



<b><u>JERICO-S3 DELIVERABLE</u></b>	
Joint European Research Infrastructure for Coastal Observatories <b>Science, Services, Sustainability</b>	
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## 1. Executive Summary

The JERICO-RI business plan outlines the strategic roadmap for a Marine Coastal Observation European Research Infrastructure (JERICO RI) and serves as a guide for its establishment and operation. The plan aims to provide a clear understanding of the objectives, strategies, governance structure, financial framework, and implementation activities of JERICO.

JERICO is a state-of-the-art research infrastructure that focuses on marine coastal areas in Europe. It aims to address the scientific challenges and gaps in marine coastal research by offering advanced facilities, resources, and services to researchers and stakeholders. By fostering multidisciplinary collaboration and providing access to cutting-edge technologies, JERICOI strives to facilitate innovative research and promote sustainable development in coastal environments.

This deliverable is closely aligned to the comprehensive Business plan developed in JERICO-DS **D4.3**. This deliverable is focused on the development of the Business Model for JERICO, the development of unique JERICO service offerings whilst looking at the existing Business plans of operational RIs. The deliverable describes how the JERICO Services are structured and how they will be developed, costed and supported through the use of a services estimation model to ensure their effectiveness and sustainability through the RI life cycle. The setting up and development of the JERICO Business development group, its links to the JERICO Nations committee and JERICO User Committee are also highlighted with a view to determining the JERICO Services in the areas of Physical and Virtual Access (PA and VA, respectively), technical expertise and direct services to both internal and external end users. A description of the education and training in Business planning and strategy carried out as part of Task 9.4 is highlighted with a focus on how the key outputs and recommendations were incorporated into the final JERICO Business Plan. There is also an analysis of technology market trends and outlook as well as technology drivers for JERICO including key enabling technologies developed in the JERICO-S3 project.

The deliverable considers the services that can be offered by JERICO-S3 in terms of Physical & Virtual Access as well as technical expertise and products available to end-users.

The JERICO-DS D4.3 Business Plan focuses on the financial aspects including potential Data Cost savings, public procurement savings and additional Commercial Access Service Revenues with respect to the financial model for the RI sustainability whilst this deliverable focuses on development and structure of the JERICO business and services estimation models and how they integrates into the overall governance strategy for the RI.

Market trends, outlook and technology drivers for JERICO including key enabling technologies are described and the added value of the JERICO brand as an indicator of scientific excellence, efficiency and trust in coastal marine research is presented.

The deliverable describes the services that are offered by JERICO-S3 in terms of Transnational Access (TA), Virtual Access (VA), and technical expertise and services to end-users.

The certification/quality assessment of coastal observatories is evaluated based on international best practices. The provision of education and training services are also examined in the business model canvas. The financial and funding framework developed in JERICO-DS D4.3 is referenced to outline funders and customers for the services provided through JERICO (D9.3). An assessment of scientific users, policy, customers and operational users of the services (linked with task 9.2) is also presented.

## 2. JERICO RI Business Plan Objectives and Strategy

JERICO is a dedicated coastal science, monitoring and management research infrastructure consisting of an extensive pan-European network of almost 700 platforms monitoring Europe's vast coastline, spanning 19 countries covering 13 regions. JERICO has 39 partners made up of scientists, modellers, technicians, and stakeholders who provide a central hub of coastal expertise within individual member states and across Europe. Key JERICO services include Physical and Virtual infrastructure Access, the definition of best practices, standardisation, quality assurance, and harmonisation of data collection, treatments and products, it also provides capacity building and knowledge transfer services.

### 2.1 Background

The Joint European Research Infrastructure of Coastal Observatories (JERICO) network was established in 2010 in response to the need to develop a pan-European marine coastal monitoring system. JERICO has since developed to become a high performing multi-national research infrastructure (RI). As part of the H2020 funded JERICO NEXT

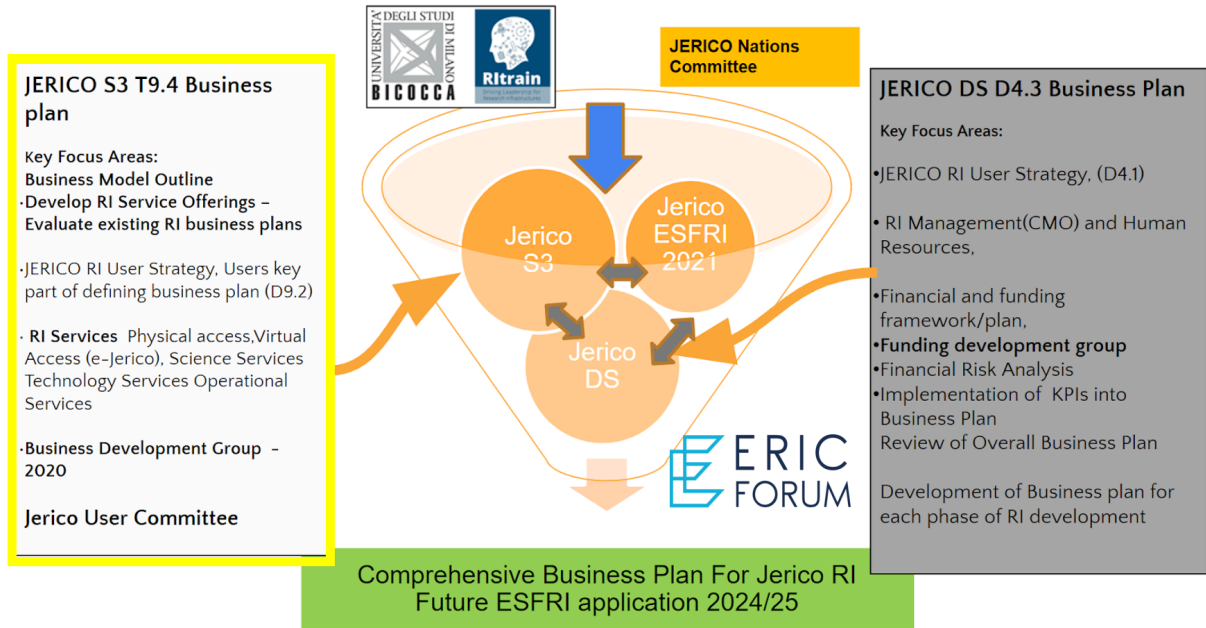
project (2015-2019) a cost benefit analysis (CBA) for the establishment of JERICO as a long term sustainable RI was carried out. The CBA appraised the balance of costs and benefits associated with the permanent establishment of the JERICO as a sustainable long-term RI, in both European Research Infrastructure Consortium (ERIC) and AISBL legal forms, as compared to the potential discontinuation of the JERICO project. The findings showed that both the ERIC and AISBL options return a surplus of benefits to society. The ERIC option had a higher net present value due to higher data cost savings under this scenario, higher public procurement cost savings, a slightly larger Transnational Access programme budget and more commercial access service activity. The cost benefit analysis clearly shows the long term benefits of strengthening the infrastructure and moving towards the establishment of an ERIC for its longer term sustainability. The CBA provides the rationale for the establishment of the JERICO network as a long term sustainable European Research Infrastructure Consortium (ERIC).

In September 2020, the JERICO consortium submitted a proposal to be included on the ESFRI Roadmap in 2021. The ESFRI evaluation board concluded that the proposal was not mature enough to be included on the Roadmap. The evaluation board also found some weaknesses on the financial dimensions beyond EU funding, particularly in relation to financial commitments from members and the lack of an in-kind contribution policy.

The aim of this deliverable is to create a business plan including results of previous tasks in WP9 to estimate the value of benefit according to the considered design of JERICO and the user engagement strategy.

In order to secure the needed communication between business analysts and operators of the RI, one expert/contact person for business per partner in key nations was involved in a Business Development Group established in March 2021. The outputs will be referred to each national representative (i.e. at Ministry level) to progress towards national commitments. JERICO-S3 Tasks 9.2 & 9.3 document the initial preparation work for the Business Plan in which JERICO will be accurately scoped out and defined (MS9.2), to be agreed with JERICO operators and contact persons for business per partner in key nations.

A sound business model ensuring the long-term sustainability of JERICO is essential from the onset of a RI's creation process. A strategic rationale for a sustainable JERICO RI (based on an ERIC Model) was clearly defined and quantified in the CBA of JERICO-NEXT Deliverable D1.3 in 2019. The JERICO Business Plan builds upon these previous results and incorporates the new value of benefits specific to JERICO-S3 based on outputs from user requirements described in task 9.2). Figure 2.1 illustrates the relationships between the Jerico-S3 and Jerico-DS projects in the development of the overall Business Plan for JERICO. The diagram illustrates the relationships and synergies between the deliverables and highlights the role of the **Nations Committee**, the **Business Development Group**, **Jerico User Committee** as well as the Business Model Training carried out with experts from the University of Bicocca. The experience gained from the Jerico application to the ESFRI roadmap in 2021 and detailed analysis of the outputs from the **Eric Forum (2022)** in the development of the business plan are also highlighted.



**Figure 2.1. Methodology used for Development of the JERICO Business plan across the JERICO-S3 and JERICO-DS projects to minimise overlap and duplication.**



**Figure 2.3 Timeline of the Key Business Plan development in Jerico-S3 2020-2024**

The RI Business Plan was further developed in an ESFRI Application made by the JERICO partners in 2021 and continues to develop and be iteratively refined and improved through ongoing research activities in the JERICO-S3 and JERICO-DS projects. A particular focus on the financial sustainability and risk through each phase of the RI development has been carried out as part of **JERICO-DS WP4**.

This Deliverable is a key component of the overall JERICO Business Plan to be delivered in JERICO-DS D4.3. The JERICO-S3 part of the Business Plan is focused on the development of the Business Model Outline and the development of the JERICO service offerings with a strong focus on user requirements. The Business Model Outline has considered all aspects of the RI operations, governance, funding and sustainability. The



work has been carried out with key inputs from the **JERICO Nations Committee** and the establishment of a dedicated **Business Development Group** within the JERICO-S3 project. External expertise in RI Strategic Development Strategies and Methodologies was incorporated into the Business Plan design through a series of 6 interactive workshops involving RI experts from the University of Milan-Bicocca. The JERICO-S3 Business development group and representatives from the JERICO Nations Committee participated in the training thus ensuring that these strategic leaders in the development of JERICO were involved in the decision making process and development of the Business Plan from the outset.

The Business Plan will demonstrate the application of tools and methodologies that will support the design of JERICO business planning process and the Business Model analysis. An objective of the completed Business Model is to determine the answers to the following fundamental questions and incorporate them into the business plan .

- 1. What user/customer needs will the new Business Model address?**
- 2. What novel activities could help satisfy those needs?**
- 3. How could the activities be linked in novel ways?**
- 4. Who should perform the activities? What novel governance arrangements can be found?**
- 5. How will value be created for each stakeholder? Services Estimation Model?**
- 6. What revenue models can be adopted to complement the business model? Lean burn financial Model described in J-DS 4.3.**

## 2.2 Who is the intended audience for the JERICO Business Plan?

This Business Plan is targeted at a broad range of stakeholders covering the quadruple helix groups of government, academia, industry and the public. This will include both experts in coastal ocean observations and non-experts. The core business of JERICO RI is to provide a range of services to users from these stakeholder groups. This Business Plan provides the context and background story behind the establishment of a JERICO RI; describes the initial services offered and the users of these services; and outlines how much it costs to provide the services and how they will be funded.

**Researchers and Scientists:** The JERICO Business Plan is designed to attract marine researchers and scientists who are interested in utilising the infrastructure and facilities offered by the ERIC. The plan emphasises the state-of-the-art equipment, resources, and collaborative opportunities available to researchers.

