

**Alignment at Trans-Regional  
Level: Case Study No.4  
The Central European Research  
Infrastructures Consortium  
(CERIC-ERIC)**

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## Alignment at Trans-Regional Level

# Case Study No.4 – The Central European Research Infrastructures Consortium

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**Dissemination level:** Wider public

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## ABSTRACT

The Central European Research Infrastructures Consortium (CERIC-ERIC, acronym CERIC) was set up under the ERIC legal framework in June 2014 by the Commission's implementing decision<sup>1</sup>, based on the formal request of five Countries.

It provides open access to the Member's scientific facilities, such as synchrotron light sources, neutron sources, nuclear magnetic resonance apparatus and similar, based on international peer review. CERIC is a distributed research infrastructure in materials and biomaterials.

The ERIC Regulation provides a common legal framework based on Article 187<sup>2</sup> of the Treaty on the Functioning of the European Union (TFEU).

CERIC has been built by integrating leading national research institutes into a unique international infrastructure on a world level.

The setting up of CERIC by integrating several different facilities into a single distributed infrastructure opens a great opportunity to enhance the circulation of human resources, ideas and innovations. The driving force behind is the common scope to be relevant and attractive at the international level.

CERIC is expected to increase the effectiveness of national research systems through its contribution to scientific excellence but also by improving the quality and capability in education and technology, and in the attraction of other socioeconomic returns. In this respect, the particular added value of CERIC lies in the mutual learning and exchange of good practices between the Countries in Central Europe.

The study highlights the CERIC-ERIC's many benefits and its capacity to achieve strong alignment at strategic and operational levels, thanks to:

- (i) integration of research infrastructures and open access. It has a clear pan-European added value linked with facilities which deliver top level services attracting a widely diversified and international community of scientific users;
- (ii) strategies to strengthen human capacity-building through training activities for **researchers and pupils**;
- (iii) the definition of monitoring and evaluation system compliant with ERA Roadmap<sup>3</sup> and national ERA Action Plans;
- (iv) collaboration with the industry. CERIC selects the most appropriate partners/types of mechanisms considering specifically the active transfer and exploitation of intellectual property, within a responsible framework of management of intellectual property;
- (v) the use of different kind of funds: national, top-up funds and ESIF and Horizon 2020.

Yet, the CERIC-ERIC has also been confronted with lack of alignment on the VAT regime.

## ACKNOWLEDGEMENTS

The case study builds on the ERALEARN2020 Task 4.4 ("Alignment at Trans-Regional Level"), and relies on an analysis of existing and potential modalities for aligning national/regional activities.

<sup>1</sup>[http://www.ceric-eric.eu/uploads/Main/OJ\\_JOL\\_2014\\_184\\_R\\_0010\\_EN\\_TXT.pdf](http://www.ceric-eric.eu/uploads/Main/OJ_JOL_2014_184_R_0010_EN_TXT.pdf).

<sup>2</sup> Article 187 TFEU: "The Union may set up joint undertakings or any other structure necessary for the efficient execution of Union research, technological development and demonstration programmes.

<sup>3</sup> Council conclusions on the European Research Area Roadmap 2015-2020.

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## 1. Introduction

This case study examines the key features, outputs and overall strengths and weaknesses of a specific modality that fosters alignment, namely the Central European Research Infrastructures Consortium (CERIC).

CERIC-ERIC is an integrated multidisciplinary research infrastructure for basic and applied research in the field of materials, biomaterials and nanotechnology. The founding Parties contribute “in kind” by making available the access and use of existing and new planned facilities and resources, to be integrated into a common research infrastructures capable of offering high-quality services.

CERIC’s international, pan-European approach, avoids duplication and fragmentation in the research system and increases the integration and competitiveness of the European Research Area (ERA), speeding up East-West alignment in the ERA.

The study analyses how this tool has been used for promoting greater alignment at operational, strategic and financial level.

According to the Typology of Alignment, open access to research infrastructures and the data and outputs allows their re-use by other researchers across countries and fosters their interoperability.

## 2. Key features of CERIC

### 2.1 Overview

The Central East European Area has an excellent historical scientific tradition but, due to the historical-economic and political events of the past century, Central East European Countries have had fewer opportunities to invest in large research infrastructures and develop them at pan European dimension. This situation is however changing thanks to a coherent effort by all countries in the area, that have developed or are developing roadmaps for Research Infrastructures (RIs).

As early as 2002, the European Strategy Forum on Research Infrastructures (ESFRI) was set up to contribute to the development of a strategic roadmap that identifies vital new European Research Infrastructures for the next 10-20 years.

