and manufacturers

- Gain access to the market
- Develop their products in an innovative and competitive environment
- Have confidence that the user requirements are met



Air traffic controllers, pilots and engineers

- Have tools and systems that are built to their needs
- Ability to operate in an increasingly complex environment



Regulators and standardisation bodies

- Build their activities based on validated solutions agreed across the European ATM stakeholder community



Airport operators

- Have access to more integrated systems and data sharing
- Greater predictability and more efficient operations



Air Passengers

- Benefit from shorter and more reliable journeys, lower costs and enhanced safety.



Airspace Users (civilian & military)

- Operate closer to their business or mission needs, while reducing fuel costs, service charges and reducing impact on the environment



Scientific Community

- Use scientific knowledge to challenge the status-quo
- Deliver the results needed for the achievement of the Single European Sky initiative

SESAR Solutions

Operational & technological improvements developed by the SESAR partnership in six key operational improvement areas



Solutions are validated through the SESAR Release process, demonstrated through Large scale demonstrations & documented in "Solution packs"



SESAR results

- **68 validation exercises** completed with results published indicating cost-efficiency, environmental and safety benefits
- **20 new validation exercises** underway (Release 4)
- **Preparations for Release 5 (PCP focussed)**
- **17 SESAR Solutions** (building blocks for deployment planning):
 - Moving from Airspace to 4D trajectory Management
 - Traffic Synchronization
 - Network Collaborative Management and DCB
 - Airport Integration and Throughput
 - SWIM
 - Conflict Management and Automation

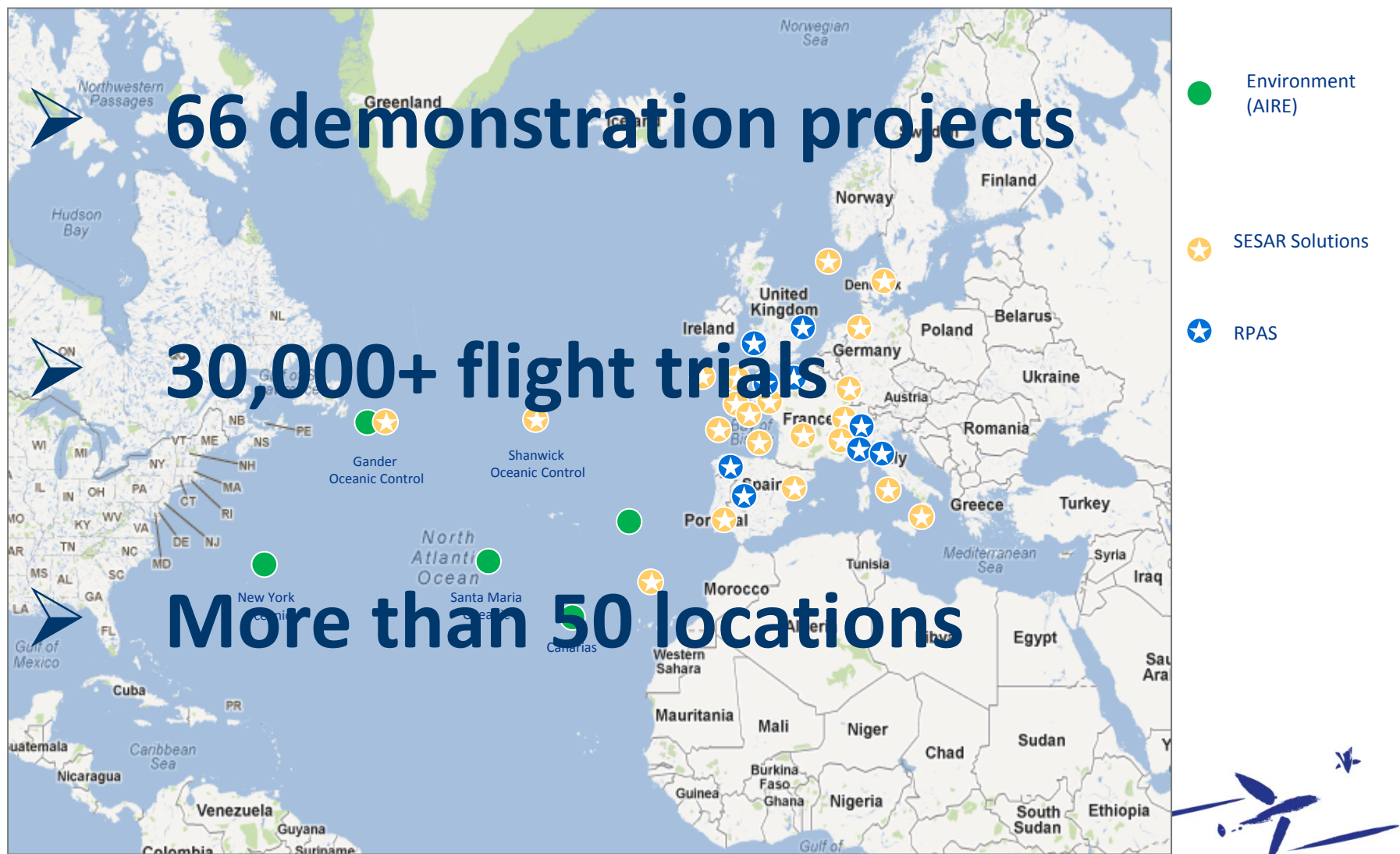
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Download SESAR Solution Packs
www.sesarju.eu



