

Evaluating LINXS

LINXS Key Performance Indicators, Impact Cases, and financial reporting

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LINXS' function

LINXS is designed to bring researchers together in order to advance the field of neutron and x-ray science, and to inspire collaboration between researchers and across disciplines. As such, LINXS is not a traditional institute focused mainly on funding specific research. Its function is rather summarised by its mission and goals:

Mission:

- **Attract** world leading scientists for short-term focused research visits in a lean Kavli institute model
- **Invigorate** the dialogue between academia and society in all aspects of neutron and x-ray large scale facilities
- **Create** international networks and enhance the visibility of Sweden internationally in this area

Goals:

- **Promote** science and education focusing on use of neutrons and x-rays in research and development
- **Educate** future users of ESS, MAX IV and other major research infrastructures
- **Become** the nucleus for local, national and international activities in Science Village Scandinavia and a think tank which initiates new ideas and themes

The goals are to be seen as open-ended and there is no specific end date to the mission of LINXS defined above. When we refer to a "Kavli institute model", we specifically mean a working model (but not topic) similar to the Kavli Institute for Theoretical Physics ([KITP](#)) in Santa Barbara. According to its own [description](#):

The KITP is the first and foremost scientific research facility where theorists in physics and allied fields congregate, for sustained periods of time, to work together intensely on a broad range of questions arising from investigations at the leading edges of science

The main inspirational points taken away from the Kavli-KITP model are; a **lean model** (no full salaries paid to researchers); **using the location and facilities as a point of attraction** for researchers all over the world (in our case a main point of attraction is the arena connected to MAX IV and ESS); and finally, functioning as a place that **inspires collaboration between researchers and across disciplines**. However, LINXS does not function exactly like the KITP - its setup, its focus areas and modes of operation are distinct¹. Further to the inspiration from Kavli-KITP, **LINXS has a focus on basic science and methods that will shape future use** of synchrotron and neutron facilities and puts a premium on:

- **Enabling new user communities** for synchrotrons, neutron sources or both;
- **Enhancing existing user communities** for synchrotrons, neutron sources or both;

¹ See <http://www.linxs.lu.se/about-linxs> for more information.

- **Enhancing or enabling co-use** of synchrotrons, neutron sources and complementary techniques. This applies to all aspects of preparation, experimentation and analysis thereof;
- **Furthering the development of methods used** at synchrotrons and neutron sources.

“Users” is meant in a broad sense, including industry, companies and public/private entities, as well as academia. LINXS also has a remit to foster training and education, for all potential and actual users of x-ray and neutron methods, and should have a major role in outreach related to synchrotron and neutron facilities.

What is measured by LINXS?

LINXS operations are currently organised under *Themes*, which each have an associated *Core Group* (CG) of people, plus *Working Groups* (WGs) to address specific research topics within the theme. To advance their specific research and education goals, the CGs and their WGs have a battery of activities at their disposal, including conferences, workshops, hackathons², collaborative research, schools, sabbaticals, and training & outreach activities.

As a matter of course during LINXS operations, we gather (easily) enumerable information on:

- Funding & Expenditures – where funding is coming from and what the funding is spent on
- Number of attendees to events and their distributions in terms of gender (estimated), employing organisation, general scientific discipline and country of organisation.
- Number of researchers involved (at any given time, in CGs, WGs and other LINXS activities), and their distributions in terms of gender, employing organisation, general scientific discipline, country of organisation.
- Number and types of events/activities performed and resources involved, including funding, time, use of LINXS facilities.
- Number of people reached by the LINXS newsletter and signing up to the newsletter, number of people responding, and, when this becomes appropriate, followers on social media such as for example Twitter (as well as other easily gathered social media indicators).
- LINXS affiliation or acknowledgement mentioned in papers and publications, and statistics connected to the papers themselves, such as Journal Impact factor and authors.
- External communication about LINXS, such as news items on websites, articles, in magazines, issued press releases and related communications materials such as videos.

