



Horizon Europe: Coordination
and Support Actions



WP2/WP3 joint parallel session

18/06/2024

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Financial model and legal status

How strictly related are those two items?

- List few characterizing aspects of the financial business model related to research infrastructures (RIs)
- Relate these financial aspects to the legal status
- Relate these financial aspects to the ESFRI lifecycle of RIs
- Lessons learned from different RIs at different steps
- Where do we stand with ET and ETO?

Financial model

What are the main characteristics?

Financial rules and financial board

(Budgeting, partner liability, allocate key to member parties, associated partners, ...)

In-kind contributions (IKCs):

How to account for them
Pro and cons

Procurement and fair work return:

This is dependent on the legal status, different treatment if ERIC, IGO or national company

VAT handling (exemption or not):

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Today's focus

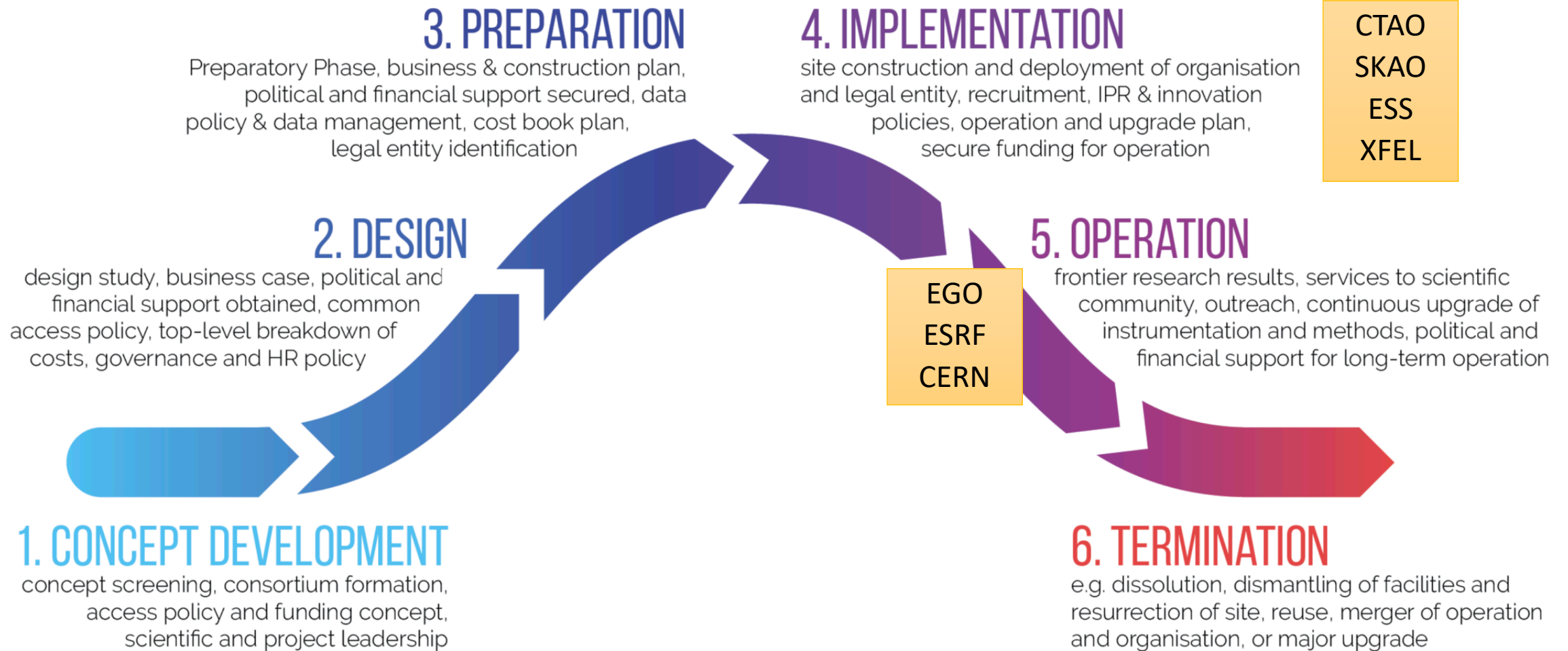
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ESFRI lifecycle of a RI



ESFRI lifecycle of a RI

	Legal status
CTAO	ERIC
ESS	ERIC
EGO	Public/private Italian institution
CERN	IGO
SKAO	IGO
XFEL, ESRF	National company (international agreement) GMBH, société civile