Demonstrating SESAR Solutions Worldwide



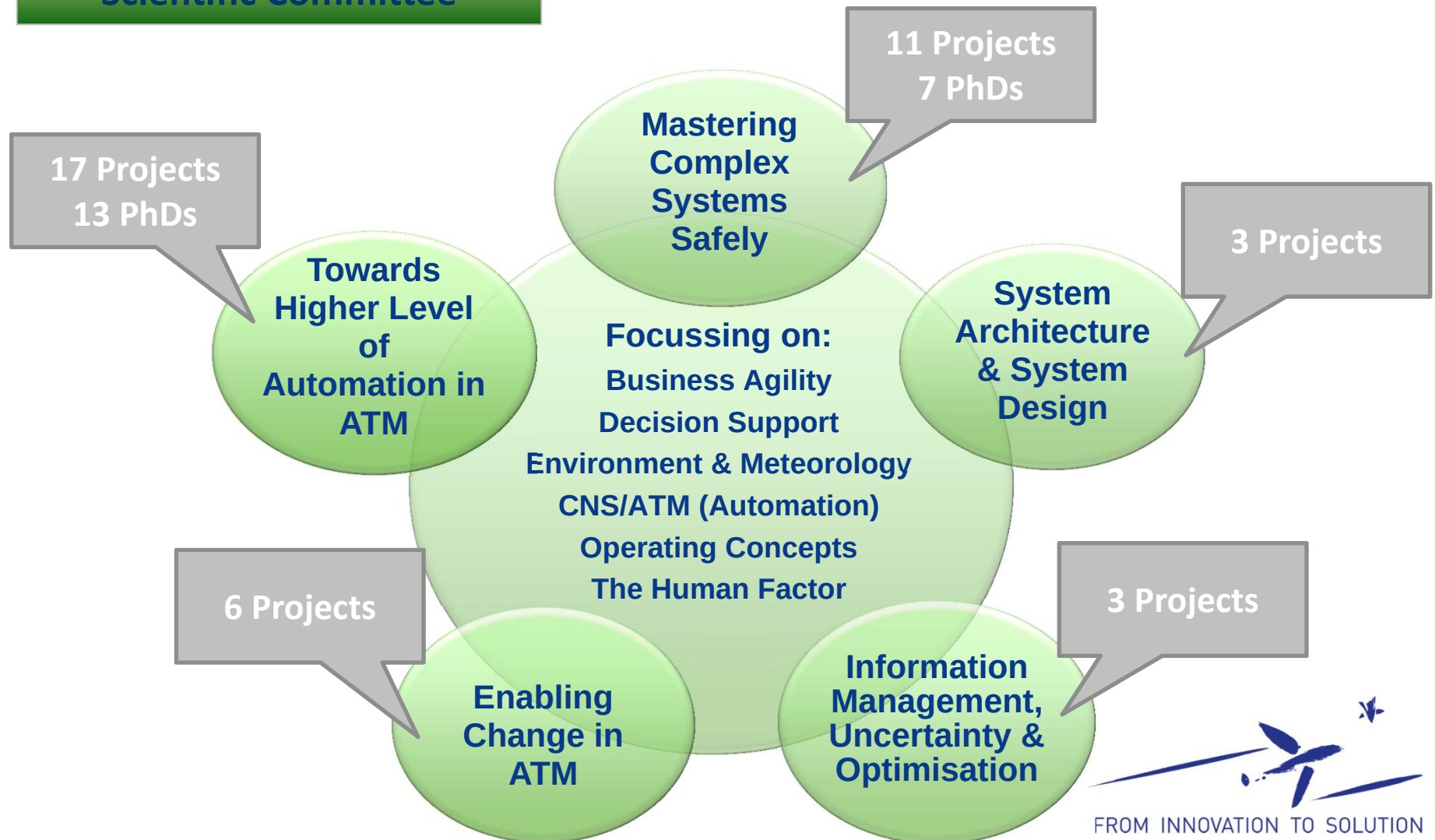
SESAR 1 Long-term research & innovation

- WP-E explores novel, unconventional areas, involving new technologies, concepts and ideas
- The scope covers ATM , CNS and related research activities not covered in the SESAR main stream program
- 40 research projects, 3 research networks, 20 PhDs and a Young Scientist Award



