#### Vývoj služeb poskytovaných eLTER RI (eLTER Service portfolio development)

a otázka potenciálního hostování Tématického Centra

Olga Vindušková, Marian Pavelka

K čemu to celé bude? Jaké služby bude eLTER RI nabízet (a kdo to zaplatí)?



#### Služby poskytované eLTER RI



#### **Thematic service areas**

- Data management & integration
- Optimised Design and RI Interoperability
- Technological Innovation & Development
- Analysis Tools and Modelling
- Synthesis towards actionable knowledge
- Central analytics and observation



# Model financování (Funding model) & scénáře

• Z čeho se bude činnost eLTER RI platit?

#### Suggested Funding Model for eLTER RI



# Funding model: Host (Premium) Contribution + Membership fees

#### Host (Premium) Contribution

- Cash or in-kind contribution (requires clear rules and consolidation with the IC)
- Host premium contribution: TC INSIDE ERIC
- Host contribution: TC OUTSIDE ERIC
- Clear collaboration agreements have to be made
  - Between hosts sharing a TC
  - Between ERIC and TC outside of ERIC





TC = TOPIC CENTER

# Vývoj portfolia služeb (Service Portfolio Development)

- Centrálně nabízené služby udělají z eLTER RI více než "sumu" národních sítí. Tyto centrální služby (Central Services) budou nejspíše sestávat z:
- • eLTER ERIC Head Office: coordination, strategic development, outreach. For the time being, Head Office activities are hosted by UFZ, Germany.
- • eLTER Service Portal: access to all eLTER RI services, such as data and Sites.
- • eLTER Topic Centres: for example,
- technological development, capacity building, data processing, and linking researchers to sites.







# Serving 7 main Stakeholder categories



#### Where are we now - Overview across all Thematic Service Areas

TSAs

- 01\_DM Data Management & integration Data QA/QC
- 02\_OD **Optimised Design** and RI Interoperability
- 03\_TI **Technological Innovation** and Developments
- 04\_AM Analysis Tools and Modelling
- 05\_SK Synthesis towards actionable knowledge
- 06\_CA Central Analytics and observation
- 07\_HO Head Office



#### Specify the services

- Identify needed components or tools for delivery
- Mark Incorporate user feedback
- Montify the value propositions (for eLTER as provider and the users)
- Massess costs

# Example portfolio - TSA 01\_DM: Data Management and Integration

Objectives	Identified Services				
Acquisition, curation and dissemination of the	01_DM.1 - Site registration and ca	taloguing	Key Servi	ce R	eference
observational data and elaborated data products of the eLTER RI	01_DM.2 - Access to Site Data	Key Servi	ce R	eference	
	01_DM.3 - Data ingestion and qu	ality	Key Servi	ce R	eference
2 Services and technical components directly or indirectly support all RI stakeholders	01_DM.4 - Access to data produc	cts	Key Servi	ce R	eference
	01_DM.5 - Site Information Clust	ers	Key Servi	ce R	eference
3 Use of data in research are monitored through data citation services enabling tracking the impact of eLTER data	01_DM.6 - Data usage statistics		Key Servi	ce R	eference
4 Use of data in research are monitored through data citation services enabling tracking the impact of eLTER data					
Components	Costing	Implementa	ation Phase	Operatio	nal Phase
(1) Digital Asset Register (DAR)		Key services	All services	Key Services	All Service
Central Data Node (CDN)	Personnel (FTE)	21	21	16	16
	Equipment (K€)	40	40	15	25.3
3 Vocabulary service / Thesaurus	Consumables (kf)	0		0	0
4 eLTER DataLabs	External Services (k€)	0	0	0	0
5 Site Registry / DEIMS	Decommissioning (FTE)	1	1	1	1
	other costs (k£)	250	250	100	100

other costs (k€)

(6)

Data Integration Platform / EcoSense

250

250

2S

# Hostovat či nehostovat centrální služby?

[eLTER] "Expression of interest" in developing eLTER services from TSA service specification

> Agenda:

•TSA service specifications

•the process for "expressions of interest" in piloting one or more services either individually or in consortia

the current cost book scenarios for how such services may be paid for in the long-term and
the expected benefits to host institutions

•experiences from existing ESFRI service providers as to how this has worked for them to progress the discussion of host selection within the eLTER RI ESFRI process (to be confirmed)

Zoom meetings will be repeated on:

June 27th: 16:00-18:00 CEST June 28th: 08:00-10:00 CEST June 29th: 14:00-16:00 CEST



#### Schedule is tight... As usual!

#### eLTER RI timeline and the potential "Valley of Death"



#### Phases of design, specification and costing



#### S m m

# 'Skeleton eLTER RI profile and key services'

All services have to be provided through the eLTER Service Portal as a single access point.