The European Strategy Forum on Research Infrastructures – ESFRI – identifies Research Infrastructures (RIs) of pan European interest meeting the long-term needs of Europe’s research communities across all scientific areas. The publication, since 2006, of periodically updated ESFRI roadmaps provides to the Council of the European Union a coherent and strategic vision to ensure Europe has excellent RIs accessible to all leading researchers and to exploit fully the potential for scientific advancement and innovation. ESFRI RIs are facilities, resources or services of a unique nature identified by European research communities to conduct top-level research activities in all fields. In developing this Roadmap 2016<sup>4</sup>, ESFRI has widened its horizon and scope compared to previous roadmaps and evolved its methods<sup>5</sup>. The European RI system has been marked by 10 years of ESFRI strategic planning, together with the synergetic action of the national RI roadmap exercises that built upon and integrated the ESFRI vision.

The European Commission and ESFRI encourage Member States and Associated Countries to develop national roadmaps for research infrastructures (RIs). Till now, 24 national roadmaps were published by the Member and Associated countries.

On 25 June 2009, the Council of the European Union adopted a Regulation providing for the setting up of a European Research Infrastructure Consortium (ERIC)<sup>6</sup>, designed to facilitate the joint establishment and operation

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<sup>4</sup> The 2016 roadmap contains details of 21 ESFRI Projects, proposed to be jointly implemented by various Member and Associated States.

<sup>5</sup> [https://ec.europa.eu/research/infrastructures/pdf/esfri/esfri\\_roadmap/esfri\\_roadmap\\_2016\\_adopted.pdf](https://ec.europa.eu/research/infrastructures/pdf/esfri/esfri_roadmap/esfri_roadmap_2016_adopted.pdf).

<sup>6</sup> Council Regulation(EC)N.723/2009 on the Community legal framework for a European Research Infrastructure Consortium was adopted in order to facilitate the establishment and the operation of large European research infrastructures among several Member States and associated countries by providing a new legal instrument, the European Research Infrastructure Consortium (ERIC).

of research facilities of European interest. This is an outcome of the activities of the European Strategy Forum on Research Infrastructures (ESFRI).

The proposal of establishing CERIC as distributed research Infrastructure<sup>7</sup> as defined by the European Strategy Forum for Research Infrastructures" (ESFRI) within the framework of Pan EU and of Regional Facilities, was inspired by the discussions and indications developed within ESFRI, in particular in its Regional Working Group, and at various levels, such as in the ECRI Conferences and the Competitiveness Council. CERIC-ERIC and also JIVE-ERIC<sup>8</sup> were set up independently of the ESFRI process.

CERIC is an ERIC (European Research Infrastructure Consortium<sup>9</sup>), set-up in June 2014 by the European Commission Implementing Decision n. 2014/392/EU<sup>10</sup> to contribute to European top-level research and technological development and demonstration programs.

CERIC aims at contributing to speedy and cost effective catch up of this Region in the field of analysis and synthesis facilities for advances materials and life science with a Research Infrastructure (RI) of pan European quality and relevance.

The founding Parties of CERIC are Central East European Area Countries, Regions<sup>11</sup> and the Italian Republic<sup>12</sup>.

The initiative is open to other Countries capable and it contributes to the common goals and it contributes to building the European Research Area, by facilitating the East-West alignment in the ERA. In 2016, Hungary and Poland joined the consortium.

The CERIC distributed infrastructure is a single legal entity offering:

- a common, web operated access point describing and offering the available integrated services;
- a common entry point for users proposals and a common evaluation system to select them and
- an access time to multiple instrumental facilities;
- free and open access to these facilities based on quality selection only;
- support and logistic services as required.

The statutory seat of CERIC is established in Trieste and the General Assembly shall consider every five years whether the Statutory Seat shall remain in the same country or be transferred to the territory of another CERIC Member<sup>13</sup>. Based on a total investment of over € 100 million, CERIC brings together research centres that develop and make available to researchers and industries the most advanced analytical instruments for the characterization and the innovative development of materials such as synchrotron light, magnetic resonance, neutron spectroscopy and electron microscopy. These instruments can be applied in fields ranging from life sciences to nanoscience and nanotechnology and from cultural and environmental heritage to materials science.

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<sup>7</sup> Research infrastructures can be **single-sited** (a single resource at a single location), **distributed** (a network of distributed resources), or **virtual** (the service is provided electronically).

<sup>8</sup> The Joint Institute for Very-long-baseline interferometry (VLBI) in Europe was formally established in 1993. Very Long Baseline Interferometry (VLBI) is a type of astronomical interferometry used in radio astronomy.

<sup>9</sup> Council Regulation(EC)N.723/2009 on the Community legal framework for a European Research Infrastructure Consortium was adopted in order to facilitate the establishment and the operation of large European research infrastructures among several Member States and associated countries by providing a new legal instrument, the European Research Infrastructure Consortium (ERIC).

<sup>10</sup> Commission Implementing decision of 24 June 2014 on setting-up the Central European Research Infrastructure Consortium (CERIC-ERIC) (2014/392/EU).

<sup>11</sup> The Czech Republic, the Republic of Austria, Romania, the Republic of Serbia and the Republic of Slovenia.