**Funding Agencies and Governments:** Funding agencies and government bodies responsible for allocating resources to scientific research initiatives. The Business Plan outlines the potential impact of the infrastructure on advancing coastal marine science, its relevance to national and international research priorities, and the potential return on investment in terms of scientific breakthroughs and societal benefits.

**Academia and Educational Institutions:** Universities, colleges, and educational institutions focusing on marine science can be interested in collaborating with or utilising the ERIC infrastructure. The Business Plan should highlight the opportunities for research



partnerships, joint projects, and knowledge exchange programs that can enhance the educational offerings and research capabilities of these institutions.

**Industry and Private Sector:** Businesses and industries associated with marine science, such as marine technology companies, environmental consulting firms, and offshore energy companies, may be potential collaborators or users of the ERIC infrastructure. The Business Plan can outline potential opportunities for industry partnerships, technology transfer, and commercialization of research findings.

**Policy and Decision-Making Bodies:** Government entities responsible for formulating marine science policies and regulations may be interested in the Business Plan to understand how the ERIC infrastructure aligns with their objectives. The plan should emphasise the potential for contributing to evidence-based policymaking and the ERIC's capacity to address critical environmental and sustainability challenges.

**International Research Community:** Collaborative research networks, international organisations, and research institutions from other countries involved in marine science research can also be an important audience. The Business Plan should highlight the ERIC's commitment to international collaboration, its potential to attract global research talent, and its ability to foster cross-border cooperation.

**JERICO Partners Representatives:** Mainly scientific users limited financial expertise but experience in setting up European Research Infrastructure Consortia Re: Governance and Strategy.

**National Scientific experts:** Mainly scientific users limited financial expertise but experience in setting up European Research Infrastructure Consortia Re: Governance and Strategy.

**National government representatives:** Political/Governance and strategic backgrounds.

**ESFRI roadmap Evaluators:** Mixture of Scientific and Governance/Financial - These reviewers will decide if JERICO has reached a maturity level in terms of Governance/Financial commitments from Members States/Scientific and technological excellence to enter the ESFRI roadmap.

## 2.3 JERICO Vision, Mission and Values

The JERICO Business Plan is based on outputs and conclusions from a range of deliverables and outputs from JERICO-S3 and JERICO-DS projects and has evolved over time to reflect the changing requirements of the JERICO User community and the RI partners and stakeholders. The determination of a **Vision, Mission and Values** for JERICO has defined the framework and scope for the development of a Business Plan for the future RI.

- **JERICO Vision statement:**

*“JERICO will be the pan-European integrated gateway to long-term scientific and harmonised observations and related services for coastal marine systems.”*

- **JERICO Mission statement:**

*“The JERICO mission is to enable a sound understanding of the responses of coastal marine systems to natural and anthropogenic stressors. To do so, JERICO adopts a systematic approach to monitor, observe, explore and analyse coastal marine systems in order to reach reliable information of their structure and functioning in the context of global change. JERICO encompasses the whole range of environmental sciences, technologies and data sciences. It achieves observations at global, regional and local scales, through the implementation and the harmonisation of a set of complementary platforms and multidisciplinary observation systems. JERICO enables open-access to state-of-the-art and innovative facilities, resources, FAIR data and fit-for-purpose services, fostering international science collaboration.”*

- **JERICO Values statement:**

1. “JERICO cares about the marine environment: it contributes to the understanding and monitoring of the changes of coastal marine systems; it provides data-driven information for the protection and the sustainable management of coastal resources.
2. JERICO declines scientific excellence through a regional approach: it identifies scientific marine coastal challenges common to regional sites, gathering all major coastal observing systems throughout Europe; it has a strong scientific community and leadership developed and demonstrated during several previous EU-funded projects.
3. JERICO implements multiplatform and multidisciplinary observation systems: it uses scientifically sound observations of physical, chemical and biological parameters and innovative biogeochemical observing technologies; it recognizes that scientific excellence in coastal areas can be achieved only through multisystems as these areas are characterised by many high-variable scales, both in time and in space.
4. JERICO seeks for collaboration and co-creation: it interacts with many other environmental RIs to take a holistic approach to the marine environment, from the coastline to the open sea, as a global ecosystem; it listens to its stakeholder and users to include their desiderata in its future development.
5. JERICO removes barriers: it enables open-access to state-of-the-art and innovative facilities, resources, FAIR data and fit-for-purpose services; it encourages transparent policies for the access, recruitment procurement and its governance; it promotes equal opportunities for its members considering gender equality and under-represented communities.”

## 3. Role of JERICO User Strategy in the Business Plan

### 3.1 Context

The main objectives of the User Strategy derive logically from the **Mission and Vision statements** of the RI, which significantly highlight the willingness to develop open-access and fit-for purpose products and services and thus improve the synergy between European scientists and services users.

These considerations imply two main objectives of the User Strategy:

1) **Engagement of stakeholders:** The development of an efficient User driven infrastructure implies to involve specific Users in the governance of the RI. These Stakeholders will be involved in a User Committee which will act as an interface between the Users and the RI in order to keep track of societal needs.

2) **Product and Services development:** The User Strategy aims to ensure that the products and services provided by JERICO are fit-for-purpose to the end Users activity. Moreover, it should enable the Infrastructure to anticipate the evolution of Users' expectations and answer their needs in the future.

### 3.2 User analysis Summary

An analysis of uses and needs of JERICO products & services was carried out to improve the social benefit and impact of the products and services provided by JERICO infrastructures, it is vital to understand what are the current uses of the Infrastructure. This information is also key in improving the efficiency of the services provided, now and in the future. Data related to identification (sector, category, region) was collected with an analysis carried out to assess the uses and demands according to these variables - JERICO-S3 WP9-D9.1(2021).

The output of this study has supported the **formulation of a Product and Services Elaboration Roadmap** in enabling strategic choices, which means targeting specific groups of Users (sectors/categories/regions) with specific actions (dissemination, communication and of course product and services development). The study also performed an analysis of market trends and outlook as well as technology drivers for JERICO including key enabling technologies.

In the analysis, the focus was set on the Products and Services Usage according to their type of access (Physical Access, Virtual Access, Access to Calibration facilities, Access to knowledge and Expert advice). This choice was made because it is a very important point in the perspective of the design of the access policy to physical access and to the future development of JERICO e-infrastructure which will be built on the combination of the current Virtual Access.

### 3.3 Integration of the User Engagement Strategy into the Business Plan for JERICO

The Business Plan for JERICO aims to leverage the User Engagement Strategy developed in J-S3 Task 9.2 to enhance the RI by focusing on open-access, fit-for-purpose products and services. This alignment is essential for increasing synergy between European scientists and service users, thus driving the overall mission and vision of JERICO.

The User Engagement strategy plan analysed the Users and their uses of JERICO products and services in order to define a User Engagement Strategy that will benefit JERICO's sustainability. It is divided into seven parts: (1) the identification of stakeholders; (2) the understanding of user needs; (3) the communication strategies deployed; (4) the training and support aspects; (5) the various feedback mechanisms envisioned for the RI; (6) the community building activities and (7) the iterative evaluation mechanism to keep updating JERICO.

This comprehensive approach will help JERICO to effectively engage users and attract new users, and to translate satisfaction metrics and detailed feedback into concrete changes, to address areas of concern, ensuring the evolution of JERICO with its landscape.

The User Engagement Plan aims to foster ongoing positive interactions and retain users. It focuses on enhancing user engagement through clear long-term vision and tailored services for both scientific and non-scientific Users. The strategy involves setting up metrics to assess user satisfaction and expectations, tailored P&S for different user groups, and adapting offerings to evolving management practices. Following ISO 9001 and ISO 14001 norms ensures stakeholder engagement and environmental management. Systematic use of surveys and questionnaires will gather feedback for continuous improvement, forming a feedback loop for the user engagement dashboard. This approach aims to sustain the JERICO by engaging existing users, attracting new ones, and refining services to meet evolving needs.

The User Engagement Plan for a Future JERICO is defined in D9.2 - Key Recommendations in the User Engagement Plan to enhance the Business Plan include:

- 1. Long-term Vision and Metrics:**
  - Establish a clear long-term vision for user engagement.
  - Implement reliable metrics to assess user satisfaction and expectations, enabling timely adjustments.
- 2. Tailored Products and Services:**
  - Design specific products and services for various user groups, including scientists, funding bodies, private companies, and citizens.
  - Adapt offerings based on evidence-based management practices and evolving user needs.
- 3. ISO Standards and UX Design:**
  - Adhere to ISO 9001 standards for high stakeholder engagement.
  - Employ user experience (UX) design principles to enhance usability and satisfaction.

#### 4. **Systematic Feedback and Continuous Improvement:**

- Conduct regular surveys to gather user feedback.
- Create a feedback loop for data-driven monitoring and continuous refinement of services.

#### 5. **Sustainable User Engagement:**

- Engage current users and attract new ones by continuously refining and adapting services.
- Develop fit-for-purpose services that support Jerico-RI's long-term sustainability.

### 3.4 User Access Plan

#### 3.4.1 User Access Policies

The JERICO Access Policies are fully described in JERICO-DS D4.3. JERICO offers access to different platform types under the following categories: **cabled observatories, ferryboxes, fixed platforms, gliders and AUVs, multi-platform facilities, supporting facilities, and special equipment**. Access to infrastructure is provided through three different avenues:

1. **Physical Access** allows the user to physically visit the infrastructure either for free of charge or at a cost,
2. **Remote Access** allows users to access the infrastructure services without having to physically visit the site, and
3. **Virtual Access** refers to the free access of e-infrastructure through the data resources and associated services and can be used by a multitude of users.

Physical and remote access is competitive access and must be applied for with a selection process based criteria for scientific excellence, availability and work plan, and seeding links to industry.

The access policy for **Physical and Remote Access** (PA and RA, respectively) was first developed in **JERICO-S3 D13.3** (Gaughan, et al., 2021). Access requests financially supported by public funding managed by JERICO (notably TA funding) will be screened for ethical compliance and practical feasibility by in-house RI staff at the requested sites, and subsequently evaluated by a largely external User Selection Panel (USP) and ranked based on scientific/technological quality and originality, pertinence to JERICO thematic priority areas, environmental impact/ethics, and innovation potential of the submitted proposals. The "User" is the external commissioner of the services from JERICO. Access requests using their own funding for commercial uses will be checked for eligibility based on ethical compliance and feasibility.

Virtual Access (VA) policy is outlined in **JERICO-S3 D11.1** (Rita, et al., 2021), where it uses access metrics to assess the impact of VA. Each VA infrastructure has its own form of access, depending on what the service is. JERICO CMO will monitor the quantity of access, type of user (academia, industry, policy, others), geographic distribution, and user

satisfaction through a feedback mechanism, implemented as part of quality assurance for continuous improvement of access services.

The access policy, outlined in **JERICO-DS D3.1 (Legrand et al., 2023)**, describes the **JERICO-CORE** service desk as the primary point of contact for users, and the JERICO CORE resource catalogue provides an exhaustive description of the JERICO online and physical resources, products, datasets, documents, tools, Virtual Research Environments (VREs), and other functionalities and services accessible to JERICO users. The Access Policy is guided by the principles and recommendations of the European Charter of Access for Research Infrastructure and aims to promote scientific excellence, international cooperation, and knowledge dissemination.

