

## **EJP RD**

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## **Del 3.3 Analysis of structures, business models and required complementarity from other relevant initiatives**

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### List of abbreviations

BM	Business Model
BMC	Business Model Canvas
EC	European Commission
EFPIA	European Federation of Pharmaceutical Industries
EJP RD	European Joint programme on Rare Diseases
EMA	European Medicines Agency
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
EU	European Union
FDA	Food and Drug Administration
FTE	Full Time Equivalent
HE	Horizon Europe
IP	Intellectual Property
IRDiRC	International Rare Disease Research Consortium
NGO	Non-governmental organization
PMC	Personalized Medicine Coalition
RD	Rare Diseases
RDI	Rare Diseases International
RI	Research Infrastructure
SWOT	Strengths, Weaknesses, Opportunities and Threats
VP	Virtual Platform

## 1. Introduction

The task consisted of 1) providing an overview of the different funding mechanisms available to sustain long-term operations of different ventures and 2) benchmarking of sustainability strategies that exist in the EU research fields, such as European ESFRI landmark research infrastructures, National and regional initiatives operating or offering services within the scope of EJP RD, public and private institutes, foundations and NGOs across the globe, with strong interconnections and involvements of public bodies. The results provide an overview of selected initiatives (examples from the field) with information on their service offering, funding streams (at inception and as running entity), together with operational processes and governance. If publicly available, information on long-term sustainability strategies was added. Information collected was furthermore assessed in the context of the EJP RD needs for sustainability of its ecosystem. The collated outcome produces insights on key elements to be taken into consideration while EJP RD is looking into developing its long-term sustainability plan and maintenance of its asset portfolio beyond competitive grant funding.

## 2. High potential benchmark strategies collated for possible use in the EJP RD sustainability roadmap

### 2.1. Literature Search and framework

To delimitate a framework for the analysis we conducted a literature review, searching articles in the databases ABI-INFORM, Medline (PubMed interface) and Scopus. We utilised terms as “sustainability”, “innovation”, “business model” and “infrastructure”, “partnership”, “investment” or “funding” using boolean operators as AND/OR with different combinations. Manual search of references, and European initiatives exploration completed the search. The detailed methodology, findings and discussion of the review will be published elsewhere.

#### 2.1.1. General aspects

Long-term actions to fulfil the needs of the RD community require long-term thinking, including sustainability strategies. Short funding cycles are opposing to financial viability (Edwards et al, 2006), limiting the options of continuity and advancement. A complex and comprehensive system as the ecosystem objective of EJP RD demands long-term vision.

The sustainability plan needs to consider the type of business model (BM) that may be applicable to a given element or asset. There are multiple definitions of business models, which could be stratified in different levels, i.e., economic, operative or

strategic (Werani et al, 2016). The strategic level comprises the most comprehensive description of business models, with **value** placed as the central topic, created, transferred and captured by the company or project (Werani et al, 2016). This value flow (tangible e.g., products, or intangible e.g., knowledge) is represented by the BM (Dellyana et al, 2018). Therefore, a BM may be seen as fundamental principle, according to which an organisation creates, transfers and captures value. This is the foundation of the nine dimensions approached by the tool Business Model Canvas (BMC)<sup>1</sup> (Osterwalder and Pigneur, 2011).

Other alternative tools to capture dimensions within the business models have been reported, e.g., the business model 360° framework, which aims to capture innovation through a value perspective (value creation, proposition, capture, delivery and communication) (Rayna and Striukova, 2016).

### 2.1.2. Factors

Different **factors can influence the development and maintenance** of an effective business model.

One relevant factor is the *nature of the organisation or venture*. Public and private ventures have contrasting perspectives, distinguished, among other, by ownership, funding and control characteristics (Margiono et al, 2018). It is important to highlight that a commercial bias is expected in BM theory, since most developments have been done with market-oriented views, although the profit maximization principle decreases when prioritising the public and social value. On the other hand, public organisations have non-market resource dependence, i.e., political support (Margiono et al, 2018).

*Communication* between actors is also highly relevant for the assessment and refinement of business models, which depend on the different involved stakeholders. When this fails, evaluation may fail, including the detection of possible business models' failures (Dellyana et al, 2018).

Another factor is *flexibility*. Adaptation of the BMs to external changes, such as emerging technologies and innovative processes, would be a requirement. These *disruptive* business models enter the picture when classical models, or established models cannot manage the ever-changing environment (Schiavi et al, 2019). This adaptation may be highly complicated from the managerial perspective, and could generate opposition (Schiavi et al, 2018).

In relation to the topic above, innovation may be applied to sustainability and business model strategies. More details may be found at the Deliverable 3.2 "*Study cases of innovative sustainability solutions for specific EJP RD outcomes*", which focuses on

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<sup>1</sup> The nine dimensions used in the BMC are customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure. The BMC has been utilized by WP3 in the roadmap preparation, with the participation of all Work Packages and Task leaders, which completed the canvas for each element or elements' packages identified throughout the Programme as subject to sustainability issues. The methodology and results may be found in other deliverables of the **WP3 sustainability deliverables collection**.

innovative approaches and use cases within the EJP RD Programme. Business model innovation (BMI) relies on the ability to modify resources and capabilities systematically to adapt business models to needs (Dellyana et al, 2018). It also may refer to the mechanisms for capturing the technological innovation (Ranya and Striukova, 2016), implying the need for readapting business models more than only making a mere incorporation of innovative products or processes (Schiavi et al, 2018). Measures of innovativeness may be applied to value offering and architecture, and revenue model (Spieth et al, 2016). It is important to remember that BM innovation focuses the attention on new ways of creating value for consumers (Schiavi et al, 2018), which are the RD community in this case.

### **2.1.3. Funding models**

#### **2.1.3.1. Classical Models**

When talking about classical we refer to established or well-known models that have been applied frequently. According to the sources of funding we can find models that rely on academic users/public funding, commercial users, third parties, or a mixture of them (Gabella et al, 2018).

##### **2.1.3.1.1. Academic users/public funding**

###### **National funding**

The model relies on public funding through national budgets and programs. Rules and policies at state level permit standardisation of programs, and organisational resources as staff, funding equipment or training (Pluye et al, 2004). It depends highly on economic situation of the countries, but it has more stability than other models. It also has high potential for equity of users or institutions, and for open access policies (Gabella et al, 2018).

###### **Infrastructure model**

The cocreation and collaboration between several organisations/stakeholders is the basis to distribute efforts, deliver services, and create value (van Limburg et al, 2011). The business modeling to provide the services contemplates the levels of *development*<sup>2</sup> (exploration, user-driven development, new functionality, professionalization, maintenance and documentation), *operations* (basic infrastructure costs, operating a “free” service level, resources for premium users, running user trainings and helpdesk, expertise) and *organisation* (rent, material and human resources, channels, outreach and impact).

###### **Institutional support**

The institution provides the financial support, either as stable funding of programmes or cyclical via e.g., research project grants. It is a stable model depending on the availability of the institutions' funds (Gabella et al, 2018). One of the possible

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<sup>2</sup> Based on presentation of sustainability aspects for infrastructures, at the P2 Annual Retreat 2021

contributions to sustainability strategies from institutional support is the in-kind modality, where institutional human or material resources develop or support activities.

#### **Research project grants** (we include here European funding)

The model is based in the cyclical funding for projects. The projects need to fulfil specific characteristics and requirements, according to the rules of the grants offered. The grants may be stable and depend on the funding agencies and their agenda for research (Gabella et al, 2018).

### **2.1.3.1.2. Commercial users/private funding**

#### **Content licensing/industrial support model**

This model may imply payment segmentation according to the user purposes, e.g., non-commercial vs commercial users that could use the service or resource for profit reasons. Licensing may enable rapid replication with localized adaptation and local financing, without the need for the founders to finance and directly manage all operations (Bocken et al, 2014).

