



# Access to Research Infrastructures: Process and modalities

## Module 3 – User needs and Experience

- Sabine Philippin (CNRS, France) – 23 Octobre 2024

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3.1: "Fund for the realisation of an integrated system of research and innovation infrastructures"



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# Overview of Training Module 1 (Oct 23)

 **I. Introduction to Research Infrastructure services** ✓

 **II. Access legal framework** ✓

 **III. User needs and experience**



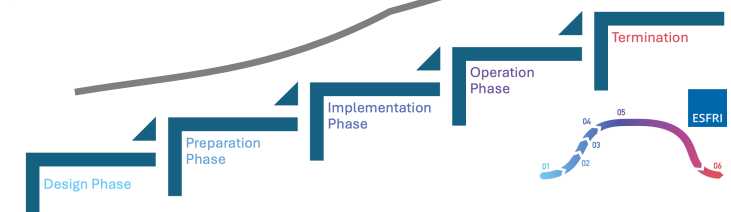
### III. User Needs and User Experiences

#### RI User Strategy

- **Who** are the users of the RI (and its services)?
- What are the user **needs**?
- User **experience**: how easy and positive is the interaction?
- How to **develop the services** over time?
- How to engage and collect **feedback** with the users?

#### Tools & Monitoring

#### Target Users - Training exercise



How difficult do you think it is to gather information about our user community(ies)?

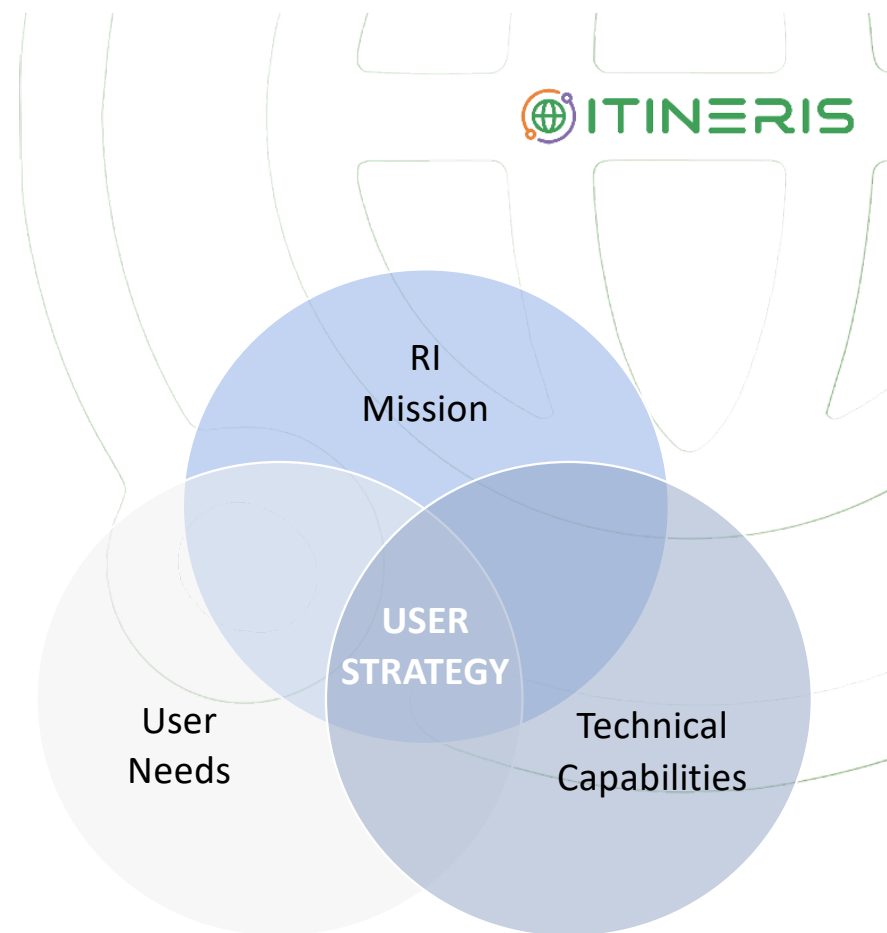


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# What is a User Strategy?

- 🌐 **Plan** → address and understand the users, their behaviour and interactions
- 🌐 **Approach** → Defining the goals, priorities and plan of action required for a provision of services to its users that effectively meet their needs
- 🌐 **User-centric design** → Success is driven by the experience and satisfaction of the users. Basis of RI operations and strategic development
  - Knowledge about users and user needs
  - Continuously designing and developing the services



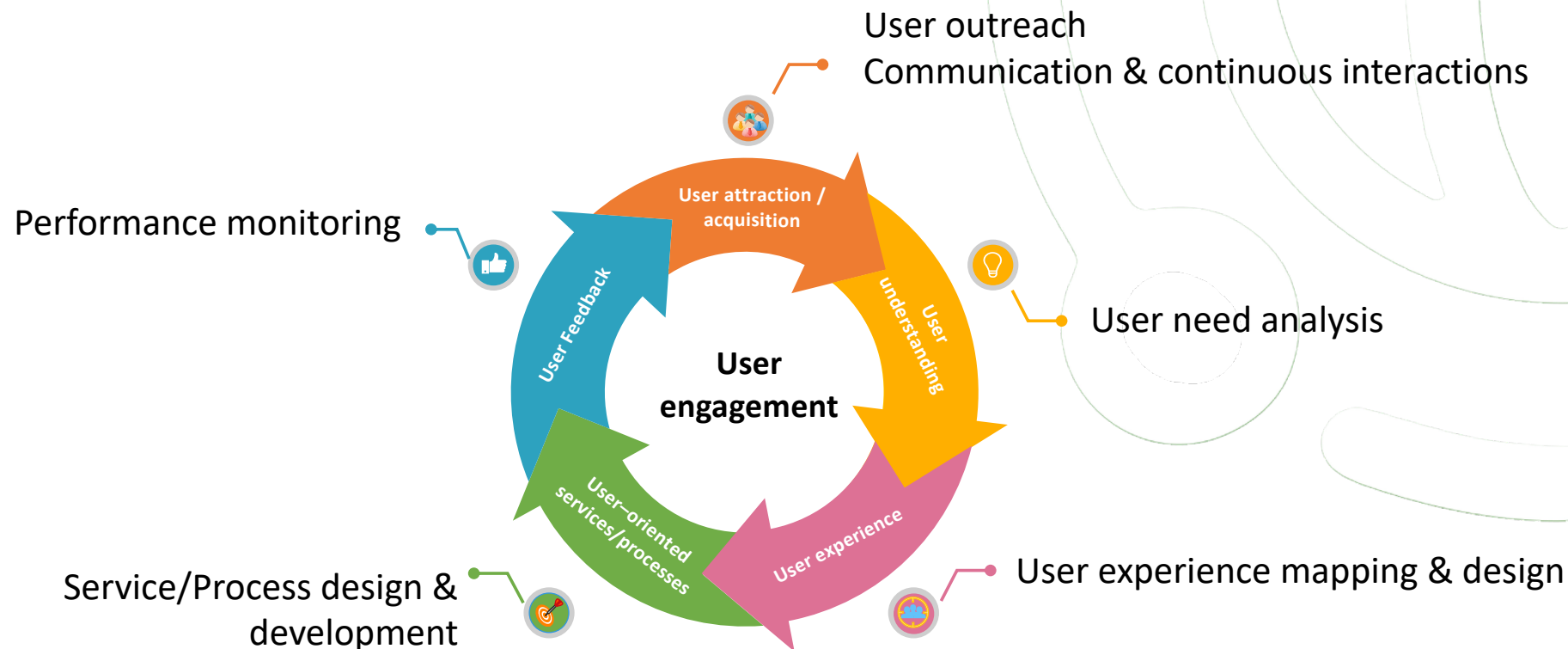
Who are our (most important) users?