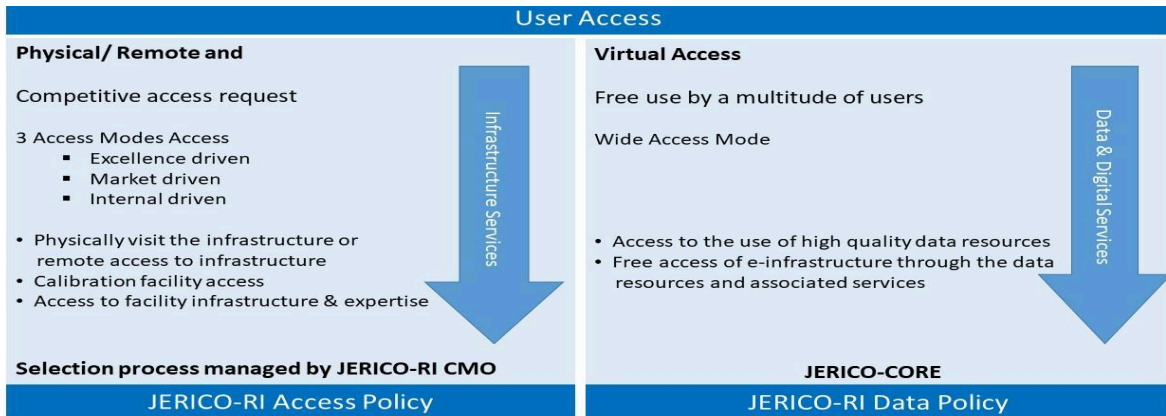
These access policies are combined to form a user access plan for JERICO which is fully integrated into the Business Plan.

### 3.4.2 Integration of JERICO User Access Plan into the Business Plan

1. **Central Role of JERICO-CORE:** The JERICO-CORE Access Policy ensures fair, transparent, and non-discriminatory access to JERICO's Virtual and Physical resources. It serves as the primary access point, providing comprehensive information and a unified service desk for users to interact with JERICO resources.
2. **Strategic Governance and Management:** The User Access Plan outlines a structured governance model with an Executive Committee, Access Committee, and JERICO Central Management Office (CMO). These bodies ensure effective management, review, and continuous improvement of user access policies, aligning with the overall business strategy.
3. **Financial Sustainability:** The plan includes clear financial projections for supporting user access, covering support costs and user travel costs. This ensures the sustainable provision of both virtual and physical access services.
4. **Enhanced User Engagement:** By providing detailed guidelines and support mechanisms for accessing JERICO's services, the User Access Plan promotes high user satisfaction and engagement. This is crucial for fostering long-term relationships with researchers, private companies, and other stakeholders.
5. **Comprehensive Access Services:** The plan details the modalities of access, including VA (remote interaction) and PA (on-site visits), ensuring users can fully utilise JERICO's infrastructure for their research needs. It emphasises open, free access to data and resources, promoting scientific excellence and international collaboration.

These points encapsulate the integration of the User Access Plan into the JERICO Business Plan, highlighting JERICO-CORE's role as a one-stop-shop for accessing JERICO infrastructures, thus supporting the overall business model and strategic objectives. **Figure 3.1** summarises the Access policy providing a concise overview of JERICO ERIC's approach to user access, responsibilities, and specific details about Virtual and Physical Access Services, making it suitable for inclusion in a Business Plan.





**Figure 3.1.** Schematic illustrating the JERICO-RI access modes.

### 3.4.2 User Access Costs and Financing

JERICO contributes to the “Access Cost” of user projects to a predefined limit. There is a full analysis of the anticipated user costs in J-DS WP4.3 deliverable.

### 3.5 Conclusions

The JERICO User Strategy will also contribute to engage JERICO towards a sustainable User-Driven Research Infrastructure through the representation of key user sectors in the **JERICO User Committee (JUC)**, which will act as the Users representing body in the governance of the Research Infrastructure. This permanent entity will be thoughtfully composed with relevant Users according to the result of the engagement strategy analysis

This JUC will also strengthen the interaction between the end users of the services and JERICO by gathering return on experience and monitoring their demand and needs. It will be involved in the governance through its close relation with User oriented bodies This User based approach will ensure JERICO remains a Users-driven Infrastructure over its lifespan and will address, through the right implementation of Products and Services, the key socio economic scope of European society.

**Key Conclusion: By integrating the User Engagement Strategy and the User Access Plan into the overall Business Plan, JERICO will ensure a user-driven approach that enhances service delivery, meets evolving needs, and supports long-term sustainability. This strategic alignment fosters greater engagement, satisfaction, and impact across the research community and beyond.**

## 4. JERICO Governance and the Business Plan

### 4.1 Background

To effectively link the RI governance structure and the Business Plan for a coastal marine research infrastructure like JERICO, it is essential to ensure that the governance framework supports and enhances the strategic goals and operational needs outlined in the Business Plan. A series of steps have been followed in the Business Plan design to ensure that the governance structure and business plan are integrated and fully aligned.

JERICO has been established as a **Distributed Research Infrastructure (DRI)** coordinating, federating and integrating a network of coastal observing platforms, as well as overseeing different "Service Offices". The legal status and the governance structure are paramount to clearly define responsibilities and safeguard an efficient coordination mechanism, which partakes to the sustainability of the DRI. JERICO-DS D5.3 Conceptual Design report describes in detail the proposed governance structure.

The highest level of governance in JERICO will be the **Assembly of Members** who have the ultimate decision-making powers of JERICO (Figure 4.1). The Assembly of Members will be advised by the **Scientific, Technical and Ethical Advisory Committee** of independent experts.

The **Director General** will report to the Assembly of Members on the strategic, scientific, legal, financial and operational aspects of JERICO. The Director General will be supported in these activities by the JERICO **Central Management Office** which performs the administrative functions of JERICO (legal advice, financial accounting, HR services, etc.).

The **Executive Committee** will be responsible for the operation and management of JERICO and report to the Director General.

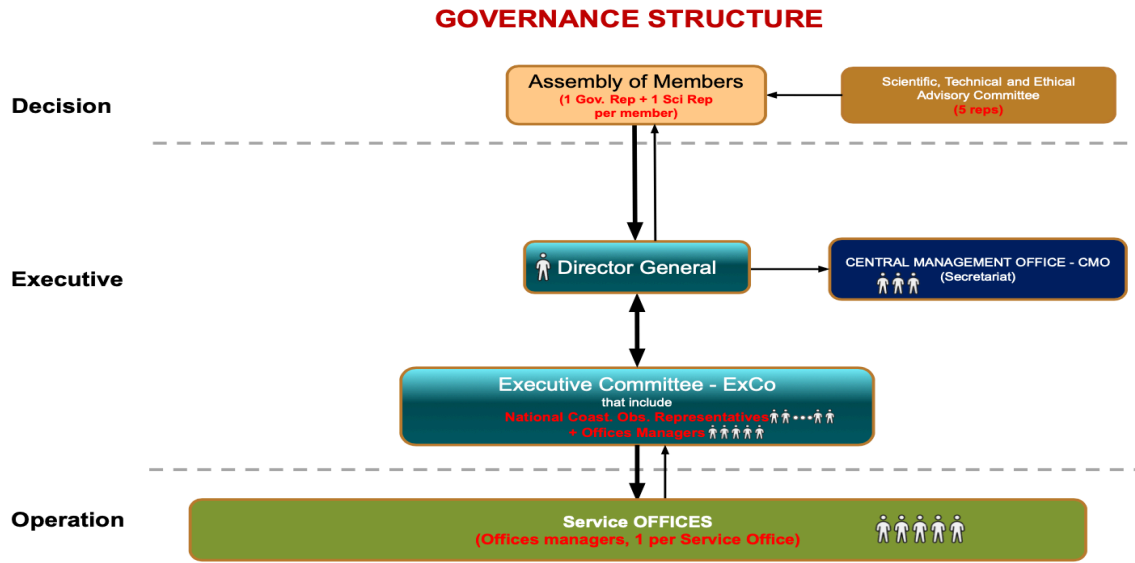


**Table 4.1** Steps followed to ensure alignment of the integration of the JERICO governance structure and Business Plan design.

	JERICO Business Plan outputs	JERICO Governance Structure
<b>Align Objectives and Goals</b>	<p>Define the mission, vision, and strategic goals of the coastal marine research infrastructure.</p> <p>Outline the services offered, target user base, market analysis, competitive analysis, financial projections, and risk management strategies</p>	<p>Ensure effective decision-making, accountability, transparency, and compliance with legal and regulatory requirements.</p> <p>Support the strategic goals of the business plan by providing the necessary oversight, resources, and guidance.</p>
<b>Define Roles and Responsibilities</b>	<p>Roles and responsibilities of key personnel and teams involved in delivering services and achieving strategic goals.</p> <p>Organisational charts and descriptions of Service offices completed.</p>	<p>Governance framework that defines the roles and responsibilities of the board of directors, executive team, advisory committees, and other stakeholders.</p> <p>Ensure that these roles align with those defined in the business plan to avoid overlap and ensure clarity.</p>
<b>Integrate Strategic Planning</b>	<p>Highlight strategic initiatives and projects that will drive JERICO towards its long-term goals.</p> <p>Inclusion timelines, milestones, and key performance indicators (KPIs) for tracking progress.</p>	<p>Create governance committees focused on strategic planning and performance monitoring.</p> <p>Ensure these committees regularly review and align their activities with the strategic initiatives and KPIs outlined in the business plan.</p>
<b>Establish Financial Oversight</b>	<p>Detailed financial projections, budgets, and funding requirements Described</p> <p>Outline revenue generation strategies, cost management plans, and financial risk assessments.</p>	<p>Set up a finance committee to oversee budgeting, financial reporting, and resource allocation.</p> <p>Ensure that financial oversight mechanisms align with the financial strategies and projections in the Business Plan.</p>



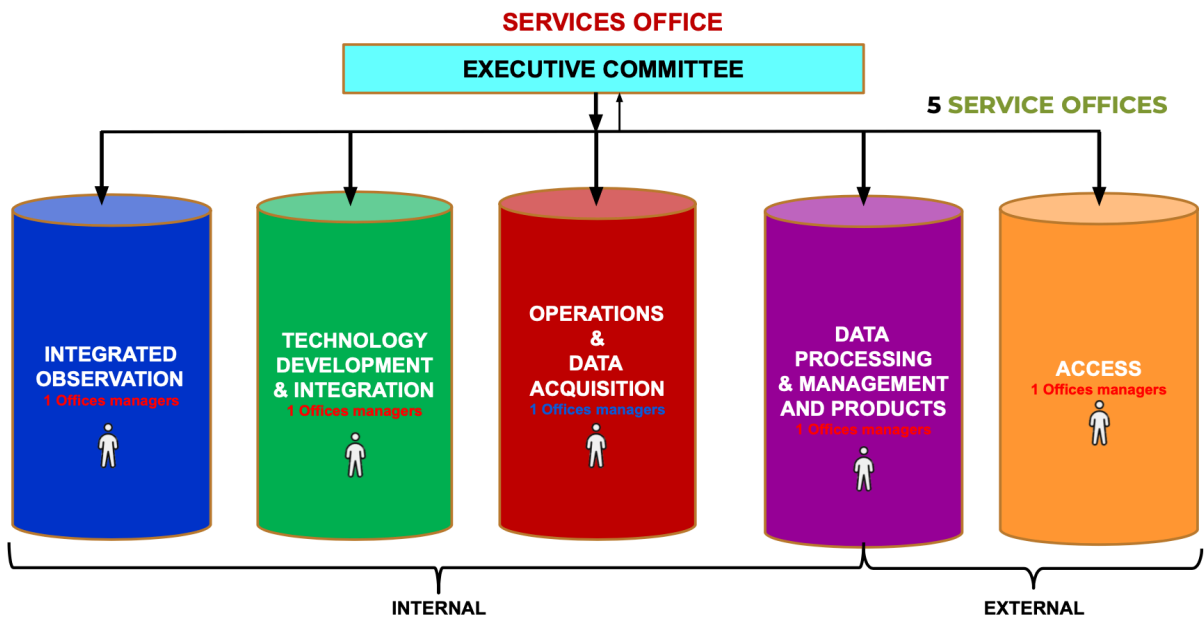
<p><b>Develop Stakeholder Engagement</b></p>	<p>Identify key stakeholders, including funding bodies, research partners, industry collaborators, and community groups. Develop strategies for stakeholder engagement, communication, and collaboration.</p>	<p>Establish Advisory Boards or stakeholder committees to provide input and feedback on strategic and operational matters. Ensure these groups have clear channels to influence decision-making processes and align with stakeholder engagement strategies in the Business Plan.</p>
<p><b>Ensure Compliance and Risk Management</b></p>	<p>Potential risks and develop mitigation strategies identified Compliance with relevant regulations, standards, and best practices included</p>	<p>Create a risk management committee to oversee risk identification, assessment, and mitigation. Ensure that compliance officers or committees are in place to monitor adherence to regulatory requirements and industry standards.</p>
<p><b>Monitor and Evaluate Performance</b></p>	<p>Set measurable goals and objectives with clear KPIs for tracking progress and success. Outline methods for data collection, analysis, and reporting.</p>	<p>Implement governance processes for regular performance reviews, board meetings and progress reports. Ensure that performance evaluation is aligned with the goals and KPIs in the business plan.</p>



**Figure 4.1. Governance, management and executive bodies of JERICO (JERICO DS D5.3 Conceptual Design report 2024).**

The operations and management of JERICO that the Executive Committee is responsible for are done through **Service Offices** providing JERICO’s **Products & Services**. The Executive Committee has the possibility to propose to establish or discontinue a Service Office, under the agreement of the Director General if the Assembly of Members validate the decision. The Executive Committee will be composed of one “National Coastal Observation” representative appointed by each Member State, and one delegate elected from each Service Office. It is from these **Service Offices** that the JERICO services will be operated, coordinated and administered. The Service Offices are outlined as follows.