The vast majority of key services require comprehensive information on the *in-situ* facilities characteristics (design, scientific, administrative).

The skeleton RI provides the minimum set of viable functions to secure fundamental data flows from the distributed site network (Fig. 1.2a) that represent the <u>2 major data assets</u> of eLTER:

- (i) decades of <u>legacy data</u> that can be mobilised *ad hoc*, and
- (ii) data from harmonized <u>Standard Observations</u> (SOs) as currently specified/ piloted. Both lay the foundation to continental scale data products.

In <u>support of excellent site-based science</u> the eLTER <u>Information Clusters</u> for all sites and platforms need to be populated with information from relevant other sources complementing *in-situ* data (official statistics, remote sensing etc.).

<u>Basic set of functionalities that will enable operations and maximise impact</u> at an early stage comprise a helpdesk and knowledge base (comprehensive contacts-roles-expertise management, e.g. for tracing occurrence of SOs, eLTER *in-situ* facilities or data usage in publications etc.) to enable collaborations, transdisciplinary work, communication & dissemination.

#### **Approaches and perspectives**

- Adopting the phased approach
- > The 'skeleton RI'
  - →close to a "slim scenario B" as adopted in 2020
- Projects extension
  - o In principle green light from our EC officer and roadmap agreed
  - Both GA decisions in place
- > Additional HE project
  - eLTER EnRich, submitted 9<sup>th</sup> March
  - Focus: bringing in new expertise
    - System Engineering for a dynamic phased implementation
    - Cyberinfrastructure development
    - Compensation for additional efforts

The end

Integrated European Long-term Ecosystem, critical zone and socio-ecological Research

> eLTER Funding model, Habitats- and SOs-Specific Cost Estimates, and Financial Principles and Rules (Outline)

Filling a critical gap for top-class science at the continental scale

eLTER Consortia Meeting, April 17-21, 2023

Jaana Bäck PPP WP4 lead University of Helsinki Syed Ashraful Alam PPP WP4 University of Helsinki

#### Examples of Financial Principles and Funding Models from Other Environmental RIs (ICOS, ACTRIS & AnaEE)



# **ICOS RI Financial Principles**

#### ICOS ERIC (Head office and ICOS Data Portal)

- Receives membership contributions from the participating countries
- Host premium contributions from Finland, Sweden, the Netherlands, and France.

#### Central Facilities (not in ERIC)

- Receive host contributions from their countries or in-kind contributions from their host institutions (70–80% of their total funding)
- Station contributions through ICOS ERIC

#### National Networks

• Receive funding from their governments or in-kind contributions from their host institutions.



#### **ICOS RI Member and Observer's Fees Calculation Principle**

**Basic contribution (Equal share):** 50% of the common costs shared equally between the Members and Observers.

**GNI-based contribution:** 50% of the common costs calculated as per GNI-based contributions [*expressed* as a percentage of the three-year aggregate GNIs of all Members and Observers in the ICOS RI].

**Station-based contribution:** related to the number and type of stations joining the ICOS network.

Annual station-based contribution by station type

STATION TYPE	ANNUAL STATION CONTRIBUTION, €
Atmosphere Class 1	32,795
Atmosphere Class 2	11,990
Ecosystem Class 1	6,320
Ecosystem Class 2	3,160
Ecosystem associated	1,580
Ocean stations	9,650



#### **Financial Principles of Other Environmental RIs**

#### **ACTRIS ERIC**

- > Hosts cover approx. 70% of the Central Facility costs.
- Host Contributions and Host Premium Contribution can be in-kind or cash contributions, and the country/RPO can itself decide the in-kind and cash shares.
- Remaining 30% of Central Facility's annual operation costs is funded by ACTRIS ERIC through the Membership Contributions from ACTRIS ERIC Members, Permanent Observers and Observers.
- Membership Contributions: general support and operation support (*not presented here in detail*)

#### **AnaEE ERIC**

- A minimum of 50% Host Premium contribution
- Rest of the Central Services' expenditures are covered by annual Membership fee contributions
- Membership fee is based on the total budget of Central Services.
- The Membership Fee model is 50% Equal Share + 25% GDP + 25% platform number.