#### **Online advertising and corporate sponsorship**

This model focuses on corporate sponsorship as part of both advertising and negotiation. The corporation pays to support a product that is of great value to its potential clients (Gabella et al, 2018).

#### **Open-source volunteering (or wiki approach)**

Usually applied to resources and data (e.g., tools or data curation) this approach is highly dependent on the willingness and availability of volunteer participants that contribute with their work and knowledge. This means that the stability of the model is very variable (Gabella et al, 2018).

#### **Donations**

This model has been utilised by Non-profit and Non-Government Organisations frequently. Private contributions depend on awareness of donors, and the capability of attraction. This produces a high volatility of the revenues. Another danger is the possible displacement of the goals, in function of the contributors' weight. The generated constraints may impact the processes and the structure (Crisan and Madalina, 2018).

### **2.1.3.1.3. Mixture of funding sources**

*Academic users/public funding & commercial users*

#### **User subscription fees**

Fees require an incentive or obligation to the submitter, and it will be modified by quality of the offered service, and the need created for users, that will demand a relevant value transfer. For public institutions or infrastructures, the charges of academic users would only cover marginal costs<sup>3</sup>.

#### **Value-added/asymmetrical pricing model (freemium service)**

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<sup>3</sup> As an example, ELIXIR is aligned with this clause to only cover marginal costs to academic users.

The freemium model is one of the most used models in Web-2.0 companies. It is based on a price-segmentation, which ranges from free to higher payments in function of the scaling up of offered services, tools or outputs. The segmentation strategy is aimed to individual users and business customers with higher buying potential. This model requires strong innovation strategies to be updated, retaining the user base and attract new users, creating loyalty. Thus, a customer's journey mapping is needed (Panda et al, 2019).

#### **Infrastructural razor & blades**

This model has been frequently used, especially regarding new technologies. The introduction of a good ("razor"), at a very low price, is accompanied by the release of premium components that complement the former "good" and constitute the "blades", with more cost for the users (Picker et al, 2010). An example related to data clouds would be the charge to re-users of computing power (Gabella et al, 2018).

*Academic users/public funding/commercial users/third party*

#### **Public-private consortium**

Public and private funds, and strategy, join in this model. The basis for this model is the mutual trust and a shared vision of creating sustainable cooperation to e.g., create a network, or an infrastructure. To avoid opportunistic or short-term incentives a long-term relationship cemented on trust is preferred. Construction costs of this kind of partnerships projects may be higher than other models, and strict governance and collaboration are key (Spohr et al, 2021).

### **3. Specific Ecosystem in which EJP RD operates**

Over 6,000 Rare Diseases have been identified, of potentially many more, which affect an estimated 300 million people worldwide and 30 million in Europe, and most currently have no cure<sup>4</sup>.

Historically, Rare Diseases have been quite neglected and there has been considerable difficulty in funding research, particularly as the relatively small numbers could make commercial solutions less viable. However, there has been significant increase over the last 15 years in funding, research and awareness, and more focus and strategic importance assigned by public and private, national and international, bodies.

In 2009 a European Council recommendation was made on diagnosing, treating and caring for sufferers, which led to many member states developing national plans to address the issue (Council recommendation, 2009).

On a global level, 2021 saw the formal adoption of the UN Resolution for Persons Living with a Rare Disease (PLWRD) and their families, emphasising the vital importance of global action to address the unmet needs (UN General Assembly, 2021).

In February 2021 the EU Parliament received a presentation from Rare 2030 (Kole et al, 2021), a two-year study involving many experts, patients and practitioners, which made 8 key recommendations for sound policy in critical areas:

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<sup>4</sup> [#30millionreasons \(eurordis.org\)](https://www.eurordis.org/en/about-us/30-million-reasons)



[http://download2.eurordis.org/rare2030/Rare2030\\_recommendations.pdf](http://download2.eurordis.org/rare2030/Rare2030_recommendations.pdf)

1. Long-term, integrated European and national plans and strategies
2. Earlier, faster, more accurate diagnosis
3. Access to high quality healthcare
4. Integrated and person-centred care
5. Partnership with patients
6. Innovative and needs-led research and development
7. Optimising data for patient and societal benefit
8. Available, accessible and affordable treatments.

In 2011 the European Commission and the US National Institutes of Health (NIH) jointly created IRDiRC (International Rare Diseases Research Consortium). This body assists cooperation, research and treatment with the vision to “Enable all people living with a rare disease to receive an accurate diagnosis, care, and available therapy within one year of coming to medical attention.

In 2022 IRDiRC released its Rare Disease Research Initiatives State of Play 2019-2021 Report (Letinturier-Valencia et al, 2022). This report gives a detailed review of the trends and activities in the Rare Diseases field and is a vital tool for researchers and funders to understand the Rare Diseases ecosystem.

In both the European Union and the United States, the regulatory bodies have adopted policies to facilitate research and drug development in Rare Diseases. The European Medicines Agency (EMA) has, since 2020, offered free protocol assistance to eligible academic researchers for developing orphan medicines. The Food and Drug Administration (FDA) developed a “Rapid Disease Cures Accelerator” to assist cooperation and common standardised platforms for characterising Rare Diseases, integrate patients’ views and foster clinical trial readiness.

In the immediate future, a key initiative to be mentioned is the Rare Disease Partnership – a partnership which could be initiated in 2024, supported by a combination of EU funding and member state commitments. The expected duration of the Partnership is seven to ten years with a total indicative budget up to EUR 150 million and subject to the effective implementation of the commitments made by the members of the consortium

(<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-hlth-2023-disease-07-01>) .

Moreover, on the side of industry, the European Federation of Pharmaceutical Industries and Associations (EFPIA) has driven the development of the ‘Rare Disease Moonshot’ initiative which was launched in December 2022<sup>5</sup>. This represents a collaboration between seven organisations (Critical Path Institute (C-Path), the European Infrastructure for Translational Medicine (EATRIS), the European Clinical Research Infrastructure Network (ECRIN), EFPIA, the European Confederation of Pharmaceutical Entrepreneurs (EUCOPE), EuropaBio, and EURORDIS-Rare Diseases Europe) to address unmet needs in Rare Disease research and infrastructure

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<sup>5</sup> [Home - Rare Disease Moonshot](#)

development. This coalition is committed to enhancing collaboration in the field and to investigate the potential to support public-private partnerships.

### **Key elements for decision in the context of EJP RD ecosystem long-term sustainability**

Moving forward with EJP RD ecosystem long-term sustainability (looking at EJP RD as a whole rather than single output and assets delivered by the project), within an evolving field and long-term planning still in the making, flexibility in the organisational model selected and funding stream diversification is key.

As mentioned before, the innovative models are those with a business model allows the reconfiguration of these value attributes (Bashir et al, 2019). This reconfiguration may be difficult when organisational or structural processes are rigid or firmly established, hindering innovation procedures. Whereas the organisational inertia has a negative impact on innovativeness, the value flexibility and external orientation have a positive one. Organisational culture, structure, leadership and technological developments are predictors of business model innovation (Bashir et al, 2019). More information on innovative models and their factors are present in the WP3 Deliverable D3.2.

The models summarised above may be part of different sustainability strategies. Sustainability may be seen as dynamic process with specific actions to strengthen system infrastructures and innovation attributes, maintaining benefits and continuity, while building capacity of the recipient community. Sustainable innovation can be integrated into ongoing operations to benefit diverse stakeholders (Johnson et al, 2004), in our case RD community and other research initiatives, creating sustainable value through business models is a relevant component of sustainable innovation (Boons et al, 2013).

The scheme to ensure an adaptive system is part of the sustainability process. Integration of sustainable innovation into normal operations, flexibility and/ or capacity building actions to decrease rigidity are needed to provide continual benefits to stakeholders, and to secure a valid framework for sustainability actions.

