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**SESAR Knowledge Transfer Network (Engage) - mapping ATM
research concepts, past and future**

Cook, A.J.

A paper presented at the 10th SESAR Innovation Days, 07 - 10 Dec 2020 .

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Engage – the SESAR Knowledge Transfer Network



10th SESAR Innovation Days





Engage

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Industry partners – our doors are still open



Advanced Logistics Group (ALG)
 AGIFORS - Airline Group of the International Federation of Operational Research Societies
 Air Traffic Controllers European Unions Coordination (ATCEUC)
 airBaltic
 Airport Regions Conference (ARC)
 American Airlines
 ANS CR
 Aslogic
 Association for the Scientific Development of ATM in Europe (ASDA)
 Autoridade Nacional da Aviação Civil (ANAC)
 Barcelona Supercomputing Center (BSC)
 Boeing Research and Technology Europe (BR&T-Europe)
 Bundesaufsichtsamt für Flugsicherung (BAF)
 Cirium
 Civil Aviation Authority (CAA)
 COOPANS Consortium
 Department for Transport (UK)
 Direction des Services de la Navigation Aérienne (DSNA)
 Direktorat civilnog vazduhoplovstva Republike Srbije (DCV)
 European Meteorological Services Network (EUMETNET)
 European Passengers' Federation (EPF)
 Executive Airlines
 Ferrovial Agroman
 Finnair
 Flughafen München / Munich Airport
 Gestair SL
 Heathrow Airport Limited
 Helios
 HEMAV - High Endurance Multipurpose Aerial Vehicles
 Honeywell Aerospace
 HungaroControl
 Icelandair
 IFSTTAR - Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux
 INFORM - Institut für Operations Research und Management GmbH
 International Air Transport Passenger Association (IATPA)
 International Federation of Air Traffic Controllers' Associations (IFATCA)
 International Federation of Air Traffic Safety Electronics Associations (IFATSEA)
 Irish Aviation Authority (IAA)
 LFV - Luftfartsverket
 London Luton Airport
 Lufthansa Systems
 Manchester Airport
 NATS
 Navair
 Network Manager - nominated by the European Commission
 NEXTOR II Consortium - University of California, Berkeley and University of Maryland
 PACE Aerospace Engineering & Information Technology
 Pegasus Airlines
 QinetiQ Ltd
 Raytheon UK
 Sabre Airline Solutions
 skyes
 SWISS - Swiss International Air Lines
 TÜBITAK - The Scientific and Technological Research Council of Turkey
 Turkish Airlines

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Core activities: 2018 – 2021

- ‘One-stop’ European knowledge hub, concepts roadmap, research repository
- 4 series of SESAR Innovation Days (non-disruptive; industry)
- 3 series of thematic challenge workshops; plus *ad hoc*
- 3 European summer schools (Belgrade ‘19, virtual event ‘20, Trieste ‘21)
- 10 PhDs (interdisciplinary); 18 catalyst fund projects (TRL pipeline)
- Future ATM skilled work-force; student mobility

35% of €4m as consortium effort

SESAR Digital Academy

Integrate IR and ER

- under-/post-graduate teaching & training initiatives
- internships & employer links
- journal publication grants; travel grants

Thematic challenges



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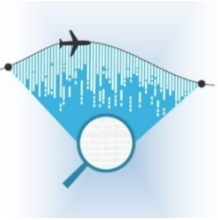


Thematic challenges – chosen by community

Thematic challenges



#1. CNS vulnerability and security *Paula López, In*
Last: November 2020 (Innaxis, virtual); next: late 202



Integrate IR and ER



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Thematic challenges – chosen by community

Thematic challenges



#1. CNS vulnerability and security *Paula López, Innaxis*
Last: November 2020 (Innaxis, virtual); next: late 2021



Integrate IR and ER



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Catalyst funding – overview

Thematic challenges



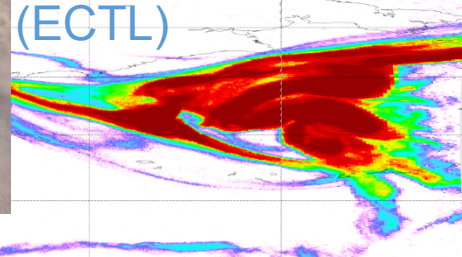
CARGO: Università di Padova;
PJ04: Total airport
management