² A *hackathon* is a 1-2 week long focused work session to find a solution to a specific set of problems, preferably during the event. It brings together specific experts with those who have open research questions. Inspired by the parallel type of event in programming, and applied to a broader set of issues, such as e.g., experimental methodology.

- how much the facilities have been used including occupation of premises e.g. amount of coffee used.

We also gather not easily enumerable information relevant for impact reporting. The information is gathered via reporting from CGs and WGs, as outcomes from activities or via interviews and, ultimately, via papers, publications and enduring impact cases. These outcomes include:

- i) solutions to difficult problems tackled and new research enabled;
- ii) new user communities accessed/opened;
- iii) Existing communities enabled (via reporting and interviews – ultimately via papers and publications);
- iv) Accounts of enabling co-use of facilities and complementary techniques;
- v) Accounts of new/expanded methods enabled via, for example, new methodologies, sample environments, analysis tools.

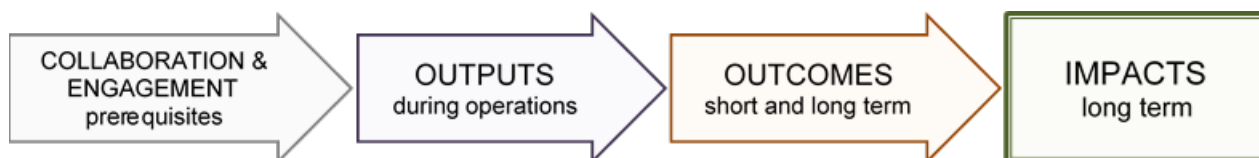
All LINXS measurements, both quantitative and qualitative, differ in terms of capturing mechanisms and effort needed for data capturing, timescale (short-, medium- and long-term), and relevance. To best serve as evaluation tools, they are therefore grouped below in three priority levels depending on purpose, capturing mechanism, and reporting frequency. The group acronym will be shown after each measurement to mark its priority level.

Priority	Purpose	Capturing	Reporting frequency
Group 1 (G1)	<ul style="list-style-type: none"> • Yearly reporting of main enumerable LINXS statistics showing activities, participation and general quantitative results. • Financial reporting. 	<ul style="list-style-type: none"> • Continuous mainly through digital systems. • Tracking in lists to process in medium- to long-term reporting. 	<ul style="list-style-type: none"> • Annually • Upon request • Budget follow-up
Group 2 (G2)	<ul style="list-style-type: none"> • Medium-term reporting where more qualitative aspects of LINXS results emerge. • Requires resources in time and work. 	<ul style="list-style-type: none"> • Tracking in lists to process for long-term reporting. • Questionnaires • Interviews and processing of tracked activities and cases 	<ul style="list-style-type: none"> • Every 3 to 5 years depending on LINXS mandate periods. • Occasionally and upon request.
Group 3 (G3)	<ul style="list-style-type: none"> • Long-term reporting where impact can be captured and analysed. • Analysis of specific aspects and perspectives when relevant. • Requires significant effort and resources. 	<ul style="list-style-type: none"> • Tracking of relevant sources • Not regularly • Comprehensive analysis necessary. 	<ul style="list-style-type: none"> • Long term (10+ years) upon approved request.

LINXS' impact logic, Key Performance Indicators and Impact Cases

LINXS' ambition is to, at least, become a nationally coordinating body for leveraging the presence of MAX IV and ESS in Sweden. This ambition extends to becoming, in the longer term, an international research hub for x-ray and neutron related science. Therefore, we have taken pains not to make the evaluation criteria of LINXS specific to a single university or partner.