Assessment, planning, implementation, evaluation, and reassessment and modification, if necessary, are steps for sustainability readiness within this sustainability actions framework (Johnson et al, 2004). Conceptualising implementation and sustainability as concomitant processes suggest ways of impacting sustainability (Pluye et al, 2004).

## **4. Real world example of various funding models**

Thematic categories were identified by surveying and interviewing all Work Packages to identify and analyse potentially sustainable elements. The analysis included the classification of elements of EJP RD through all of its pillars and resulted in the following

groupings – all of the potentially sustainable elements of EJP RD relate to one or more of these 4 thematic categories:

1. Policy / advocacy and structuring communities
2. Virtual Platform or related constructs
3. Training
4. Spin-outs or offering niche services.

For the purposes of benchmarking, identifying and assessing funding, operational and governance structures we identified various initiatives whose activities relate to one or more of these 4 thematic categories.

The initiatives were selected based upon various criteria: generally in fields quite closely related to Rare Disease research; and demonstrating a broad range of funding, operational and governance structures.

In the analysis below the selected initiatives have been bracketed under individual headings, but most have aspects that relate to more than one of the categories. They are (solely) examples of different funding models rather than a comprehensive list of complementary initiatives to the EJP RD scope of activities.

### **1. Policy / advocacy and structuring communities**

#### **International Rare Diseases Consortium (IRDiRC)**

##### Description

The aim is to tackle rare diseases through research and to accomplish the vision to enable all people living with a rare disease to receive an accurate diagnosis, care, and available therapy within one year of coming to medical attention.

##### Origin, Funding and Support, Costs, Sustainability

IRDiRC is a global collaborative initiative launched in 2011 by the European Commission (Horizon 2020) and the US National Institutes of Health.

IRDiRC's members coordinate to provide in-kind services and work together to advance the goals and operations.

The organisational and communication support was funded for 6 years (2012-2018) by means of the SUPPORT-IRDiRC project, which established the IRDiRC Scientific Secretariat. This body supports the work of the consortium at large and manages the development of the initiative. This project received funding of €2.242m of which €2m was EU contribution.

<https://cordis.europa.eu/project/id/305207/reporting>

Following on from this, the Scientific Secretariat of IRDiRC has been supported by the European Union through the European Joint Programme on Rare Disease under the

European Union's Horizon 2020 research and innovation programme Grant Agreement N°825575.

Membership increased from 5 public funding members in 2011 to almost 60 partners in 2021. These include companies, public and private funding institutions and patient advocacy groups, all of which (except the patient advocacy groups) are committed to investing at least USD10m into Rare Disease research over 5 years.

### Operational and Governance Structure

IRDiRC is not a legal entity, but a soft international coordination of research, based upon commitment of members, a consortium agreement and expressions of intent with financial commitment.

Task Forces (TFs) and Working Groups (WGs) are the instruments adopted by IRDiRC to address actionable topics identified by the Consortium and propose solutions through policy recommendations and/or technical applications including platforms, tools, standards and guidelines.

IRDiRC is governed through a Consortium Assembly, an Operating Committee, three Constituent Committees and three Scientific Committees, aided by ad hoc Task Forces. The Scientific Secretariat provides organisational and communication support.

The Consortium Assembly is composed of one representative per member organization and the Chair and Vice Chair of each of the four Scientific Committees.

#### Operating Committee:

The Operating Committee consists of the Chair and the Vice Chair of the Consortium Assembly, the Chairs and Vice Chairs of the Constituent and the Scientific Committees, and the Scientific Secretariat. The Operating Committee meets regularly to prepare and advance IRDiRC activities, process information, and enable more effective management of the Consortium as a whole.

#### Constituent Committees:

IRDiRC has three Constituent Committees:

- Funders Constituent Committee (FCC)
- Companies Constituent Committee (CCC)
- Patient Advocates Constituent Committee (PACC)

#### Scientific Committees:

- IRDiRC has four Scientific Committees:
- Diagnostics Scientific Committee (DSC)
- Interdisciplinary Scientific Committee (ISC)
- Therapies Scientific Committee (TSC)
- Regulatory Scientific Committee (RSC)

Each Scientific Committee is composed of approximately 15 members with balanced expertise and representation from academia, patient organizations, diagnostics, pharmaceutical industry, and regulatory bodies. The Scientific Committees identify and propose actionable projects to advance rare disease research, report on Task Force and Working Group activities and progress made from a scientific point of view, advise the Consortium Assembly on research priorities and funding gaps, and execute activities in their scientific areas that will bring IRDiRC closer to its goals.

#### Task Forces and Working Groups:

The Task Forces and Working Groups are created to tackle specific topics within rare diseases research proposed by the Constituent and/or Scientific Committees and selected as prioritized actions by the Consortium Assembly and the Operating Committee. Each Task Force and Working Group reviews current barriers to efficient and effective rare disease research, and proposes solutions through policy recommendations and/or technical applications including platforms, tools, standards and guidelines. Members of the Task Forces and Working Groups are nominated based on their expertise in the selected area and include key players of diverse backgrounds to ensure different perspectives are taken into consideration to drive innovation and new approaches. The Task Forces and Working Groups may operate, on a time-limited mandate, either solely as IRDiRC initiatives or jointly with other external organisations that wish to collaborate and address similar issues.

#### Scientific Secretariat:

The Scientific Secretariat provides relevant day-to-day actions aimed at assuring the correct organization and management of the IRDiRC Consortium and its members. In details, the Scientific Secretariat (i) supports the work of IRDiRC Committees, Task Forces, and Working Groups, (ii) organizes and coordinates meetings, teleconferences, and events, (iii) develops and provides all required documents, (iv) facilitates the coordination and collaboration intra-consortium and with relevant external organizations and initiatives, (v) provides secretariat support and (vi) engages in communication and dissemination activities.

#### Office of the IRDiRC Chair:

In addition to the Scientific Secretariat, the Office of the Chair supports IRDiRC actions on defined strategic projects as well as global Consortium activities, reinforces the activities of the Scientific Secretariat, assists the organization of communication channels between the Chair and Consortium members, and provides activity reports to the Chair.

#### High potential benchmark strategies and relevant findings

- ✓ Successful example of collaboration between Europe and the US.
- ✓ Development and evolution of activities and structures based upon internal review and dialogue among experts.
- ✓ Initial operations put in place through EU-grant funding (Support IRDiRC).

### Description

The RE(ACT) Initiative has the aim of boosting research and facilitating the discovery of new molecules and therapies for millions of patients. The Initiative is structured on two main axes: the RE(ACT) Congress, organised every 2 years, and the online RE(ACT) Community, which uses an innovative online platform that combines elements of scientific knowledge sharing with access to new funding mechanisms.

The RE(ACT) Discovery Institute aims to discover, collect and internalize ongoing or abandoned research programs and continue their development. The RE(ACT) Discovery Institute is acting as a "bridge" between a project of a research group at the "discovery" stage and the final clinical development.

### Origin, Funding and Support, Costs, Sustainability

The BLACKSWAN Foundation (BSF) created the RE(ACT) Discovery (RD-INSTITUTE) Institute company (LLC), a not-for-profit company, and it is the only shareholder.

The relationship between BSF and RD-INSTITUTE is based on three interrelated pillars.

The BLACKSWAN Foundation is the guarantor of RD-INSTITUTE's funding by channelling funds to support RD-INSTITUTE's activities and project-specific funds.

Crowdfunding is introduced as original financing method to support research in the field of RDs as it involves funding a project with relatively modest contributions from a large group of individuals. The promotion of a research project can be facilitated by social media through the integration of "social plugin" on platforms, which allow a user to sensitize his network and improve awareness on a specific research or disease.

### Operational and Governance Structure

The RD-INSTITUTE Board of Directors works under the aegis of BLACKSWAN Foundation. The BLACKSWAN Foundation ensures the quality of the RD-INSTITUTE's management and defines the strategy.