3. PREPARATION

Business & construction plan, legal support secured, data collection, cost book plan, site identification

4. IMPLEMENTATION

Site construction and deployment of organisation and legal entity, recruitment, IPR & innovation policies, operation and upgrade plan, secure funding for operation

CTAO
SKAO
ESS
XFEL

5. OPERATION

Frontier research results, services to scientific community, outreach, continuous upgrade of instrumentation and methods, political and financial support for long-term operation

EGO
ESRF
CERN

6. TERMINATION

e.g. dissolution, dismantling of facilities and resurrection of site, reuse, merger of operation and organisation, or major upgrade

Few Financial Rules

Basics

- The council of the RI decides:
 - ◆ Annual budget
 - ◆ Allocation key for each member state, associated partners, third party etc...
 - ◆ How the budget is paid (cash, IKC, mixed) and the frequency
 - ◆ Liability of member states
 - ◆ ...
- Establishment of a financial board which will handle all financial matters
 - ◆ Validation of the budget
 - ◆ Plan for at least 5 years of expenditure
 - ◆ ...
- Accounting system and personnel

Definition of in-kind contributions

The financing of RI involve some degree of cash and in-kind

- In-kind contribution can be in various forms:
 1. Buildings, structures, ...
 2. Component and systems, services, ...
 3. Personnel
- Need of a In-kind contribution office to keep track of the IKC of each partners:
 1. financial evaluation
 2. quality assessment
 3. schedule
 4. integration of systems, ...

There is no recommended ratio between cash and in-kind for a RI, it depends on its context and its the stage in the ESRFI life cycle

During preparatory phase RI partners tend be involved mostly with in-kind contributions

IKC from XFEL (national company and International agreement)

credit to Antonio Bonucci (Head of IKC department)

XFEL is in the construction phase

■ Budget of the European XFEL Facility:

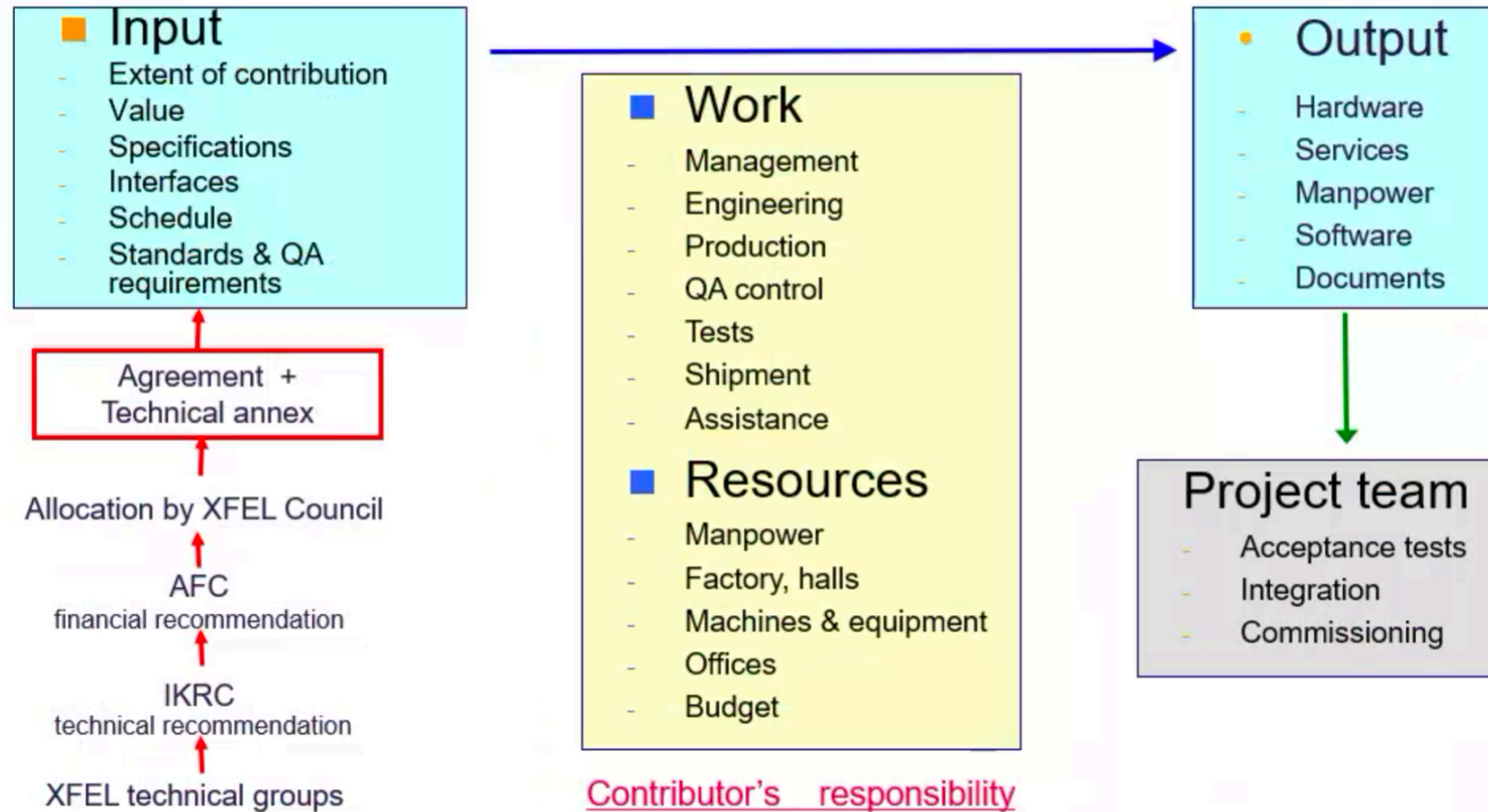
- In-Kind contributions ~ 50%
- Cash ~ 50%