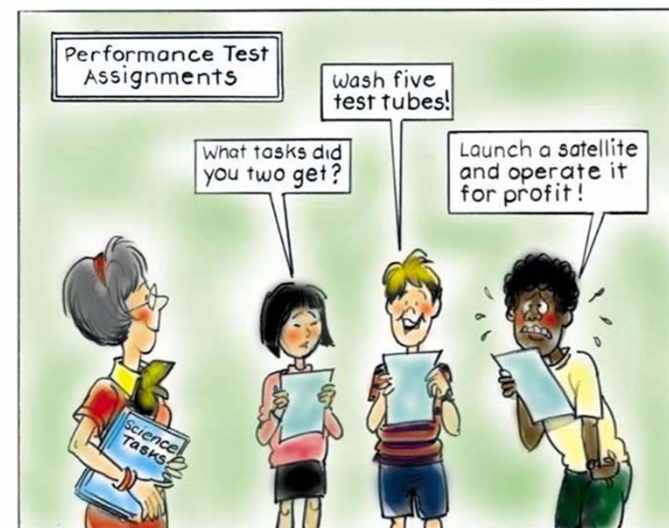
Encouraging scientific excellence in ATM

With guidance from SESAR
Scientific Committee

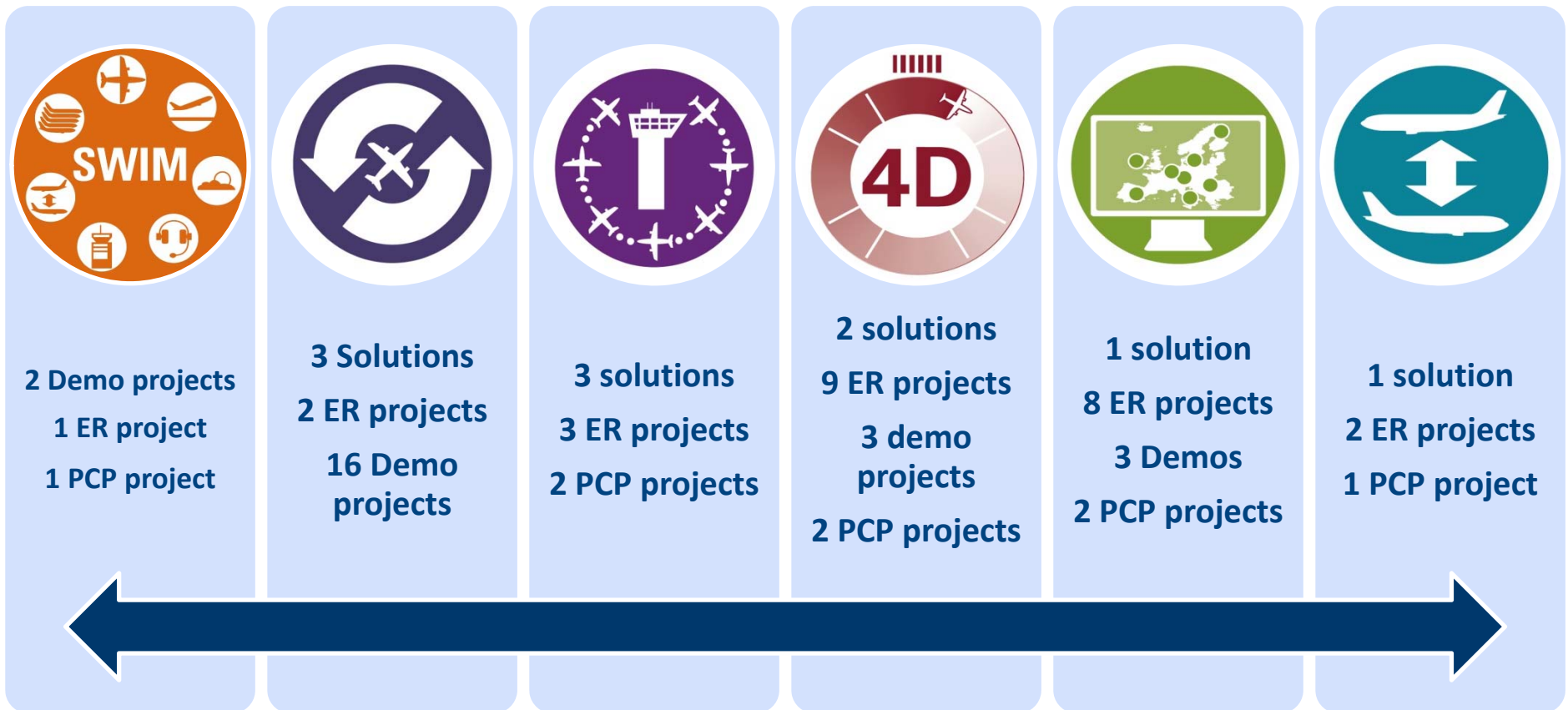


WP-E Research Networks

- WP-E total **40 projects** of which **22 are ongoing** and **18 are closed**
- The three Research Networks coordinate research, knowledge development and manage PhD research
- HALA! – Towards Higher Levels of Automation in ATM
- Complex World – Mastering Complex Systems Safely
- ALIAS – Addressing the Liability Impact of Automated Systems



