

Introduction to ESA Knowledge Management

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EUROPE'S GATEWAY TO SPACE

WHAT

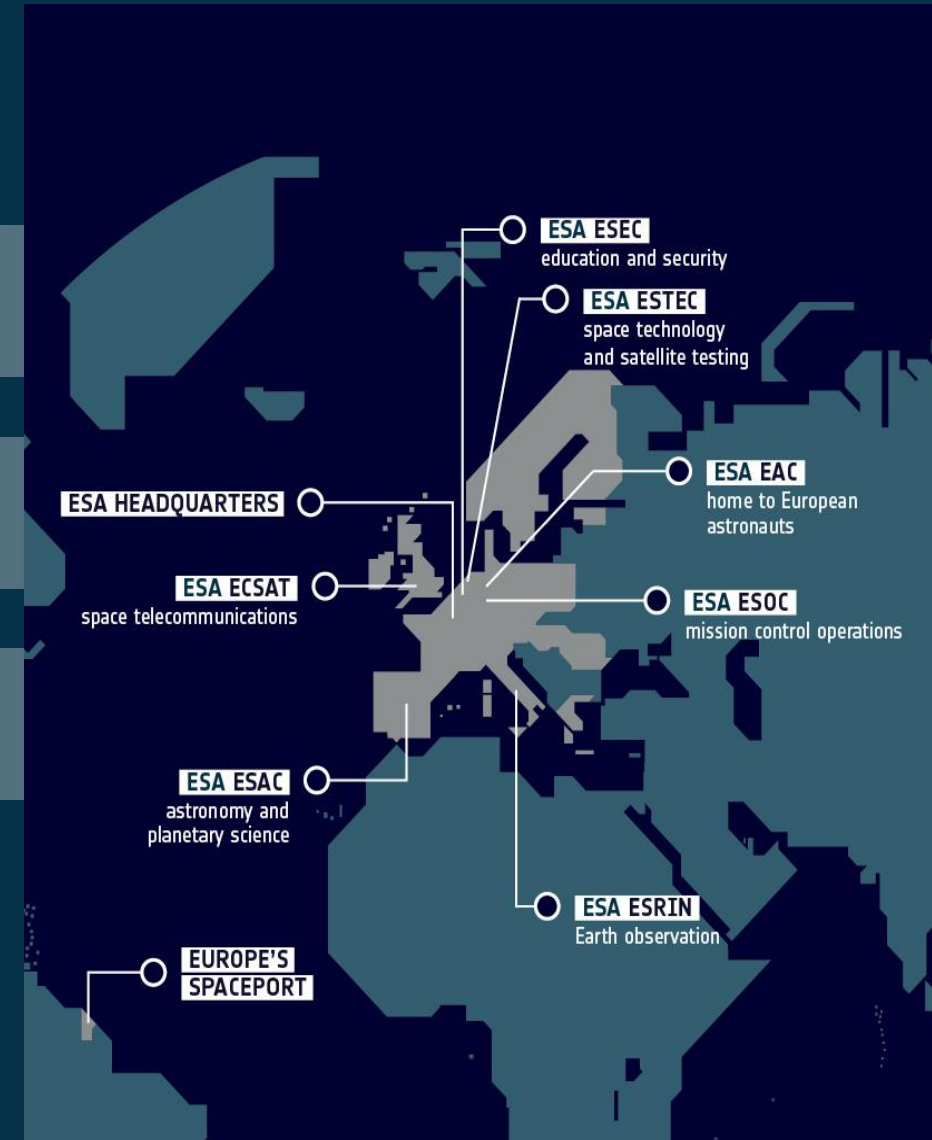
22 Member States, 6000+ workforce

WHERE

HQ in Paris, seven sites across Europe and a spaceport in French Guiana

WHY

Exploration and use of space for exclusively peaceful purposes



Many diverse activities

HUMAN AND ROBOTIC EXPLORATION

SPACE SCIENCE

SPACE ENGINEERING & TECHNOLOGY

SPACE TRANSPORTATION

OPERATIONS

SPACE SAFETY

NAVIGATION

OBSERVING THE EARTH

CONNECTIVITY AND SECURE COMMUNICATIONS

COMMERCIALISATION, INDUSTRY & COMPETITIVENESS



(Some of the..) specifics & challenges

- **Distributed and versatile workforce:** 22 member states, 9 main establishments in 8 countries (Europe and South America)
- **13 Directorates** with individual focus and missions
- **Diverse types of knowledge** and very specialized: Scientific, Technological, Operational, Managerial
 - Alone in TEC: 50 different fields of expertise in 10 competency domains
- Decades-long projects
- Ageing demographics
 - 50% current ESA workforce will be retired by 2030
- Newcomers wave