**Figure 4.2. The 5 Service Offices identified as part of the JERICO Governance Model**

## 4.2 Overview of Governance Structures

The JERICO Governance structure is defined in detail in JDS 4.3 and JDS WP5.3. Key points on the Governance structure include:

- JERICO will be governed at the highest level by the Member States that have joined JERICO RI - the governance system that each Member States adopts internally is a matter for each individual Member State.
- Each Member State appoints a national delegate to the Assembly of Members.
- It is proposed that each Member State appoints one “Head of Country” delegate as its country’s representative to the JERICO Executive Committee.
- It is proposed that each Member State also appoints at least one delegate to each Office.

## 5. JERICO-RI Business Model Outline

### 5.1 Rationale for the Model

To frame the JERICO-RI sustainability concept, a business model outline has been developed. A business model describes the rationale of how an organisation creates, delivers and captures value. The Business Model Canvas (BMC) concept was developed in 2010 as a tool used to describe, analyse and design business models (Osterwalder and Pigneur, 2010)

### 5.2 Establishment of the JERICO Business Development Group

A Business Development Group was established early in the project with the main objective to provide input to the JERICO RI Business Plan through the development of specific products and services for users. The group consists of work package partners and leaders of the Integrated Regional Sites (IRS) and Pilot Super Sites (PSS), and work package leaders on Monitoring Strategy and System Design, Communications, and Virtual Access. The group's first meeting was held on March 11<sup>th</sup> 2021, where Terms of Reference and membership of the group was agreed. These include :

- Identifications and development of the JERICO RI products and services to a broad range of stakeholders.
- Work with the JERICO User Committee to:
- Identify the priority sectors and stakeholders for JERICO RI to engage with on the delivery of services.
- Determine the needs and requirements of users to further refine the services that have already been identified.
- Communicate the services provided by JERICO RI through relevant channels (LinkedIn, Twitter, etc).
- Explore options for centralised procurement of sensors and equipment to achieve discounts for JERICO RI partners.
- Source relevant candidates for the external review of the JERICO RI Business Plan.

The full terms of reference and membership details of the Business Development Group are described in detail in JERICO-S3 MS.46 – WP9 - “Informative document to support the preparation of the business plan dedicated to JERICO-RI operators and contact persons for business per partner” (Task 9.4). The group members contributed their business expertise

to achieving identified targeted actions as necessary and gathering relevant information for their nation from relevant source/personnel.

### 5.3 Business Model Training

The next stage of the development of the Business Model was the delivery of a dedicated training programme for members of the Business Development Group and other strategic leaders within the JERICO Partnership. A programme was developed in association with domain experts for the University of Bicocca to support the JERICO Business Development Group and other JERICO strategic leaders in the fine-tuning of the strategic analysis developed until now and to finalise the strategic direction for the RI. The training was run over 6 days from March to May in 2022 and was focussed on all aspects of the JERICO Business Model development. The training was coordinated by Enrico Guarini.

To frame the JERICO sustainability concept, a Business Model outline has been developed. The Business Model describes the rationale of how an organisation creates, delivers and captures value. The Business Model Canvas (BMC) concept was developed in 2010 as a tool used to describe, analyse and design business models (Osterwalder and Pigneur, 2010). It consists of nine key interlinked elements or building blocks. These are: **Key Partners, Key Activities, Key Resources, Value Proposition, Customer Relationships, Channels, Customer Segments, Cost Structure and Revenue Streams**. The Business Model canvas for JERICO was developed as part of the Business Plan training provided to JERICO partners by the University of Milan-Bicocca in 2022.

The JERICO Business Model incorporates key elements of the Business Model Canvas concept to clearly demonstrate the ecosystem approach to the JERICO design and the relationships between the key elements of the infrastructure design and how they will function. The objective of the JERICO Business Model is to provide a blueprint for the JERICO strategy to be implemented through its **organisational structures, processes, and systems**.

The original Osterwalder's Business Model Canvas (Osterwalder and Pigneur, 2010) is a widely used tool for developing and visualising business models. The Business Model headings defined below show how the methodology was applied in the JERICO Business Plan. Each heading was analysed from a JERICO perspective to build up a picture of the structure and design of the JERICO business Model (Figure 5.1).

It consists of **nine key interlinked elements** or building blocks. These are:

- **Key Partners:** describes the network of suppliers and partners whose involvement is essential for the successful operation of the organisation (e.g. government agencies, research institutes, suppliers of sensors). For JERICO-RI the key partners are listed in Figure 5.1.
- **Services Offices (Key Activities):** describes what must be done to provide the RI products/services - Services are defined as actions and activities carried out for the benefit of targeted users and providing assistance to these users.
- **Key Resources:** describes the assets and resources required to deliver the

- product/service (e.g. personnel, equipment, finances/funding).
- **Value Proposition:** describes the products and services provided, their value added and benefits/impact for customers. The Value Propositions Building Block describes the bundle of products and services that create value for a specific Customer Segment. It solves a customer problem or satisfies a customer need for both Internal and External users
  - **Customer Relationships:** describes how to build and maintain relationships with customers/users (e.g. personal interaction at conferences, workshops, etc).
  - **Expert Centers (Channels):** describes how the products and services are distributed and delivered to customers/users (e.g. intermediary service providers, website). Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with RI User routines?
  - **User Segments** describes the different groups of customers/users that will use the products and services (e.g. scientists, government agencies, private companies). The information in this section is based on information gathered in JERICO-S3 D9.1.
  - **JERICO-RI Cost Book (Cost Structure)** describes all the costs associated with delivering products and services (e.g. cost of equipment, personnel, etc). For JERICO-RI, the cost structure refers to the capital expenditure (upgrades, sensors, equipment, hardware) and operational expenditure (personnel, IT and data management) of the national infrastructures, the cost of service provision and the annual operational costs of the central hub (personnel, event organisation, travel, etc). The cost structure is covered in more detail in Section 6: Funding and Financial Framework.
  - **Revenue Streams** describes all revenue generated from the product/service and related activities (e.g. Physical Access Services). For JERICO-RI, the revenue streams include annual host country, member and observer monetary contributions; national research infrastructure funding; European and regional funding programmes and income from industry partnerships and collaboration. More of the detail on funders is in the ESFRI application (section D2.2).

Each building block was analysed from a JERICO-RI perspective to build up a picture of the structure and design of the JERICO-RI business Model. By completing each section of the Business Model Canvas (BMC), a comprehensive understanding of how JERICO-RI creates, delivers, and captures value was identified. This canvas has helped visualise the various components of the BMC and ensures that all aspects of the business are considered in the development of the JERICO-RI Business Plan. This is an ongoing iterative process and the latest version of the JERICO-RI business model was developed using the business model canvas methodology.

The Business Model Canvas (BMC) is a dynamic circular model with a flow between the various elements, it has enabled a comprehensive definition of the JERICO-RI **Value Proposition** to evolve during the JERICO-DS project lifecycle.

Important JERICO specific questions that were considered in the Business Model Canvas Design process included:

**WHO ? “User Relationships”**

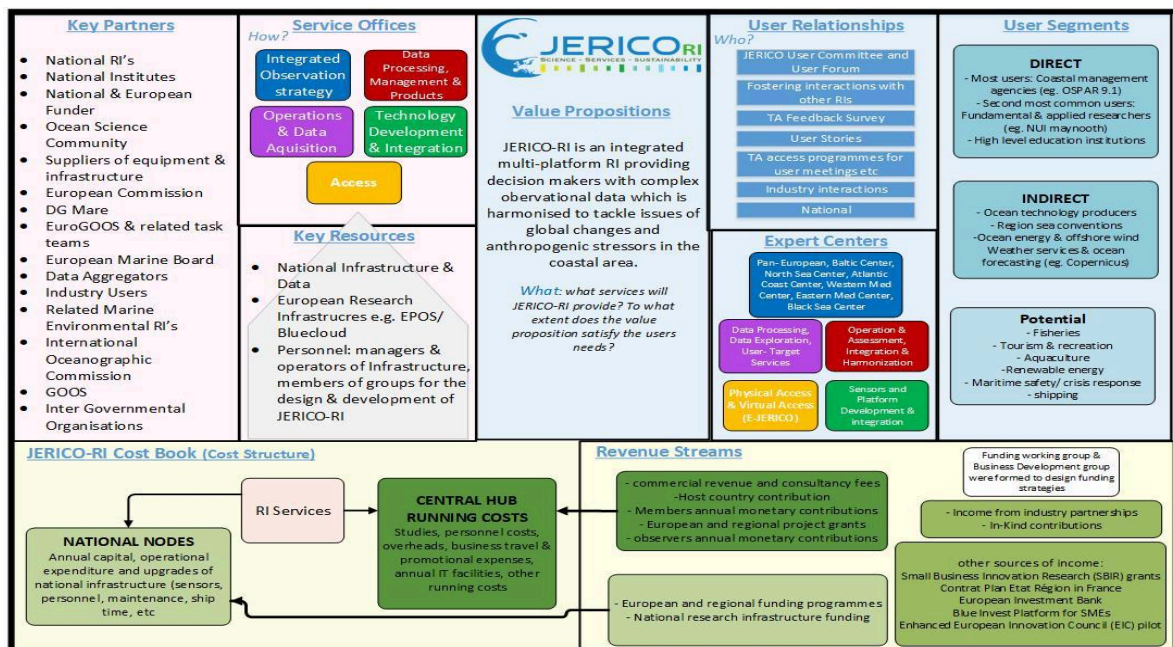
- Who are the target users?
- What are their problems?
- How do users choose services?
- Is the target segment quantitatively relevant? (give some estimations)
- What are the contextual factors influencing the trends in the target users?

**HOW ? “Service Offices”**

- What services does JERICO-RI offer?
- What are the main features of these services?
- What is the value proposition?
- To what extent does this value proposition satisfy the users' problems?
- To what extent does the value proposition differ from the one of other players/actors, if any?

**WHAT ? “Value Propositions”**

- What are the activities to perform in order to realise JERICO-RI's value proposition?
- How should the activities be organised to provide services?
- Could the activities be done internally or should be outsourced?
- What are the needed skills?
- Who are the key partners and suppliers? What is their impact on the generated value?