Integrate IR and ER



OPAS: Royal Belgian Institute
for Space Aeronomy; SWIM
(ECTL)



10th



Catalyst funding – Wave 2 launch

Thematic challenges

Scheduled date	Activity	Actual date (Δ)
06JAN20	Call opened (Commission's Participant Portal; Engage website)	0
30MAR20	Ensure everything ready for the evaluation process	0
06APR20	Call closes (2 day turnaround)	0
	– submission checks	
	– resolve any potential conflicts of interest; allocation to Awards Board	
08APR20	Evaluation begins (4 weeks to contracting process)	+2
	– 3 weeks for the evaluation, incl. Easter break	
20APR20	Reminder to Awards Board about evaluation process	0
28APR20	Evaluation deadline (latest to return evaluation forms to ECTU)	0
	– 1 week to process and deliver outcome (up to 8 projects)	
05MAY20	Funding decision finalised	+1
06MAY20	Send notification letter to all proposers	+1
06MAY20	UoW contracting process begins; then UoW to each CF2 project coordinator	+1
11MAY20	Start consolidating evaluation feedback across evaluators (110 forms)	-5
[endMAY]	Send detailed, consolidated feedback (+ve/-ve outcomes) prior to launch	0
08JUN20	CF2 projects begin launching (once agreement signed)	-8
03JUL20	All CF2 projects launched	0

On time

Integrate IR and ER



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Catalyst funding – Wave 2 launch

Title	TC	Project coordinator	Partner(s)	Start – end
Proof-of-concept: practical, flexible, affordable pentesting platform for ATM/avionics cybersecurity	1	University of Jyväskylä, Finland	–	JUL20-JUN21
Safe drone flight - assuring telemetry data integrity in U-Space scenarios	1	NATS, UK	Open University, UK	JUL20-JUN21
Collaborative cybersecurity management framework	1	Winsland, UK	Movable-type, UK; MSDK, Bulgaria; BULATSA, Bulgaria	JUN20-MAY21
Probabilistic information integration in uncertain data processing for TP	2	CIRA ¹ , Italy	–	JUL20-JUN21
Meteo sensors in the sky	3	NLR, The Netherlands	AirHub B.V., NL	JUL20-JUN21
Weather impact prediction for ATM	3	FRACS ² , France	MetSafe, France	JUL20-JUN21
Role of markets in AAS deployment	4	Think Research, UK	–	JUN20-MAY21
Flight centric ATC with airstreams	(2)	NEOMETSYS, France	ENAC, France	JUL20-JUN21



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Overview of thematic challenges

	Open	TC1	TC2	TC3	TC4	Σ
PhDs	2	-	5 ↔ 2	2		10
CF Wave 1	-	2	3	4	1	10
CF Wave 2	1 — 3 →		1	2	1	8
Σ	3	5	9 ↔ 8	4		28



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Engage PhDs

Ten PhDs are receiving financial support through Engage (Call details below).

Read the [Engage PhD abstracts](#).

Interested in studying for a PhD?

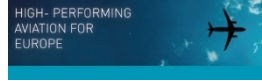
Current *non-Engage* PhD calls/positions are listed on the [PhD opportunities](#) page.



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Future ATM skilled work-force – 2020 summer school