### High potential benchmark strategies and relevant findings

- ✓ Crowdfunding is a potential auxiliary financing method to support research or the development of projects in the field of RDs. It typically involves a large number of people contributing relatively small amounts, generally over the internet and typically involving social media. The promotion of a research project can be linked to discussion and dissemination of results and to patient engagement, especially where a platform incorporating this is developed.
- ✓ The Rare Genomics Institute and Find-A-Cure are among those that seek crowdfunding to support research. The funds raised and funnelled into research programs from such efforts often help to de-risk subsequent drug development,

thereby broadening the disease areas that biopharmaceutical companies are willing to work on.

### Rare Diseases International (RDI)

#### Description

RDI brings together national and regional rare disease patient organisations as well as international federations for specific diseases and multi-stakeholder groups.

Its mission is:

“To ADVOCATE for rare diseases as an international policy priority  
To REPRESENT Persons Living with a Rare Disease and their families at international institutions and platforms  
To SUPPORT the empowerment of RDI members through knowledge exchange, networking, mutual support and joint actions”

The rationale for the development of RDI by EURORDIS was to internationalise Rare Diseases patient advocacy, representation and support, building on the European and other structures put in place.

“The foundation of RDI is a historic moment, turning the rare disease patient movement into an international one. By coming together we are creating a critical mass that cannot be ignored. Joining together makes each of us stronger locally and together globally.”

Yann Le Cam, EURORDIS CEO

#### Origin, Funding and Support, Costs, Sustainability

RDI is an EURORDIS initiative and was created in concert with national rare disease alliances from the United States (NORD), Canada (CORD), Japan (JPA), China (CORD) and India (I-ORD) in addition to international alliances (ALIBER and DEBRA International).

The initiative was launched in 2015 in concert with the EURORDIS membership meeting. It was hosted and funded by EURORDIS until 2019 when it was launched as a fully-fledged NGO.

From inception RDI has been supported by EURORDIS with substantial in-kind contributions including administrative services, strategic and management support, and advocacy capacities. EURORDIS will continue to provide such support through 2024. This is enabled through funding secured for EURORDIS' international initiatives.

RDI has a broad range of funders / supporters. In 2021 its income of €1.1m was derived from:

Patient organisations – 18%;  
Volunteers – 27%;

Pharma – 45%; and  
Outside health sector NPOs – (9%).

Its expenses in 2021 of €1.0m were split:

Staff – 41%;  
Volunteers – 31%;  
Logistics – 5%; and  
Services (Fees) – 22%.

At the end of 2021, RDI had 9 staff – 4 permanent and 2 temporary full-time staff and 3 part-time consultants.

Such a structure can provide both continuity with a core team and also potential flexibility in relation to income volatility.

It is important to note that almost half of the “income” is the valuation of In-Kind contributions and an economic valuation of volunteers' time.

In the years 2019-2021 RDI reported a Profit & Loss surplus, which was allocated to reserves (amounting to €300k at 31/12/21). This reserve is important to provide a cash buffer for timing differences between the regular required expenses (mainly payroll) and the irregular income. As the staff numbers and scope of activities increased the buffer has also been increased.

RDI's goal is to operate with a broad range of revenue sources (both financial and in-kind) and to aim for a distribution of approximately:

- one third from RDI members (including volunteer contributions);
- one third from industry; and
- one third from non-profit organisations and fund-raising events.

With regard to the second revenue stream, RDI develops and leverages its relationships with companies in the field both to improve communication between these companies and patients and also as sources of revenue, particularly through corporate donation programmes. RDI enforces strict principles to maintain its independence and integrity and to avoid any conflict of interest –

“All funding by commercial companies:

- must be for the benefit of the patients RDI represents
- must not entail product advertisement
- cannot influence in any way RDI's policy, positions or decisions, whether explicitly or implicitly.”

### Activities, Operational and Governance Structure

RDI is a legal entity registered in the Republic of France.

It is an Association of members, which are non-profit rare disease patient organisations.



The General Assembly of RDI is made up of one representative from each full member. There are also associate members who can participate in all activities but have no voting rights and cannot stand for Council. It meets at least once a year and approves the accounts, votes on forthcoming budgets, approves membership fees and discusses agenda items.

RDI's managing body is a Governing Council of Directors (the Council). The directors are elected by full members from individuals nominated by them for a period of 3 years. This body approves membership applications and prepares the agenda for the General Assembly.

#### High potential benchmark strategies and relevant findings

- ✓ Visibility, networks and logistics at the launch facilitated by coordination with support from EURORDIS, well established in the field.
- ✓ Ongoing operational support from EURORDIS.
- ✓ Economic valuation of volunteers' time to account for in-kind contributions.
- ✓ Flexibility in costs and net asset buffer to accommodate volatility in revenues.
- ✓ Balance revenues, both monies and in-kind, expected from multiple sources: one-third from RDI Members, one third from industry, one-third from NPOs and fund-raising events allowing a diversification of funding portfolio.
- ✓ Leverage on complementarities regarding communications, logistics and infrastructure with close partners.

#### International Consortium for Personalised Medicine (ICPerMed)

##### Description

ICPerMed provides a platform to initiate and support communication and exchange on personalised medicine research, funding and implementation.

##### Origin, Funding and Support, Costs, Sustainability

The consortium arose from the Project PerMed was funded 2013-15 by EU's 7th Framework Programme. It was initiated during several workshops organised by EC throughout 2016.

Since 2019 the EU has funded several so-called Coordination and Support Actions in support of ICPerMed through Horizon 2020.

ICPerMed Secretariat is a Coordination and Support Action financed by Horizon 2020. It started its work in November 2016 with a budget of € 2 million for four years and was prolonged in 2021 for another three years with a budget of another € 2 million.

ICPerMed brings together more than 40 funding bodies from EU member states and beyond. Members include public and private 'not-for-profit' health research funding

and policy organisations. Other organisations or initiatives can join ICPeMed's stakeholder group.

There is no monetary commitment required to join ICPeMed but members commit to working actively towards achieving the overall aims of the Consortium. In addition, members will be expected to report annually on their activities and to actively participate in the running of the initiative.

ICPeMed originates from a European initiative. Therefore currently most members are from Europe. But ICPeMed seeks to include more international partners in the coming years.

Further funding is foreseen under the European Partnership for Personalised Medicine (EP PerMed). One of the European research and innovation partnerships under Horizon Europe which will be dedicated to maximising the benefits of personalised medicine (PM) approaches. The investments from both Member States and the Commission for the 7-10 years duration of the partnership is expected to be over 300 Mio. Euros.

#### Operational and Governance Structure

ICPeMed is a consortium restricted to public and private not-for-profit health research funding organisations. A membership seeking funding organisation needs to fill in and sign a letter-of-intent and contact form.

ICPeMed is organised around an Executive Committee consisting of its members, with an elected chair and two vice-chairs. The Executive Committee is supported by five Working Groups and advised by an Advisory Board.

In addition, the ICPeMed Secretariat supports with content-driven input, logistics and organisation.

The Steering Board is a sub-group of the Executive Committee, taking care of the consortium's everyday work in close cooperation with the ICPeMed Secretariat.

#### High potential benchmark strategies and relevant findings

- ✓ ICPeMed originates from a European initiative: H2020 Coordination and Support Action with a budget of € 2 million for four years and was prolonged in 2021 for another three years. It will continue under the next European Partnership for Personalised Medicine.
- ✓ No monetary commitment required but members commit to actively participate in the running of the initiative.

#### Personalized Medicine Coalition (PMC)

##### Description

PMC represents innovators, scientists, patients, providers, and payers. They promote the understanding and adoption of personalized medicine concepts, services, and products to benefit patients and health systems.