We follow an impact logic partly inspired by the Lund University evaluation model for external impact of strategic research areas³ augmented with standard measures for impact used *within* academia. The impact logic follows a schema:



COLLABORATION AND ENGAGEMENT – With this we mean measuring the prerequisites for regular operation, such as funding, how and with whom are we collaborating and how we ensure that the actors are engaged. When we say “measured by” in the following, we mean a Key Performance Indicator (KPI) when the indicator is easily enumerable), and an Impact Case (IC) when it is not easy to quantify. Evaluation criteria relating to collaboration and engagement are:

- 1) **Total engagement** (academic and otherwise), both for events and fellows, **measured by:**
 - i) Number of people attending events (KPI) (G1)
 - ii) Distribution and number of organisations of origin for attendees (KPI) (G1)
 - iii) Gender distribution of attendees, as estimated by LINXS ⁴ (KPI) (G1)
 - iv) Subject distribution of attendees (KPI) (G1)
 - v) Number of LINXS fellows and invited speakers (KPI) (G1)
 - vi) Distribution of organisations of origin for fellows and invited speakers (KPI) (G1)
 - vii) Gender distribution of fellows and invited speakers (KPI) (G1)
 - viii) Subject distribution of fellows and invited speakers (KPI) (G1)
- 2) **Funding raised** and its origin, including (where applicable):
 - i) Size and percentage of funding from government sources (KPI) (G1)
 - ii) Size and percentage of funding from other sources including in-kind (KPI) (G1)

This will appear in the financial reporting (see below in the text)

³ See “Impact beyond academia – A guide to help preparing for impact evaluations”, by Pia Romare, Corporate Relations (Avdelning Samverkan), Lund University.

⁴ Due to GDPR rules, no gender information can be directly collected.

- 3) **Interdisciplinary and intersectoral engagement** (academic-academic and academic-institute/industry/public), both for events and fellows, as measured by:
 - i) Distribution over main subject discipline and sector (captured in 1.iv) (G1)
 - ii) Notable examples or stories (IC, about 3 per year expected) (G2)
- 4) **Intermethodological engagement** (i.e. specifically pertaining to bringing different methodological stakeholders together), **as measured by:** Participation in events and activities (IC, self-reported by event organisers and WGs) (G2)
- 5) **Collaboration with private or public actors**, national, or international. This also includes education or culture institutes, archives, **as measured by:** Number of people from outside academia involved in and attending events (captured in 1.ii) (G1)
- 6) **Public involvement, as measured by:** Number of occasions LINXS was presented in outside talks, mentioned in news items, etc. (KPI) (G2)
- 7) **Participatory** research, i.e. discussion on concrete problems in the realm of practice and its diversity, **as measured by:** Number and distribution of types of events (KPI) (G1)

OUTPUTS – Outputs are concrete deliverables, research products and activities performed as part of the operations in LINXS. Items in this category are:

- 1) New ideas, products and processes leading to potential publications and funding raised for scientific projects (outside the scope of LINXS) **as reported to LINXS, as measured by:**
 - i) Number of publications with LINXS affiliation or acknowledgement (KPI) (G1)
 - ii) Number of proposals written as a result of activities in LINXS (KPI) (G2)
- 2) New methods or increase in the applicability of existing methods, **as measured by:** Notable examples or stories (IC, with a target of at least one per year when LINXS has reached full operations) (G2)
- 3) New infrastructure and other outputs for societal target groups: instruments, datasets, resources, software tools, designs and/or educational material (LINXS encourages open source), **as measured by:** Notable examples (IC) (G2)
- 4) New policies and guidelines (in e.g. public policy, social services, health care, conservation etc.), **as measured by:** Notable examples (IC) (G2)

OUTCOMES – Outcomes can be short term (up to 5 years), medium term (5-10 years) and even long term (10+ years). These are effects that result from the use of the outputs (beyond the control of LINXS) in academia, research infrastructures, institutes and society in general. Items in this category are:

