



D9.4 Report on sustainability aspects and future perspectives for forming major strategic cooperations in the fields of chemical biology and academic drug discovery

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1 Glossary

CCMF	EU-OPENSREEN's Central Compound Management Facility
DG RTD	Directorate-General for Research and Innovation
DNDi	Drugs for Neglected Diseases Initiative
EACL	EU-OPENSREEN's European Academic Compound Library
ECBS	European Chemical Biology Symposium
EMBL	European Molecular Biology Laboratory
EOSC	European Open Science Cloud
ERA	European Research Area
ERIC	European Research Infrastructure Consortium
ESFRI	European Strategic Forum on Research Infrastructures
FMP	Leibniz-Forschungsinstitut für Molekulare Pharmakologie
H3D	Drug Discovery and Development Centre
IAG	Industry Associate Group
ICRI	International Conference on Research Infrastructures
ILO	Industry Liaison Office
KPI	Key Performance Indicator
LS-RI	Life Science Research Infrastructure
MDC	Max Delbrück Centre for Molecular Medicine
MoU	Momorandum of Understanding
NCRIS	National Collaborative Research Infrastructure Strategy
NTD	Neglected Tropical Disease
RI	Research Infrastructure
TIA	Therapeutic Innovation Austra
VAT	Value-Added Tax



2 Introduction

EU-OPENSREEN is a distributed research infrastructure (RI) in the field of Chemical Biology and early Drug Discovery. In 2018, it was inaugurated as an international European Research Infrastructure Consortium (ERIC), based in Berlin, Germany, by seven founding members: Czech Republic, Finland, Germany, Latvia, Norway, Poland and Spain. The member countries contribute membership fees, which ensure the operation of the RI, including the Central Office, Central Compound Management Facility (CCMF), Database, and training activities.

As the host country of the EU-OPENSREEN ERIC, Germany made a specific host country contribution to establish the central assets of the RI, which are jointly used, including the premises of the Central Office, the premises and equipment of the CCMF, and the jointly used compound collections.

In order to improve the long-term sustainability of the RI, additional measures were explored during the DRIVE project:

The membership fees play an important role in the operation of the RI. During the lifetime of the DRIVE project, three additional countries joined the EU-OPENSREEN ERIC as new member countries: Denmark, Portugal and Sweden, which are described in more detail in [Deliverable D1.3](#).

The expenses for the implementation of the scientific user projects at the affiliated EU-OPENSREEN partner sites, which are located exclusively in the member countries, are not covered by the membership fees of the member countries. In general, the users are expected to apply with their own project funding as part of their research activities. EU-OPENSREEN raised awareness among the scientific community, for example, by organizing the biennial European Chemical Biology Symposium (ECBS), organizing outreach activities at scientific conferences, regular webinars, annual training schools and other training activities, which are described in deliverable D9.3.

In addition to the users' project funding, EU-OPENSREEN and partner sites participate in European projects, which support transnational projects, for example, ISIDORE (<https://isidore-project.eu/>), canSERV (<https://www.canserv.eu/>) and AgroServ (<https://agroserv.eu/>). European project funding for RIs is therefore important to complement the membership fees of the member countries to facilitate these transnational research collaborations with RI users.

EU-OPENSREEN collaborates with scientists from both, academic and industry. The majority of EU-OPENSREEN users are from academic institutions. Thus, DRIVE WP7 specifically aims to enhance the engagement with industry partners. A bespoke Industry Liaison Office (ILO) and Industry Associate Group (IAG) have been established, and pilot co-development projects with industry partners were implemented during the DRIVE project (see [Deliverable 7.1](#) and [7.2](#)).

In this report, we will describe EU-OPENSREEN's efforts to increase the long-term sustainability of the RI by engaging with public policy makers and funding organizations, charities and foundations, and international collaboration partners. We will explain the different communication channels and formats to facilitate these discussions in the framework of the DRIVE project.