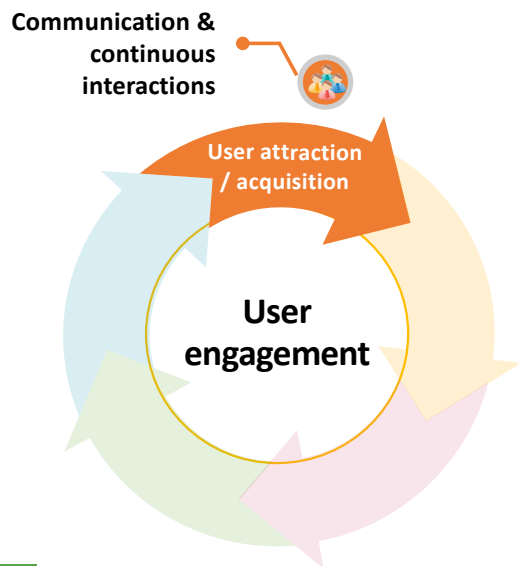
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# User Strategy Cycle



# User Strategy Cycle - Attraction & Interaction

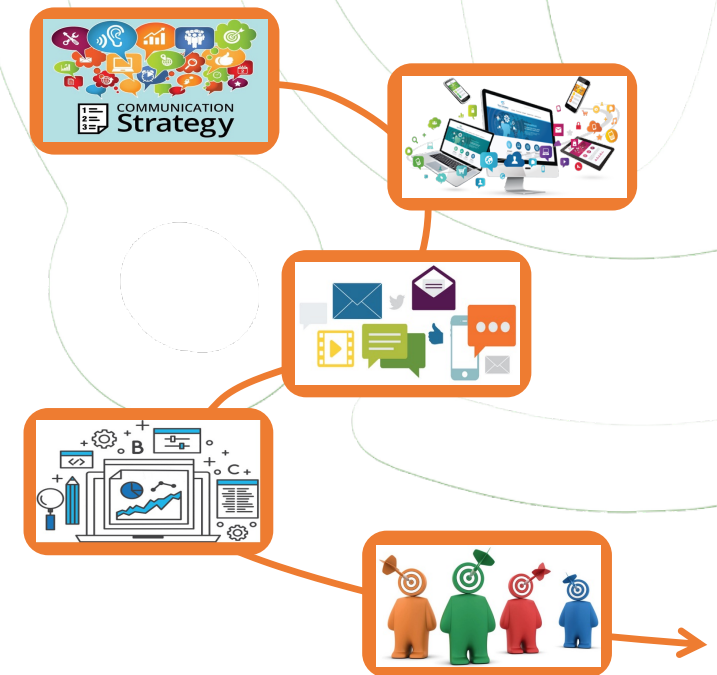


- Consolidated communication strategy is key for reaching out to users and effective user interaction
- Important driver for promoting successful access
- Promoting attractiveness and increasing visibility of RI services
- Advertisement of access opportunities
- Attracting and engaging the users
- Reaching out to wider user communities

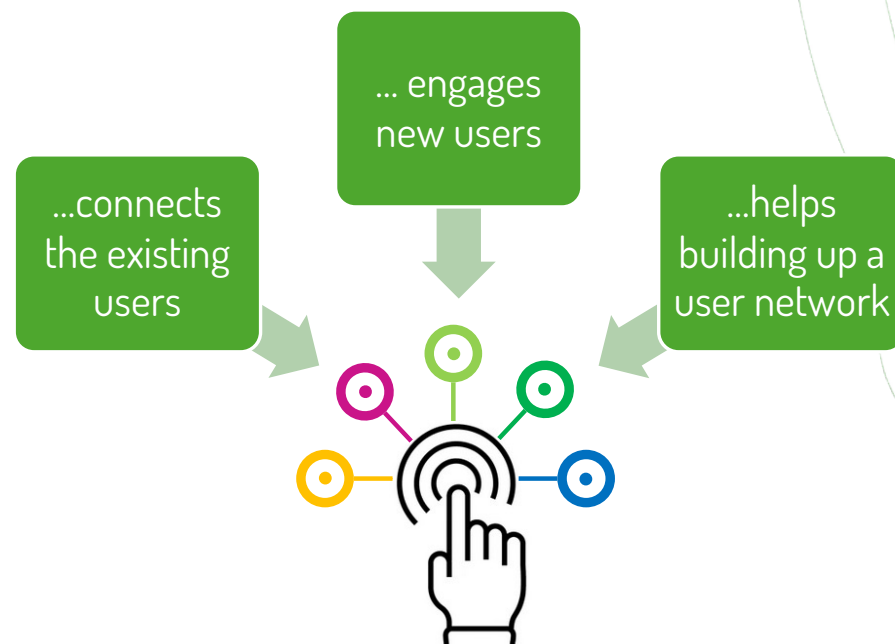


# User Strategy Cycle - Attraction & Interaction

- Effective communication strategy
- Efficient communication tools
- Relevant communication channels
- Appropriate message
- Knowledge about target audience → user



