



# ISOLDE MOU

## Update of Annexes

**July 1, 2019**

Gerda Neyens



# OUTLINE

MOU automatic renewal every 3 years: new period 2020-2022

- Update of the Annexes during 2019 – aim for final approval November 2019
- Status of membership (Greece, Portugal, ...)
- Amendments
  - Collaboration Agreement with BOSE Institute, Kolkota, India
  - Collaboration Agreement with Prague, Czech Republic, in preparation

# Update of Annexes

## ● Annex 1: Institutes representing their country in the ISOLDE Collaboration and the names of their Contact Persons

Country	Town	Institute	Representative
	Geneva	CERN, European Organization for Nuclear Research	G. Neyens
Belgium	Leuven	Katholieke Universiteit Leuven (KU Leuven)	S. Severijns
Denmark	Aarhus	Department of Physics and Astronomy, University of Aarhus	H.O.U Fynbo
<b>Finland</b>	<b>Helsinki</b>	<b>Helsinki Institute of Physics</b>	<b>J. Pakarinen</b>
France	Bordeaux-Gradignan	CENBG	B. Blank
Germany	Greifswald	<b>Universität Greifswald</b>	L. Schweikhard
Greece	Athens	INP, NCSR Demokritos	A. Lagogiannis
Italy	Firenze	INFN	A. Nannini
Norway	Oslo	Fysisk institutt, Universitetet i Oslo	S. Siem
Poland	Warsaw	University of Warsaw	M. Pfützner
Romania	Bucharest	National Institute of Physics and Nuclear Engineering	N. Marginean
Slovakia	Bratislava	Institute of Physics, Slovak Academy of Sciences	M. Venhart
South Africa	<b>Witwatersrand</b>	<b>University of the Witwatersrand</b>	<b>D. Naidoo</b>
<b>Spain</b>	Madrid	<b>Complutense University of Madrid</b>	<b>L. Fraile</b>
Sweden	Lund	Lund University	J. Cederkall
<b>United Kingdom</b>	<b>Guilford</b>	<b>University of Surrey</b>	<b>D. Doherty</b>

# Update of Annexes

## Annex 2: List of Funding Agencies and their Representatives

Country	Agency	Place	Represented by
	CERN	Geneva	E. Elsen
Belgium	Fonds voor Wetenschappelijk Onderzoek – Vlaanderen (FWO)	Brussels	H. Willems
Denmark	University of Aarhus	Aarhus	K. Riisager
Finland	Helsinki Institute of Physics	Helsinki	K. Huitu
France	IN2P3	Paris	R. Pain
Germany	Universität Greifswald	Greifswald	L. Schweikhard
Greece	General Secretariat For Research and Technology	Athens	P. Kyprianidou
Italy	INFN	Rome	Prof. Antonio Zoccoli
Norway	The Norwegian Research Council	Oslo	A. Moe
Poland	University of Warsaw	Warsaw	M. Duszczyk
Romania	National Authority for Scientific Research and Innovation - Institute of Atomic Physics	Bucharest	F. D. Buzatu
Slovakia	Ministry of Education, Science, Research and Sport of the Slovak Republic	Bratislava	Z. Hlavacikova
South Africa	National Research Foundation	Pretoria	M. Qhobela
Spain	Ministerio de Ciencia, Innovación y Universidades	Madrid	R. Rodrigo Montero
Sweden	Swedish Research Council	Stockholm	Niklas Ottosson
United Kingdom	UKRI-STFC	Swindon	Mark Thompson

# Update of Annexes

- **Annex 4: Participants in the ISOLDE Collaboration by Country and Institute**

Modifications received from most countries.

# Update of Annexes

## ● Annex 5.1: Management structure of the ISOLDE Collaboration

- Added ISOLDE Deputy Technical Coordinator and the Operations Section Leader as invited members to ISCC, GUI (also INTC – discuss with Karsten ?)
- Rephrased/added roles of technical responsibilities at ISOLDE:

7. The ISOLDE **Technical Coordinator (ITC)** and **ISOLDE Deputy Technical Coordinator (DITC)** appointed by the CERN Departments responsible for **ISOLDE and HIE-ISOLDE (EN and BE Departments)**, **coordinate the ISOLDE/HIE-ISOLDE facility maintenance and technical R&D, while the ISOLDE OP Section Leader** coordinates the operation of the facility. They are the liaison persons (a) between the **CERN staff in EN and BE Departments** and those in EP Department, and (b) between EN and BE Departments and the rest of the ISOLDE Collaboration. They are also the contact persons for such technical collaborations concerning the ISOLDE facility as may from time to time form outside the context of the ISOLDE Collaboration.