3 Perspectives for strategic cooperations in the fields of chemical biology and academic drug discovery

Over the past year, EU-OPENSSCREEN pursued different approaches to engaging with public funding organisation and science policy makers in Europe. These include the participation of in consultations and networking events of the European Strategic Forum on Research Infrastructures (ESFRI), bilateral discussions with stakeholders at the European Commission and other formats. With the aim to increase the visibility of the RI, EU-OPENSSCREEN joined forces with thematically similar RIs to coordinate the engagement with stakeholders, either as part of the EU project ERIC Forum, as a partner in the group of Life-Sciences Research Infrastructures or via trilateral collaboration with Euro-BiImaging and Instruct. Besides the engagement with these public funding organisations, EU-OPENSSCREEN proactively reached out to private charities and foundations.

Finally, in the second part of this report, we describe EU-OPENSSCREEN's collaboration with scientists in different world regions, either as part of collaborative research projects, or as part of joint training or outreach activities, or initiated by the exchange of compounds, which are integrated in EU-OPENSSCREEN's European Academic Compound Library (EACL).

3.1 European Strategy Forum on Research Infrastructures (ESFRI)

EU-OPENSSCREEN has been included in the periodic Roadmap for Research Infrastructures of ESFRI in 2008, and is now an ESFRI Landmark Project. ESFRI is a self-regulated body with senior science-policy officials or equivalents, who represent ministers responsible for research in their respective country. ESFRI is a strategic instrument to develop the scientific integration of Europe and to strengthen its international outreach. It has the “mandate from the EU Council to support a coherent and strategy-led approach to policy-making on research infrastructures in Europe, and to facilitate multilateral initiatives leading to the better use and development of research infrastructures, at EU and international level” (<https://www.esfri.eu/>).

With the launch of the ESFRI Stakeholders Forum (<https://www.esfri.eu/esfri-stakeholders-forum>), ESFRI recently launched a new platform, with the ambition to instigate an open dialogue among the different European RI stakeholders, to reinforce the position of Research Infrastructures (RIs) as an essential pillar of the European Research Area (ERA). This concept was presented in the ESFRI White Paper adopted in 2020.

The explicit aim of the consultations of the ESFRI Stakeholders Forum are new and improved services by RIs, with their enhanced use across various communities. The participants of these events are science policymakers, municipalities, citizens, socio-economic actors, research organisations and higher education institutions with scientific communities participating in European Research Area (ERA) activities, which may contribute to or run the RIs, or are their potential users of RIs. EU-OPENSSCREEN participated in the first ESFRI Stakeholders Forum Meetup (<https://www.esfri.eu/esfri-events/1st-esfri-shf-meetup>), which took place in September 2022 in Brussels. Another ESFRI Stakeholders Forum Meetup was in September 2023 in Tenerife, Spain.





Figure 1: Moderator Prof. Carlo Rizzulo and panellists at the Opening & Welcome session at the First ESFRI Stakeholder Forum Meet-up in Brussels, Belgium, in September 2022.

3.2 ERIC Forum

The most recent ESFRI Roadmap 2021 (<https://roadmap2021.esfri.eu/>) lists 22 ESFRI Projects and 41 ESFRI Landmarks. With the aim to increase EU-OPENSREEN's visibility in consultations and other policy actions with national, European and international science policymakers, funding agencies, and ESFRI, EU-OPENSREEN participates as a project partner in the ERIC Forum (<https://www.eric-forum.eu/>). This format allows EU-OPENSREEN to address jointly with other established RIs science policy issues, which arise from emerging scientific and technological developments, and from the impact of ERICs on the European research ecosystem. Over the past years, EU-OPENSREEN contributed to policy briefs and ERIC Forum position papers.



Figure 2: Participants in the 4th ERIC Forum Meeting in Oslo, Norway in May 2019.