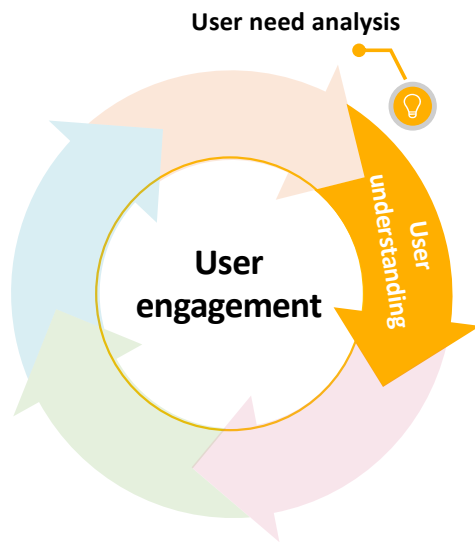
## User Strategy Cycle - Communication & Interaction



**User communities evolve, new users need to be engaged**

**A solid user interaction is a **continuous** effort**

# User Strategy Cycle – User needs & understanding



- 🌐 RI services, resource and products aim at serving the needs of users → **know the users and their needs**
- 🌐 **User needs evolve continuously** and require continuous developments of services within a RI to meet these needs → match and develop suitable capabilities
- 🌐 An effective user strategy necessitates knowledge about the user needs and requirements to be ensured by the RI → **flexibility to adjust to emerging and future needs**

What type of evolution and developments may be expected in relation to the user needs?



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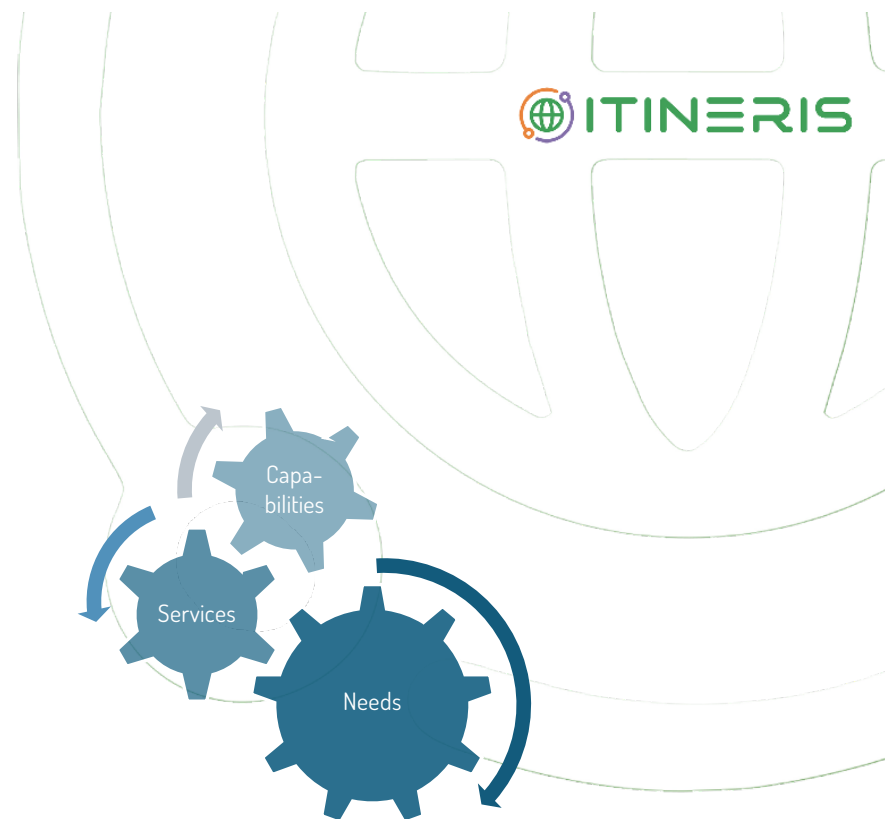
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## User Strategy Cycle – User & Needs

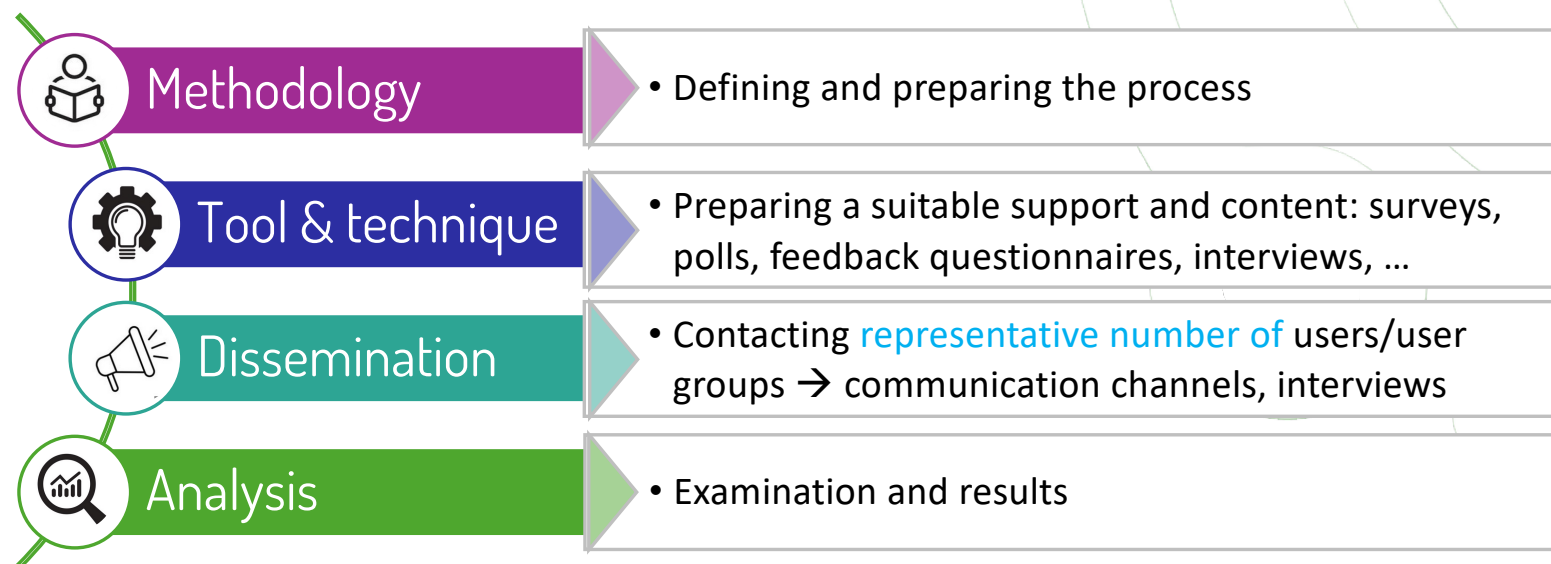
### Knowledge about the user communities connected to the RI

- Categories of users
- User origins and background
- Size of user communities
- User scientific activities and interest

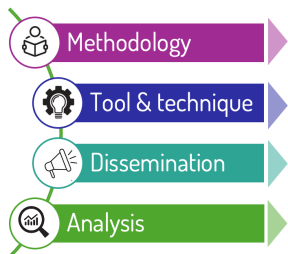
### Identifying the user needs



# User Strategy Cycle – Identifying the user needs



# User Strategy Cycle – Identifying the user needs...

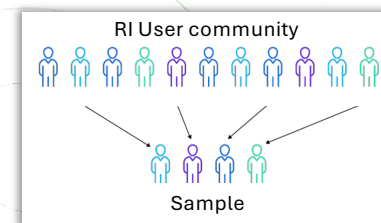


...may be challenging:

« Contacting a representative number of users »

→ accurately representing the RI's user communities

→ required to have statistical value



Ensuring representativeness is often very tricky !