Vision, Mission, Objectives of ESA KM

"KM for ESA: every day and everyone"

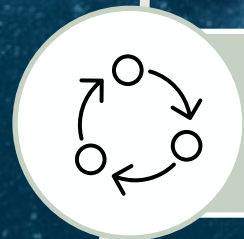
Ensuring the management of ESA's **critical knowledge** (scientific, technical, managerial) to continuously improve its **effectiveness** and **efficiency** in pursuing its mission.



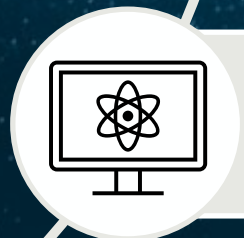
Capture, retain and share critical expertise for future use



Learning from Projects



Control of how information is created, stored, shared, tracked and protected - make it FAIR (Findable, Accessible, Interoperable, Reusable)



Optimize access to online resources through the ESA Libraries service

Knowledge Management: people & activities



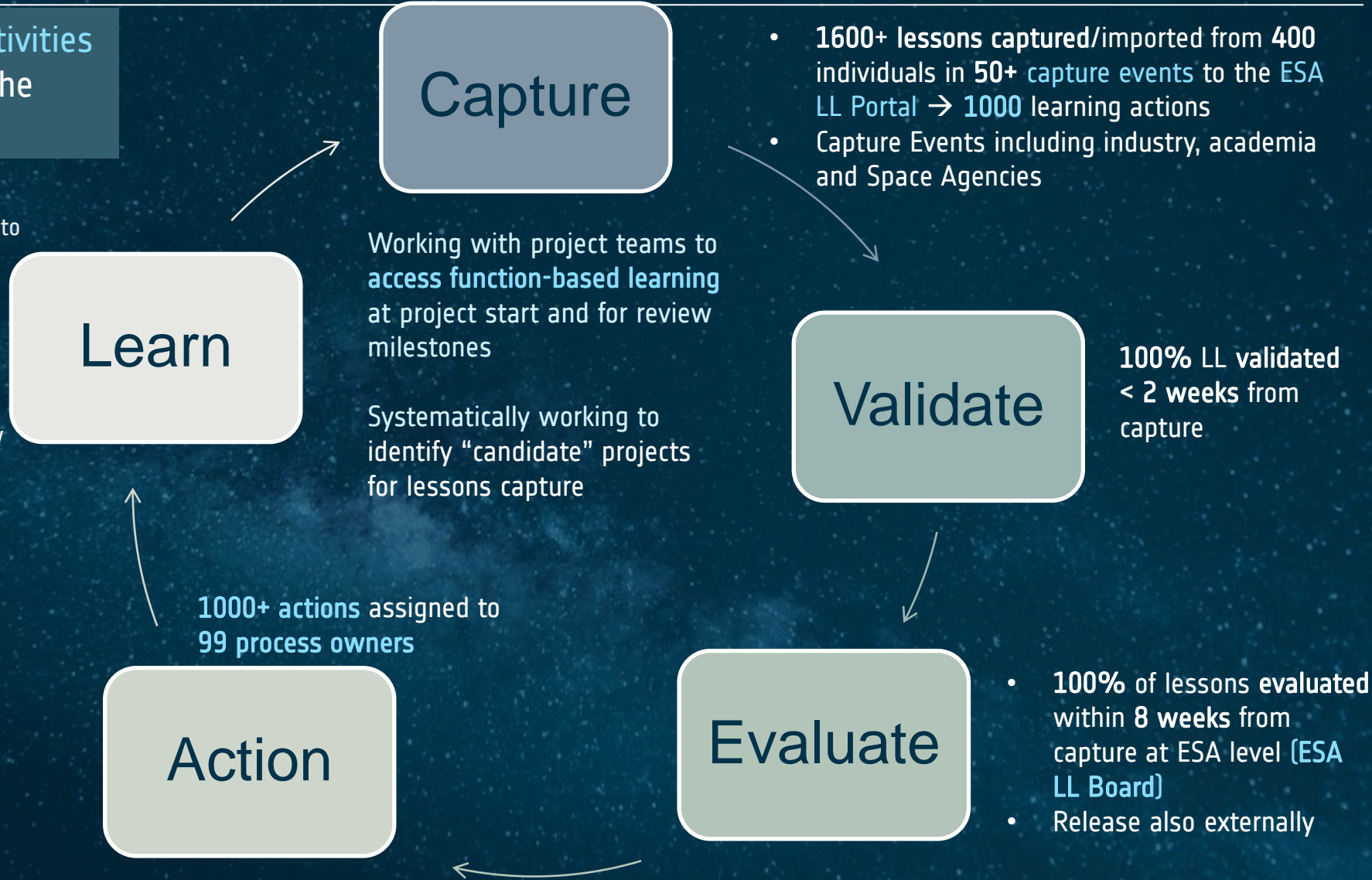
Lessons Learned @ ESA

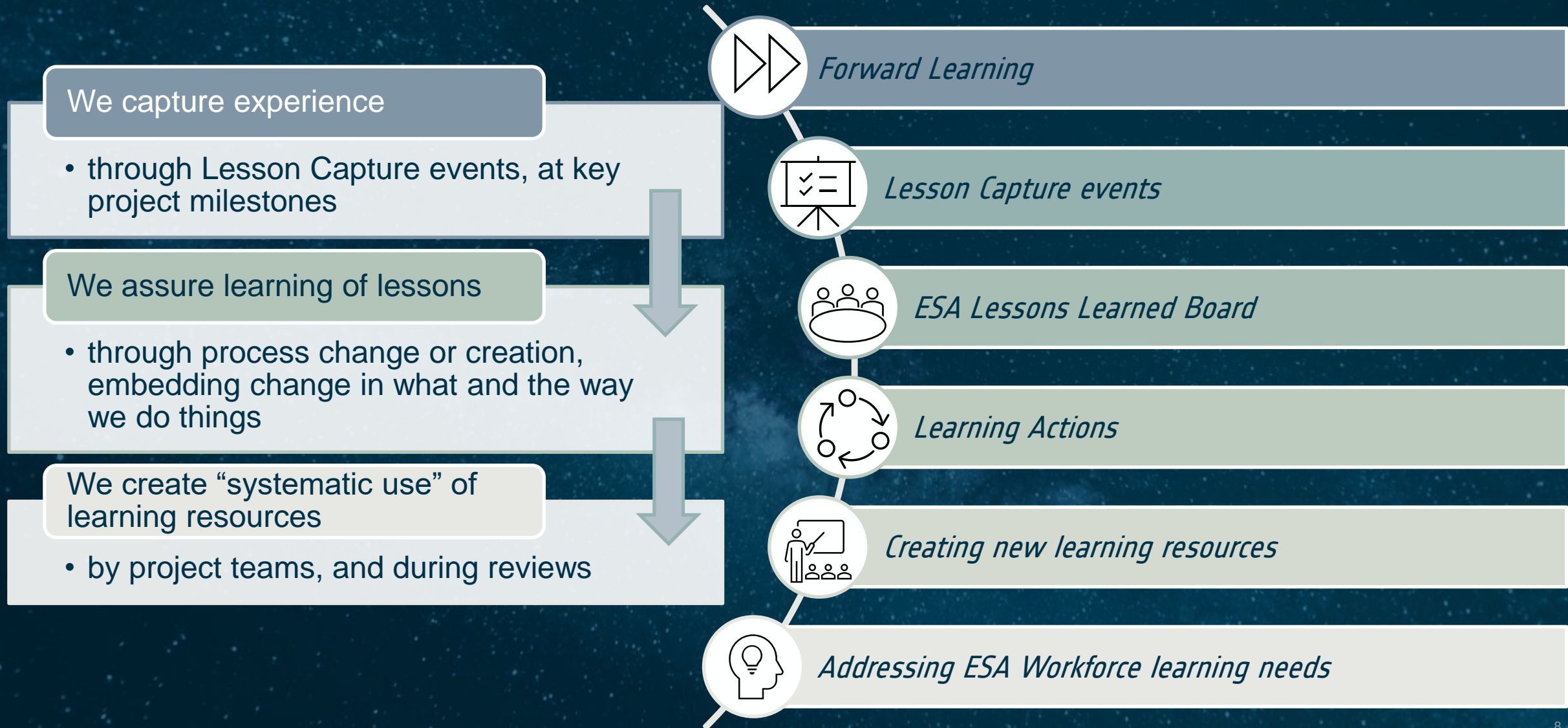
Continually improve the Agency's activities as a result of experience gained in the execution of the Agency's mission.