In a healthcare economy that is highly decentralized and market driven, it is incumbent upon the stakeholders themselves to advocate for a consistent set of policies and legislation that pave the way for the adoption of personalized medicine. To address this need, the Personalized Medicine Coalition (PMC) was formed as a non-profit umbrella organization of pharmaceutical, biotechnology, diagnostic, and information technology companies, healthcare providers and payers, patient advocacy groups, industry policy organizations, major academic institutions, and government agencies. The PMC provides a structure for achieving consensus positions among these stakeholders on crucial public policy issues, a role which will be vital to translating personalized medicine into widespread clinical practice. In this article, we outline the goals of the PMC, and the strategies it will take to foster communication, debate, and consensus on issues such as genetic discrimination, the reimbursement structures for pharmacogenomic drugs and diagnostics, regulation, physician training and medical school curricula, and public education.

#### Origin, Funding and Support, Costs, Sustainability

PMC was launched in 2003 as a non-profit umbrella organisation of 20 institutions, including pharmaceutical, biotechnology, diagnostic, and information technology companies, healthcare providers and payers, patient advocacy groups, industry policy organizations, major academic institutions, and government agencies. The launch was funded by a Eugene Washington PCOR! Engagement Award<sup>6</sup> (a program supporting projects that encourage active, meaningful involvement of patients, caregivers, clinicians, and other healthcare stakeholder).

PMC has a membership revenue structure, in 2023 as follows:

- Large Public Corporation \$34,000
- Small Public Corporation \$17,000
- Trade Association (based on revenues)
- Private Corporation >15 FTEs \$6,500
- Professional Society (based on revenues)
- Private Corporation <15 FTEs \$3,200
- Strategic Partner >5 FTEs \$3,400
- Strategic Partner <5 FTEs \$1,600
- Research, Education & Clinical Care Institutions \$3,200
- Patient Advocacy Group \$500

In 2020 revenue of \$2.3m was split:

- 88% contributions;
- 8% program services; and

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<sup>6</sup> [Engagement Award: Capacity Building -- April 2023 Cycle | PCORI](#)

4% other.

2020 costs of \$2.5m were made up of:

\$1.8m salaries; and

\$0.7m other costs (accountancy, IT, occupancy, office expenses, etc.)

### Operational and Governance Structure

PMC is an international, multi-stakeholder 501(c)3 non-profit organization recognised as a research institute (US-based).

PMC is governed by a Board of Directors and an executive committee consisting of 6 Board Members which assists management in meeting goals and objectives.

### High potential benchmark strategies and relevant findings

- ✓ Broad base of members and active provision of and promotion of benefits of membership.
- ✓ Mixed revenue, aiming to achieve greater balance.

## **2. Virtual Platform/data access related services**

### **Orphanet**

#### Description

Orphanet is a unique resource, gathering and improving knowledge on rare diseases to improve the diagnosis, care and treatment of patients with rare diseases. Orphanet aims to provide high-quality information on rare diseases and ensure equal access to knowledge for all stakeholders. Orphanet also maintains the Orphanet rare disease nomenclature (ORPHAcode), essential in improving the visibility of rare diseases in health and research information systems.

#### Origin, Funding and Support, Costs, Sustainability

Orphanet was established in France by the INSERM (French National Institute for Health and Medical Research) in 1997. This initiative became a European endeavour from 2000, supported by grants from the European Commission, developing into a consortium covering more than 40 countries.

Orphanet's budget was approximately 2.84m Euros in 2018, originating from 8 different contracts for the core activity funding and from various other contracts in some of the participating countries (50% from France, 34% EC funds and 16% from other countries).

Orphanet's core activity funding - Orphanet's core activities include the infrastructure, the coordination activities (management, management tools, quality control, rare disease inventory, classifications and production of the encyclopaedia) and

communication. It excludes the collection of data on expert resources in the participating countries. This funding (c.1.8m Euros in 2018) came from INSERM (48%) and other parties. INSERM also provided infrastructure (office space).

Financial partnerships for national activities - Orphanet's national activities are also supported by national institutions, specific contracts and/or contributions in kind. In European countries, data collection at the national level is also supported by the European Commission. Globally this budget reached 1.28 million Euros in 2018.

In addition, Orphanet has many non-financial partnerships for core activity funding. Non-financial partners are those that provide services in kind and/or share their expertise for Orphanet core activities.

In 2019 a Focus Group dedicated to the question of Orphanet's sustainability was established and reported on different scenarios for a sustainable future, as well as a business plan for Orphanet<sup>7</sup>. The focus group provided a final report in 2020 recommending that a stepwise approach to sustainability be put into place, which includes a short-term actionable solution with shared contributions to core/transnational activities by network members facilitated through the construction of a non-profit international association under Belgian law, or similar. European Commission support of European added-value activities could also be envisaged through grants/procurement. A long-term sustainability roadmap was also elaborated and recommended to the SGPP.

#### Operational and Governance Structure

Orphanet is led by a European consortium of around 40 countries, coordinated by the French team. National teams are responsible for the collection of information on specialised clinics, medical laboratories, ongoing research and patient organisations in their country. All Orphanet teams respect the same quality charter. The French coordinating team is responsible for the infrastructure of Orphanet, management tools, quality control, rare disease inventory, classifications and production of the encyclopaedia.

The infrastructure and coordination activities are funded jointly by Inserm (the French National Institute of Health and Medical Research), the French Directorate General for Health, and the European Commission (Orphanet network is funded by the DG Santé grant RD-ACTION Joint Action 677024 (2015- May 2018) and the Orphanet Direct Grant 831390(2018-2020). Certain services are specifically funded by other partners.

Orphanet's national activities are financed by national institutions and/or specific contracts.

Orphanet is governed by various committees, which independently supervise the project in order to ensure its coherence, evolution and viability.

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<sup>7</sup> <https://www.orpha.net/orphacom/cahiers/docs/GB/ActivityReport2019.pdf>

At International level:

The Management Board is composed of Orphanet country coordinators. This committee is chaired by the director of the Inserm-Orphanet department. This board identifies funding opportunities and guides the project.

The Steering Committee is composed of representatives from the agencies and bodies which finance Orphanet's core services. This committee is chaired by the director of the Inserm-Orphanet department. This committee ensures that Orphanet's content reflects the policy, strategy or plan at the country level in the field of rare diseases.

The International Advisory Board is composed of experts proposed by the Management Board and nominated by the Steering committee. Board members are in charge of advising the Steering committee regarding the overall strategy of the project

At national level:

The National Advisory Board is composed by members nominated by the appropriate legitimate institutions which are defined at country level. The board members contribute with their expertise to Orphanet at country level.

#### High potential benchmark strategies and relevant findings

- ✓ Unique resource, gathering and improving knowledge on rare diseases to improve the diagnosis, care and treatment of patients with rare diseases;
- ✓ National teams are responsible for the collection of information; the coordinating team at INSERM is responsible for the infrastructure and coordination activities.
- ✓ Sustainability plan was established as well as a business plan for Orphanet.

### The Centre for Global Clinical Research Data (VIVLI)

#### Description

VIVLI is an independent, non-profit organization, founded in 2016, that has developed a global data-sharing and analytics platform.

#### Origin, Funding and Support, Costs, Sustainability

The initial set-up involved a funding instrument of \$2m.

For the launch of the platform grants were received from several philanthropic organisations; some of them represent end-users or fund clinical trials (as Gates Foundation).

The funding sources and splits were not really different for the development stage and the maintenance / operation stage - the initial amount was a global envelope. The major cost was building the platform itself.

In 2022 VIVLI reported the following splits for revenue and expenses:

Revenue - 66% Membership Contributions, 34% Grants and contracts awarded;

Expenses - 37% Personnel, 35% Platform, 28% Administration and operations.

### Operational and Governance Structure

Vivli is an independent no-profit organisation based in the US.

The Vivli Board of Directors represents a variety of diverse stakeholders, including representatives from academia, non-profit and for-profit entities, and participant/patient communities.

The Vivli Board sets the strategic direction and finances of the organisation and selects Permanent officers.