Using wide and effective communication channels



What information should be collected for identifying the RI users and their needs?



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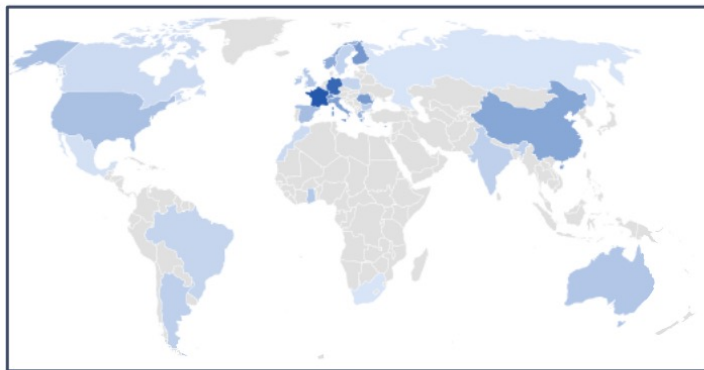
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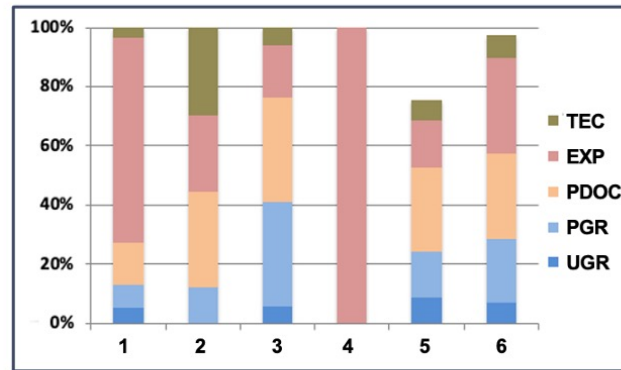
# Examples of results from user needs analysis



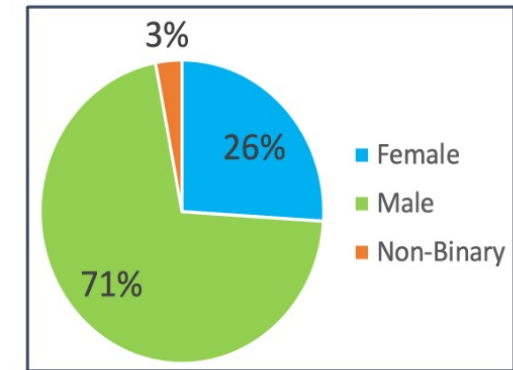
User origin and number



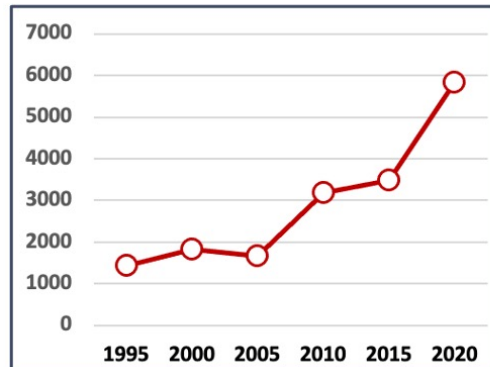
User profile



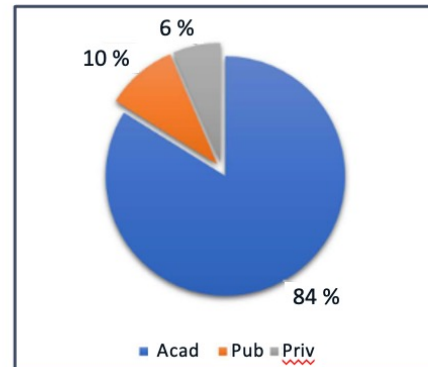
Gender



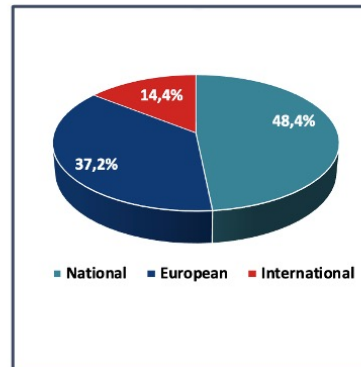
User number



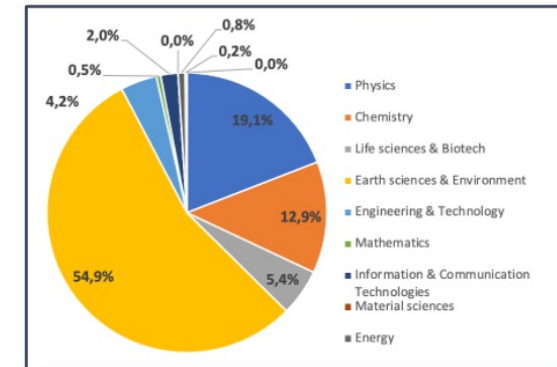
User type I



User type II



User scientific fields^



## Evolving user needs



Monitoring user needs




Regularly reconducting  
user needs analysis



Building and maintaining an  
**inventory on user needs**

# Training exercise on target users

USER PERSONA CANVAS		Persona type _____	Author _____	Date _____
  Name: _____ Age: _____ Occupation: _____ Profile: _____ Internal trigger: _____ Technology used/Fav. Apps-social: _____	Key Activities		Key resource used	
	Challenges and interests		Needs	
	Preferred method of communication		Channel	
	What makes this user get involved		Challenges to engagement	
Reasons to use your service(s)		Obstacles to using your service (s)		

- Gathering information about target user types
  - Understanding users' needs and behaviour
  - Expected profile of fictional user
- Start by defining a target user (general categories)