<sup>12</sup> The involvement of the Italian government has been particularly supported by the Regional Government of the Trieste area, which has a strong Central Eastern European orientation.

<sup>13</sup> Chapter I "General Provisions" Article 1 of Commission implementing Decision 2014/392/EU on setting –up the Central European Research Infrastructure Consortium(CERIC-ERIC),24 June 2014.

## 2.2 Principal outputs to date

The scientific activities of this new distributed Research Infrastructure show interesting numbers and outreach for the users attracted and served.

In 2016, 119 proposals were submitted to two calls, requesting the use of 260 instruments. This is a 36% increase over the previous year:

- proposals came from 24 countries and 5 continents. 16% of the proposals were from non-EU countries;
- 42% of all publications were co-published between researcher from EU countries and another 14% of the publications were co-published with researchers from non-EU countries;
- majority of applicants requested access to multiple facilities, which is still the distinguishing and the most appealing characteristic of CERIC. In both calls in 2016, there has been an average request of over two instruments per proposal.

## 2.3 Mission and activities

CERIC responds to two main needs for European Research: maintaining and strengthening cutting edge competitiveness in a relevant scientific field, and speeding up the involvement of all its human resources in advanced, competitive research and innovation. The mission and main purpose of CERIC, in line with the ERIC Regulation (EC No 723/2009), is to establish and operate a multidisciplinary distributed research infrastructure on a non-economic basis.

*“CERIC is a research infrastructure integrating and providing open access to the best facilities in Central and Eastern Europe to help science and industry advance in the fields of materials, biomaterials and nanotechnology. It enables the delivery of innovative solutions to societal challenges in the fields of energy, health, food and cultural heritage”<sup>14</sup>.*

As agreed by the founding Governments CERIC has two main missions:

- to provide research in materials and life sciences with a unique multidisciplinary Research Infrastructure of Pan European and international relevance, operating in the context of the European Research Area;
- to help the catch-up process of the scientific communities in the area, involving them in setting up and operating this Pan European Research Infrastructure, and thus acquiring the capability and training to compete at international level both in terms of research quality and of generating socioeconomic returns.

## 2.4 Governance structure

The governance structure will implement a common Strategy and Development Plan, driving the integration and timely upgrades of the partner infrastructures operating in different Member States and Associate Countries.

This governance is composed by:

- ✓ an **Assembly of the Parties** that develops a common strategy and the overall policy towards an integrated operation and evolution. The General Assembly is composed by the Parties that can appoint, as Representing Entities, the Institutions owning the facilities and;
- ✓ a **Board of Directors**, the executive body is the Board of Directors composed by the Directors of the partner facilities who, by statute, must have the power to dispose of the facilities needed for the operation of CERIC.  
The Board is in charge of the joint integrated operation of the facilities and of increasing the outreach and use of its scientific and technical capabilities both for Science and for Society;

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<sup>14</sup> Statement of CERIC-ERIC.

The Statute of CERIC requires that the Assembly and the Board of Directors take into account the advice of an **International Scientific and Technical Advisory Committee (ISTAC)** which monitors the quality and strategic coherence of the CERIC activities and planning.

### **3. Overall strengths and key achievements of programme**

#### **3.1 Alignment at operational level: Integration of research infrastructures and open access**

In the present financial and regulatory circumstances, to launch new initiatives requiring large investments is bound to give results only in the longer term, while a faster and more effective approach can be implemented by improving “national” investments, already existing and/or planned, which, without an international approach and competitive drive, would not have a pan-European impact.

The approach adopted by CERIC and supported by the founding Members is to start a process enhancing the quality and returns of available resources, and obtain results greater than the simple sum of the contributed parts. The main driver is the opening to international competitive access to leverage resources and investments available at national level and increase their quality and effectiveness.

This, in practice, is achieved by integrating available resources (instrumental as well as human) as in-kind contributions to CERIC, and opening them to international use and excellence driven competition.

The integration and coordination of research infrastructures enhance the excellence and optimise the use of the resources.

CERIC, being a distributed research infrastructure, is based on the transnational cooperation between its Members (Countries). It also enables transnational access, based on international peer-review, aligned with the principles of the Charter for Access to research infrastructures<sup>15</sup>. Both core activities contribute to transnational cooperation and competition.

CERIC contributes significantly to the increase of **scientific excellence, level of interdisciplinarity and integration of research infrastructures**.

In CERIC, each Country (except Serbia, pending full membership), through a Partner Facility (PF) assures access and outreach to all national scientific communities and its EU added value is achieved by integrating and upgrading them to offer a unique capability to international users as a single service facility. The PFs are already operational or planned (in case of Synchrotron Solaris in Poland), and their joint operation and access increases their value and outreach at international level. PFs are proposed by each Country and accepted after international evaluation<sup>16</sup>. Each PF also has the task to act as a reference for the nearby Region and to connect with the national and regional research centres. Evaluations of each PF and of the central services of CERIC is performed regularly to ensure quality and effectiveness. The first periodic international evaluation of PFs will take place in 2017.