■ Reasons why IKCs are an attractive solution:

- For the contributing institute:
 - Implementing and developing its know-how
 - Local development
 - Image and reputation
- For the project:
 - Delegation of responsibilities (technical, management)
 - Delegation of risks (technical, costs)

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Coordination of several different actors in space and time needs a big effort:

■ Technical difficulties:

- Different environment (procedures, language, CAD software, units...)
- Different standards
- Different raw materials (same quality ?)
- Different style of management
- Follow-up is difficult

■ Financial:

- Budget is in current prices, but IKCs are in 2005 prices
- Controller takes note of completed IKC milestones
- Custom taxes for equipment coming from outside EU

■ Logistics:

- Transports
- On-time delivery and temporary storage
- Installation must fit with global integration plan

■ Legislation:

- National legal rules are different
- Procurement rules can be different

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ESS (ERIC in Sweden) has the same exact problems; it took 8 years to settle agreement with each partner! For them 35% IKC was the largest contribution that could be handled

IKC will depend on the legal status for settling the different agreements between partners and the 'main site' of the RI

Lesson learned from SKAO

Preparation phase → construction phase there is the need to secure funding

Preparatory phase: 70% IKC and 30% cash

- In the Pre-IGO phase already a financial board established (simpler form)
- Most in-kind contributions but it was always recognized that there would always need to be a minimum cash contribution to the SKAO
- used to regularly survey all members about their preference cash vs. in-kind

Construction phase: 30% IKC and 70% cash

- The flip from IK to cash probably came because they decided to allocate the work, before these members were convinced that if they offered to deliver work IK they would have a better grip on that work, as soon as we sent to allocation lots of IKC became cash
- This provided also quite good fair work return
- Costs and fundings constantly being modeled and revised to allow for contingency

Lesson learned from CTAO

Large in-kind contributions can be problematic

It has a quite large fraction of IKC: 74%

IKC chosen without competition based on the previous activities of the scientific teams in partners, and by attributing the remaining ones when the Money Matrix was constructed, in which it is evident who is doing what and which value (not cost) is attributed

Need of a more equilibrated distribution of cash and in-kind for the construction and then operation phase

- A budget based on more cash is safer because the responsibility can be put on the partner
- Better control of the teams via the central funding
- Have more flexibility for increased budget and contingencies due to inflation etc...

Lesson learned from EGO

Large in-kind contributions can be problematic

- From the organizational review EGO and VIRGO
- EGO is a legal entity to manage logistics, finance, procurement, HR, maintenance of the Virgo interferometer
- Virgo Collaboration is charged with managing the technical and scientific direction —> this is IK

Recommendation to move away from a 'distributed' organizational structure towards a 'strong central laboratory'

