

Integrated Structural Biology Infrastructure INSTRUCT

Scientific area:	Life Sciences
Host country:	United Kingdom
Infrastructure type:	Distributed
Dutch node or similar:	INSTRUCT-NL
Legal entity	ERIC
Established:	2017
The Netherlands member since:	2012
Phase:	Operational

Duration of agreement

Ongoing

Terms of withdrawal

Before June 30 of a calendar year and at least 2 year membership

Access to facilities

Open Access to the INSTRUCT infrastructure, expertise and methods is available to academic and industry researchers from all Member countries

Access to data

Open Access

User definition

We define an INSTRUCT user as any member of the research community who uses any of our services including access to our infrastructure, training programmes, research and development grants and participating in our scientific conferences. In addition, INSTRUCT-ERIC supports individual researchers through technical advice which may fall outside of the scheduled activities.

Description:

INSTRUCT-ERIC is a pan-European distributed research infrastructure making high-end technologies and methods in structural biology available to users. Our aim is to promote innovation in biomedical science and operates on a non-economic basis within the scope of the ERIC Regulation. INSTRUCT-ERIC is comprised of 14 Member Countries: Belgium, Czech Republic, EMBL, Finland, France, Israel, Italy, Latvia, Lithuania, Netherlands, Portugal, Slovakia, Spain and United Kingdom, and one Observer Country: Greece. INSTRUCT-ERIC provides open access to cutting edge structural biology, specifically supporting research that uses integrated approaches and technologies. It operates with the following principles: a) scientific excellence is our priority in the services we provide and the research we support; b) transparency, equality and legality is the cornerstone of our operational model.

Financial details

Mean Dutch membership over 5 year period (€K)

n/a

Mean Dutch share of contribution over 5 year period (%)

n/a

Year	NL membership (k€)	NL Contribution (% of total*)	Total membership (k€)	Total expenditure (k€)	Turn-over (k€)
2017	75	n/a	n/a	2213	n/a
2018	77	n/a	n/a	2546	n/a
2019	78	8.5	889	992	1674
2020	80	8.7	943	1351	1595

Employee statistics

	Female	Male	Other	Total
Total	10	3,5		13,5
Of which are Dutch	0	0	0	0

(2019, FTE – Full Time Equivalents)

The majority of the FTE are paid by Horizon 2020 grants (2.75 FTE are paid directly by the ERIC) and the personnel managing and supporting access visits and training at the distributed infrastructures and in kind contribution by the Centres.

Use of the infrastructure

User information

Year	Number of users		Dutch share of users (%)	Type of users	
	NL	Other Countries		Senior (%)	Students (%)
2016	16	526	3	20	75
2017	29	646	4.3		
2018	24	295	7.6		
2019	33	586	5.7		

Comments by the RI

We have done our best to estimate these numbers but the information is not requested in the way we measure our KPIs or the way ESFRI or the EC request the information. We only provide totals as in many of our activities the Male/Female is not required information. These number are underestimation as doesn't include internal training meetings and project activities which would involve hundreds of additional users.

During the period 2016-2019, INSTRUMENT-ERIC has undergone a number of important developments that have affected its interactions with the community it serves. These are: transition in legal form from a non-profit Limited Company to ERIC status (2017) and expansion of the membership from 11 member states in 2017 to 14 in 2019 . In addition, there has been a structural biology molecular revolution in technology development (in particular in cryo-electron microscopy) during this time which has driven significant changes in the composition of the INSTRUMENT research infrastructure, which has also affected the community demand and delivery. These numbers are an estimation taking into account the average membership of a team applying for access, the teams hosting and participating in training courses, collaborating researchers in internships and other INSTRUMENT awards. Technical staff are recorded in training workshops specifically for technical staff.

Application information

Year	Number of applications/requests		Number of approved applications/requests		Percentage of approved applications/requests to use (%)	
	NL	Other countries	NL	Other Countries	NL	Other Countries
2016	2	94	2	71	100	76
2017	6	91	5	62	83	69
2018	7	83	6	65	86	79
2019	9	113	8	83	89	75

Comments by the RI

Applications = proposals submitted to our infrastructure and a single proposal can make multiple requests to different infrastructure services. The numbers above show numbers of applications which will be lower than the number of requests. The numbers provided only show applications for access and do not include training, R&D, internships and other core activities. Applications are each supported by teams of scientists and therefore an application does not have a gender.

Sample request information

n/a

Comments by the RI

Providing samples is not one of our activities. However, during the present COVID-19 situation we have supported the development of a reagent data base where users can request reagents for COVID-19 research. INSTRUMENT does not provide samples per se, although sample preparation is provided within the technical services. However, INSTRUMENT has facilitated an external COVID-19 sample repository which may be extended in 2020 for INSTRUMENT to provide samples/reagents on request.

Data request information

n/a

Comments by the RI

We don't own or manage datasets. However, the research undertaken using our infrastructure contributes to the production of data reused elsewhere.

Contributions provided by organisations or companies in the participating countries

<i>Year</i>	Contributions by organisations or companies in the participating countries (k€)		Dutch percentage out of contributions provided by organisations or companies	
	NL	Other countries	NL	Other Countries
2016	n/a	486	n/a	n/a
2017	n/a	735	n/a	n/a
2018	n/a	1109	n/a	n/a
2019	n/a	1427	n/a	n/a

Dutch percentage out of contributions provided by organisations or companies

n/a

Comments by the RI

Aside from the membership fee that each member contributes, an in-kind contribution from institutions provide the infrastructure and support staff to enable infrastructure access. The catalogue of infrastructure services is described [here](#), including electron microscopy, high-end NMR, high-throughput sample production and access to synchrotron beamlines. The membership fee pays consumable and travel costs for infrastructure access but all other costs are part of the in-kind contribution which would be difficult to calculate but is at least in the hundreds of thousands of Euros. The infrastructure pledged for INSTRUMENT access is purchased, maintained, staffed and upgraded by each institution - and this forms the basis of the in-kind contribution.