The integration between the Partners Facilities is based on previous successful experience. Several of them have already operated in an integrated way and/or in extensive collaborations.

For example, the photon beamlines and measuring stations built by Institutions in Austria and the Czech Republic have been successfully operating at the Elettra electron synchrotron facility in Trieste as in-kind participations based on the equipment and personnel of the home institutions. These earlier experiences already produced a growing outreach to the Central EU scientific communities and a strong and increasing response from the scientific community also beyond the specific Countries involved.

Moreover, each Partner Facility ensures the direct availability of instrumental time and support personnel, as required for the integrated access for research. Partner Facilities also act as “Reference Point” at national and

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<sup>15</sup> European Commission, European Charter for Access to Research Infrastructures: Principles and Guidelines for Access and Related Services.

<sup>16</sup> The Partner Facility are proposed by the Members through their Representing Entity and the International Scientific and Technical Committee (ISTAC) evaluated them keeping in account of both their research quality and their potential for the research.

regional level, providing support to develop the capacities of the different scientific communities operating in their area, and training them to access both the services of CERIC and other research infrastructures and projects of international level.

Through the integration of human and instrumental resources for the creation of a unique scientific multinational asset, an open access to wide variety of geographically widespread scientific and technical services, distributed in Central and Eastern European Countries is guaranteed.

The access for industries and/or other proprietary requirements considers both the use of the facilities and Technology Transfer activities. CERIC ensures and supports an active integrated network of the existing Technology Transfer offices operating in the Partner provides a coordinated access for industries both to the facilities and to cutting edge technology and knowledge, as well as expertise and technical and scientific support to enable the successful exploitation of this knowledge. The scientific excellence of the PFs ensures attraction of excellent external users, and this helps to improve also the quality of Education and Technology. In addition, it helps broaden the networks of CERIC researchers, which contributes to improve track records of applying into the EU Framework programmes.

The Partner Facilities are available and can be used by external users. This scheme has been (and is) extensively used very successfully in several University Consortia<sup>17</sup>. Several of the institutions had not provided internationally peer reviewed open access to their facilities prior to joining CERIC.

The external users<sup>18</sup> have access to nearly 50 different analysis techniques based on the use of electrons, ions and neutrons as well as analysis and synthesis of the materials through a single-entry point.

The access is open to researchers from all over the world through two calls for proposals per year. It is free of charge for non-proprietary research requiring access to **one or more techniques, accessible in a single step**. In exchange for the free access, the users are required to share their achievements through the **publication of the results** of the experiments, with appropriate references to the CERIC facilities and to the local scientific and technical staff involved. Proposals are submitted online through the specific online platform. The best ones are selected by international peer review through an **independent and international panel** of experts whose choice is based solely on excellence.

In 2015, CERIC improved its application process by offering a **two-stage deadline option (Figure 1)**, which allows increasing the success rate of proposals submitted by users less familiar with the techniques for which they are applying.

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<sup>17</sup>Some of these Consortia (in particular INFN and INSTM in Italy) have reached the capability to build or participate in the operation of national facilities. This is the case of Elettra which has been largely built with the support of INFN. In this well tested approach, time availability of equipment and personnel of different Universities is made available to a Consortium (a legal and independent entity) and jointly used to reach critical mass allowing to participate, e.g. in EU projects, and then re investing the proceeds into common assets of the Consortium.

<sup>18</sup>Also, commercial users can use this innovative service under market-based conditions.

Figure 1: Two steps deadline



Source: CERIC website

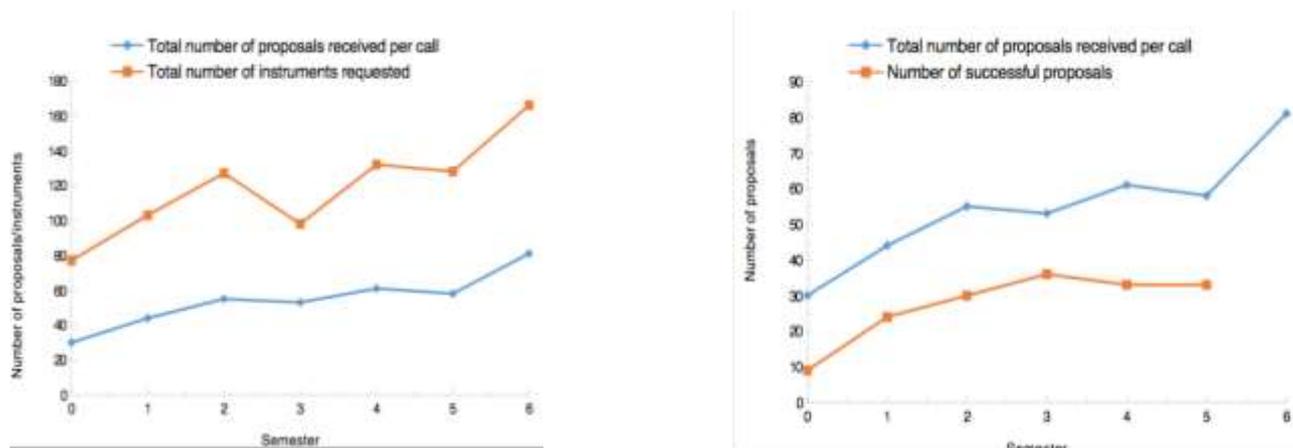
In 2016, CERIC opened and implemented two calls for proposals involving research groups from 24 countries and five continents. As shown in Figure 2, the number of proposals received substantially increased since 2014. Although 16% of applicant were non-EU nationals, the majority of submitted proposals (61%) came from CERIC member countries. This is expected, since CERIC is a recent addition to the European research infrastructure landscape and is still not well known beyond its member countries.