Creating "systematic" learning in projects for ESA Transformation: Project Management-reduced time to launch

E-books created for functions

- Project Manger e-book
- Controller e-Book
- Systems e-Book ...
- Establish new products including WG and new on-line resources
 - CFI Handling
 - Review Skills





Next Steps

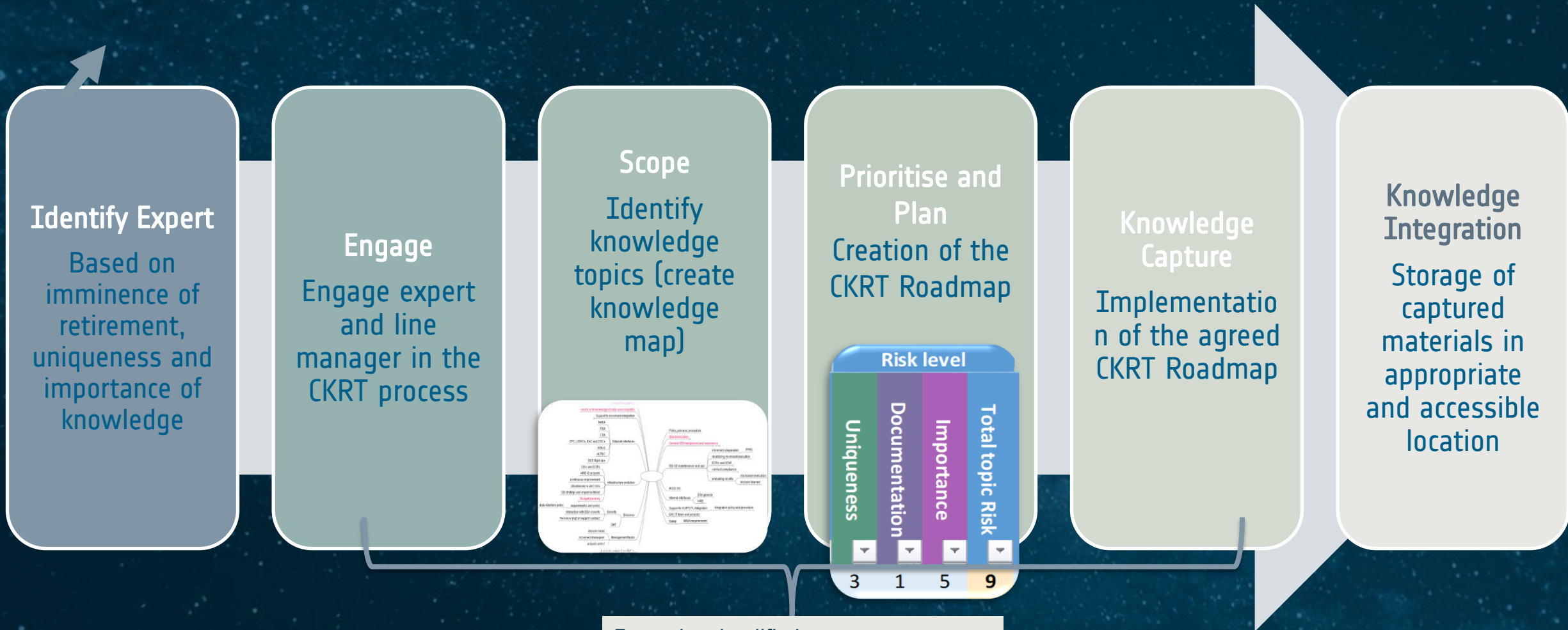
- Internal release of New AI capabilities for lessons learned (Knowledge Graph and Chabot)
- Integrate “systematic” learning in projects for ESA Transformation: Project Management-reduced time to launch
- Provide means to share ESA’s experience across the European Space Community
- Deploy additional AI solutions to improve quality of experience capture and improve retrieval of learning