## Target users



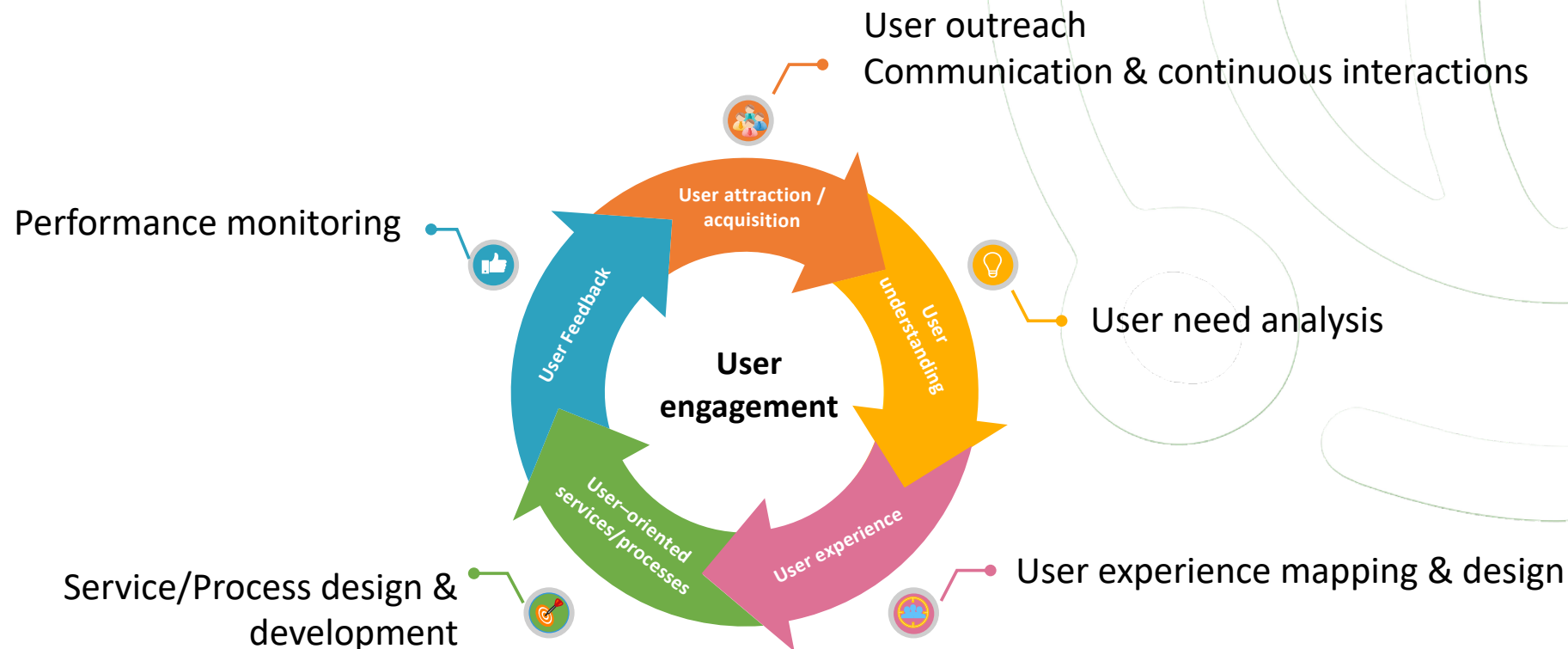
User	Description	Examples for needs
Academic researcher		
Industry and private sector		
Public sector		
International organisations		
Education		
NGOs, non-profits		
Citizen scientists		
...		

# Target users

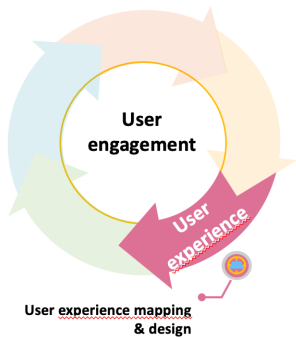


User	Description	Examples for needs
<b>Academic researcher</b>	Scientists, post-docs, PhDs, students	Data, databases, specialised state-of-the art instrumentation, representative ambient environments, training, scientific expertise, technical support
<b>Industry and private sector</b>	Companies, start-ups	Tailored and specific expert services for technical developments, prototype testing, industrial applications
<b>Public sector</b>	Ministries, government agencies, policy-making institutions, agencies of public interest (e.g., environmental monitoring, health, space agencies)	Reliable data and analytical tools (e.g., evaluation of policies, hazard management, risk mitigation), regulation strategies, policy decisions
<b>International organisations</b>	Global institutions (UN, EU), international research institutions	High-quality research data and tools (e.g., to address pandemics, climate change, ..), international collaboration on global challenges & societal questions
<b>Education</b>	Educators, teachers	Educational material, data for teaching, hand—on learning tools
<b>NGOs, non-profits</b>	Organisations working on social, humanitarian, environmental projects	Scientific data and analytical tools to support advocacy, policy change, social impact initiatives
<b>Citizen scientists</b>	Non-professional individuals	Access to real-time data, user-friendly tools for monitoring projects
...		

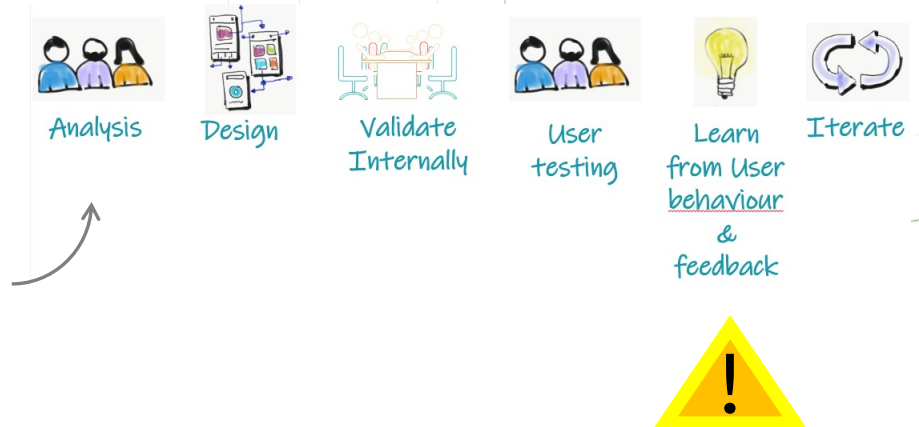
# User Strategy Cycle



# User Strategy Cycle – User experience



- Consider the overall experience and every aspect of a user when **interacting** with a RI
- Goal: Create a process and system that provides a meaningful and satisfying experience to the users:
  - Attractivity, accessibility, usability, design & functionality, interaction, consistency
  - Identifying blocking points
- Iterative process for optimising touchpoints, to be identified