In 2016, CERIC had received 119 proposals. Being multi-technique, these 119 proposals correspond to 260 single instrument proposals, which is a 36% increase over 2015. There were 147 allocated requests, for a total of over 11400 hours. The number of allocated experiments has not increased significantly (2%), as it is limited by the time offered to the CERIC open access by the members’ facilities.

Majority of applicants requested access to multiple facilities, which is still the distinguishing and the most appealing characteristic of CERIC. In both calls in 2016, there has been an average request of over two instruments per proposal.

Nevertheless, in comparison to the previous year, many countries were added to the list for a total of 24 countries involved. These data show that CERIC successfully delivers on the aim of involving international researchers, fostering their mobility, the exchange and transfer of knowledge and the creation of a worldwide network.

Figure 2: Statistics CERIC call 2014- 2016



Source: CERIC website

### 3.2 Alignment at operational level: Strategies to strengthen human capacity-building in interdisciplinary science and science-based management

CERIC, as distributed research infrastructures, is a natural knowledge triangle among research, education and industry. Strengthening and multiplying knowledge triangles are fundamental objectives of the Europe 2020 and Innovation strategies<sup>19</sup>.

Therefore, the human capacity building has been increased and represents a key core of CERIC. In fact, Article 5 of the Commission’s implementing decision states that CERIC should “make optimum use of resources and know-how by coordinating research and development of relevant technologies, by promoting and coordinating joint training of scientific and technical personnel and young researchers, and by collaborating with neighbouring communities and industry”.

To this end, CERIC is carrying out many activities addressing **Partner Facility staffs and pupils**.

In 2015, CERIC had published a call for internal research and technological development projects, with the aim to contribute to the alignment between the facilities, enhance scientific and technological excellence and contribute to capacity building. International peer review selected four projects for funding, involving at least two CERIC Partner Facilities. The projects are implemented through the joint co-funding of the involved parties (in-kind), while the top-up is contributed from the funds for strengthening of CERIC, allocated by the Italian Ministry of University and Research. The duration of the internal research projects is 3 years. The overall co-funding of the involved parties (in-kind) for all 4 projects is €5.659.749 while the top-up (in cash) contributed from the funds for strengthening of CERIC is €1.750.530.

In addition, CERIC organizes dedicated workshops for the staff from its facilities on various topics. Following the workshop on technology transfer in 2015, the event in 2016 was focused on communication issues, while the scientific issues were addressed in 2015 and 2017 in Science@CERIC workshops.

CERIC supports and actively participates in educational activities such as the **HERCULES school**, providing training for students, postdoctoral and senior scientists in the field of Neutron and Synchrotron Radiation for condensed matter studies. In 2016, the Italian Representing Entity of CERIC-ERIC, Elettra Sincrotrone Trieste, welcomed a

<sup>19</sup> Prof. Carlo Rizzuto ESFRI Chair, Research Infrastructures and the Europe 2020 Strategy.

group of 16 PhD and post-doc students who attended lectures, hands-on activities and tutorials and who have been acquainted with the scientific possibilities offered by CERIC.

Concerning the training for pupils, CERIC also successfully implemented the project PaGES<sup>20</sup>:

The project PaGES allows guiding high school pupils through the planning, management, execution, evaluation and dissemination of the results of a scientific experiment.

PaGES gives an opportunity to pupils to learn about the different stages of a scientific project. By carrying out all the steps of a scientific experiment, over 60 students are acquiring the basic tools for the planning, management, execution, evaluation and dissemination of the results of a research project. Three different schools from the funding region are getting the know-how and the direct experience of an international research environment such as CERIC and are actively participating, by interactively working in groups, in the process of shaping a research idea into an actual experiment. They are also learning how to communicate the results obtained and how to present the project's outcomes to the student communities to which they belong.