### High potential benchmark strategies and relevant findings

- ✓ Philanthropic input for development of the platform and initial running costs, business model moving towards sustainability based upon members/customers with grant support in early years.

### Signant Health

#### Description

Signant Health is a global evidence generation company. They help modernize clinical trials by meeting patients where they are and reimagining the path to proof, using the Signant SmartSignals ecosystem.

SmartSignals transforms evidence generation by digitizing clinical trials from end to end and redefining how and where studies are conducted. SmartSignals connects sites, patients, and supplies in six functional areas to streamline data delivery and accelerate clinical development across traditional, virtual, and hybrid/decentralized trials.

Built on 20+ years of best practices, innovative technology, and scientific expertise, SmartSignals ensures customers of all sizes – including all top 20 pharmaceutical companies – capture and manage reliable trial data, reduce patient and site burden, globally manage IP supplies, and equip study teams with analytics and tools to make informed decisions faster.

#### Origin, Funding and Support, Costs, Sustainability

The company was launched in 2000, upon the merger of CRF Health and Bracket Global, and between 2002 and 2004 received funding of \$9.4m from Venture Capital (2 tranches) and \$1.6m grant funding.

In 2020 it was acquired by Genstar Capital with E1 billion valuation.

It has estimated revenues of \$460m and over 2,000 employees.

### Operational and Governance Structure

Executive Committee  
Key Senior Leadership  
Board of Directors

Signant Health is a private limited company registered in the UK with ultimate parent company GENSTAR BI GEN HOLDINGS CAYMAN LP, with operations directed by a Board of Directors overseeing an Executive Committee.

### High potential benchmark strategies and relevant findings

- ✓ Huge potential revenues for private sector platform which addresses medical needs.

### ELIXIR

#### Description

ELIXIR is the European ESFRI for life science data, with as tagline “data for life”. An alternative description could be the European research infrastructure for bioinformatics. It is a virtual research infrastructure consisting of a hub, at the Genome Campus in Hinxton, UK, national nodes in over 20 countries, and the special node formed by the European Bioinformatics Institute (EBI).

#### Origin, Funding and Support, Costs, Sustainability

ELIXIR as organisation started in 2014 when 5 nodes had signed up for participation. Long before that there have been projects that brought together bioinformatics in Europe planning for the addition to ESFRI. ELIXIR was one of the first ESFRI landmark research infrastructures.

The bulk of the work in ELIXIR takes place in the national nodes. Each of the national nodes has its own funding and support, which is used to develop and provide node-services. The “central” ELIXIR organisation is paid from national contributions to the hub, the yearly contributions are calculated based on the GNP of the node countries. Funding in the central organisation is used to pay for the hub personnel (~25 FTE), providing mainly coordinating functions, and for so-called “commissioned services”. Most of the commissioned services are small contributions to projects that are set up to realise parts of the 5-year scientific plans. In addition to this funding, ELIXIR nodes and hub are coordinating and participating in several EC projects both for infrastructure development and science. The multitude of funding sources gives ELIXIR a good sustainability.

### Operational and governance structure



Legally, ELIXIR is run as a project under EMBL, which in itself is an intergovernmental organisation. ELIXIR is scientifically governed by the director who heads a committee formed by the scientific leads of the nodes. It is controlled by a board consisting of independent members from all participating countries. The board is advised by a Scientific Advisory Board and an Industry Advisory Committee.

#### High potential benchmark strategies and relevant findings

- ✓ European intergovernmental organisation allowing contribution across participating countries (ELIXIR is a project under EMBL, which in itself is an intergovernmental organisation).
- ✓ Country membership (distributed Research Infrastructure) – long-term sustainability.
- ✓ Diversity of funding sources.
- ✓ Bulk of the work in ELIXIR takes place in the national nodes. Each of the national nodes has its own funding and support, which is used to develop and provide node-services.
- ✓ Successful in securing EC project funding.

### **3. Training and Education**

#### **Elevate Health**

##### Description

Elevate Health offer a range of online courses in the fields of epidemiology, clinical research, skills training, data management, drug development and more.

##### Origin, Funding and Support, Costs, Sustainability

On 1 October 2013 the Elevate project started as a spin-off from the UMC Utrecht in order to develop evidence based online education for healthcare practitioners and researchers in the Health and Life Sciences domain.

By 1 February 2015 Utrecht University had launched the first accredited online Master's in Epidemiology. This course was developed by Elevate and the Julius Center at UMC Utrecht. Over the five years of our existence, Elevate has grown, adding other universities (Maastricht, Rotterdam) to its customers, followed by the Dutch ALS centre and healthcare organizations such as Vitadent.

Elevate has worked together with public-private consortia on many projects such as the Innovative Medicines Initiative, Horizon 2020, Erasmus+ and other initiatives.

Course fees and accreditation costs provide revenue for operations.

By 2018, with revenue growth of over 30%, Elevate achieved final break-even point and moved from Start-up to scale-up.

#### Operational and Governance Structure

Private company.

#### High potential benchmark strategies and relevant findings

- ✓ Successful spin-off from the UMC Utrecht with course fees and accreditation costs to provide revenues. Additional income from grant funding.
- ✓ Break-even point achieved by charging service users for training.

#### VVER training academy

##### Description

State-of-the-art regional training center for VVER competence, then called CORONA Academy)

##### Origin, Funding and Support, Costs, Sustainability

Horizon 2020 CORONA II project (2011-2014) had specific objective to proceed with the development of state-of-the-art regional training center for VVER competence (training for Human Resource Development for Nuclear Power Programmes).

Now fully supported as an asset within Bulgarian entity, maintained and updated with in-kind contributions by host.

##### Operational and Governance Structure

Element maintained as a resource hosted by [Bulgarian institute](#).

##### High potential benchmark strategies and relevant findings

- ✓ Now fully supported as an asset within Bulgarian entity, maintained and updated with in-kind contributions by host.

#### TransMed Academy

##### Description

E-learning platforms relating to translational medicine developed as part of EU funded projects.

##### Origin, Funding and Support, Costs, Sustainability

C-COMEND was a two-year European training project supported by the Erasmus plus programme, which started in 2015, with the overall objective of bringing together stakeholders from different sectors and disciplines in order to develop a course aimed at PhD students and early postdocs, teaching the skills and competencies required to successfully contribute to translational research and medicines development.

Elevate health and EATRIS maintain the platform and provide the necessary support.

#### Operational and Governance Structure

The ownership of the face-to-face workshop and the content of the e-learning course remained within the consortium. Once a host (EATRIS) was identified a light contract between the consortium and the host was drafted.

The ownership for the MOOC stays with EATRIS. Elevate health assured to - cover the upcoming year 2018. After this EATRIS was the owner for the MOOC and owns all legal rights that came along with it.

#### High potential benchmark strategies and relevant findings

- ✓ Training resources supported as assets within RI, maintained and updated with in-kind contributions by host.

#### **4. Spin-outs or offering services with fee**

##### VectivBio

###### Description

A global, clinical-stage biotechnology company focused on the discovery, development and commercialization of innovative treatments for severe rare conditions with high unmet medical need.

###### Origin, Funding and Support, Costs, Sustainability

In 2020 the founders of Swiss biotech Therachon launched a new company called VectivBio, also based in Basel, with €31M funding to develop drugs for rare diseases. The spin-out comes after Therachon was acquired by Pfizer in a deal worth up to €700M. Therachon's Senior Management will all move to the new company, which is independent of Pfizer, although the big pharma does own some equity in the new venture. Other funding comes from life science investors Versant Ventures, Novo Holdings and Orbimed, as well as several others.

Therachon's lead candidate is a drug to boost bone growth in people born with the genetic condition achondroplasia. The company's second candidate was a drug to help nutrient absorption in patients with serious bowel diseases, but it will now become the lead candidate for VectivBio.