- 1) Academic outcomes, **as measured by**:
 - i) **Number of citations** of publications with LINXS affiliation or acknowledgments (KPI); (G2)
 - ii) **Size of external funding** won for external projects resulting from LINXS activities as reported to LINXS (KPI), and; (G3)
 - iii) **New models, methods or policies that are in use** by scientists and/or public/private actors resulting from LINXS activities (IC) (G3)
- 2) **Increase in the active user community** at large research infrastructures, as **measured by** the cases related to LINXS in a long term perspective (IC) (G3)
- 3) **Number of projects engendered with parties outside of academia**, as a result of LINXS activities, **measured by** follow-up reporting from people involved (KPI and IC) (G3)
- 4) **Results of dissemination and knowledge exchange activities** directed towards the public or different user-groups, as **measured by** (where applicable): number of views, website analytics and similar metrics, including number of outreach activities and counting the number of persons reached (KPI) (G2)

IMPACTS – Societal and academic impact derived from activities includes academic, social, environmental, cultural and economic benefits. Societal impact also includes the reduction or prevention of harm, risk, cost or other negative effects. These impacts are to be considered over a long term of 10+ years. These are difficult to follow quantitatively, especially considering the time spans involved. LINXS will rely on the time evolution of its KPIs and gathered Impact Cases, which, over time, will be followed up to answer long-term questions such as: (G3)

- 1) Does LINXS exist and is its work generally regarded as relevant and useful?
- 2) What have LINXS' effects been on building up capacity in the national and local research and innovation arena?
- 3) Has LINXS managed to lift the profile of the arena internationally?
- 4) Are the outcomes resilient, have they brought a lasting change and contributed to the goals of LINXS?
- 5) Has LINXS affected the total volume of users, from academia, industry and public/private sectors, of x-ray and neutron methods and associated facilities in a significant way?
- 6) Has LINXS affected the way education is performed in the arena?
- 7) Has LINXS contributed to advancement of and breakthroughs in x-ray and neutron science at the large-scale facilities?

LINXS' Financial Reporting model

The LINXS financial reporting model is used for all internal and external reporting needs and aims to provide transparency and efficiency through standardisation (G1).

Income statement	General Categories	Description	Accounting category
Income	National funding	Includes funding from national sources such as the Swedish Tillväxtverket, Vinnova, VR etc.	35110 - Bidrag statl mynd exkl affv
	National funding Total		
	Partners contribution	Includes financing from partners and participants. Currently includes funding from the LU faculties of Science, Engineering and Medicine, as well as LU central funding .	30112 - Anslag FFU
			30121 - Fördeln anslag, senare beslut
			30122 - Fo-samarbete anslag
	Partners contribution Total		
Private funding	Includes funding from private sources such as private foundations.	36220 - Bidrag övr org och ideella för	
Private funding Total			
Income Total			
Expenditures	Activities	Conference costs	50110 - Lokalhyra
			50910 - Övriga utgifter för hyrd lokal
			57322 - Måltid kurs konferens
			57323 - Måltid arbetsmöte
		Includes renting of conference space, catering, translation, related printed material etc	57400 - Konferensavg vetenskaplig konf
			57470 - Förtäring vid sammanträde
			57892 - Köpta tjänster övrigt
			Conference cost Total
		Hotel	
		Includes accommodation for keynote speakers, LINXS external fellows and outreach activities.	57320 - Hotell och logi
Hotel Total			
Participation conferences	48100 - Kurs/konferensavg utb/komp utv		
Includes fee for outreach activities	57400 - Konferensavg vetenskaplig konf		
Participation conferences Total			
Representation external	49600 - Representation intern		
Includes external representation for LINXS	55200 - Representation extern		