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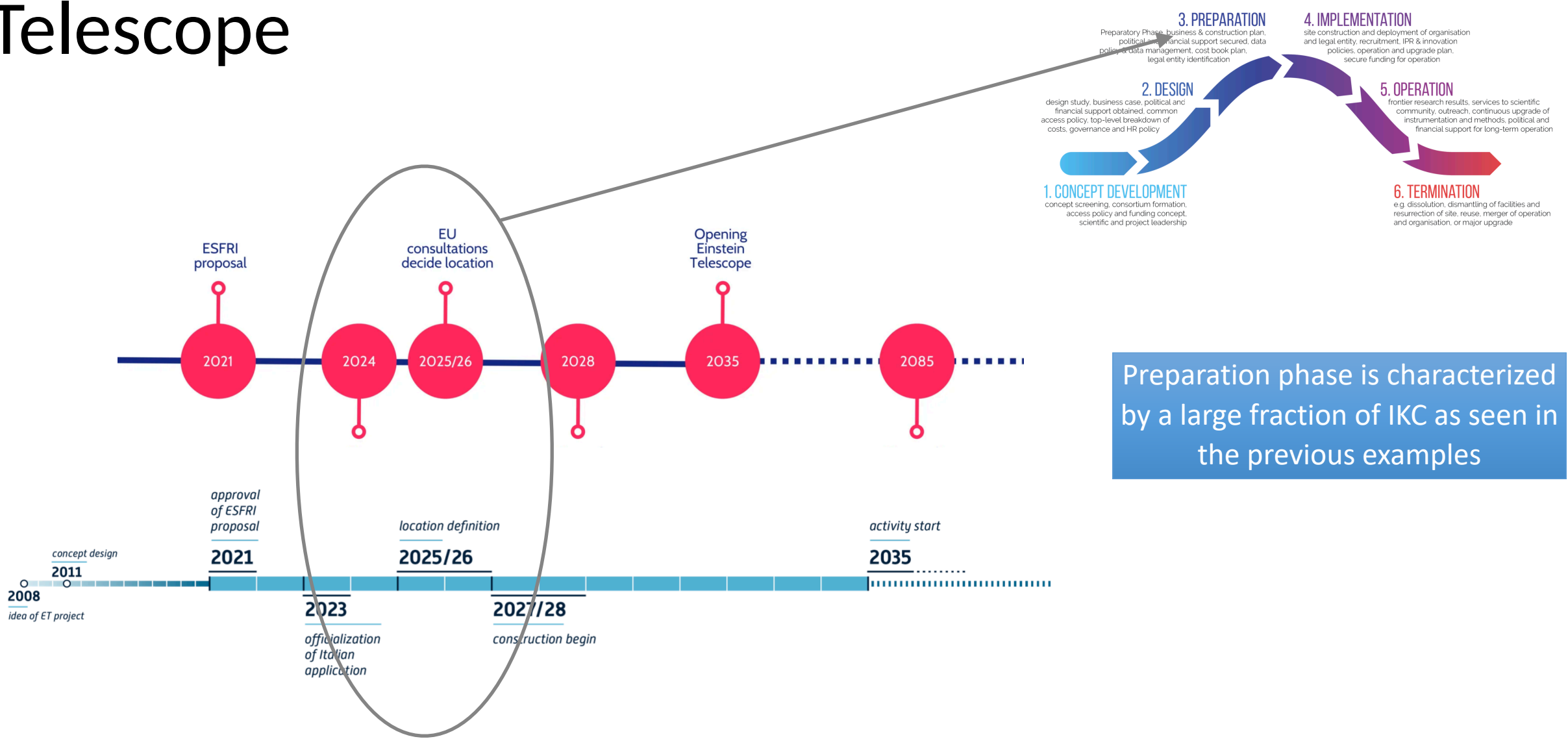
Recommendation to move away from a 'distributed' organizational structure towards a 'strong central laboratory'

Additional funding and more centralized handle of the budget is needed; all members should contribute to EGO budget

OECD global science forum recommendation

International dimension	Legal statute	VLRI examples	Pros	Cons
Fully international	International organisation	ITER, ESO (ELT), CERN (LHC), JINR (NICA), SKA, ELIXIR	Long-term stability, resilience	Very long birthing process
	International agreement	IFMIF, IODP, ALMA	Flexibility	Lighter commitments
International with major national members	Non-profit company or foundation based on an international agreement	XFEL, ESRF	Stability	Vulnerability to the main member(s) difficulties; may be less acceptable for some partners
Regional with international partners	ERIC	ESS, ECCSEL, ELI	Stability, resilience	Difficulty to include non-EU members
	Consortium agreement	ARICE	Flexibility	Difficulty to secure long-term financial commitments
National with international partners	National Institute	Super Kamiokande, KSTAR, SARAO, EAST	Stability	Restricted international participation
	University + national research funding agency	ICECube, LIGO, JWST,	Proven and flexible system, open to international collaborations	Mostly United States-specific, no real international governance
	Consortium of national stakeholders/not for profit organisation	TRIUMF	Stability	Restricted international participation

ESFRI lifecycle of the Einstein Telescope



Preparation phase is characterized by a large fraction of IKC as seen in the previous examples

Financial model, funding and ETO

What is the current status?