The project contributes to strengthening the links among high schools in the regional area and establishes the basis for implementing similar actions in the future, even across the other CERIC countries, to let pupils have hands-on training sessions in the labs in which the research takes place and to empower them to make more conscious choices for their future career.

### **3.3 Alignment at operational level: collaboration with industry**

CERIC also carries economic activities, which are limited but very significant in terms of socioeconomic impact on the regions involved. These activities have the capability of being financially self-sustaining and to repay the initial investment for the goods and/or services provided to the market, with an appropriate margin. The support to economic activities and the generation of socioeconomic returns is part of the critical role of Research Infrastructures (RIs) in the European Research Area. They collaborate with industries, promoting technology or knowledge transfer and science-driven innovation, thus enhancing EU competitiveness.

The CERIC Partner Facilities have an exceptional body of skills and technical expertise individually, and various experiences of interaction with industry. By working together and expanding the outreach to industry in the region and beyond, this concentration of knowledge significantly enables the region's competitiveness and the attraction of further industrial activities. In fact, CERIC partner facilities have long standing relations with the industrial partners. The first non-disclosure agreements between industrial partners and CERIC Consortium were signed in 2016, covering service measurements, R&D and product developments.

CERIC, as a new research infrastructure, is currently developing a comprehensive approach to Industrial Liaison & Technology Transfer (IL&TT). It builds on an active integrated network of the existing IL&TT offices operating in the Partner Facilities, and the appropriate training and sharing of know-how to maximize the overall capabilities. This provides a coordinated access for industries to cutting edge technology and knowledge, as well as expertise and technical and scientific support to enable the successful exploitation of this knowledge.

Confidentiality is guaranteed through specific agreements guaranteeing the customer ownership of the results. The approach strengthens the involved facilities due to the mutual learning, joint marketing of services and widening of the pool of cooperating industries.

The following services are being developed:

- access to multi-technique facilities;
- direct transfer of knowledge and technology and training of staff;
- co-development of new products;
- innovative and pre-commercial procurement;

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<sup>20</sup> The project is funded by the Italian Region Friuli Venezia Giulia, within the program "Regional plan for the building up of the formative offer for the academic year 2016/2017", in the section "Special projects" and it covers the period October 2015 - September 2016.

- spin-offs and start-ups creation;
- support services to researchers.

Confidential or non-peer reviewed access is accepted on a cost basis. The fees charged cover the full costs incurred by the Partner Facilities and CERIC for the specific services required.

One specific advantage of the CERIC distributed nature is to develop joint procurement and pre-procurement policies to co-develop products and instrumentation for the RIs together with industry. This enhances the integration of industrial markets and help to develop new advanced products on a globally competitive basis.

Technology and knowledge transfer activities also support proprietary R&D projects, such as new and innovative processes, technology, analytical services, development of scientific instruments and special components as well as the access to the laboratories based on the needs and initiative of industry.

The know how resulting from activities in the field of research and development, performed by CERIC for public or industrial research and its exploitation, is managed through a common Intellectual Property Rights policy, allowing for the appropriate recognition of activities developed either directly or jointly with the private sector, including in particular collaborative research whereby all parties carry out R&D tasks, and contract research where R&D is contracted out by an industrial private company.

These services support proprietary R&D in various industrial areas, such as health, food, energy, high-tech materials, environment and more.

### **3.4 Alignment at operational level: Monitoring and evaluation**

CERIC is a new institution in European research policy arena, funded largely with national public funds. Particular attention therefore should be paid to monitoring and evaluation. To this end, CERIC had put in place a comprehensive framework, which is used:

- **internally**, as a management tool, helping in improving performance and achieving results;
- **externally**, to demonstrate the effectiveness, efficiency and accountability of CERIC<sup>21</sup>.

Monitoring and evaluation framework is derived from the objectives of CERIC, which are described in the Statute<sup>22</sup>.

Monitoring and evaluation is an essential part of policy cycle and is usually implemented on EU, national and regional level.

ERICs are not evaluated by the European Commission even though ERIC regulation requires that ERICs submit an annual activity report to the Commission, while the Commission reports to the Council<sup>23</sup>. In addition to annual reporting of ERICs, Commission's implementing decisions establishing CERICs also requires that CERIC-ERIC should proceed to the periodical evaluation of its scientific activities and of its impact on the European Research Area, on the Regions hosting its Partner Facilities and at international level. This shall take into account both the performance of CERIC-ERIC as a consortium and of the single Partner Facilities (Art. 17).

To this end, CERIC annually collects the data for the Key Performance Indicators since its first year of operation (2015). They are used for annual reporting, but also to assist the international experts, which are performing the first periodic evaluation of the Partner Facilities in 2017-18. Since a longer time frame is needed to observe the effects of the contribution to the ERA, the Regions and at the international level, these periodic evaluations are proposed to take place in 5-year cycles and are to be carried out by an expert contractor. To prepare for this evaluation, CERIC is undertaking a societal impact study with the assistance of Rathenau Instituut from The

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<sup>21</sup> CERIC-ERIC Monitoring and Evaluation Framework 2016.