The discussions with other ERICs during exchange of experience sessions, in thematic working groups and during networking activities feed back into the DRIVE project. For example, ERICs



extensively discussed and exchanged views on the Key Performance Indicators (KPIs) for Research Infrastructures, which have been proposed by ESFRI (<https://www.esfri.eu/latest-esfri-news/report-esfri-working-group-monitoring-ris-performance>). EU-OPENSSCREEN contributed to the ERIC Forum's position paper "ERIC Forum Position paper on Key Performance Indicators (KPIs) for Research Infrastructures", which has been published in May 2019 and which is available for download on the project website (<https://www.eric-forum.eu/wp-content/uploads/2020/09/ERIC-Forum-position-paper-on-KPIs-for-RIs.pdf>). Based on these discussions, further bilateral in-depth consultations with individual RIs in the life sciences helped EU-OPENSSCREEN to refine its own KPIs. After consultation with EU-OPENSSCREEN partner sites and DRIVE beneficiaries, as well as with our member country delegates, EU-OPENSSCREEN consolidated its KPIs. The refined KPIs of EU-OPENSSCREEN are published in the DRIVE deliverable D1.4.

As part of the Eric Forum 2 project, EU-OPENSSCREEN will work on the sustainability of ERIC services, the visibility of RIs in the national arena to raise further awareness of ERIC offers, on modalities of engagement with third countries and international organisations, on intensifying efforts towards a green and digital transition (e.g., energy efficiency analysis) as well as addressing challenges of the ERIC regulation implementation (e.g., VAT exemptions in different countries).

3.3 Life-Sciences Research Infrastructures (LS-RI) Strategy Board

All life science RIs are distributed RIs and share similar challenges such as the development of internal procurement rules, harmonised reporting, VAT exemption practices, insurances and pensions policies and training of governance bodies representatives. While the ERIC Forum partners are RIs that are established as European Research Infrastructure Consortia across scientific fields (e.g., life sciences, physical sciences, social sciences, environmental sciences), the Life Sciences Research Infrastructures on the ESFRI Roadmap (Life Science Research Infrastructure – LS-RIs) established a thematically more focused group of RIs, independently of their legal form: the Life-Sciences Research Infrastructures Strategy Board.

EU-OPENSSCREEN is a member of the LS-RI Strategy Board and signed a non-legally binding Memorandum of Understanding (MoU), which serves as a framework for strategic collaboration and coordination, and which defines the objectives of the LS-RI collaboration.

The Strategy Board has an advisory role to facilitate the exchange of information and create of synergies between the LS-RIs. The LS-RI Strategy Board elects a chair and a vice chair amongst themselves on a rotating one-year term basis. EU-OPENSSCREEN was the chair of this group between September 2021 and August 2022.

EU-OPENSSCREEN participated in the meetings, which were organised by the LS-RI Strategy Board, with members of the Directorate-General for Research and Innovation (DG RTD) of the European Commission, which coordinates the European Union's research and innovation policy and coordination of research and innovation activities. The aim of these consultations was to present how the LS-RIs promote FAIRification of research data and contribute to the European Open Science Cloud (EOSC). The discussions also highlighted how operational synergies between the RIs in the life-sciences are created and how shared services are developed and provided to scientists in various Horizon 2020 and Horizon Europe projects, e.g., ISIDORE, CanSERV, AgroSERV.

The LS-RI group provides an excellent forum to engage with the ESFRI Strategic Working Group 'Health & Food' and Mission Boards. It facilitates discussions on, for example, identified or



perceived gaps in the ESFRI landscape. EU-OPENSSCREEN contributes to the position papers, which are published by the group of LS-RIs, for example, the recent position paper on 'How European Life Science Research Infrastructures will support the Cancer Mission' (https://eatris.eu/wp-content/uploads/2020/06/LS_RI_Cancer_Mission_Capacities-1.pdf). These joint statements are important to raise awareness among relevant policy stakeholders and allow EU-OPENSSCREEN and the different LS-RI to speak with one voice to increase the visibility of each individual RI.