Key questions on the access experience	
Only to users	To users and providers
<ul style="list-style-type: none"> <li>How was the access organized?</li> <li>What's the most problematic and hard part about your experience of access to Facilities? (open text)</li> </ul>	
<ul style="list-style-type: none"> <li>Please describe how you got access to facilities (sequence of main steps in the process, e.g. answer to a call, suggestion by acquaintances and/or colleagues, etc.) (open text)</li> </ul>	
<ul style="list-style-type: none"> <li>Overall, how easy or difficult did you find the procedure to get access to facilities and services? (extremely difficult, somewhat difficult, neither difficult nor easy, somewhat easy, extremely easy)</li> </ul>	
<ul style="list-style-type: none"> <li>Why? (Open text)</li> </ul>	
<ul style="list-style-type: none"> <li>Did you receive proper assistance before, during and after your access experience (application, selection, service fruition, ...)? Y/N Please comment.</li> </ul>	<ul style="list-style-type: none"> <li>Did you receive proper assistance before, during and after your provider experience (application, selection, service fruition, ...)?</li> </ul>
How would you describe your overall access experience (extremely satisfactory, somewhat satisfactory, neutral, somewhat poor, extremely poor)?	
What would you suggest as possible improvements?	

Where may be potential pain points when interacting with users within a RI?



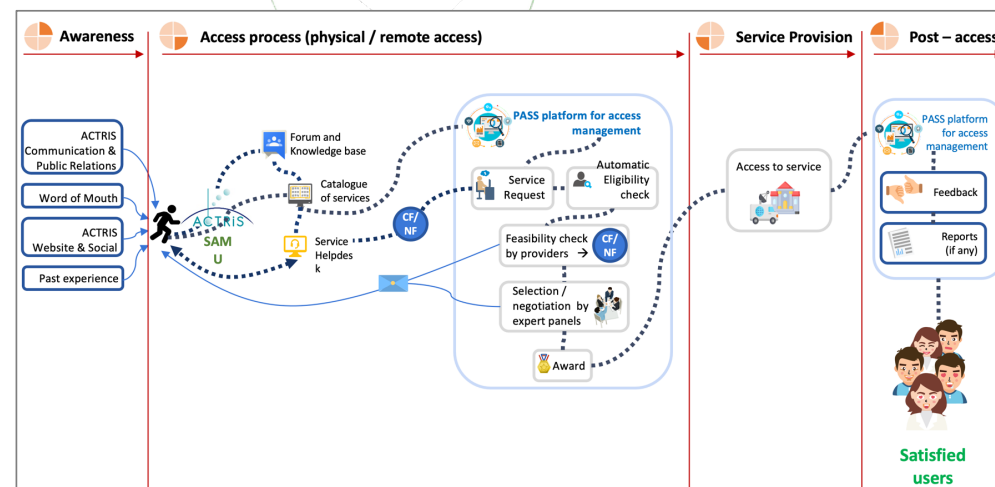
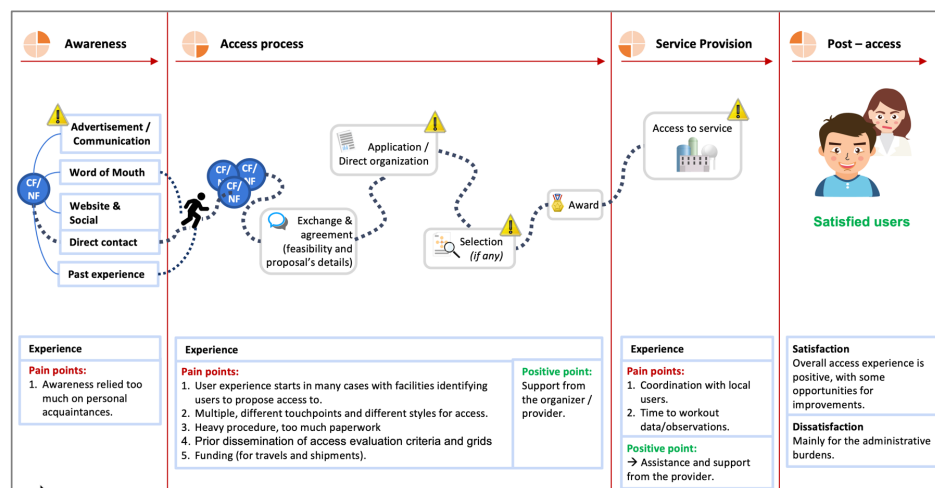
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# User Strategy Cycle – User experience

## Use case 1: User onboarding, access and service provision (example ACTRIS)



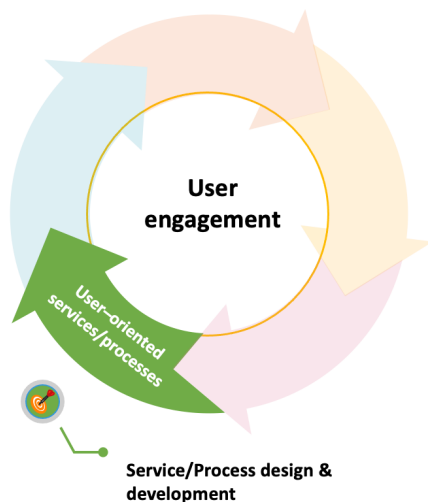
# User Strategy Cycle – User experience

## Use case 2: Access to data and data analysis tools

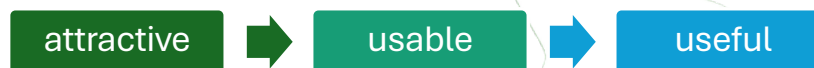
The screenshot displays the 'Data Search' interface. On the left, a sidebar contains several filter sections: 'Variable matrix' with a search bar, 'Facility types' with a search bar, 'Variables' with a search bar, 'Facilities' with a checkbox for 'ACTRIS National Facility - In Progress' and a search bar, and 'Timeliness' with a search bar. Below these are date pickers for 'Start date' and 'End date', and a 'Clear Filters' button. The main area on the right shows a map of Europe with numerous grey pins representing 'Facilities' and a few blue pins representing 'ACTRIS National Facility - In Progress'. A legend at the bottom left of the map area identifies these pin types. The top of the sidebar indicates 'Number of data objects matching your search: 101950'.