SESAR JU E-News



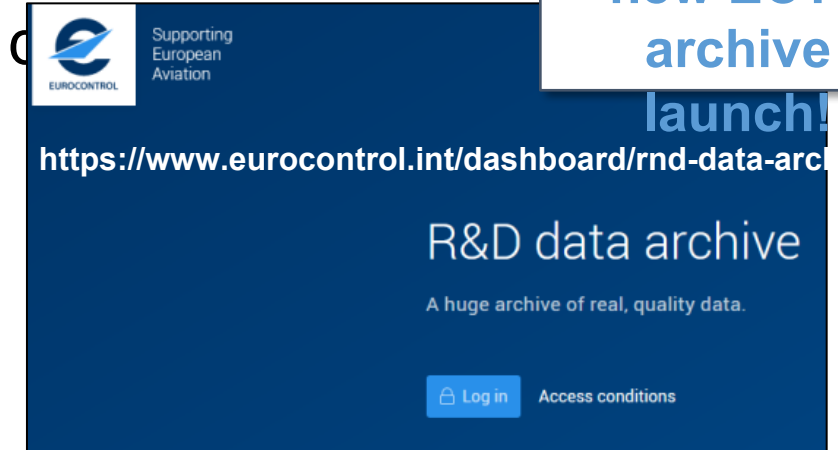
SESAR JU website



E-mail subscribers



- Announced at SIDs 2019 (Athens); SESAR e-news JAN20, ...
- 21-25 September 2020; virtual, hosted by FTTE (University of Belgrade)
- Greater **industry participation**; collaborative programme designed with PhDs & CF projects
- >800 participants from 15 countries



new ECTL
archive
launch!

<https://www.eurocontrol.int/dashboard/rnd-data-arc>

R&D data archive

A huge archive of real, quality data.

[Log in](#) [Access conditions](#)



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Thank you

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Part 1 – achievements in 2020

Part 2 – how to get involved in 2021



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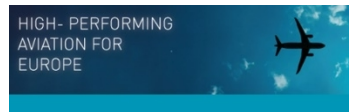
Workshop – data-driven trajectory prediction (TC2)



25 January 2021



High-Performing Aviation for Europe
SESAR e-news
November



SESAR JU E-News



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E-mail subscribers



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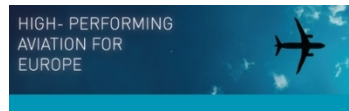
Workshop – efficient provision & use of MET info (TC3)



27 January 2021



SESAR e-news
November



SESAR JU E-News



SESAR JU website



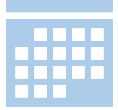
E-mail subscribers



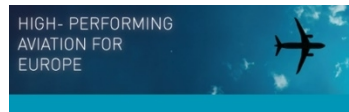
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Workshop – novel market mechanisms (TC4)



May 2021 (tbc)



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SESAR e-news
Coming soon



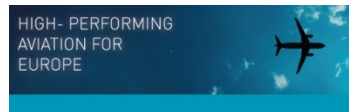
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2021 summer school



September 2021 (tbc)



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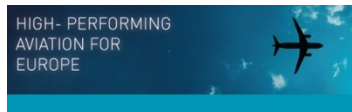
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Introductory courses – future ATM skilled work-force



June 2021



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The Engage wiki



wikiengagektn.com



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EngageWiki ▾

Tools ▾

Log in

Request account

Search EngageWiki



Welcome to the EngageWiki

The one-stop European knowledge hub

A repository and interactive research map for exploratory and industrial research in ATM, also compiling European events and learning opportunities, and hosting discussion fora.



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Tools ▾

➡ Log in

👤+ Request account



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Check out the main wiki features

Interactive research map of ATM



Discussion fora



European university programmes



ATM concepts roadmap



share thoughts / make suggestions



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European university programmes



1st

add your
course



Institution

Country

Type
☐ Postgraduate
☒ Undergraduate

Degree
☐ Bachelor of Arts
☒ Bachelor of Science
☐ Masters

Language

Add a Programme

View full table

Spain

Years: 4

Aeronautical Management

Universitat Autònoma de Barcelona
Undergraduate | **Bachelor of Science**
Spanish

Web

Spain

Years: 3/4

Aerospace Engineering

Aerospace Engineering Universities in Leon
Undergraduate | **Bachelor of Science**
Spanish

Web

Spain

Years: 4

Aerospace Engineering

Universitat Politècnica de València
Undergraduate | **Bachelor of Science**
Spanish

Web



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Interactive research map of ATM



all projects, one tree
14 bottom-up clusters
NLP & machine learning
(descriptive text in wiki)