3.4 Tripartite Memorandum of Understanding (MoU) between EU-OPENSSCREEN, Euro-Biolmaging and Instruct

The three life-science RIs EU-OPENSSCREEN, Euro-Biolmaging and Instruct collaborate in various Horizon 2020 (e.g., CORBEL, RI-VIS, EOSC-Life, iNEXT-Discovery) and Horizon Europe (e.g., ISIDORe, canSERV, FragmentScreen, AI4Life, EOSC4Cancer, BY-COVID) projects. They are all distributed RIs, established as ERICs, have similar access models and are thematically close.

A tripartite Memorandum of Understanding (MoU) between EU-OPENSSCREEN, Euro-Biolmaging and Instruct was signed at the International Conference on Research Infrastructures (ICRI 2022) in Brno, Czech Republic. The MoU aims to facilitate the establishment of common pipelines for user access, and the improved coordination of training, external communication, FAIR data management, and funding opportunities between the three RIs to benefit the life science research community at large. The agreement strengthens their existing collaboration and paves the way for extended outreach and synergies, project funding, training, user access and data management.

The three RIs intensify joint efforts to maintain high-quality services, offer user and staff training and increase the visibility of their common RI services towards scientific communities and funders, thus contributing to their long-term sustainability and supporting scientific excellence within the European Research Area.



Figure 3: Dr Wolfgang Fecke, Director General of EU-OPENSSCREEN, Dr Antje Keppler, Euro-Biolmaging Bio-Hub Director, and Prof. Harald Schwalbe, Director of Instruct-ERIC, after the signature of the tripartite Memorandum of Understanding at the International Conference on Research Infrastructures (ICRI 2022) in Brno, Czech Republic.



3.5 Foundations and charities

Besides the public funding organisations at the national and European level, EU-OPENSREEN engaged with foundations and charities to present the aims of the RI and the opportunities for collaborations in the field of drug discovery.

The largest private charity supporting the development of technologies that facilitate drug discovery, low-cost drug manufacturing, and drug delivery is the Bill & Melinda Gates Foundation (<https://www.gatesfoundation.org>). Pierre Grand, Senior Advisor Europe Office of the Bill and Melinda Gates Foundation visited EU-OPENSREEN in August 2019. Pierre Grand was accompanied by Detlev Ganten, who is the founding Director of the Max Delbrück Centre for Molecular Medicine (MDC) and President of the World Health Summit, and Jörg Heldmann, Managing Director of the World Health Summit. The discussion focussed on EU-OPENSREEN's strategy to raise awareness on European RIs and attract users globally, with an emphasis on reaching out and engaging with scientists from Africa. As part of the Horizon 2020 project RI-VIS (<https://ri-vis.eu>), EU-OPENSREEN co-organised the 'Africa Europe Symposium', which was initially planned as an in-person event at the University of Cape Town in March 2020, with Prof. Trevor Sewell, Director of Imaging and Analysis, at University of Cape Town as the host and local organiser of the meeting (due to the ongoing Covid-19 pandemic, the meeting was held an online meeting in February 2021). The symposium brought together African technology platforms, European RIs, funders, philanthropic organisations and researchers.



Figure 4: Visit of Pierre Grand, Senior Advisor Europe Office, Bill and Melinda Gates Foundation, Dr. Detlev Ganten, Founding Director of the Max Delbrück Centre for Molecular Medicine (MDC) and President of the World Health Summit, and Jörg Heldmann, Managing Director of the World Health Summit to EU-OPENSREEN and the Leibniz-Forschungsinstitut für Molekulare Pharmakologie (FMP) Screening Unit on August 20, 2019.