**Figure 5.1** Illustration of the Business Model Canvas with the 9 Business Model Canvas Headings and how they are applied to JERICO-RI.



## 5.4 The Value Proposition for JERICO-RI

The JERICO Business Model Canvas framework charts the evolution of the JERICO value proposition based on the initial perspectives of the consortium partners and subsequent refinement based on feedback from continuous engagement with different categories of users and stakeholders as reported.

### The JERICO-RI Value proposition:

*"JERICO-RI is an integrated multi-platform Research Infrastructure providing decision makers with complex observational data which is harmonised to tackle issues of global changes and anthropogenic stressors in the coastal area. JERICO-RI empowers a comprehensive understanding of how coastal marine systems respond to both natural and human-induced pressures. Through a systematic methodology integrating monitoring, observation, exploration, and analysis, JERICO-RI delivers trustworthy insights into the structure and dynamics of coastal marine ecosystems amidst global change. With expertise spanning environmental sciences, cutting-edge technologies, and data sciences, JERICO-RI conducts observations on an international, regional, and local scale. This is made possible by a diverse array of platforms and multidisciplinary observation systems, ensuring a holistic understanding of coastal environments."*

## 5.5 How the Business Model Canvas is utilised ?

The interactions between the building blocks of the Business Model Canvas highlight how Jerico-RI collaborates with partners, engages in activities, leverages resources, delivers value to its customers, maintains relationships, utilise channels, generates revenue, manages costs, and focuses on key metrics for success. The BMC provides a mechanism to collect this information from stakeholders and incorporate it into a birds eye view of the business model and how the different elements interact. For example the **JERICO RI Cost book** and **Revenue streams** building blocks have been identified and described in the BMC - see Figure 5.1. These building blocks are then broken down into a more detailed financial analysis in the Comprehensive Business Plan See JERICO-DS 4.3. For this deliverable D9.3, the focus is on the elements of the Business Model Canvas relating to JERICO Services and Users.

## 5.6 Summary of JERICO Business Model

This JERICO-RI Business Model has incorporated findings from the ERIC Forum Implementation project (2022), which analysed the modus operandi of 27 existing ESFRI RIs to support the planning of their sustainability. These findings have helped in providing a template JERICO to follow in the development of its business model.

The Business Model envisages JERICO operating as an ERIC legal entity will initially include a minimum of 42 facilities/ infrastructures (based on infrastructures made available in JERICO-S3). These infrastructures will make available to JERICO-RI up to a maximum



of **20%** of their available access time to service demands from JERICO-RI users (internal and external). With infrastructures having on average annual availability of 44 weeks per year and each infrastructure making available a conservative 5% of their total access time, this results in the initial JERICO-RI working with infrastructures spread across 14 European states and providing a minimum of 431 days of access in the first year of operation.

The Services Estimation Model (SEM) under development(-see Chapter 6) describes a pipeline of JERICO-RI S&Ps managed across **5 Service Offices and 18 Expert Centres**, which will drive the development and expansion of RI services. The business model is based on the assumption that the technical and financial viability of the services is based on in-kind contributions from the members - see Jerico-DS D4.3 - Section 7.9 on **Benefit in Kind contribution** and Appendix 2.

The path to sustainability commences with the succession of JERICO project to the ESFRI roadmap, with anticipated acceptance by the end of Q4 in **2025**. Once accepted on the ESFRI roadmap, the consortium will prepare the required legal framework and business structure together with securing the required political and funding commitments as well as the participation of the National Facilities required to facilitate an application to become an independent legal entity. It is anticipated that the application to be recognised as an ERIC will be made at the end of **Q4 2028**, with granting of formal recognition anticipated at the beginning of **Q1 2030**. At this point, the JERICO-RI has a legal framework to allow it to begin operating as a not-for-profit entity. The timelines reflected herewith capture similar timescales associated with other ESFRI entities applying to and being awarded ERIC legal framework status. Therefore, these timescales are recognised as realistic.

## 6. JERICO-RI Services Model Outline

In conjunction with the JERICO Business Model Development process, a detailed analysis was also carried out on what sustainable services Jerico will provide to its users and partners. Information gathered from the Jerico partners as well as outputs from the deliverables on Jerico Users were utilised to develop a detailed future services model closely linked to the governance structure of the RI.

**JERICO-RI Services** are defined as actions and activities carried out for the benefit of targeted users and providing assistance to these users. They can be internal if addressing internal needs of the JERICO-RI members or external when addressing JERICO-RI external users' (non-members) needs. For example, internal needs can be related to the day-to-day operations of the RI, as well as with research and operational issues, while external user needs are only related to products and services offered by the RI. It is envisaged that some services will be developed exclusively for the members of the RI. This can provide a 'pull factor' as external users will see a clear benefit in joining the RI and not remain as simple external users.

## 6.1 The current JERICO Service Offering

Under the coordination of JERICO-S3, JERICO-RI provides service access to a range of resources: systems and facilities as hardware part of the RI, products, IT facilities and knowledge as the software part. Some are in development and commitment of services from National Research Infrastructures is yet to be finalised.

Currently the services of JERICO-RI are organised under four main categories during the ongoing Jerico-S3 research project:

**1. Coastal Observation Systems:** observation platforms and stations that are available for scientific teams and industry partners to lead research and experiments. Modalities of physical access vary according to the infrastructure policy:

- a. Fixed platforms,
- b. Ferryboxes,
- c. Gliders
- d. Coastal cabled observatories (seabed and water column),
- e. Multiplatform systems (combination of single platforms outlined above)
- f. Special equipment (e.g.: sediment profile viewer, novel instrumentation for microscopy and image analysis).

**2. Calibration Facilities** under modalities of physical access:

- a. Access to metrology laboratories for the calibration of oceanographic sensors
- b. Access to laboratories for the purpose of testing and calibrating equipment.

**3. IT facilities and data products** complement the access to the physical part of the RI. These include access to products, services or data available from distance via the internet.

a. Sharing of IT facilities and joint services for processing of data acquired through the distributed JERICO-RI nodes and collaboration with other RIs for integrating new solutions for enhancing data management flows and platforms. b. Data products: i. Dedicated added value coastal data and products not offered elsewhere. Cover existing gaps of knowledge in coastal ocean state and variability not provided from existing ERIC landscape. ii. Data products distributed across relevant Pan-European and global marine data infrastructures (EMODnet, SeaDataNet and Blue-Cloud, CMEMS, WOD, GTS).

**4. Knowledge resources** to different kinds of scientific knowledge produced by JERICO:

- a. Educational and training resources that cover the whole JERICO-RI coastal observing ocean value chain, including internal advanced training and educational training (events and materials).
- b. Code libraries containing the tools and services used for JERICO-RI data lifecycle management.
- c. Best Practices library extended after those created in the framework of JERICOF7 and JERICO-NEXT, including procedures and processes to manage the entire data life cycle from the metrology to the data processing.
- d. Expert advice sharing technical and scientific expertise.
- e. Bibliographic resources

## 6.2 Drivers for the Strategic Development and Design of JERICO Services

The ambition of a sustainable JERICO is to further develop structure and enhance the current service offerings into a well managed, efficient and sustainable governance structure to maximise the delivery, scientific excellence and impact of services to its users and stakeholders. The strategy for **JERICO Services provision** development is to address the main scientific challenges relevant to the global and EU integrated landscape of marine and environmental initiatives.

JERICO-RI is, in the domain of coastal observation, answering two major needs that are complementary. On one side, it wants to address the main scientific challenges relevant to the global and EU integrated landscape of marine and environmental initiatives. JERICO-RI services are envisioned as a **pan-European Coastal Ocean Integrated component** of this landscape. In addition the **socio-economic impact of the RI** is also a key objective. It aims to deliver scientific achievements to the broad range of socio-economic activities which rely on coastal and marine science among Europe. These two drivers are taken into account in the strategy for the elaboration of products and services roadmap, meaning the setting of priorities and targets on the short and long term. Both are the basis on which relies the strategy for services elaboration. These drivers are tempered by constraints such as available budgets, resourcing and timelines related to the project life cycle development of the RI. Services are represented in the **Business Model Canvas - Figure 5.1** as the **“How”** JERICO-RI will deliver on its value proposition.

Key considerations in the identification and development of JERICO-RI Services include:

- How to address the main scientific challenges relevant to the global and EU integrated landscape of marine and environmental initiatives.
- Outputs from the JERICO-RI User Strategy to implement a sustainable User-Driven Research Infrastructure.
- Collaboration with users and stakeholders thanks to services designed and developed through their representation in the JERICO-RI User Committee (JUC).

Taking into account these drivers, the **“What”** must be answered: **What** services will JERICO-RI provide and to what extent does the value proposition satisfy the users' needs? To satisfy this, the specific types of services are defined as core services that JERICO-RI will deliver to its users:

- Access to Infrastructure:
  - Physical and remote access to infrastructure and calibration facilities,
  - Virtual Access via the JERICO-CORE Virtual Research Environment (VRE).
- Harmonisation/standardisation interoperable Data,
- Virtual/real-time/ continuous access to data,
- Access to knowledge (expert advice training) and high-level education (both technical & scientific)”.

Important Infrastructure related drivers of the services to be developed by JERICO-RI include:

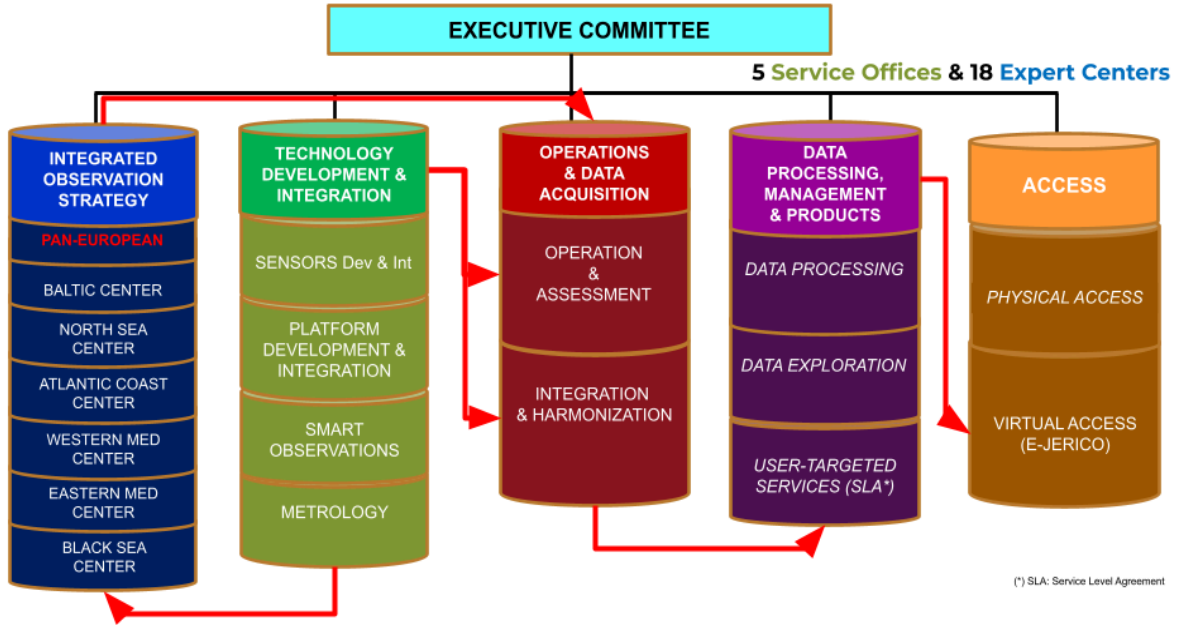
- JERICO-S3 key exploitable resources (KER's) - see **Table 6.1**
- Transnational Access Programmes run by JERICO-RI projects ( 2012-2023) - |See WP8 D 8.1,8.2 & 8.3
- Virtual Access Platforms operated by JERICO-RI projects (2015-2023), See WP 11
- Development of JERICO-CORE (e-JERICO, VRE) as the unified central hub to discover, access, manage and interact with JERICO-RI resources.