- Pain point steps identified, e.g.:
  - Intuitive service catalogue and navigation
  - Well-organised data repository
  - Functionalities: searching, preview, multiple-choice plotting, download options, dashboards, visualisations, etc.
  - User support & help functions
- Benefit (user perspective):
  - Improving user's workflow and interaction from data discovery to data availability

# User Strategy Cycle – Service development



- 🌐 User centric approach: continuous alignment of services and process to match the user needs



- 🌐 **Balancing user needs with operational requirements**

- 🌐 User feedback integration

- 🌐 Iterative development

- 🌐 Key outcome:



User satisfaction



Improved efficiency

# User Strategy Cycle – Service development

## Use case 1: Development of a new, advanced online service (example ATMO-ACCESS)



### • User-centred development process:

#### 1) Research:

- User need assessment (survey, interviews → user persona)
- Identifying interface and tools (platform, data sets, FAIR principles, version control)

#### 2) Feature design: interface and backend processes

- Data management, analysis, visualisation, functionalities, compliance with data policy

#### 3) Implementation, testing and feedback

#### 4) User training + support

#### 5) Launch

#### 6) Iteration

- **Outcome:** creating and delivering an upgraded, easy-accessible and user-friendly novel collaboration tool for data analysis

Is there a difference between the user experience and a service development?



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# User strategy –UX vs Service development

**User experience**

**Service / Process development**

Interaction between users and service (RI)

Entire service lifecycle for creating, developing and delivering a service

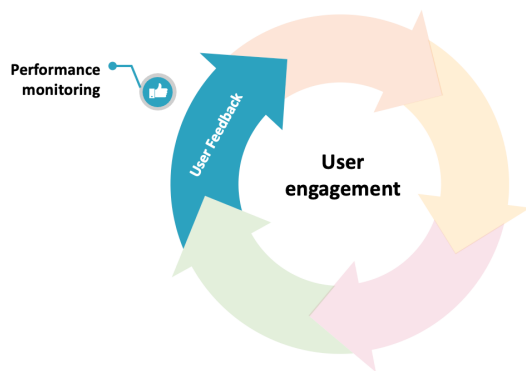
Interface, specific pain points

Entire service process as a whole, involving both front-end (user-face) and back-end (facility, operations)

User perspective

User needs vs operational capability and efficiency

# User Strategy Cycle – Performance monitoring

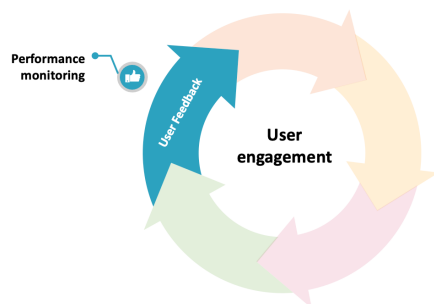


Why is performance monitoring important?

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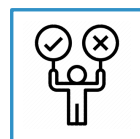
# User Strategy Cycle – Performance monitoring



## Why is performance monitoring important?



X Continuous monitoring and assessment of access activity



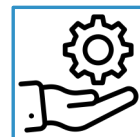
X Decisions made based on reliable data



X Performance evaluation



X Identifying problems (early)



X Continuous improvement



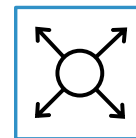
X Measuring success



X Accountability and transparency



X Forecast trends



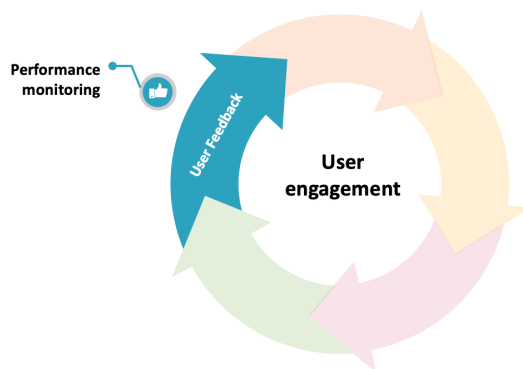
X Benchmarking



X Risk management



# User Strategy Cycle – Performance monitoring



## Monitoring using performance metrics

- Using access statistics for quantitative and qualitative performance evaluation
- Tracking and assessing the effectiveness of the strategy

### Metric type

### KPIs → Application for access and service provision

#### Organisational metrics

- Quality of managing the access process and service provision
- Interactions, reporting, result dissemination

#### Operational metrics

- Quantity of services offered
- Access provided

#### User metrics

- Size and extent of the user community
- User interest and satisfaction

#### Strategic metrics

- Progress
- Relevance and impact of the services provision

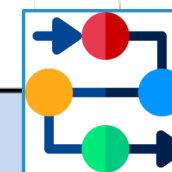
#### Financial metrics

- Cost effectiveness of the service provision
- Relevance to RI's financial sustainability



# KPIs – Organisational metrics

- Quality of managing the access process and service provision
- Interactions, reporting, result dissemination



Cate gory	Performance Indicator	Definition
Visibility	Number of pages views on ACTRIS website TNA part	Measure of visibility and web presence
	Time spent in exploring the ACTRIS TNA pages	Measure of relevance of service catalogue
	Number of impressions on ACTRIS TNA related tweets	Measure of visibility in social media



Cate gory	Performance Indicator	Definition
Access process	Number of user helpdesk requests	Measure of capacity for stimulating user interest
	Average duration of access process, in weeks (from date of user request to acceptance by SAMU)	Measure of ACTRIS readiness for regular processing of user requests
	Average duration of evaluation of user request by selection panel, in weeks	Measure of readiness of review panel
	Level of access provider satisfaction of access process and interactions	Measure of access providers satisfaction: not satisfied (1), slightly satisfied (2), moderately satisfied (3), very satisfied (4), extremely satisfied (5)
	Level of reviewers satisfaction of access process and interactions	Measure of access providers satisfaction: not satisfied (1), slightly satisfied (2), moderately satisfied (3), very satisfied (4), extremely satisfied (5)
	Level of users satisfaction of access process and interactions	Measure of access providers satisfaction: not satisfied (1), slightly satisfied (2), moderately satisfied (3), very satisfied (4), extremely satisfied (5)
	Level of SAMU satisfaction of access process and interactions	Measure of SAMU satisfaction: not satisfied (1), slightly satisfied (2), moderately satisfied (3), very satisfied (4), extremely satisfied (5)