<sup>22</sup> CERIC Official Statute.

<sup>23</sup> COM (2014) 460 final, Report from the Commission to the European Parliament and the Council on the Application of Council Regulation (EC) No 23/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC).

Netherlands (co-funded by the EU project ACCELERATE). During these periods, the potential impacts on ERA are reported in the CERIC Annual reports<sup>24</sup>.

### 3.5 Alignment at financial level: synergies with different European funds

The decision on setting-up the CERIC has foreseen that each CERIC member should contribute in kind by operating, making available and continuously upgrading one Partner Facility for a total investment value exceeding EUR 100 million and a total annual operation cost exceeding EUR 10 million.

The Italian Republic has provided a host contribution of EUR 5,5 million (cash contributions) to the establishment and strengthening of CERIC-ERIC integrated operations, while considering further contributions to upgrade and strengthen CERIC integration and operation, including training, technology transfer and communication<sup>25</sup>.

The CERIC and Representing Entities have signed Framework Agreements to regulate mutual responsibilities and obligations in supporting the scientific, technical and administrative operation of the PFs within CERIC.

The Framework Agreements define the characteristics, role and responsibilities of each PF and the procedures through which the related Representing Entity will commit the resources necessary for the operation of the PF and for guaranteeing access and service to scientific and industrial users, coherently with CERIC's Statute and Internal Regulations. It thus sets the framework within which REs will contribute in-kind, through the PF, the resources required to ensure its operation as an entry point for both the national scientific community and international users.

The declared commitment is also related to the joint development of applied and industry-related activities, training of human resources, communication and data management, with the aim of achieving common strategic objectives, purposes and access capabilities.

Furthermore, Specific Agreements between CERIC and PFs in the member states have been signed to define the human, financial and instrumental resources that constitute the PF.

Practically, cooperation between Members is demonstrated through the prioritization of CERIC in the national roadmaps.

Table 1: Research Infrastructure Roadmap

|                | Publication of the Research Infrastructure Roadmap | CERIC included in National Research Infrastructure Roadmap |
|----------------|--|--|
| Austria        | 2014   |  |
| Czech Republic | 2016   | X  |
| Hungary        | Not yet available                                  |  |
| Italy          | 2014   | X  |
| Poland         | 2014   | X<br>(SOLARIS)   |
| Romania        | 2008   |  |
| Slovenia       | 2017   | X  |

Source: CERIC website

Apart from CERIC Member Countries which had published their research infrastructure roadmaps before or in the same year in which CERIC was established (June 2014), i.e. Austria, Poland and Romania, all other Members have

<sup>24</sup> CERIC Technical description of Partner Facilities and initial offer to users. International Evaluation Committee Report 2012.

<sup>25</sup> Commission Implementing decision of 24 June 2014 on setting-up the Central European Research Infrastructure Consortium (CERIC-ERIC) (2014/392/EU).

included CERIC among their funding priorities in their roadmaps. Only Hungary had so far not yet published its roadmap.

CERIC utilises national, structural and EU framework programme funds. operations are funded with national funds, either contributed in-kind, or in-cash in the case of the Host Country contribution (Italy). Equipment is either financed using national and, in eligible countries also European structural and investment funds. Also, within the current programming period.

The ordinary activities of CERIC (mainly open access) are covered through the national funds, while investments into the infrastructures of European interest are often subject of a targeted call which, in some CERIC member Countries, is co-funded through the European Structural and Investment Funds (ESIF).

Currently, only the data for 2015 are available, demonstrating that the total costs of the ordinary scientific and technical activities in the first full year of operation of the CERIC-ERIC partner facilities was € 6,853,321.65 EUR.

The number is to increase in 2016, primarily due to the addition of a new member, Poland, with synchrotron Solaris. In addition to these, largely in-kind contributions, € 609,500 was paid by the Italian Ministry of Education, University and Scientific Research to Central Administration to support the Consortium's starting activities in 2015.

## **Horizon 2020**

The CERIC ERIC can also be funded through other kind of funds such as ESIF and Horizon 2020. Indeed, CERIC applied for a proposal funded in the Coordination and Support Actions (CSA) and for the topic "Developing new world-class research infrastructures".

The H2020-InfraDev project ACCELERATE was selected to receive funding for the next 4 years. The project aims at supporting CERIC sustainability through the collaborative development of policies with other research infrastructures (RIs), in particular new and forming ERIC entities. ACCELERATE will assist sustainability, relevance and effectiveness of the RI through the preparation of frameworks for services to private and public entities, outreach to new scientific and industrial networks and geographical areas and a methodology for RI social impact assessment. Together with the RI partners CERIC will also carry out several intense courses for developing future RI managerial, IL&TT staff. The project will be carried out while maintaining vigorous communication with research and industrial communities, policy makers, EC administration and other RI stakeholders. Project partners are the European Spallation Source - ESS-ERIC (Sweden), ELI-DG (Belgium), Knaw (The Netherlands), the Technical University of Munich (Germany), the Helmholtz Zentrum Geesthacht (Germany), The Uzhorod National University (Ukraine), ESP Central (UK).