Another foundation, the Volkswagen Stiftung, regularly published calls for cooperative research projects in Sub-Saharan Africa. Together with the DRIVE partner Fraunhofer ITMP and the Drug Discovery and Development Centre (H3D), University of Cape Town, EU-OPENSREEN applied for a 'Cooperative Research Projects in Sub-Saharan Africa' grant of the Volkswagen Foundation. The joint proposal to organise a comprehensive Sub-Saharan workshop on preclinical drug discovery at the University of Cape Town was successful. The workshop, which will be organised in early 2024, will provide a comprehensive overview on pre-clinical drug discovery and focus on



early career scientists post graduate students and early career scientists from across sub-Saharan countries to collaboratively build international, interdisciplinary networks and capacity in early drug discovery. The workshop provides EU-OPENSSCREEN and the participants with the opportunity to network and build a global research network with their peers from Africa and Europe and aims to collaboratively build capacity in drug discovery expertise in Africa, which is emerging strongly across the continent.

3.6 Public-private partnerships (MMV)

HIV/AIDS, tuberculosis, and malaria are infectious diseases which claim millions of lives worldwide. In addition, the WHO lists ca. 20 neglected tropical diseases (NTDs), which disproportionately affect the Global South and where effective treatments are urgently needed. EU-OPENSSCREEN supports researchers from the Global South, who work on diseases that cause a heavy burden on vulnerable populations in the global south. Discussions with Medicines for Malaria Venture (www.mmv.org/) and other initiatives are ongoing to facilitate collaborations and joint projects to advance drug discovery research in this area. Discussions about a collaborative pilot research project are well advanced and the project will be initiated shortly.

Individual partner sites already work with Drugs for Neglected Diseases Initiative (DNDi) and other organisations (<https://dndi.org/press-releases/2020/fundacion-medina-dndi-institut-pasteur-korea-announce-new-funding-from-la-caixa-health-research-to-discover-new-natural-products-against-leishmaniasis-chagas-disease/>). Based on their experience, new models for collaborations are currently being explored.

3.7 Collaborations with international partners in the field of chemical biology and early drug discovery

Besides the discussions with public funding organizations and science policy stakeholders, as well as with private foundations and charities, EU-OPENSSCREEN engaged with scientific peers from overseas to explore ways to collaborate in the field of chemical biology and early drug discovery.

In 2015, EU-OPENSSCREEN signed a Memorandum of Understanding with Compounds Australia, Australia's national compound collection housed at Griffith University's Eskitis Institute, and Therapeutic Innovation Australia (TIA), a federal government funding agency for strategic infrastructure for medical research (<https://news.griffith.edu.au/2014/05/19/eskitis-links-with-european-researchers/>).





Figure 5: Signature of the Memorandum of Understanding between EU-OPENSSCREEN, Compounds Australia and Therapeutic Innovation Australia, hosted by the Australian Ambassador to European Union, North Atlantic Treaty Organization, Belgium and Luxembourg, in Brussels, Belgium.

Regular meetings took place during the lifetime of the DRIVE project to discuss areas of joint interest and joint research projects. Recently, EU-OPENSSCREEN attended the International Chemical Biology Symposium 2022 in Brisbane, Australia, to meet in person colleagues of Compounds Australia, TIA, and Monash University.

In September, EU-OPENSSCREEN joined the Australian and European Health Research Infrastructure Symposium, hosted by the Monash University, in Prato, Italy. The aim of the symposium was to discuss collaborations between Australian NCRIS health groups, European RIs listed on the ESFRI Roadmap, and the European Molecular Biology Laboratory (EMBL). National Collaborative Research Infrastructure Strategy (NCRIS) is the program that manages Australia's national research infrastructure and supports 24 funded projects and an international membership (<https://www.education.gov.au/ncris>).

As part of the Horizon 2020 project 'RI-VIS', EU-OPENSSCREEN co-organised the Australia-Europe Symposium on Research Infrastructures (<https://ri-vis.eu/network/rivis/events/australia---europe-symposium-on-research-infrastructures>), which was initially planned as an in-person event in Australia, but took place as a virtual event due to the ongoing Covid-19 pandemic and related travel restrictions. Dr Stuart Newman represented TIA at this event. After the symposium, EU-OPENSSCREEN co-authored, together with colleagues from Australia and European RIs, the White Paper 'Recommendations towards cooperation between Australian and European research infrastructures', which has been published on Zenodo (<https://zenodo.org/record/4546173>).