The services will be delivered under the management of 5 **Service Offices** listed below which are proposed to oversee the JERICO-RI Service offerings:

1. Integrated Observation Strategy,
2. Technology Development and Integration,
3. Operations and Data Acquisition,
4. Data Processing, Management and Products,
5. Access.

These Service Offices will then be further distilled into **Expert Centers** (Figure 6.1) for management at a more granular level. How JERICO-RI uses its scientific capacity to support and inform state-of-art in coastal and marine research was a key question in developing the Jerico-RI Services Model. JERICO RI Services will focus on the following Key Areas:

- A federation of current (prototype) and new services
- Performance monitoring & reporting
- Common tools for operations
- Traceability of the data down to the users and feedback
- Materialise best practices with some metadata
- Try monitor the carbon footprint of observations
  - ⇒ Establish a 'scrum team of IT developers'
  - ⇒ Focus of common vocabularies
- A single entry point supported by the present OceanOPS
- Focus of physical and biogeochemical EOVs
- Prepare inclusion of biological EOVs



**Figure 6.1** The Service Offices and Expert Centers as proposed in the Jerico Governance Model.

## 6.3 Alignment of Scientific & Technology Strategy Implementation to the services estimation model

The scientific integration developments within the JERICO-S3 project described in **JERICO-S3 D.1.3- WP1 - Synthesis of the implementation** significantly enhance the services estimation model for JERICO-RI by leveraging technological innovations and integrated observational approaches. The advancements to be utilised include :

### 1. Integrated Ocean Observation Technologies:

- Plankton Dynamic Sensor Package (PSP): Utilises advanced biologically related sensors and an automated processing unit to adapt sampling strategies in real-time. This technology can improve the accuracy and responsiveness of data collection services, ensuring high-quality and real-time data flow.
- Autonomous Coastal Observing Benthic Station (ACOBs): Simultaneously captures comprehensive data on seawater characteristics, oxygen fluxes, and benthic activity. ACOBS enhances the depth and breadth of environmental monitoring services by providing integrated and detailed observations at the sediment-water interface.
- Water-Sample Filtering and Preservation Device (WASP): Enables real-time observation of seawater characteristics and facilitates the collection of phytoplankton for environmental DNA (eDNA) analysis. This capability can significantly enhance biological monitoring and environmental assessment services.

### 2. JERICO Coastal Ocean Resource Environment (JERICO-CORE):

- Central Hub for Resources: JERICO-CORE acts as a unified platform for discovering, accessing, and managing JERICO-RI resources. It supports a wide array of services including data access, software tools, best practices, and training. This centralised resource hub enhances the accessibility and usability of JERICO-RI services, fostering better resource management and user interaction.
- Data-to-Products Thematic Services (D2PTS): Demonstrates JERICO-CORE's capabilities through services like:
  - Sea Water Masses and Transport Monitoring from Gliders: Integrates hydrographic, hydrodynamic, and biogeochemical data, enhancing services related to water mass transport and environmental monitoring.
  - Biogeochemical State of Coastal Areas: Combines near-real-time observations to provide comprehensive multiplatform data, improving the quality and timeliness of biogeochemical monitoring services.

### 3. Transnational Access (TA) Program:

- Access to Cutting-Edge Facilities: Offers researchers the opportunity to utilise JERICO's coastal observatories and facilities across Europe. This access



supports a wide range of experimental actions and studies, enhancing the scope and quality of research and monitoring services.

- **Diverse Experimental Projects:** TA projects often involve the integration of various platforms and sensors, contributing to technological validation and intercalibration efforts. These projects enhance the capabilities of JERICO-RI services by promoting innovation and comprehensive ecosystem understanding.

#### Utilisation of the JERICO-RI Scientific strategy in Services Estimation Model development

- **Scope Definition:** Incorporate these advanced technologies and platforms into the list of services offered by JERICO-RI, ensuring a comprehensive coverage of observation and monitoring capabilities.
- **KPIs Identification:** Use metrics such as data quality, real-time responsiveness, and integration of multidisciplinary data to measure the performance and impact of these new services.
- **Valuation Framework:** Assign values to services based on the advanced capabilities provided by technologies like PSP, ACOBS, and WASP, considering the effort, expertise, and impact on research outcomes.
- **Non-Monetary Benefits:** Highlight the qualitative enhancements in scientific knowledge, research capabilities, and policy impacts driven by these integrated observational approaches.

By integrating these scientific advancements into the services estimation model, JERICO-RI will enhance the accuracy, comprehensiveness, and value proposition of its services, leading to improved coastal research and management across Europe.

## 6.4 Service Estimation Model

A **Services Estimation Model (SEM)** for JERICO over the RI life cycle complete with a sensitivity analysis on the amount and type of services to be delivered has been completed as part of the Business Plan development. The model is aligned with the governance structure of the RI and the overall model for service development and implementation based on the Service Offices and Expert Centres in Figures 5.2 and 5.3 above.

The JERICO-RI business model will start with a limited number of services and show progress over the development life cycle of RI. It is anticipated that access services both physical and virtual, which have already been developed over the last decade of activity, would be the most straightforward to make operational first. There is also a strong recommendation from members that the services to internal members of JERICO-RI be prioritised in the services estimation model to ensure strong support from members benefitting from these Services.

A **Benefit In-Kind Policy** for JERICO has been completed and is provisionally approved by JERICO-RI members to enable resources and support to develop and operationalise the RI Services - See **Appendix 2**.

The Technology Readiness Levels (TRL) which JERICO-RI provides services and support for in its services Model are as follows:

- TRL 1-3 (basic research)
- TRL 4-6 (R&D for feasibility studies and prototyping)
- TRL 7-9 (R&D for commercialisation)

In the case of the Business Plan and the definition of services, it is important to refer to the exploitation plan of J-S3 and the subsequent Key Exploitable Resources (KERs). These project outcomes can be categorised under four broad headings:

1. Technological Innovations,
2. Access,
3. Best Practices and innovative monitoring,
4. Co-operation agreements.

These project outcomes are the most developed lists of potential services and products developed and/or operationalised by the JERICO-RI community and highlight a clear strategic focus by JERICO-RI on the development of services for stakeholders. A number of potential JERICO-RI Services have been clearly defined in terms of Key Exploitable Resources (KER's) in WP2 of JERICO-S3.

As part of the services estimation model development process, the KERs in Table 6.1 were evaluated, categorised and integrated, where practicable, into a high level RI Services model for JERICO-RI. The JERICO Nations Committee representatives are also evaluating the specific services that will be provided under the various Service Offices and Expert Centers. This process will be completed as part of JERICO-S3 WP9. The model will be utilised and further enhanced during the preparatory and implementation phases of the future JERICO-RI.



**Table 6.1** Summary of Key Exploitable Resources being developed under JERICO-S3 that are under consideration in the JERICO services estimation model.

Project Outcome	Key Exploitable Resource	Objective of Exploitation	Who will benefit/Potential Services
Technological innovations	<b>KER 1.1:</b> JERICO Interoperable Instrument Module (cEGIM)	To investigate new commercial opportunities on the basis of new developments (algorithmics) and sensor payload for biogeochemistry and biology	RTSYS company under Ifremer (Host country representative) licence for the upgraded COSTOF2 module
Technological innovations	<b>KER 1.2:</b> JERICO Plankton dynamics multi-sensor package (PSP)	To investigate commercial opportunities. Integration of the new sensors into monitoring strategies and platforms	Coastal observing community, consulting companies, blue growth activity operators
Technological innovations	<b>KER 1.3:</b> Water sample filtering and preserving device (WASP)	Demonstrate a method for eDNA sampling based on a commercially available solution	Coastal marine biologists
Technological innovations	<b>KER 1.4:</b> Autonomous Coastal Observing Benthic Station (ACOBS)	Integration of the new sensors into monitoring strategies and platforms. Best practices in operational and integrated benthic (soft bottom) observation	Coastal observing scientific community (benthic biologists and biogeochemists)
Technological innovations	<b>KER 1.5:</b> JERICO-CORE e-infrastructure	Supporting the current and future JERICO-RI services	UN Decade - CoastPredict CORIS, Support JERICO-RI <b>Services</b>
Access	<b>KER 2.1:</b> VA: JERICO-CORE/VRE	Promote VA and ensure service beyond the end of the project	Users of coastal data and services JERICO-RI - <b>Service</b>
Access	<b>KER 2.2:</b> TA External international evaluation	Promote TA and ensure service beyond the end of the project	Access Service JERICO-RI - <b>Service</b>
Access	<b>KER 2.3:</b> RD&I results/success stories	Success story for engaging with stakeholders	JERICO-RI - <b>Service</b>
Best practices & Innovative monitoring strategies	<b>KER 3.1:</b> JERICO-RI Best practices for coastal observation	To implement best practices within the coastal observatories- Maximising impact of JERICO-RI in the European landscape, maximising interactions with stakeholders at regional level. Creating added-value for science, monitoring and sustainable growth at regional and pan-European scales.	Coastal Platform operators, CMEMS, EMODnet, nations, Monitoring Authorities JERICO-RI - <b>Implementation/Service</b>
Best practices & Innovative monitoring strategies	<b>KER 3.2:</b> Best practices for Data Management	Maximising impact of JERICO-RI in the European landscape	Coastal platform community JERICO-RI - <b>Implementation/Service</b>
Cooperation agreements	<b>KER 4.1:</b> MoC with key RIs	Making JERICO-RIs positioning in the RI landscape clear and unquestionable - Initiating new collaborations btw RIs	JERICO-RI - <b>Implementation</b>
Cooperation agreements	<b>KER 4.2:</b> Partnership with Copernicus marine service, ESA and EUMEDSAT	Elaborating fit-for-purpose products - Promoting of this products/service towards different communities, commercialization protection/IPR, start-ups	JERICO-RI- <b>Service</b>
Cooperation agreements	<b>KER 4.3:</b> Roadmap for cooperation with industries	Publishing and promoting a long-term strategy with respect to the Industry - giving confidence to investors	JERICO-RI- <b>Service</b>

The **Services Estimation Model (SEM)** is contingent on the resources and Benefit in Kind supports available to support the available services. **Table 6.2** highlights the envisaged development of services over the JERICO lifecycle phases. It has been designed with a sensitivity analysis to reflect a worst case/baseline/best case scenario in terms of the resources available to support the services . The model shows an initial development of 20 Services in the preparatory phase with an estimate of the resource expressed in terms of Full Time Equivalent (FTE) across the 5 JERICO Service Offices. It is assumed that this resource, and any associated infrastructure/equipment required to support the services, will be provided In Kind from the JERICO members. The table also shows the planned increase in the amount of services, as well as the associated FTE requirement to support them over the JERICO lifecycle phases with a best case scenario of 19 Jerico Members offering up to 40 Services in the best case scenario for the Operational phase (2029-2058). The resource requirement to support this target is to be finalised in the preparatory phase.

The Service Estimation Model outlined in Figure 6.2, is a detailed visual representation of the comprehensive process and the detailed steps involved in developing services for JERICO. The Model has 3 main steps focusing on the service design criteria to be considered, the operational steps involved in running the service and finally analysis of the Service over a period of time enabling a comprehensive analysis of the overall value and impact of the service and its contribution to the value of JERICO.



**Table 6.2** Initial JERICO-RI Services Estimation model over the RI life cycle phases describing the 5 Jerico Service areas/offices outlined in the Governance structure.