- So far ET preparation phase activity is mostly supported by IKC (besides vacuum), cash contribution is minor
- The activities for the design and site preparation are conducted by group under specific boards (ISB, EIB, OSB and SCB), like SKA activity in the pre-IGO phase
- A MoU is currently being redacted with IFAE as lead agency first step towards establishing interim agency to secure funding before the settling of the final legal structure of ETO
- Allocation key?

Financial model, funding and ETO

Allocation key to define contribution of each member party

4 possible indicators

- (I) GDP only (pro-capita)
- (II) # of scientists belonging to the ET Collaboration
- (III) Weighted coefficient: $\text{Share coeff} = \text{GDP (pro-capita)} \times \text{R\&D fraction} \times \text{\# ET coll. scientists}$
- (IV) Weighted flat rate

Party	(I) GDP pro-capita based (%)	(II) #scientists ET collab (%)	(III) GDP+# scientists ET collab (%)	(IV) Flat rate (%)
Austria	10,4	0.001 (nominal)	0.14 (nominal)	8
Belgium	10	6,3	11.31	8
France	8,2	9,3	13.51	12
Germany	9,9	12,2	15.57	12
Hungary	3,6	2,7	1.2	6
Italy	6,9	38,7	25.24	12
Netherlands	11,5	6,9	6.6	8
Poland	3,5	1,9	0.53	6
Spain	6	11,1	5.24	8
Switzerland	20,1	1,3	4.68	8
United Kingdom	10	9,6	15.98	12

ETPP Annual meeting 2024, 17-18 June Barcelona

Joint session: WP2/WP3
ESFRI lifecycle approach for development financial model

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Aim of the joint session WP2/WP3

- What are the options for the development of a financial model in the various phases of the lifecycle?
- Best practices and lessons learned for the financial model from recent examples, ESS, SKA and the hybrid model ESRF.
- In which areas would the choices in the financial model relate to, or restrict the development of the governance structure and options of the legal entity?

Legal framework: guidelines and references to best practices

- *Third Report from the EC on the ERIC regulation (2023)*
- *OECD report: Very large research infrastructures (2023)*
- *Assessment on the implementation of the ERIC regulation (2021)*
- *Sustainable governance (ESFRI report 2017)*
- *ESFRI life cycle approach,*
- *Practices from examples of other large scale research infrastructures: ESS, SKA, CTAO, ESRF, EGO, CERN*

➤ **Elements for long term sustainability RI:**

- Governmental participation
- Sustainable financial contribution model [construction & exploitation]**
- Flexible procurement policy
- Provision of exemptions of VAT and excise duties
- Competitive HR scheme
- Inclusiveness for late joiners (global partners or international organisations)

Examples: impact of the choices in the financial model

Selection Legal framework

- **Elements for long term sustainability RI: construction and operation phase**
- Flexible procurement policy
- Provision of exemptions of VAT and excise duties
- Competitive HR scheme

Cash-contributions, responsibility and authority by RI Council

- Flexible procurement policies , fair return on investment
- VAT and exise duties
- Competitive and harmonised HR schemes

In kind contributions, responsibility and authoriy by contributor

- Flexible procurement policies for funding organisations in Memberstates, fair return on investment
- VAT and exise duties for funding organisations
- Secondment → different HR schemes for staff doing the same job

Examples: impact of the choices in the financial model

Governance structure: examples

- Decisionmaking and voting procedures → financial decisions

Cash contributions, responsibility and authority by RI council

- Line of authority, ability to control and enforce implementation, e.g. central lab model

In kind contributions, responsibility and authority by contributor

- In kind Contribution Office: Valuationpolicy, quality controlpolicy, IP-policies ..and so on
- Inclusiveness for late joiners; a contributionmodel, based on workpackages, might be less attractive to join the RI later on

Interaction WP3/WP2: questions for discussion

Sustainable financial contribution model [construction & exploitation]

- What is an ideal division of cash and in-kind contributions?
 - Examples: ESS, CTA, SKA, ESRF
 - In design and preparation phase (I)?
 - In construction and operations phase ?
 - Which national and international funding schemes would have an impact?
- **How to map this on the ET characteristics?**

Thank you!