Expenditures	external fellows and guests. In few cases it may include costs for partners working group meetings such as Board meetings	
	Representation external Total	
	Travel Includes travel costs for keynote speakers, LINXS external fellows and outreach activities.	55110 - Biljetter, bil/busshyra resor
	Travel Total	
	Activities Total	
	Equipment	
	Computer/screen/electronics May also include special equipment related to specific activities such as hackathons.	63210 - Datortillbehör m m 63502 - Elektronik 64200 - Korttidsinvest datorer m m 64800 - Korttidsinvest övrigt
	Computer/screen/electronics Total	
	Depreciation Includes depreciation of equipment.	69125 - Avskr maskin o inv 69122 - Avskr datorer o kringutr
	Depreciation Total	
Furniture	64800 - Korttidsinvest övrigt	
Furniture Total		
Equipment Total		
Materials & consumables		
	57892 - Köpta tjänster övrigt	
Office supply Includes printing paper, coffee and coffee machine service etc.	63200 - Pappersvaror utan tryck 63290 - Kontorsmaterial övr ej papper 63800 - Övriga varor	
Office supplies Total		
	55300 - Information reklam annonsering 57000 - Tryckning av böcker blanketter	
Printed material Includes LINXS printed material, publication, and related services.	57892 - Köpta tjänster övrigt 63190 - Övr tryckta pappersvaror 63800 - Övriga varor	
Printed material Total		
Services Include computer leasing and service, postage etc.	52320 - Serv o u-hållsavtal dator m m 57130 - Operationell leasing	

Expenditures		57310 - Varutransport o fraktavg	
	Services Total		
	Other	38620 - Valutakursvinster	
	Include currency exchange costs and the like.	59120 - Dröjsmålsränta o dyl	
		59620 - Valutakursförluster	
	Other Total		
	Materials & consumables Total		
	Overhead		57892 - Köpta tjänster övrigt
			92000 - Indirekta kostnader
			93030 - Univ gem kostn forskn
	OH		93930 - Univ gem kostn forskn förd
	Includes overhead of the LINXS host department. Currently hosted by Lund University Faculty of Science, department of Chemistry		94030 - Fak gem kostn forskn
			94930 - Fak gem kostn forskn förd
			96030 - Inst gem kostn forskn
			96930 - Inst gem kostn forskn förd
	OH Total		
	Overhead Total		
	Premises		51115 - Intern lokalhyra kärnvsh
			51715 - Intern lokalservice kärnvsh
	Premises		57210 - Tele o datatrafik
Includes office rental, cleaning services, mobile and internet cost etc.		57892 - Köpta tjänster övrigt	
		63800 - Övriga varor	
Premises Total			
		57310 - Varutransport o fraktavg	
Installation premises			
Includes costs such as initial office refurbishing and moving to the new premises.		57892 - Köpta tjänster övrigt	
Installation premises Total			
Premises Total			
Salaries	Compensation (Arvode) Includes compensation to LINXS external fellows for specific assignment when applicable.	57892 - Köpta tjänster övrigt	
	Compensation Total		
	Salaries	41110 - Lön övriga anställningar	
	Includes % of salaries of researchers from partner organisations that work on LINXS activities, and salaries of administrative personnel.	41112 - Lön ombokning	
		41124 - Uppdragstillägg	
		41125 - Övriga ersättningar	
		41160 - Löp semkostn fr 2006	
		41165 - Löp semkostn fr 2006 omb	

	43900 - Läkemedel sjukvårdser skattepl
	46000 - Lönebikostnader inst
	46005 - Lönebikostnader inst ombokn
	49400 - Friskvård
	Salaries Total
Salaries Total	
Expenditures Total	

The Accounting category in the model is based on the “Konto” category in Lund University’s financial system since it is currently the sole partner. Additional categories than those shown in the table may be included depending on the actual costs occurring during LINXS’ future development. Note that some standard accounting categories appear in more than one general categories depending on the actual occurring cost. For example, specific office supply for a conference will occur under cost for Activities.

In addition, a separate calculation of the in-kind contribution of the LINXS members and partners will also be included in the financial reporting. This is important since the model of LINXS participation and partnership offered to Swedish and international universities and other organisations includes membership and partnership levels with the possibility of both cash and in-kind contribution.

LINXS’ Annual Reporting model

The following model is a consolidation of the financial reporting model in which the overhead costs are proportionally distributed to the other cost categories. It is to be used in the LINXS Annual Report (G1). In-kind contributions from the LINXS members and partners will also be included in a separate table.

Income
National funding
Partners contribution
Private funding
Total Income
Expenditures
Activities
Equipment
Materials & consumables
Premises
Salaries
Total Expenditures
Annual Result