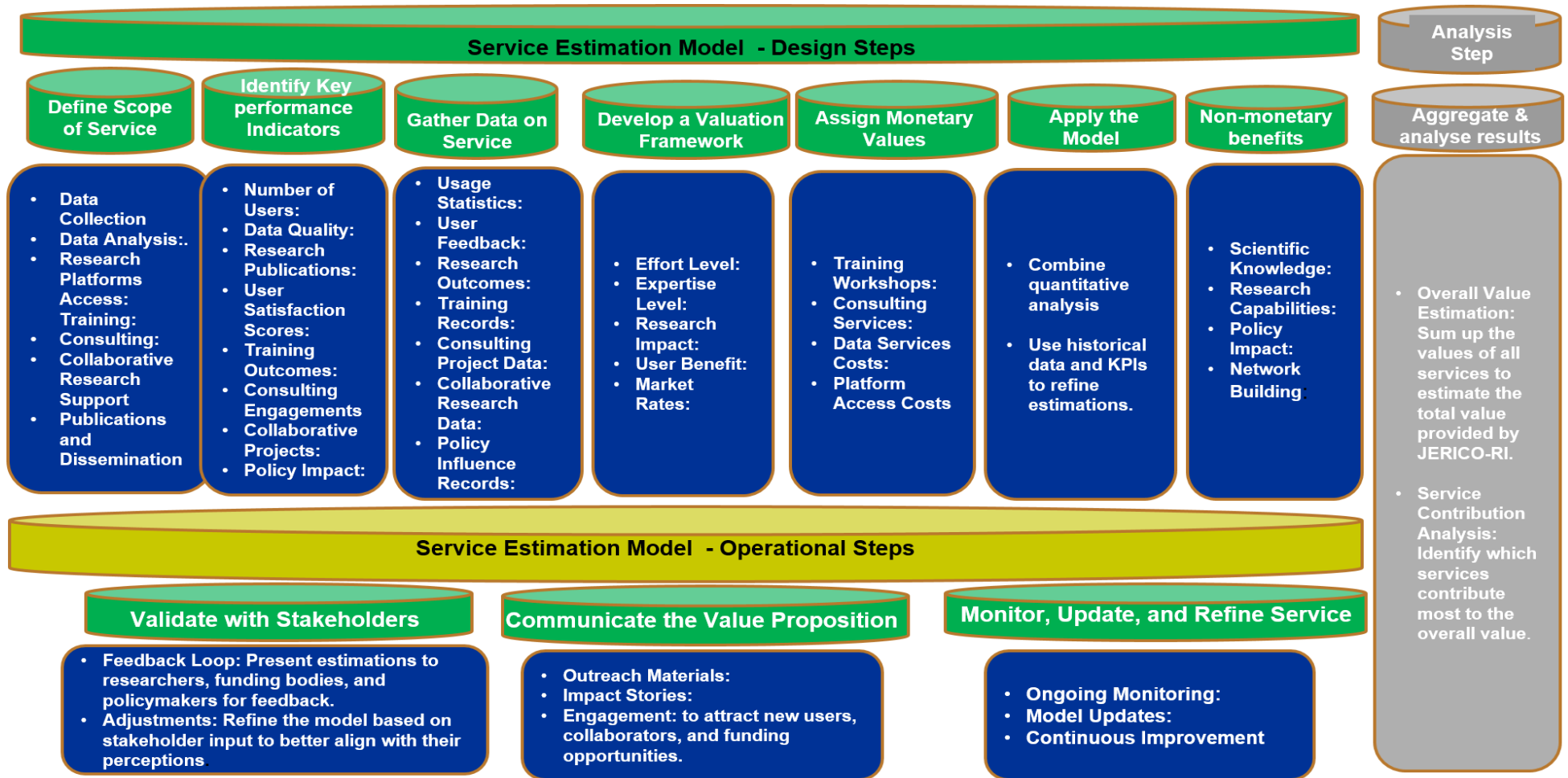
RI Services		Preparation phase 202 - 2025			Implementation phase 2025 - 2029			Operation phase 2029 - 2058			Termination phase 2059
		Worst	Baseline	Best case	Worst	Baseline	Best	Worst	Baseline	Best	
	<b>No. of members</b> <i>0,2 FTE per member(min)</i>	10 members			10	11	13	13	15	19	0
ACCESS	<b>Physical Access Services -</b> <i>Number of services</i>	20 services			20	30	40	20	30	40	0
ACCESS	<b>Virtual Access</b> <i>HR needs</i>	1 FTE			1 FTE	2 FTE	3	0.5 FTE	3 FTE	5	0
ACCESS	<b>JERICO-CORE/VRE</b>	0			1	2	3	3	5		0
DATA PROCESSING, MANAGEMENT	<b>Data Processing</b>	< 0.5			To be defined in preparatory phase						
	<b>Data Exploration</b>	< 0.5			To be defined in preparatory phase						
OPERATIONS & DATA ACQUISITION		< 0.5			To be defined in preparatory phase						
TECHNOLOGY DEVELOPMENT & INTEGRATION	<b>JERICO-CORE</b>	To be defined in preparatory phase									
	(PSP)	JERICO Plankton dynamics multi-sensor package To be defined in preparatory phase									
	(WASP)	Water sample filtering and preserving device -To be defined in preparatory phase									
	(ACOBS)	Autonomous Coastal Observing Benthic Station -To be defined in preparatory phase									
	(cEGIM)	JERICO Interoperable Instrument Module- To be defined in preparatory phase									
INTEGRATED OBSERVATION STRATEGY	<b>Training Catalogue</b> <i>No of trainings/year</i>	<2 trainings/year			2	<5	>8	>12 trainings/year			0
	<b>Scientific Experts</b> <i>permanent FTEs</i>	1 FTE			1	<5	>7	>10 FTE			0



Figure 6.2 JERICO Service Estimation Model identifying the process utilised in the Design, Operation and Analysis of future Jerico Services.



## 7. CONCLUSIONS

The Business Plan for JERICO-RI serves as a strategic guide delineating the establishment and operation of a Marine Coastal Observation European RI. This plan details the infrastructure's objectives, strategies, governance, financial framework, and operational activities. The plan delineates JERICO-RI's long-term vision, emphasising its added value in the European environmental research domain and alignment with key research policies. It elucidates unique features such as its research facilities, service offerings, regional sites, and pilot supersites. The user strategy, market trends, access modes for researchers, and communication strategies are also outlined, aiming to effectively engage users and stakeholders.

The sustainability of JERICO-RI, a distributed research infrastructure (DRI), is shaped by numerous factors, including legal, governance, technical, scientific, and financial aspects. The central focus of the JERICO-RI Business Plan is the critical role that its services and users play in ensuring long-term viability. In a complex ecosystem where diverse contributors must coordinate effectively, the plan emphasises how the integration of services tailored to user needs is essential to overcoming the challenges faced by such a distributed infrastructure.

Key to JERICO-RI's success is the evolution of its value proposition, which has been continuously refined through active engagement with its broad and diverse user community. This community spans multiple sectors, from scientific research to commercial industries. The deliverable outlines how feedback from these users has shaped JERICO-RI's service offerings, ensuring they meet the needs of both scientific and commercial stakeholders. The focus on users not only strengthens the infrastructure's relevance but also underpins the business case for transitioning to an independent legal entity under the ERIC framework, which will unify the pan-European coastal observation network.

The JERICO-RI Business Plan is also aligned with a strategy to deliver cutting-edge coastal observations and associated scientific research services. This strategy is directly linked to the needs of its user community, ensuring that services are not only scientifically robust but also commercially viable. By focusing on user-driven services, JERICO-RI aims to achieve financial sustainability within a five-year period, primarily by providing infrastructure access and expanding its data services to a broader industry sector.

Finally, the plan details JERICO-RI's commitment to advancing scientific excellence and fostering economic and societal impact, all through a user-centred approach. This includes ensuring the sustainable provision of services, promoting innovation within the infrastructure, and engaging users through training and collaboration to maximise the socio-economic benefits of JERICO-RI's offerings. The involvement of users is not just a component of the plan but is central to the overall strategy, ensuring that JERICO-RI remains a user-driven infrastructure that continues to evolve in response to the needs of its diverse community.

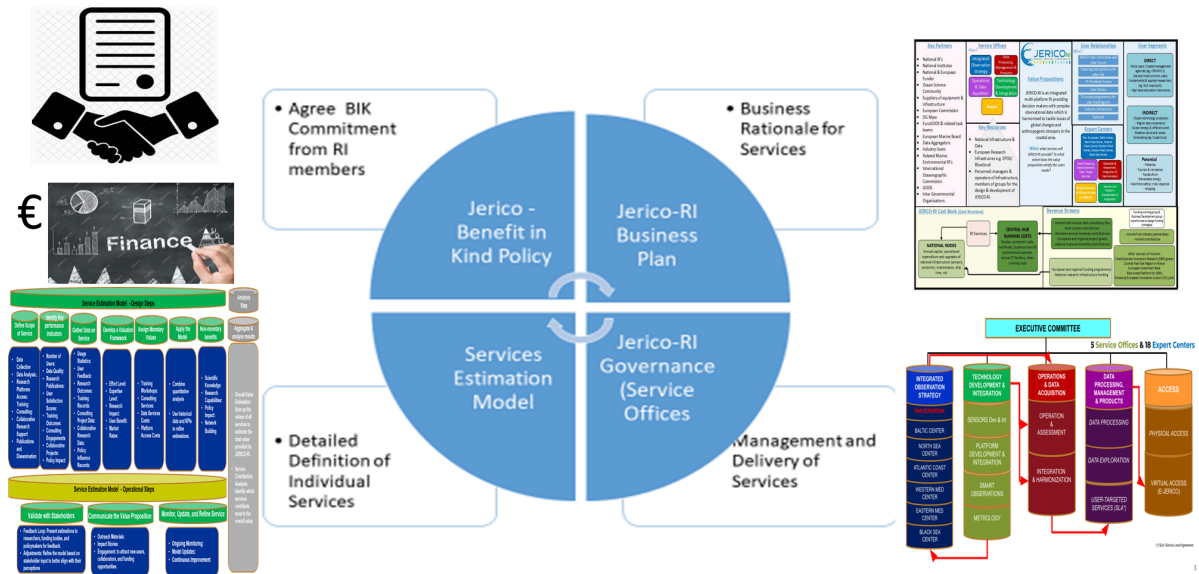


A comprehensive, robust fit for purpose business plan for the JERICO-RI has been designed and reviewed by economic experts to enable the RI to achieve its goals through negotiating and securing the required funds. This Business Plan design addresses the issue of what the development process of the JERICO-RI requires to succeed through the different phases of a RI's lifecycle, i.e. preparatory, implementation, operational, upgrade and decommissioning. The Business Plan is focused on the area of funding approval for the RI through the identification of partners, development of the RI infrastructure and platforms, incorporation of data policies and engagement with the funding stakeholders. As a pan-European distributed Research Infrastructure, with a strong focus on service provision and sustainability, JERICO is in a strong position to align its value proposition with the ambitions expressed in the The Tenerife Declaration (2023) on the "Global Dimension and Sustainability of Research Infrastructures" which calls for:

*"Ensuring long-term sustainability of RIs, which covers not only their design and construction, but also their governance, operations and service provision remains a challenge for which adequate funding schemes and mechanisms should be explored. Concrete further actions at national and European level would be needed to address these challenges. In particular for a better engagement of smaller EU countries in the RI ecosystem, aiming at building a more balanced and better geographically distributed RI ecosystem across Europe. This is especially relevant for distributed RIs which enhance European competitiveness and bring added value. Mechanisms in place to foster synergies of operations among RIs should be reviewed, including those from different scientific domains to promote cross-disciplinarity, and new governance models should be explored."*

The next phase of the implementation of JERICO will focus on the further integration of the key elements of the sustainability plan - Figure 7.1.