Besides advancing discussions with collaborators in Australia, EU-OPENSSCREEN engaged with scientists in the other world regions, including Latin America, South Africa and Asia. Similar to the bioregional symposium with Australia, EU-OPENSSCREEN co-organised similar virtual 2-3-days symposia, such as the 'Latin America - Europe Symposium on Research Infrastructures' in June 2021 (<https://ri-vis.eu/network/rivis/events/ri-vis-latin-america---europe-symposium-1>) and the 'Africa-Europe Symposium on Research Infrastructures' (<https://ri-vis.eu/network/rivis/events/ri-vis-africa-europe-symposium>) in February 2021, which was hosted by the University of Cape Town. These symposia brought together relevant stakeholders in the respective two world regions and provided a forum for discussions on new partnerships as well as on common challenges and opportunities. The symposia initiated and supported discussions between EU-OPENSSCREEN and individual chemists in Africa, Latin American and Australia about the opportunity and benefit of sharing their compounds with EU-OPENSSCREEN. Individual bilateral follow-up discussions took



place, during which the procedure of the compound submission, Material Transfer Agreement, conditions, data policies and other practical aspects, which are highly relevant for the chemists, were discussed in detail. Besides synthetic compounds, the discussions also revolved around the submission of natural compounds, which needs to be compliant to the 'Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization.' In general, EU-OPENSOURCE's compound submission model is an excellent format to initiate long-lasting bi-regional partnerships between EU-OPENSOURCE and the international scientific community. EU-OPENSOURCE does not charge any access cost or other expenses (e.g., shipment) and the bioprofiling, quality control, reformatting, storage etc. is free for the submitting chemist, so the barrier to engage with EU-OPENSOURCE as a chemistry user is low. The initial success of these case studies as a model to create a scientific user community in chemical biology and initiate bi-regional collaborations with chemists worldwide encourages us to further pursue this effort in the future.

4 Conclusion

Similar to other RIs listed on the ESFRI Roadmap for Research Infrastructures, EU-OPENSOURCE member country contributions account for the funding basis for the operation of the distributed RI. Project funding from public funders (i.e., national and Horizon 2020 / Horizon Europe project funding) are essential to support additional activities, which allow the RI, for example, to extend its service portfolio, to increase the reach of the outreach and training activities, and to widen its user communities. Therefore, a concerted effort to engage with public funding organisations and science policy stakeholders proactively and continuously is important for the long-term sustainability of the RI. In this report, we described the different approaches and formats, often in collaboration with other RIs and ESFRI Landmark Projects. These are organised either in the framework of the EU-funded projects, e.g., ERIC Forum / ERIC Forum 2, EU-OPENSOURCE DRIVE and RI-VIS, or as initiatives that are governed by MoUs, e.g., group of life sciences RIs or tripartite collaboration with Euro-Biolmaging and Instruct.

In addition to the public funding organisation, EU-OPENSOURCE also engaged, during the course of the EU-OPENSOURCE-DRIVE project, with private foundations and charities to discuss possible collaborations to facilitate joint research projects or to support joint training and capacity-building efforts, e.g., the organisation of the comprehensive Sub-Saharan workshop on preclinical drug discovery next year with partners at the University of Cape Town next year.

Engagement with the non-European science communities involved outreach activities at in-person and virtual scientific conferences, which are described in the [EU-OPENSOURCE-DRIVE Deliverable 9.3](#) (Report on scientific publications and dissemination / outreach activities to new communities); training activities; collaboration in joint research projects and exchange of compounds as part of EU-OPENSOURCE's compound submission model.

In summary, various approaches are pursued to facilitate the continuous engagement with public and private funding organisations, science policy stakeholders, foundations and charities. At the same time, EU-OPENSOURCE proactively engaged with scientists from overseas to further collaborations as part of joint collaborative research projects, exchange of compounds, or training and outreach activities to broaden the user community and geographical impact of the RI.