In April 2021 VectivBio Holding AG, announced the closing of its initial public offering of 8,625,000 ordinary shares, which includes the full exercise of the underwriters' option

to purchase an additional 1,125,000 ordinary shares, at a public offering price of \$17.00 per share. The gross proceeds from the offering were approximately \$146.6 million. Vectiv's ordinary shares began trading on the Nasdaq Global Market under the ticker symbol "VECT" on April 9, 2021.

### Operational and Governance Structure

VectivBio as a NASDAQ listed company is operated by a Board of Directors responsible to the shareholders.

### High potential benchmark strategies and relevant findings

- ✓ Very substantial private sector funding available for products with high potential commercial returns.

### EATRIS

#### Description

EATRIS operates along a crucial stretch of the biomedical innovation pathway, where the novel knowledge and tools created by science outputs of academia require substantial multi-disciplinary effort and financial resources, in order to mature them to a point where industrial developers will take on the best projects and make significant investments on the basis of their potential to serve patients and society. By bringing together the clinic via clinician involvement and patient-centric research planning, technology via cutting edge analytical platforms that are validated in the context of use, and biology via molecular and pathway level understanding of pathology, EATRIS facilitates rigorous development from scientific hypothesis to high potential clinical intervention.

#### Origin, Funding and Support, Costs, Sustainability

In 2013 the European Commission approved the creation of a new European research infrastructure – EATRIS ERIC.

The European Research Infrastructure Consortium (ERIC) is a specific legal form that facilitates the establishment and operation of Research Infrastructures with European interest.

The ERIC allows the establishment and operation of new or existing Research Infrastructures on a non-economic basis

An ERIC can carry out some limited economic activities related to this task.

It has the following advantages:

a legal capacity recognised in all EU countries;  
flexibility to adapt to specific requirements of each infrastructure;  
a faster process than creating an international organisation; and  
exemptions from VAT and excise duty.

An ERIC must be a European joint-venture whose infrastructure is necessary to carry out research programmes and projects and which represents added-value in the development of the European Research Area (ERA) and significant improvement in the relevant scientific and technological fields.

EATRIS' financial sustainability is underpinned by a hybrid funding strategy with 3 funding pillars:

- Membership contributions and host country contributions – currently accounting for approx. 50% of annual budget. EATRIS has currently 12 Full member states and 2 observer countries;
- Grant income – currently accounting for ca. 40% of budget and growing quickly annually; and
- Services income, such as industry matchmaking fees, translational assessment, hub management – currently accounting for ca. 10% of income.

After an initial 5-Year commitment from member states, membership is on a rolling basis, with a notice period of 1 year for departure. This is far from optimal and hinders long term infrastructure planning. This can include:

Further support comes from the Netherlands government structurally provide host country contributions above the membership fee, and Amsterdam UMC, who donate office space.

### Operational and Governance Structure

The governance structure of EATRIS ERIC comprises of two main and two subsidiary bodies.

The main governance bodies are:

EATRIS Board of Governors (BoG) - the highest and ultimate governing body of EATRIS ERIC with full decision making. It is formed of representative entities from EATRIS member and observer countries. The BoG is in charge of adopting EATRIS ERIC strategies (long term strategic plan), annual budget and annual financial reports, and yearly operational plans. The BoG also approves applications of new countries to become EATRIS ERIC members or observers; and

EATRIS Executive Board, which is responsible for implementation of the strategies and supports EATRIS BoG. The Executive Board consists of the Operations and Finance Director (legal representative of EATRIS ERIC) and the Scientific Director (strategic scientific development and scientific matters). The Executive Board is appointed by BoG decision for a mandated period.

The two subsidiary governance bodies are:

EATRIS Board of National Directors (BoND), which consists of scientific representatives of member and observer states and is responsible for ensuring the scientific excellence of the infrastructure and developing and implementing national scientific strategies; and

EATRIS Scientific Advisory Board (SAB), which consists of external scientific experts to inform and offer advice on new development and scientific trends based on requests from the BoG and reviews EATRIS performance on a yearly basis.

EATRIS ERIC Coordination and Support office is managed by the EATRIS Executive Board and it represents the central management and daily operations office of EATRIS ERIC.

High potential benchmark strategies and relevant findings

- ✓ Hybrid funding strategy with 3 funding pillars.
- ✓ The ERIC legal status offers a legal capacity recognised in all EU countries, flexibility to adapt to specific requirements of each infrastructure, and a faster process than creating an international organisation.

**Summary and considerations for EJP RD sustainability**

Initiative	Pros in context of EJP RD	Cons in context of EJP RD
<b>1.Policy / advocacy and structuring communities</b>		
International Rare Diseases Research Consortium (IRDiRC)  EU / NIH funding	<ul style="list-style-type: none"> <li>• Allowing for global collaboration.</li> <li>• Development and evolution of activities and structures based upon internal review and dialogue among experts.</li> <li>• Initial operations put in place through EU-grant funding (Support IRDiRC).</li> </ul>	<ul style="list-style-type: none"> <li>• Very large development with broad scope and finances, scale beyond that foreseen for any individual element (or group thereof).</li> </ul>
RE(ACT)Discovery Institute  Funded by BLACKSWAN foundation  Crowdfunding initiative	<ul style="list-style-type: none"> <li>• Crowdfunding is introduced as original financing method to support research in the field of RDs as it involves funding a project with relatively modest contributions from a large group of individuals. The promotion of a research project can be facilitated by social media through the integration of "social plugin" on platforms, which allow a user to sensitize his network and improve</li> </ul>	<ul style="list-style-type: none"> <li>• Crowdfunding can be expensive to set up and maintain effectively. Duplication of efforts should be avoided.</li> </ul>

	<p>awareness on a specific research or disease.</p>	
<p>Rare Diseases International (RDI)</p> <p>2021 income of €1.1m derived from:</p> <p>Patient organisations – 18%;</p> <p>Volunteers – 27%;</p> <p>Pharma – 45%; and</p> <p>Outside health sector NPOs – (9%).</p>	<ul style="list-style-type: none"> <li>• Visibility, networks and logistics at the launch facilitated by coordination with and support from EURORDIS, well established in the field.</li> <li>• Ongoing operational support from EURORDIS.</li> <li>• Almost half of the “income” is the valuation of In-Kind contributions and an economic valuation of volunteers’ time.</li> <li>• Flexibility in costs and net asset buffer to accommodate volatility in revenues.</li> <li>• Objective to balance revenues, both monies and in-kind, from multiple sources, working toward the following distribution: one-third from RDI Members, one third from industry, one-third from NPOs and fund-raising events.</li> <li>• Successful implementation at monitoring of actions towards this end.</li> <li>• Utilisation of complementarities regarding communications, logistics and infrastructure with close partners.</li> <li>• Gradual development of legal, governance, operational and funding apparatuses over years rather than adopting a ‘final model’ immediately</li> </ul>	<ul style="list-style-type: none"> <li>• Long process of development requiring in-kind and funding support from existing entity and volunteers.</li> <li>• It would take a lot of work to develop a case for and bring on board so many parties and depends heavily on existing organisations providing strong advocacy, support and networking.</li> <li>• Such an operating model requires a strong case for addressing important unmet needs and backers to reinforce credibility.</li> <li>• Restrictions on commercial activity to maintain independence and integrity.</li> </ul>
<p>International Consortium for Personalised Medicine (ICPerMed)</p> <p>EU Grant funded</p>	<ul style="list-style-type: none"> <li>• There is no monetary commitment required to join ICPerMed but members commit to working actively towards achieving the overall aims of the Consortium. In addition, members will be expected to report annually on their activities and to actively participate in the running of the initiative.</li> </ul>	<ul style="list-style-type: none"> <li>• The initiative, and its planned and actual offshoots / developments fully dependent upon securing EU funding (via relevant calls).</li> </ul>
<p>Personalized Medicine Coalition (PMC)</p> <p>2020 revenue of \$2.3m was split:</p>	<ul style="list-style-type: none"> <li>• Broad base of members and active provision of and promotion of benefits of membership.</li> <li>• Mixed revenue, aiming to achieve greater balance.</li> </ul>	<ul style="list-style-type: none"> <li>• Required concerted support from a large range of members and also grant funding to kick start (and some time).</li> <li>• Requirement to show that it is addressing a relatively new and very prominent area where such activity is needed.</li> </ul>