## **European Structural and Investment Funds (ESIF)**

ESIF funds cannot be used to cover the ordinary activity, such as open access to research infrastructure.

However, they may be used for co-funding of research infrastructure. The investments into the research infrastructure contributed to CERIC were made using national funds, and, in the case of Romanian and Polish Facilities, using also European structural and national funds. Due to the prioritisation of CERIC in the National Research Infrastructure Roadmaps, CERIC national facilities in Slovenia (SI) and Czech Republic (CZ) could apply to the national calls dedicated to the support of Research Infrastructures of European Interest, published in 2016. Some facilities in Slovenia and the Czech Republic are co-funded with ESIF funds. The results of and Slovenia call are not yet known.

## **4. Overall limitations and difficulties encountered during implementation**

### **4.1 VAT Exemption regime**

According to Council Regulation 73/2009 and CERIC's Commission implementing decision, CERIC is recognized, by the country hosting its seat, as an international body or organisation for the purposes of the directives on value

added tax<sup>26</sup> (VAT) and excise duties<sup>27</sup>. It also qualifies as an international organisation for the purpose of the directive on public procurement<sup>28</sup>. An ERIC may therefore, under certain limits and conditions, benefit from exemptions from VAT and excise duties on its purchases in all EU Member States and it may adopt its own procurement rules.

Indeed, the Italian Revenue agency adopted an important precedent confirming the right to extend the VAT exemption regime to the purchase of goods and services made by the CERIC Member – Italy through its Representing Entity (RE) in favour of CERIC.

The problem arises for the other European Countries in CERIC-ERIC. Indeed, the legal form of ERIC's is not yet widely recognised. This causes a series of administrative drawbacks, as the impossibility to buy in VAT exemption in European Countries different from the seat due to the need to settle up procedures by the Ministries of Foreign Affairs and Finance. The same nature of the ERIC is still under discussion in some countries, not being a public entity nor a commercial one. Local registries (e.g. municipalities, chamber of commerce, etc) do not know how to register the ERIC nor what requirements should it fulfil.

## 5. Conclusions: Suitability and key factors of success

This part summarises the success factors in CERIC-ERIC (1) at operational level a (2) and funding level.

The integration of research infrastructures and open access supports efficient advancement of research knowledge by increasing awareness and reducing fragmentation of already existing research and related outcomes. Open Access contributes to effective and aligned dissemination of research outcomes to various stakeholder and end users, promoting technology transfer and science-driven innovation that are the essential for the enhancement of European competitiveness.

Also, the opening up to the private sector through the technology transfer could provide guidance to decision-makers in elaborating and aligning future research priorities and related funding strategies at national as well as transnational levels.

Moreover, Capacity building and prestige related to the joint use of cutting-edge infrastructure and hence to the achievement of high quality scientific results are key motivations for researchers to participate in such transnational research activities

*Key factors of success:*

### 1) *At operational level:*

- integration of research infrastructures and open access to different end-users. CERIC-ERIC supplies, in an integrated fashion and on the international scale, open access to research infrastructures and all results of the experiments;
- development of dedicated instruments for capacity building, focusing on (i) involving the researchers from around the globe and also the pupils (ii) facilitating knowledge transfer through data and best practices sharing; and (iii) providing training for students, postdoctoral and senior scientists in the fields covered by CERIC-ERIC;

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<sup>26</sup> Council Implementing Regulation (EU) No 282/2011 of 15 March 2011 laying down implementing measures for Directive 2006/112/EC on the common system of value added tax (OJ L 77, 23.3.2011, p. 1).

<sup>27</sup> Directive 2008/118/EC of 16 December 2008 concerning the general arrangements for excise duty and repealing Directive 92/112/EEC, OJ L 9,14.1.2009, p. 12.

<sup>28</sup> Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, OJ L 134, 30.4.2004, p. 114 and Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC, OJ L 94, 28.3.2014, p. 65.

- systemic approach to industrial involvement: (i) all the various types of mechanisms (such as licensing or spin-off creation) and (ii) all the different possible partners (such as spin-offs or existing companies, other public research organizations, investors, or innovation support services or agencies);
- set up of a monitoring and evaluation framework. The framework is used internally and externally with the aim to improve performance and achieve results and efficiency.

2) *At financial level:*

- the synergy with various funds: 1) national funds for ordinary activities; 2) the European Structural and Investment Funds (ESIF) for investments into the infrastructures of European interest; 3) participation in projects funded by Horizon 2020.

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### Interviews

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