Contributions provided by organisations or companies in the participating countries

n/a

Comments by the RI

For operational activities at INSTRUMENT Centres INSTRUMENT-ERIC counts on the in-kind contribution of the institutions that are part of the distributed infrastructure. The catalogue of services is described [here](#) including electron microscopy, high-end NMR, high-throughput sample production and access to synchrotron beamlines. The subscription fee is used to cover consumable and travel costs but all other costs are part of the in-kind contribution which would be difficult to calculate but would be at least in the hundreds of thousands of Euros.

Income from user fees

n/a

Comments by the RI

INSTRUCT-ERIC is mostly free at the point of use for users resident in INSTRUCT-ERIC member countries. Users from non-member countries can pay per access but this is done directly to the centre involved. Only in some cases of an extended visit the user may be required to supplement the cost of the visits. Where fees are charged this is done at a centre level and there is not oversight of the fees charged centrally.

Additional questions to the RI (2020)

What is the Dutch contribution to the RI?

The Netherlands hosts the multi-sited INSTRUCT-NL Centre bringing together facilities in Amsterdam (NKI; crystallization, protein production, molecular biophysics), Leiden (NeCEN; electron microscopy) and Utrecht (Bijvoet Centre, Utrecht University; mass spectrometry, magnetic resonance). These facilities host a large number of (inter)national access projects per year, not only through INSTRUCT, but also through EU funded infrastructure projects, NWO funded infrastructure projects, and through bilateral interaction with academic and industrial scientists. The participation of the Netherlands in INSTRUCT(-ERIC) since 2014 has been an important factor in the continued development and funding of the Dutch structural biology research community. Amongst others, the Dutch INSTRUCT-NL sites coordinate(d) the EU infrastructure projects WeNMR (computational structural biology), PRIME-XS (proteomics), iNEXT (structural biology), EPIC-XS (proteomics) and iNEXT-Discovery (structural biology). Importantly, they have been able to maintain an internationally competitive role in the structural biology field through large investments as part of the Dutch National Roadmap for Large-Scale Research Facilities. As part of this Roadmap, they coordinate(d) the uNMR-NL (nuclear magnetic resonance, 2x) and Proteins@Work (proteomics) projects and participate in the X-Omics (multi-omics) and NEMI (electron microscopy) projects. Access to the new and upgrades facilities established through these projects is provided to national users and industrial partners, and internationally through EU infrastructure projects and to the users of INSTRUCT-ERIC. INSTRUCT-NL also successfully bid to hold the 2021 INSTRUCT-ERIC Biennial Structural Biology Conference which is planned to take place in May 2022 (a year delayed due to the COVID-19 pandemic).

Currently, are there any RI's that provide similar kinds of research infrastructure and services as yours in the world?

RISCAPE project survey of the international Research Infrastructure Landscape in 2019 identified no infrastructures in the world equivalent to INSTRUCT-ERIC. There is a network of institutions in Latin America called CeBEM which brings together structural biologists in the region but does not provide access as we do. There are also many individual national facilities and some national networks providing access to some subset of the technologies offered through INSTRUCT-ERIC. Currently there is a Transnational network project, funded by H2020 (iNEXT-Discovery, coordinated by the Dutch INSTRUCT-NL node at the NKI) that provides infrastructure to a focused community of users requiring structural biology technologies for translational projects. iNEXT-Discovery opened in 2019 and will end in 2023. INSTRUCT-ERIC is a partner in the iNEXT-Discovery project and already works closely with this network. The expectation is that INSTRUCT will provide a substantial part of the sustainability for iNEXT-Discovery.

What are the overlaps and what are the main differences? To which extent do you cooperate or compete?

INSTRUCT-ERIC and iNEXT-Discovery have some infrastructure nodes in common, but the membership of each is not identical: INSTRUCT-ERIC has 14 members and iNEXT-Discovery is available to all EU member state and associated country researchers. INSTRUCT-ERIC provides infrastructure for all scientific proposals, subject to peer review for quality, whereas iNEXT-Discovery is focused on projects that have a direct translational relevance. INSTRUCT and iNEXT are closely aligned as iNEXT uses the INSTRUCT-ERIC ARIA access management system - this allows joint applications to be managed where added value can be provided.

What are the RI's major educational and outreach activities?

INSTRUCT offers a range of workshops delivered at INSTRUCT Centres by internationally recognised experts. Our education programme aims to train European scientists in a variety of structural biology methods, enabling researchers to expand their expertise and implement new techniques in their research. Each year we open a call for training course proposals, from which we select a broad range to offer for the following year. In addition to INSTRUCT-sponsored courses, we also maintain a list of training courses and conferences from our Centres and

the wider structural biology community on the INSTRUCT-ERIC events page. The INSTRUCT Training Programme is found [here](#). The INSTRUCT Internship Programme funds research visits of 3-6 months duration to INSTRUCT Centres in Europe. The aim is to facilitate valuable collaborations with INSTRUCT research groups applying techniques that are not available in the applicant's laboratory. Applications should specifically focus on the benefit to the applicant's research, more information available [here](#). In addition access to infrastructure provide training to early career researchers in the use of the facilities by highly trained personnel at our centres.