## KPIs – Operational metrics

- Quantity of services offered
- Access provided



Category	Performance Indicator	Definition
Access statistics	Number of services requested by users	Measure of user demand
	Number (and percentage) of requested services accepted	Measure of quality of user request
	Number (and percentage) of projects provided vs planned	Achievement of project goals
	Quantity of access provided to users in units of access	Measure of the quantity of access provided, expressed in corresponding units of access of the service concerned access
	Number (and percentage) of access provided vs planned	Achievement of project goals
	Percentage of physical/ remote access provided in units of access	Measure of operational capacity for access provision as a function of access type

# KPIs – User metrics

- Size and extent of the user community
- User interest and satisfaction



User access	Category	Performance Indicator	Definition
		Number of user requests for access received by SAMU	Measure of the total number of requests received from users
		<b>Number of individual users served</b>	Measure of the ACTRIS capacity to serve users
		Number (and percentage) of user served vs planned	Achievement of project goals
		<b>Number of users per country</b>	Measure of the origin of users per country
		Percentage of users originating in the 17 potential ACTRIS member countries	Measure of the user base within the RI perimeter
		Percentage of users originating in European countries and associated states	Measure of the user base within Europe
		Percentage of user groups originating in countries outside Europe	Measure of the user base worldwide and of the capacity for international collaboration



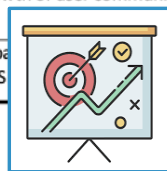
User type	Category	Performance Indicator	Definition
		<b>Number of users per scientific field</b>	Measure of the capacity for attracting users from other domains
		<b>Number (and percentage) of users from academic and public research organisations</b>	Measure of users from academic and public research organisations
		<b>Number (and percentage) of users from public sector</b>	Measure of users from public sector
		<b>Number (and percentage) of users from private sector (business and industry)</b>	Measure of users from private sector
User profile		<b>Percentage of new users</b>	Measure of attracting new users
		<b>Percentage of young users (students, early career scientists, ...)</b>	Measure of training capacity
		<b>Percentage of female users</b>	Measure of gender balance

# KPIs – Strategic metrics

- Progress
- Relevance and impact of the services provision

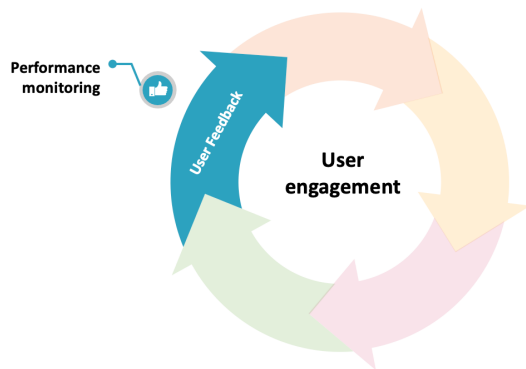


Category	Performance Indicator (suggested KPIs are indicated in bold)	Value type	Definition
Impact on communication	Increase in number of communication activities	quantitative	Measure of dissemination capacity
	<b>Number of citations of ACTRIS-related publications</b>	quantitative	Measure of enlarged scientific audience
	Number of communications in media	quantitative	Measure of public visibility
Impact on outreach	<b>Increase in number of user requests</b>	quantitative	Measure of growth of user needs
	<b>Increase in number of services provided</b>	quantitative	Measure of growth of service capacity
	<b>Increase in number of users served</b>	quantitative	Measure of growth of user community
	Increase in number of users from different countries	quantitative	Measure of growth of user community
Impact on act	Increase in number of users in the atmospheric domain	quantitative	Measure of capacity needs in ACTRIS



Category	Performance Indicator (suggested KPIs are indicated in bold)	Value type	Definition
Impact on technology	<b>Increase in number of users from other than atmospheric domain</b>	quantitative	Measure of cross-disciplinary capacity
	<b>Increase in new services offered to users</b>	quantitative	Measure of capacity to adapt to evolving user needs
	Number of citations of ACTRIS-related publications	quantitative	Measure of relevance of research output due to ACTRIS
	Number of peer-reviewed papers resulting from use to services	quantitative	Measure of production of knowledge due to ACTRIS services
Impact on training	Increase of measurement quality	qualitative	Measure of capacity for improvement: very low (1), low (2), moderate (3), high (2), very high (5)
	Degree of technological development (instrument testing, development, new products)	semi-quantitative	Measure of capacity for technological development resulting from services: very low (1), low (2), moderate (3), high (2), very high (5)
Impact on act	Increase in number of young users and early career scientists	quantitative	Measure of training capacity
	<b>Increase in number of new users from new regions/countries</b>	quantitative	Measure of training capacity
Impact on act	<b>Increase in number of users from private sector</b>	quantitative	Measure of attractiveness towards the private sector

# User Strategy Cycle – User feedback & Interaction



- Continuous interaction with users throughout the access process
- Feedback questionnaire is efficient tool to gather information from user after service provision
- Essential assessment of quality of the service provision and to improve the overall access process and feedback on user satisfaction

# User Strategy Cycle – User feedback questionnaire 1/3



## Questionnaire

- ✓ General information: user, services received, platform(s) accessed, ...
- ✓ How access opportunities were obtained (e.g., websites, mailing lists, social media, colleagues, events, ...)
- ✓ Required resources for access



# User Strategy Cycle – User feedback questionnaire 2/3



## Evaluation of different aspects of the access process (e.g., scale from 0 to 5)



6. Please assess the service provided by ACTRIS IMP (0 = not evaluable, 1 = very poor, 2 = sufficient, 3 = good, 4 = excellent)	
• Advertisement and call for access	
6.1 Publicity and information about the access opportunities:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.2 Comments related to the TNA advertisement and calls:	.....
• Application	
6.3 Practical information on how to apply, on available support and documentation:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.4 Application form and easiness of the procedure to apply/submit:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.5 Length of time for preparing the application:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.6 Comments related to application:	.....

• Access to facility	
6.7 Information and support for organizing the access:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.8 On-site scientific, technical, administrative and logistic support by the access provider	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.9 Comments related to access:	.....
• Post-access	
6.10 Quantity of post-access documentation required	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
Quality of services accessed	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.11 Comments related to post-access:	.....
• Overall aspects	
6.12 Interaction with and support by SAMU	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
6.13 Please evaluate the overall service provided by the ACTRIS IMP TNA:	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4
If your evaluation is ≤2, please briefly explain why: .....	



## User Strategy Cycle – User feedback questionnaire 3/3



### General user satisfaction and/or additional comments:

- ☐ Potential benefits of access
- ☐ Lessons learnt
- ☐ New discoveries/ breakthroughs/ novelties
- ☐ Contribution to filling a patent or prototype design
- ☐ Suggestions for improvement
- ☐ Any other comment



What is your key takeaway from this session on user needs and experiences?



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# THANKS!

**IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System**  
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3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



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