# **eLTER RI Funding Model Scenarios**



#### **Suggested Funding Model for eLTER RI**



#### Envisioned Funding Sources of eLTER RI (1/2)

National	Funding provided by RPOs, RFOs or ministries.	
funding (NRI)	<b>Existing</b> : The part of ongoing funding at a Site that can be redirected to renew the infrastructure to meet the eLTER standards. The ongoing upgrade is assumed to be 5% of the capital value of the site annually, and half of that is assumed to be used for eLTER NRI purposes.	
	New: Additional funding for upgrading the infrastructure.	
Host (premium) contribution	National funding provided by the institution(s) hosting the Central Service. Can be either cash and/or in-kind as agreed by the shareholders. Host premium is provided by the Member (and/or Permanent Observer) countries hosting the eLTER Central Service within eLTER ERIC.	
Membership fees	Income from membership contributions by members. The principles of calculating the membership fee will be negotiated during the PPP. The largest part of the membership fees will be used to cover the CS costs, but part of it can be allocated to NRI to compensate the members' use of the services.	
Non-member user fees and other income	User fees that the eLTER legal entity can collect from non-members and industry users to access the facilities of eLTER RI. This fee will be coordinated and reallocated by the Head Office based on real access. Other income, for example SMEs and industry involvement, and private funding.	
ontributions (	such as personnel, equipment, office space, utilities, software, hosting of me	etings, editing and

publishing)

#### **Envisioned Funding Sources of eLTER RI (2/2)**

Access compensation	Funding from the membership fees and non-member user fees, collected by the legal entity, which is reallocated following the use of transnational access (TNA) of a Site. Presumably all Master Sites will provide TNA.
EC projects	Project funding from European Commission on competitive calls.
EU structural funds	Cohesion funds of European Union. Only certain regions are eligible for structural funding. Can be used during the Implementation Phase, covering both construction and pre-operation costs.
In-kind policy	Stable long-term funding of the operations of eLTER RI is formed by a combination of cash and in-kind contributions by participating members and other sources. eLTER RI can use resources, including human resources, provided in-kind to support its activities. In-kind contributions must always support and benefit the operations and aims of the eLTER RI.



#### **Funding model: Host (Premium) Contribution**

- Cash or in-kind contribution (requires clear rules and consolidation with the IC)
- Host premium contribution: TC INSIDE ERIC
- Host contribution: TC OUTSIDE ERIC
- Clear collaboration agreements have to be made
  - Between hosts sharing a TC
  - Between ERIC and TC outside of ERIC





# **TENTATIVE Model for eLTER ERIC Membership Fees (1/2)**

#### Membership Fee = ES + GDP + Site number & category

- Equal share (ES) = dividing 30-50% of the costs of Central Services not covered by Host Premium contribution equally among Members.
  - · Can be adjusted to take into account potential membership levels and the related service levels
- Gross domestic product (GDP) = dividing 25-45% of the remaining costs among Members using share of total GDP of all Members. The reference will be the average GDP over the last known period of 5 years before the constitution of the ERIC (e.g., 2020 – 2024).
- Site number and category -based contribution = dividing 25% of the remaining costs among Members using Member-specific Site contributions. Different Site types can be charged e.g. in the following way (still under negotiation):
  - Category 1 Site: full price
  - LTSER Platform: 20% discount of the full price
  - Category 2 Site: 40% discount of the full price
  - eLTER ERIC Observers would pay a fixed Membership fee equal to half the median of the Membership Fee

FR

# **TENTATIVE Model for eLTER ERIC Membership Fees (2/2)**

- Always in cash
- > Form a variable part of the revenues
  - Depends on the number of Member countries
- > Calculation method should be
  - Transparent and robust, data available
  - $_{\circ}$  As simple as possible
  - Justified based on the needs of Members to use the services
  - Provide a balanced and sustainable income to the ERIC





#### eLTER ERIC Exemplary Funding Model Scenarios

Name of	Operation		Years No. of Member (+Observer) Countries		Funding Model Components			
Scenarios	Phases	Years			Host Contribution	Membership Fees		
Scenario 1a	Phase 1 ('Skeleton RI')	2026-2027		6 (+ 4)		50%	50%	
Scenario 1b	Phase 1 ('Skeleton RI')	2026-2027		6 (+ 4)		70%	30%	
Scenario 2a	Phase 2	2028-2030		10 (+ 4)		50%	50%	
Scenario 2b	Phase 2	2028-2030		10 (+ 4)		70%	30%	
Scenario 3a	Phase 3	2031 →		22 (+ 4)		50%	50%	
Scenario 3b	Phase 3	2031 →		22 (+ 4)		70%	30%	