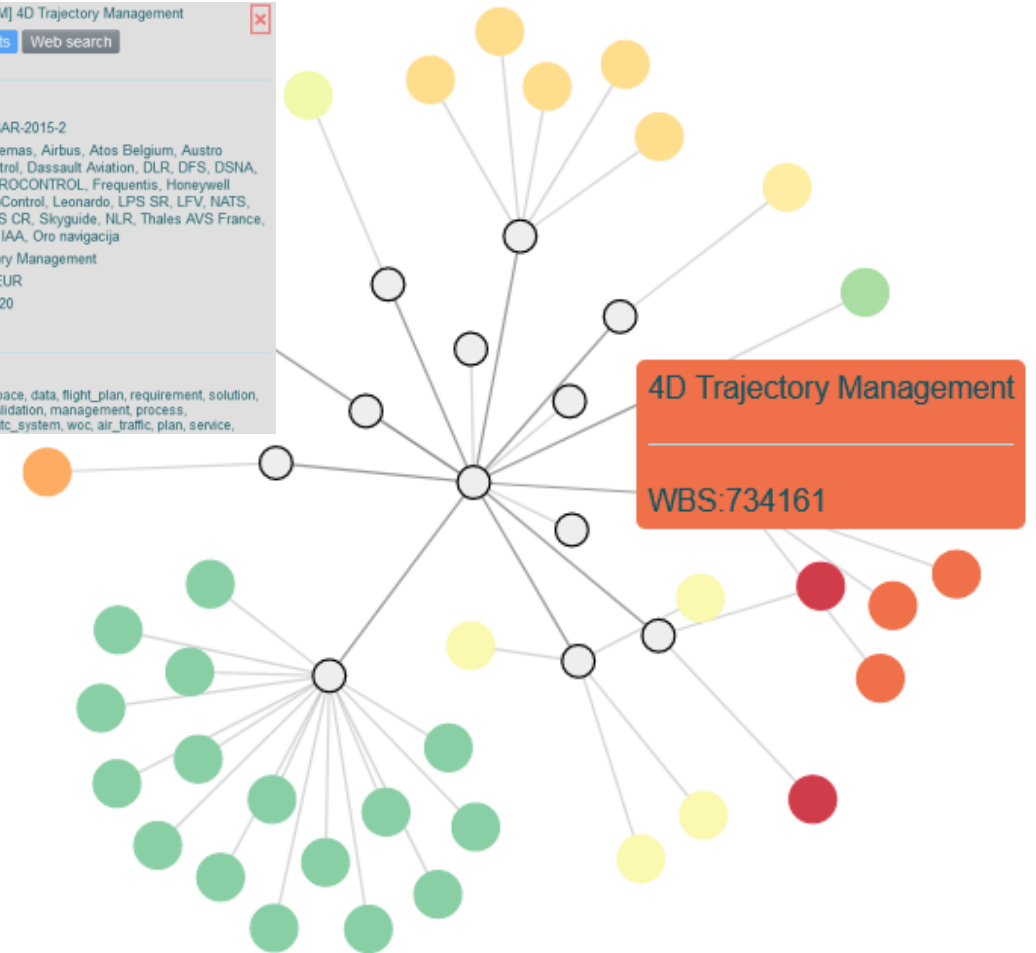
one-stop
hub

[734161] [PJ18 4DTM] 4D Trajectory Management

Website Reports Web search

Call: IR Wave 1
Call ID: H2020-SESAR-2015-2
Partners: Indra Sistemas, Airbus, Atos Belgium, Austro Control, Croatia Control, Dassault Aviation, DLR, DFS, DSNA, ENAIRE, ENAV, EUROCONTROL, Frequentis, Honeywell Aerospace, HungaroControl, Leonardo, LPS SR, LFV, NATS, Naviair, PANSAT, ANS CR, Skyguide, NLR, Thales AVS France, Thales LAS France, IAA, Oro navigacija
Theme: 4D Trajectory Management
Budget: 49 249 M EUR
Duration: 2016 - 2020
Deliverables:

Keywords
system, load_fpl, airspace, data, flight_plan, requirement, solution, mission_trajectory, validation, management, process, validation_exercise, atc_system, woc, air_traffic, plan, service,