Challenges

- Increasing demand (positive!), but limited resources
- Dependency on KM team

Critical Knowledge Retention and Transfer

300 retirees in until 2026 @ESA



It can be simplified bc of time and availability of the expert

Next Steps

- Review / refresher (?) of the process
- Closer cooperation with HR for a better planning of CKRT exercises

Challenges

- Increasing demand (positive!), but limited resources
- Single point of truth for captured resources

SMART-1 mission profile

- Ariane5 (3 passengers) V162 lift-off on 27 September 2003 at 23:14:39 UTC
- SMART-1 separated at 23:56:03 into a GTO (656 x 35,881 km): perfect injection
- Optimised direction to 153,000X338,000 km 30 deg (~400 days)
- Moon resonances and swing-bys
- Lunar capture phase
- Lunar spiralling (32 d)
- Lunar operational orbit 300X10,000 km polar (6 months)

ESA logo

- ✓ ESA-wide, silos-breaking, high-level lectures (55 so far)
- ✓ Career-long expertise, insights and lessons learned are passed down from one generation to the other
- ✓ Help learners avoid common pitfalls and mistakes
- ✓ Exchange of ideas, foster a culture of sharing knowledge
- ✓ Sense of “legacy” and accomplished duty from the speaker



ESA KNOWLEDGE MANAGEMENT @ 2024



50%

STAFF RETIREMENT BY 2030



ACCESS TO EBOOKS, JOURNALS AND DATABASES ALLOWING > 200,000 DOWNLOADS PER YEAR

KNOWLEDGE PRINCIPLES

- F FINDABLE
- A ACCESSIBLE
- I INTEROPERABLE
- R RE-USABLE

25

KNOWLEDGE RETENTION & TRANSFER EXERCISES UNDERWAY IN TEC



600+

EXPERT DIRECTORY PROFILES ALL DIRECTORATES

56

EXPERTS LECTURES TARGETING GREATER INCLUSIVITY



1600 LESSONS

@ 300 NEW LESSONS /YR

1000 LEARNING ACTIONS CLOSED

50 CAPTURE EVENTS INC. INDUSTRY AND AGENCIES

32 PROCESSES IMPROVED THROUGH LEARNING

387 TOOL CATALOGUE ENTRIES



ESA CLASSIFICATION PLAN AVAILABLE @ ESA TAXONOMY



ESA KNOWLEDGE PORTAL

1200+ WIKI ENTRIES

119 VIDEOS

550 TOPICS

14 WORKSPACES

54

R&D CONTRACTS IN CONTRACT CLOSURE DOCUMENTATION (eCCD) PILOT

1



GENERIC PROTOCOL FOR EXPERIENCE EXCHANGE WITH AGENCIES AND INDUSTRY

3

NOVEL USES OF ARTIFICIAL INTELLIGENCE



LESSONS LEARNED:

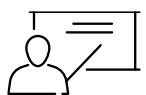
DATA-MINING, KNOWLEDGE GRAPH (KG) AND CHATBOT FOR QUALITY TRANSFER

NEBULA LIBRARY:

KG-SUPPORTED SEARCH FOR TDE, GSTP AND DISCOVERY & PREPARATION REPORTS

TEXT MINING FOR CONFERENCES:

EXTRACTING TRENDS AND TOPICS FROM SCIENTIFIC PAPERS



100%

NEWCOMERS TO BE TRAINED IN KNOWLEDGE CAPTURE AND SHARING

400+

KNOWLEDGE FOR NEWCOMERS: ENABLING SPACE CAREERS TO 2050

ASTROLABE KNOWLEDGE & VISITOR CENTRE
Open and running @ HQ-N