SESAR Projects





FROM INNOVATION TO SOLUTION

LONG TERM RESEARCH & INNOVATION IN SESAR 2020



founding members



EUROPEAN UNION



EUROCONTROL

Bridging stakeholder needs with R&I



Delivering best-in-class, globally interoperable and high-performing Air Transport for Airspace Users and Citizens

- Enabling the delivery of safe, cost-efficient and environmentally responsible Air Vehicle & ATM operations, systems and services



High Performing Airport Operations

Capacity, Safety,
Environment, Efficient,
Effective, Networked



Optimised ATM Network Services

Collaboration, Balancing
Demand & Capacity,
Environment, Efficiency



Advanced Air Traffic Services

Synchronisation,
Capacity, Safety,
Environment, Cost



Enabling the Aviation Infrastructure

- Providing shared technical services across the aviation domain
- Communications, positioning, navigation, timing and SWIM information
- Air vehicle operations, systems & services



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Three main Research Phases of SESAR R&I Pipeline

1) Exploratory Research

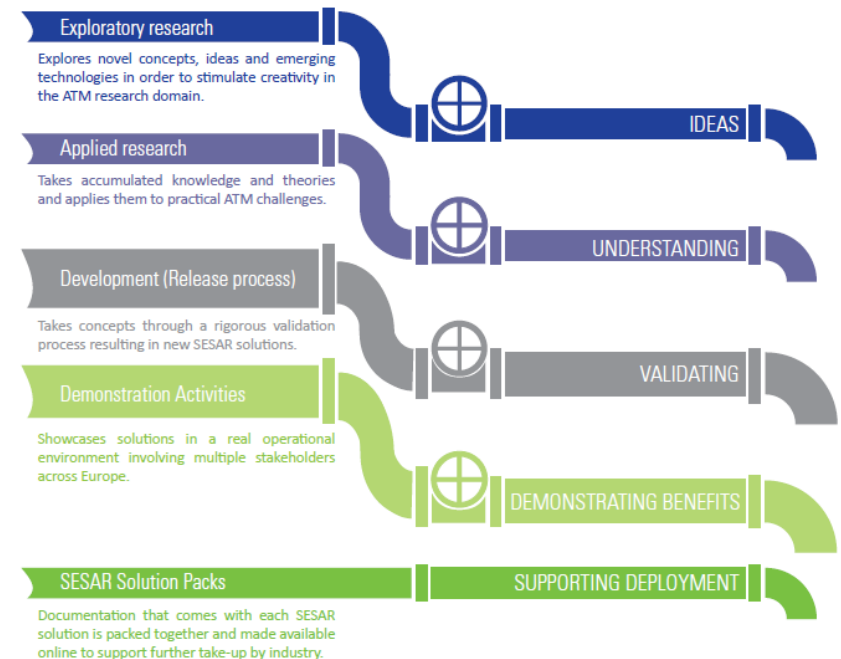
- Concentrates on early maturity Excellent Science and initial applications to ATM.
- Uses open calls.

2) Industrial Research & Validation (Applied Research & Pre-industrial Development) through partnership

- Concentrates on maturing and validating through Applied Research, Pre-Industrial Development and Validation of high benefit applications for ATM.
- Uses an industrial PPP with involvement of all stakeholders.

3) Demonstration Activities

- Concentrates on taking the concepts and technology to a wider geographic and stakeholder application
- The bridge to deployment through risk reduction
- Uses a mixture of industrial PPP and open calls.



SESAR 1 WP-E Lessons Learnt

- In very early stages research V0 level (e.g. WP-E projects), transfer of research results is difficult into the SESAR main-stream program
- The need to strengthen the link of the ATM research community and SESAR stakeholders through ATM Applications Oriented topics in SESAR 2020
- SESAR 2020 will aim at bridging the results from Exploratory Research, Industrial Research and Large Scale Demos



SESAR 2020 Program

- Bring benefits to SESAR SJU Industrial stakeholders, through the transfer of Exploratory Research results to Industrial Research
- The objectives of SESAR 2020 Exploratory research are to sustain and grow the future ATM research community
- The exploratory research ideas, concepts, methods and technologies can contribute, to the successful evolution of the next generation of European ATM system





Thank you for your attention