**Figure 7.1** Integration of Key Elements of the Sustainability Plan - Financial Commitments/ Business Rationale for Services/Services definition and Estimation/ Service Delivery and Management.

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## 8. Glossary of Terms

JERICO-RI is developing an **ontology** to specifically identify key terms and provide a simple definition of those terms. The key Business Plan terminology, abbreviations and acronyms are described and defined below.

**AISBL** Association Internationale Sans But Lucratif

**Assembly of members:** one representative from each Member State (the national delegate) that may be accompanied by one or more advisors. The national delegate is appointed by the Member State. (Member State and Member terms should be defined).

**Benefit-cost ratio (BCR)** is an indicator showing the relationship between the relative costs and benefits of a proposed project, expressed in monetary or qualitative terms. If a project has a BCR greater than 1.0, the project is expected to deliver a positive net present value.

**Benefit In-Kind (BIK)** refers to the non-financial in-kind contributions made by JERICO-RI members to sustain the operation and services of JERICO-RI

**Business Development Group** A dedicated group within Jerio-S3 with a defined Terms of Reference to develop the Business Model and Services for a future Jerico

**Business Model Canvas (BMC):** a business model describes the rationale of how an organisation creates, delivers and captures value. The Business Model Canvas concept was developed in 2010 as a tool used to describe, analyse and design business models.

**Central Management Office (CMO)** performs the administrative functions of JERICO-RI (legal, contract, financial accounting, HR).

**Cost Benefit Analysis (CBA)** is a process used to measure the benefits of a decision or taking action minus the costs associated with taking that action.

**Director General:** the legally responsible Head of JERICO-RI appointed by the Assembly of Members for a fixed period.

**ERIC** European Research Infrastructure Consortium

**ESFRI** European Strategy Forum on Research Infrastructures

**ESFRI Application** refers to the application submitted by the JERICO-RI partners in 2021 to the ESFRI Roadmap.

**ESFRI Roadmap:** a strategic document published by the European Strategy Forum on Research Infrastructures (ESFRI) that identifies and prioritises key research infrastructure projects across Europe to support scientific excellence and address major societal challenges.

**Expert Center:** a group of experts responsible for discussion and strategy within some specific key scientific or technological domains, needed for activities and the generation and operation of specific centers. An expert center can be virtual or physical.

**Executive Committee:** a collegial body including the Nation Infrastructure Representative elected from their national peers, according to specific rules + Offices' managers, for the operation and management of the JERICO-RI.

**Excellence Driven:** access mode based on the scientific excellence, originality, quality and technical and ethical feasibility of the users' request for access.

**FAIR Data:** data that follows the guidelines for Findability, Accessibility, Interoperability, and Reusability.

**Governance:** the system by which an organisation makes and implements decisions to achieve its goals.

### **IRS** Integrated Regional Sites

**Internal driven:** access mode provided to other JERICO-RI Members using JERICO-RI facilities based on availability, feasibility, and not given priority over requests from other access modes. The costs will be paid using JERICO-RI points system.

**JERICO-CORE:** the unified central hub of JERICO-RI to discover, access, manage and interact with JERICO-RI resources including services, datasets, software's, best practises, manuals, publications, organisations, projects, observatories, equipment's, data servers, e-libraries, support, training, and similar assets.

**JERICO-RI:** Joint European Research Infrastructure network for Coastal Observatories - Research Infrastructure.

**KPI:** Key Performance Indicator, a quantifiable measure of performance over time for a specific objective.

**Market driven:** access mode that provides access to infrastructure defined through an agreement between the user and JERICO-RI and may lead to a confidential fee.

**National Nodes:** In the context of a future JERICO-RI ERIC that will be composed of distributed infrastructures, a "National Node" refers to a specific component or unit of the overall infrastructure that is located within a particular member country. These nodes play a crucial role in the distributed model of ERICs, functioning as the points of contact, operation, or service delivery within their respective nations.

**Office:** performs the managerial function of planning, organising, directing and controlling (An office can be distributed or centralised work virtually and/or physically);

**RI:** Research Infrastructure

**Scientific, Technical and Ethical Advisory Committee:** a collegial body appointed according to specific rules to provide advice to JERICO's governing bodies to the Assembly of Members. The AC is an independent body. The AC is appointed by the Assembly of members following the proposal of the ExCo.

**Services Estimation Model (SEM)** A model to develop a pipeline of JERICO services over the project lifecycle with technical and financial viability based on in-kind contributions.

**Service Office** manages different Expert Centers all related to one area of service.

**Services:** actions and activities carried out for the benefit of targeted users and providing assistance to these users. They can be internal if addressing internal needs of the JERICO-RI or external when addressing JERICO-RI external users' needs.

**Wide Mode:** access mode that reaches the maximum users for free use of data resources and digital services and not limited to a geographical location.



## Appendix 1 Service Estimation Model Design Steps

Service Estimation Model Steps	Description
<b>Define the Scope of the proposed Services:</b>	Identify the specific services offered by JERICO-RI. These may include data collection, analysis, access to research platforms, training, consulting, etc. Ensure that the list is comprehensive and covers all aspects of services provided.
<b>Identify Key Performance Indicators (KPIs):</b>	Determine the metrics that will be used to measure the performance and impact of each service. For example, this could include metrics like the number of users, data quality, research publications, user satisfaction scores, etc.
<b>Gather Data:</b>	Collect historical data related to the services provided by JERICO-RI. This may include usage statistics, user feedback, research outcomes, and any other relevant information.
<b>Develop a Valuation Framework:</b>	Create a framework for assigning a value to each service. This could involve considering factors such as the level of effort required to provide the service, the expertise involved, and the impact it has on research outcomes.
<b>Assign Monetary Values (if applicable):</b>	For certain services, it may be possible to assign a monetary value based on market rates for similar services. For example, if JERICO-RI provides training workshops, you could estimate the cost of similar training programs in the industry.
<b>Apply the Model:</b>	Use the established framework and valuation criteria to estimate the value of each service provided by JERICO-RI. This could involve a combination of quantitative analysis and expert judgement.
<b>Consider Non-Monetary Benefits:</b>	Acknowledge that not all benefits can be easily quantified in monetary terms. Consider qualitative factors like increased scientific knowledge, enhanced research capabilities, and positive impacts on policy-making.
<b>Aggregate and Analyze Results:</b>	Sum up the estimated values for each service to get an overall estimation of the value provided by JERICO-RI. Analyse the results to identify which services contribute the most to the overall value.
<b>Validate with Stakeholders:</b>	Share the estimated values with stakeholders, including researchers, funding organisations, and policymakers. Seek feedback and validation to ensure the model aligns with their perceptions of the value provided.



<b>Communicate the Value Proposition:</b>	Use the estimated values to communicate the value proposition of JERICO-RI to potential users, collaborators, and funding organisations. Highlight the tangible benefits and impacts of the services offered.
<b>Monitor and Update and Refine</b>	Continuously monitor the performance of services and update the estimation model as necessary to reflect changes in the scope, quality, or demand for services.



## Appendix 2 JERICO Benefit in Kind Policy

The ESFRI Guidelines on Cost Estimation of Research Infrastructures (2019) define benefit in-kind contributions as non-cash contributions provided by a legal entity (e.g., in terms of personnel or machine time, supply of equipment, services, buildings, etc.). They represent a non-cash benefit (and risk) transfer of goods and services and/or personnel based on statute and/or agreements involving (directly or indirectly) the Members and planned in yearly programs approved by the General Assembly (Central European Research Infrastructure Consortium (CERIC) workshop on BIKs in the life cycle of an ERIC, Dec 2019).

Two main cases of **benefit in-kind contributions** can be distinguished:

- Contributions to the construction and operation of an RI by procuring and transferring goods and services.
- Contributions to the implementation and operation of an RI by making available existing facilities, which may be improved “in-situ” within the contributing Member during the ERIC operation.

In addition to monetary contributions, JERICO-RI Members may also provide BIK contributions for the functional operation of JERICO-RI. BIK contributions may be in the form of personnel time for the delivery of services and provision of access to facilities, equipment and other infrastructure for the delivery of services. In practice, BIK contributions are likely to be a combination of both of these forms.

In accordance with the proposed Articles of Statutes of the JERICO-RI, hereinafter referred to as the Organisation, the Council of the Organisation has adopted the following internal provisions on benefit in-kind contributions.

Benefit in-kind contributions are a non-cash contributions in the form:

- **In-kind contributed Goods**
  - • durable goods (e.g. equipment/software)
  - • non-durable goods (e.g., consumables/materials)
- **In-kind contributed Personnel**
  - • Personnel seconded/not seconded from the Representing Entity to the ERIC
- **In-kind contributed Services**
  - External services provided by the Representing Entity to the ERIC (e.g., external consultancy)
  - Internal services provided by the Representing Entity to the ERIC (e.g., right to use a facility)

In relation to the delivery of JERICO-RI services, **there are two categories of BIK contribution (1) Personnel time and (2) provision of access to facilities, equipment and other infrastructure** for each category - it is foreseen that there will be three main types of in-kind contributions see Table below.



Type of BIK Contribution	Mandatory in kind-contributions:	Voluntary in-kind contributions:	Requested in-kind contributions:
<p><b>Personnel time</b></p>	<p>Participation in governance activities, management board/nations committee activities and related meetings is mandatory for all JERICO-RI Members. These contributions (personnel, travel costs and other resources related to participation in governance activities) will be in addition to annual monetary contributions.</p>	<p>Participation in JERICO-RI Thematic Expert Centres and other working groups to carry out centralised actions, project proposal writing and similar exercises will be on a voluntary basis, as per a request by the JERICO-RI Management Office. These contributions (personnel, travel costs and other resources related to participation in JERICO-RI working and service groups) will be in addition to annual monetary contributions.</p>	<p>These are for ad-hoc activities and relate to personnel, expertise and/or other resources requested by the JERICO-RI Management Office to one or various Members to satisfy JERICO-RI requirements, which would otherwise be sourced externally (e.g. specific data management expertise).</p>
<p><b>Provision of access to facilities, equipment and other infrastructure</b></p>	<p>Envisaged that there will be a minimal level of access to infrastructure per year (up to a certain value to be determined as part of the annual review process outlined below).</p>	<p>Contributions will involve access to infrastructure required in order to carry out centralised actions relating to involvement in the thematic centres (e.g. provision of physical access to infrastructure as part of a Transnational Access programme, provision of virtual access through JERICO-CORE).</p>	<p>Ad-hoc activities related to hardware and/or software use and/or other resources requested by the JERICO-RI management office to one or various members to satisfy JERICO-RI requirements,</p>

## **Approval and Review Process**

The JERICO-RI in-kind contribution policy shall be reviewed every year by a dedicated BIK Contribution Committee, where the contribution of each Member will be determined. Once the BIK contribution proposal is approved, the Member shall be accredited the BIK contribution value as part of its total contribution to JERICO-RI.

The policy will require approval by the JERICO Nations Committee (in the future, this will be the role of the Assembly of Members or equivalent senior management group). BIK contributions must be included in the Cost Book estimation analysis by calculating their corresponding market price or actual production costs. Personnel that is provided as in-kind contributions should be included in the cost estimation at the equivalent labour cost covered by the partner institution and including salaries, fringe benefits, and social security contributions of personnel engaged. Differences in the salaries between JERICO-RI nations and a potential weighting system for the cost estimation of personnel will be discussed and approved by the Nations Committee/Assembly of Members. The JERICO-RI Cost Book value defines the total value of the BIK contribution.

### **Calculation of Access Availability across the JERICO-RI facilities:**

- Average available access to Facility 44 weeks per annum
- Access days per week = 5 Day
- Total Access Days 220
- 5 % availability for JERICO-RI related Access = 11 days per annum
- 11 days x 42 Facilities = 431 days Access per annum available for JERICO-RI related Activity