# **Estimated Central Services' Costs Allocation Over the Three Operational Phases**

Name of Scenarios	Operation Phases	Head Office Costs*, k€/yr	Other Central Services' Costs*, k€/yr	TOTAL Costs, k€/yr	Host Contribution, k€/yr
Scenario 1a	Phase 1 ('Skeleton RI')	2019	84	2103	1052
Scenario 1b	Phase 1 ('Skeleton RI')	2019	84	2103	1472
Scenario 2a	Phase 2	2019	4042	6061	3031
Scenario 2b	Phase 2	2019	4042	6061	4243
Scenario 3a	Phase 3	2019	4567	6586	3293
Scenario 3b	Phase 3	2019	4567	6586	4610



#### Impact of variation in Membership Fees (MFM 1 & 2)



# Impact of Number of Sites -Calculation Principle on MF Option I = linear, Option II = 'Site Baskets' (UK suggestion)



- Sites can be included in the NRI in four 'baskets' differing in number of sites: 1 to 5 sites, 6 to 10 sites, 11 to 15 sites or more than 16 sites per country.
- This gives the countries possibility to have more sites with same membership fee cost.



#### Impact of Setting a Max 300 k€/yr Limit to MF (UK suggestion)



- With the application of MF cap (300 k€/a): France, Germany, Italy and UK MF reduced to 300 k€/year [Membership Fee I (MINMAX)].
- However, the MF for Austria, Belgium, Spain and Netherlands increased due to the cap.



#### Costs at national scale: eLTER RI Habitats- and SOs-Specific Cost Estimates



# Habitat-Specific Investment and Annual Operation Costs of SOs (Prime & Basic Method)

#### Habitat-Specific Investment and Operation Costs of SOs (Cat 1/Prime Method)

Wetlands (mires, bogs, fens) Vegetated man-made habitats (agricultural, horticultural,... Sparsely vegetated habitats and deserts Inland surface standing waters

Inland surface running waters

Heathlands, shrub and tundra

Grasslands and lands dominated by forbs, mosses or lichens

Forests and other wooded land

**Coastal (transitional) waters** including coastal littoral zones





Annual Operation Cost Investment Cost

M eLTER

# Example: Investment & Operation Cost of 'Forest & Other Wooded Land' (Cat 1 & 2). Focusing HYD & BIO.



# Example 2: Investment & Operation Cost of 'Inland Surface Standing Waters' (Cat 1 & 2). Focusing HYD & BIO.e



#### Investment & Operation Cost of Selected Two Habitats (Cat 1 & 2). Focusing HYD & BIO.





2

10

BIO

BIO

# eLTER Financial Principles and Rules v2.0 (Table of Contents)



#### eLTER Financial Principles and Rules v2.0 (Table of Contents)

Preface		9. Provisions of Fur	nds to eLTER ER	RIC		
1. Applicable Principles	S	10. Late Payment or	r Inability to Pay	eLTER ERIC	Membership Contribution	
2. Financial Manageme	ent General Principles	11. Payments to the	eLTER Central S	Services		
2.1 Framework		12. Financial Reporting				
2.2 Contribution Prin	ciples for eLTER Funding	12.1 Financial Reporting of eLTER ERIC				
2.3 Contribution Prin	Shared with me > ··· > WP04 Financia		Principles -	్రి	vices	
2.4 Contribution Prir			Theples			
2.5 Financial Manag	Name 🗸	Owner	Last mo 🔻	File size	IC	
3. Financial Year	Meeting Minutes All meetings 🚜	me	Feb 10, 2023	6 KB	;	
4. Currency		inc.	100 10, 2020	0 NB		
5. Financial Planning c	eLTER Financial Principles V2_2023-03-03 🚢	me	Mar 3, 2023	77 KB		
6. Preparation of eLTE	R ERIC Annual Budget	17. Audit of eLTER I	ERIC			
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6.2 Expenditures of	eLTER ERIC	19. Final Provisions				
7. Adoption of eLTER	ERIC Budget					
8. Revisions of the Bud	dget of eLTER ERIC					
					MW ELIER	

#### eLTER Service Portfolio (architecture)



#### eLTER Service Portfolio (architecture) – Legacy data publication



#### eLTER Service Portfolio (architecture) – Standard Observation data



#### eLTER Service Portfolio (architecture) – Synthesis of new data



# **eLTER CI Architecture v0.0**

eLTER application services layer



#### eLTER CI Architecture v0.0 - current components hosts

eLTER application services layer







#### Developing our portfolio of services

eLTER RI will provide access to ~200 well equipped sites and platforms. Data gathered at these sites will be integrated with a wide range of other data from various sources, including remote sensing and official statistics. Research based on this wealth of information will provide insights into the functioning of our life supporting system.