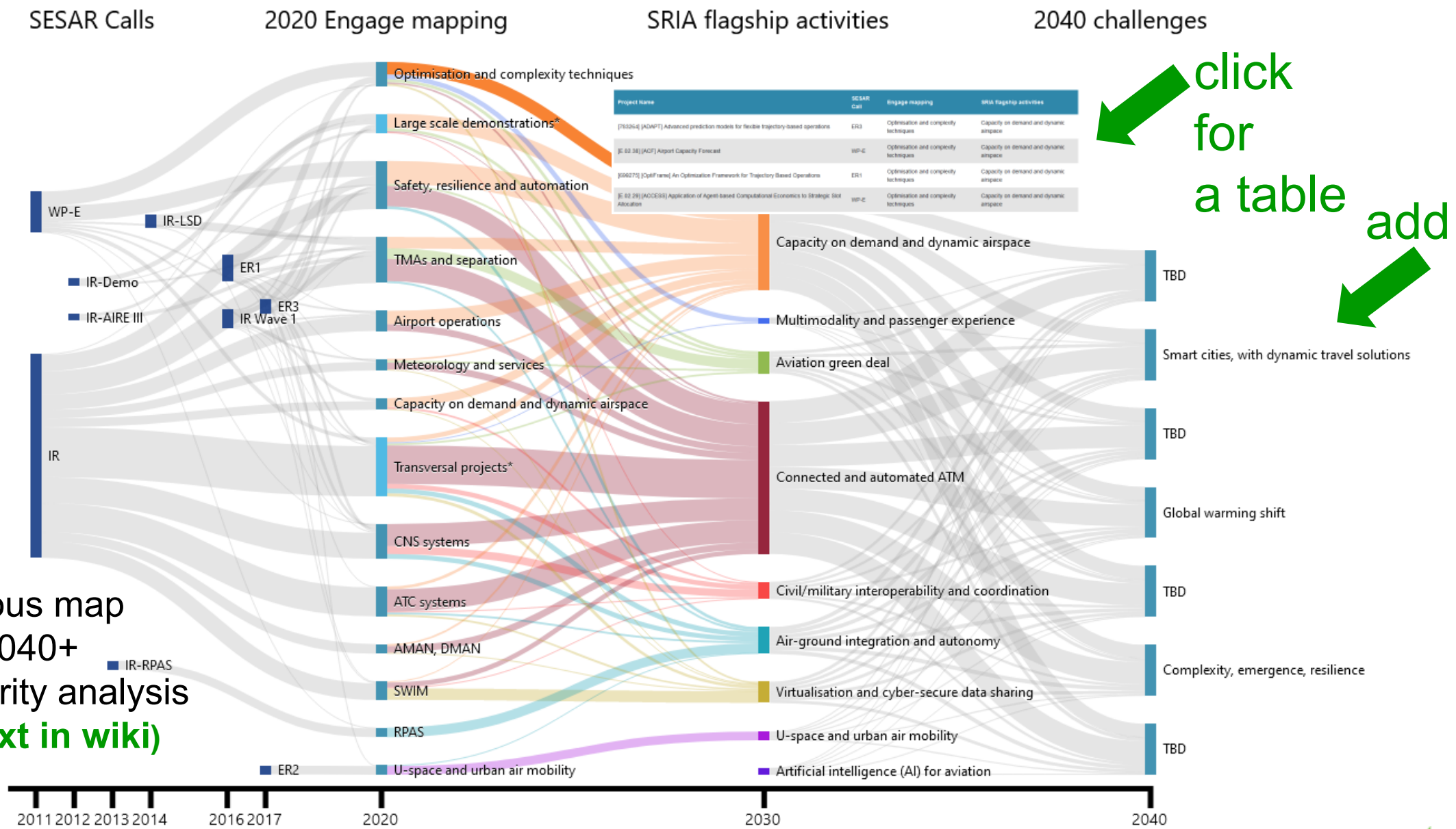


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builds on previous map
SRIA 2020 ... 2040+
semantic similarity analysis
(descriptive text in wiki)



click
for
a table
add

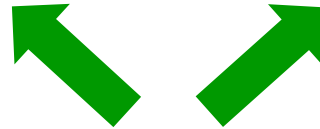
Education and learning

**PhD
funding
opportunities**

3

**Jobs
and
internships**

9



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one-stop
hub

Coming soon!

Research repository

Engage



- SESAR 1, SESAR 2020, SIDs papers
- Appx. 1500 dels / papers
- More to come (permissions)

your
space



- Code (e.g. useful R scripts for PRISME data)
- Data (e.g. common (synthetic) models)
- Video



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feedback
welcome

do take
a look

- Quite a lot to squeeze in
- A year, in ten minutes
- Thank you for your attention



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