<p>88% contributions; 8% program services; and 4% other.</p>		
<p><b>2. Virtual Platform/data access related services</b></p>		
<p>Orphanet Financed by grant funding, national institutions and/or specific contracts.</p>	<ul style="list-style-type: none"> <li>• Many non-financial partnerships for core activity funding (those that provide services in kind and/or share their expertise for Orphanet core activities).</li> </ul>	<ul style="list-style-type: none"> <li>• Need for hosting institution (INSERM) for Coordinating team.</li> <li>• Operations from many partners</li> <li>• Potential impact on flexibility and decision-making process.</li> </ul>
<p>The Centre for Global Clinical Research Data (VIVLI)  Philanthropic start-up and early-stage funding, moving towards member/customer funding</p>	<ul style="list-style-type: none"> <li>• Philanthropic input for development of platform and initial running costs, business model moving towards sustainability based upon members/customers with grant support in early years.</li> </ul>	<ul style="list-style-type: none"> <li>• Large initial investment required to develop resource.</li> <li>• Aiming to be self-supporting, but requirement for funding during initial years.</li> </ul>
<p>Signant Health Private capital</p>	<ul style="list-style-type: none"> <li>• Huge potential revenues for private sector platform which addresses medical needs.</li> </ul>	<ul style="list-style-type: none"> <li>• Fully business oriented – all activities need to be monetarised.</li> </ul>
<p>ELIXIR Country membership and grant funding</p>	<ul style="list-style-type: none"> <li>• European intergovernmental organisation allowing contribution across participating countries.</li> <li>• Country membership (distributed Research Infrastructure) – long-term sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Country commitment to be secured</li> </ul>
<p><b>3. Training and Education</b></p>		



<p>Elevate Health</p> <p>Funded by revenue from users</p>	<ul style="list-style-type: none"> <li>• Break-even point achieved by charging service users for training.</li> <li>• Successful spin-off from the UMC Utrecht with course fees and accreditation costs to provide revenues. Additional income from grant funding.</li> </ul>	<ul style="list-style-type: none"> <li>• Some funders, partners, and contributors would be opposed to monetising training materials.</li> <li>• Free to access materials could achieve greater coverage.</li> </ul>
<p>VVER training academy</p> <p>Supported as asset within institute</p>	<ul style="list-style-type: none"> <li>• Now fully supported as an asset within Bulgarian entity, maintained and updated with in-kind contributions by host.</li> </ul>	<ul style="list-style-type: none"> <li>• Only applicable to elements that can function as stand-alone resources requiring hosting / maintenance justified by their utility.</li> </ul>
<p>Transmed Academy</p>	<ul style="list-style-type: none"> <li>• Training resources supported as assets within RI, maintained and updated with in-kind contributions by host.</li> </ul>	<ul style="list-style-type: none"> <li>• Access and maintenance through RI. Can prevent from further offering outside the RI</li> </ul>
<p><b>4. Spin-outs or offering services with fee</b></p>		
<p>VectivBio</p> <p>Private sector funding</p>	<ul style="list-style-type: none"> <li>• Very substantial private sector funding available for products with high potential commercial returns.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires drug or other developments and IP with very high commercial potential.</li> </ul>
<p>EATRIS – ERIC</p> <p>Income from: membership contributions (c. 50%); grant income (c. 40%); and services income (c.10%)</p>	<ul style="list-style-type: none"> <li>• Hybrid funding strategy with 3 funding pillars.</li> <li>• The ERIC legal status offers a legal capacity recognised in all EU countries, flexibility to adapt to specific requirements of each infrastructure, and a faster process than creating an international organisation.</li> </ul>	<ul style="list-style-type: none"> <li>• Strict requirements for recognition as and operation as an ERIC.</li> <li>• Long process to become registered (although opportunity to perform activity during process).</li> <li>• Initial and long-term commitment of member states</li> <li>• Partially dependent on competitive funding.</li> <li>• Restrictions to potentially market disrupting activity.</li> </ul>

## 5. Conclusions and next steps

A wide variety of different operational and funding models have been used to ensure sustainability of different initiatives which have been analysed in so far as they offer lessons or examples that could be used to optimise the sustainability of EJP RD elements.

In most cases examined, there was very close involvement with many stakeholders (via surveys, meetings, discussions, sharing of information) in determining the route to take to ensure sustainability, and this appeared to produce effective outcomes.

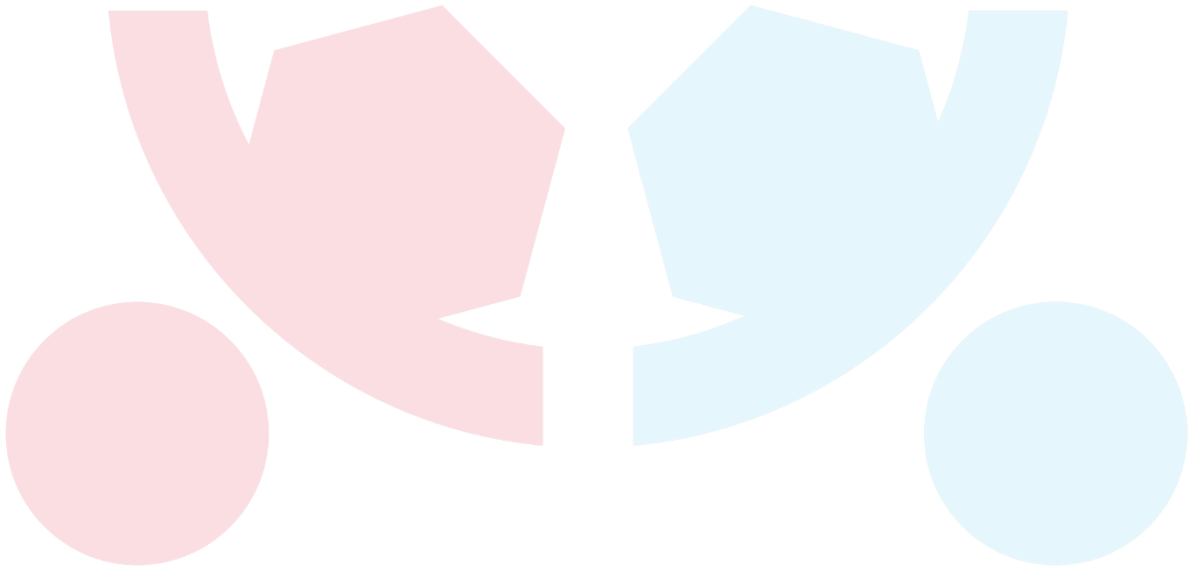
In the development of initiatives (e.g. patient advocacy organisations), training services, and spin-off, an absolutely vital component of early success and sustainability has been very close involvement with 'parent' or closely related existing operations, in providing in-kind services and infrastructure, in sharing expertise and networks, and in providing or securing early-stage funding.

In every case considered, a key factor in ensuring sustainability was the development and communication of clear evidence of value from the initiative, well formulated, analysed and disseminated.

A lot of successful ventures involve a mixed funding model, and often one that shifts over time (and is intended to do so).

In the Rare Diseases field there is evidence of organisations and individuals (experts and other volunteers) being willing and able to provide huge amounts of in-kind services and resources where the overall utility of a project is demonstrated.

This assessment is based on desktop research and analysis of publicly made available information. To get more insights on the various elements to take into considerations looking at sustainability from the initiatives listed here would be to organise semi-organised interviews. With this approach more granular information on best practices sharing, informing and lessons learned and challenges ahead in the context of EJP RD.



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