We are developing our service to build on and complement these core activities to serve our stakeholder groups. These range from scientific research to decision-making and business & industry.

Some of the services are already in operation, others are currently specified and piloted within 6 Thematic Service Areas. As the detailed implementation plans for the service portfolio takes shape, we will identify a number of Topic Centres to add value to the operation and evolutions of the eLTER RI's capabilities.

#### Services in operation



# **Piloting integrated information clusters for eLTER sites**





#### Usings DEIMS interface in eLTER information cluster workflows





#### Published programming libraries for eLTER workflows

# **Additional slides**



# **UK IC Delegation Comments on eLTER ERIC Funding Model**

- 1. The UK prefers the 50% host contribution 50% membership fee funding model (Option 1). The UK recommends that;
  - Equal share portion of the membership fee calculation should be no less than 50%.
  - Proportion of GDP should be a relatively minor part of the membership fee equation (or should be managed heavily, see below)
  - Highest and lowest membership fees should be constrained with an upper and lower cap (especially if the GDP component is a higher proportion of the calculation)
- 2. The UK believes the fee component based on the number of sites should not be a linear relationship. To avoid disincentive for including more sites, the suggestion would be to cap the amount based on the number of sites, and/or have a lower/declining rate for additional sites after the first one you include from your country.
- 1. The DiSSCo pre-ERIC is also considering their approach to fees currently. It may be worth looking at for alternative ideas to achieve similar outcomes to what we are proposing here, as it aims to make it fair and possible for smaller countries to join while not overburdening the larger countries.

# **Responses to <u>UK IC Delegation Comments (1/3)</u>**

#### Comment No. 1 & 2

- In the proposed membership fees model, GDP share varies between 25-45%
- The more are the sites joining ERIC, the more services need from Central Services
- An Excel-based tool (*thanks to Terhi*) has been developed to better understand the effects of each of the funding model components (Equal share, GDP and Site numberand category-based contribution)
- IC05 delegation will take the decision

#### **Comment No. 3**

 We studied the proposed DiSSCo (Distributed System of Scientific Collections) ERIC funding model and our findings are available <u>HERE</u> (only for internal discussion!)



#### **DiSSCo ERIC annual membership fee** <u>calculation principles</u>

- 1. Contributions shall be based on a combination of GERD (Gross domestic expenditure on research and experimental development)/per capita and GDP [GERD and GDP/per capita].
- 2. The minimal threshold of a contribution shall be EUR 50,000 (for members).
- 3. Contribution of observers shall be calculated as 1/3 of the standard contribution for full members.
- 4. Contributions of intergovernmental organisations shall be subject to the General Assembly's decision and fixed on a case-by-case basis, taking into consideration the size of the organisation, its members, and the R&D capacity.
- 5. None of the Members shall pay more than 50% of the overall amount of contributions by members/observers. In case the contribution of a member exceeds this level, the difference shall then be distributed among the other member/observer states according to their percentage levels of GDP. This will be a monetary contribution (not in-kind).
- 6. The hosting country (statutory seat) shall pay an extra premium fee as defined by the formula.



### **Responses to Bulgaria's IC Delegation Comments**

- PPP WP4 team suggests that to keep the funding model simple with the robust and easily accessible sources of data, proposed adjustment coefficient equations by the Bulgarian delegation would not be added in the eLTER ERIC Funding Model Scenarios at least for the time being.
- However, this issue can be handled and taken into reconsideration once we will revisit the Funding Model (once in five years) after formation of ERIC, provided that common, valid, and publicly accessible data are available.
- Detail comments are <u>HERE</u>.



#### **My Recommendations / Observations**

We are NOT going to modify the structure (basic formulae) of the proposed eLTER ERIC funding model. Rather, we will negotiate (for decisions) the percentage shares of different components in the membership fees model, for example:

- Host contribution: 50% or 60% or 70%?
- Membership fees contributions [Total costs Host (premium) contribution]:
  - Equal share based contributions: 50% or less?
  - GDP-based contributions: 25% or more?
  - Site number based contributions: 25% or less?