10. The **HIE-ISOLDE Project Leader** was responsible for the advancement of the HIE ISOLDE project, up to the end of Phase 2 (December 2018). From January 2019, HIE-ISOLDE along with its pre-accelerator REX-ISOLDE, is handed over to the operations team, with the **ISOLDE OP Section Leader** in charge of its operation and consolidation

# Update of Annexes

## ● Annex 5.2: Persons holding Management and other senior positions within the ISOLDE Collaboration

ISOLDE Collaboration Committee Chairperson	B. Blank
Spokesperson	G. Neyens
Resource Coordinator	G. Neyens
ISOLDE Technical Coordinator (ITC)	R. Catherall
Deputy ISOLDE Technical Coordinator (DITC)	E. Siesling
HIE-ISOLDE Project Leader	Y. Kadi (end 12/2018)
ISOLDE Operations Section Leader	J.A. Rodriguez Rodriguez
Physics Coordinator	K. Johnston
GLIMOS	K. Johnston

# Update of Annexes

## ● Annex 7.2: Collaboration Membership Fees and extra contributions (current)

	CONTRIBUTION (kCHF)			
	Total	2020	2021	2022
CERN	285	95	95	95
Belgium	180	60	60	60
Denmark	180	60	60	60
Finland	180	60	60	60
France	180	60	60	60
Germany	180	60	60	60
Greece (since 2013)	90	30	30	30
Italy	180	60	60	60
Norway	180	60	60	60
Poland	180	60	60	60
Romania	180	60	60	60
Spain	180	60	60	60
Slovakia (since 2016)	90	60	60	60
South Africa (since 2015)	90	30	30	30
Sweden	180	60	60	60
UK	180	60	60	60

The standard membership fee is 60 kCHF/year, ~~extra contributions (also those from other funding sources) are included in the table.~~



# Update of Annexes

## 7.3 Physics equipment permanently at ISOLDE but not forming part of the common equipment (shown for information only and not part of the responsibilities of the Institutes under this MoU) (kCHF)

	CERN	Belgium	Denmark	Finland	France	Germany	Spain	Sweden	UK	Romania
ISOLTRAP					75	3600				
COLLAPS		300				1800				
WISArD		1500			200					
Miniball		1300		50	8	5200		10		
Spectroscopy	360		150				200	400		
Lucrecia-Tags					200		130		200	
CRIS		800							900	
Tilted Foil & Beta NMR	30				4					
IDS		390.5		10			209.3		171.6	423.5
Reaction Chamber (SEC)								56		

Supplementary information:

- The Collaboration has contributed jointly to several experiments, e.g. the HV platform and WITCH (80 kCHF).
- Solid state experiments have invested more than 2500 kCHF.
- The NICOLE on-line orientation set-up (France, United Kingdom) is estimated to have cost 780 kCHF.
- An electron gun is planned for the new EBIS. The preliminary budget estimate is 150 KCHF.

# Update of Annexes

## ● Annex 13: HIE-ISOLDE project

### A. SCOPE *rephrase from present/future to past (has/will have –had)*

The HIE-ISOLDE project **had** as objectives the upgrade of the post-acceleration energy and the RIB beam intensity of the ISOLDE facility. It **included** two parts:

1. The *Energy upgrade*, which **consisted** in building a superconducting linear accelerator consisting of six cryomodules, to boost the final energy of all species produced by ISOLDE to 10 A MeV or above. The project **included** all the buildings and services, in particular cryogenic, necessary for the operation of the accelerator. The transfer lines to the experimental areas are also included. The energy upgrade was proposed to be installed in three phases, and the first two phases were approved in CERN's MTP.

The first phase of the project was realized in 2016 and included the installation of 2 cryomodules bringing the energy to 5.5A MeV.

During the second phase, 2 additional cryomodules have been installed, respectively in 2017 and 2018 to increase the beam energy up to 9.2A MeV for beams with  $A/Q=4.5$ . If all cryomodules can operate at their nominal capacity, reaccelerated beams to at least this energy is possible for all isotopes produced at ISOLDE.

The 3<sup>rd</sup> phase of the project has not yet been endorsed by CERN. It was planned to install 2 low-beta cry-modules to replace part of the current warm LINAC (REX-ISOLDE), thus boosting the maximum achievable energy to 10 MeV/u for  $A/Q=4.5$ . This phase will be revised in the coming years.

2. The *design study for an intensity upgrade*, which aims at delivering a TDR for making best use of the upgraded proton beams from the LINAC 4 and the upgraded PSB. This design study has been finalized and is available under .....

# Update of Annexes

## ● Annex 13: HIE-ISOLDE project

### B. FUNDING

#### 1. Cost to completion table

Funding of the project is shared between CERN and outside partners. The total Cost-to-Completion of the project, up to the end of Phase 2, reached in December 2018 ~~as of November 2015~~ is 4039.4 MCHF over the period 2007-2018. The current CtC of the project excludes Phase 3 for which the 5.6 MCHF are still not funded.

<i>In kCHF</i>	Infrastructure	Machine			Total
		Phase 1	Phase 2	3 <sup>rd</sup> beam line	
CERN funding	<del>21'840</del> <u>21'067</u>	4'199	<del>416</del> <u>415</u>	<del>802</del> <u>753</u>	<del>27'257</del> <u>26434</u>
Collaboration		8'329	<del>4'473</del> <u>4'222</u>		<del>12'802</del> <u>12'551</u>
In kind		341	41		382
<b>Total</b>	<del>21'840</del> <u>21'067</u>	<b>12'869</b>	<del>4'930</del> <u>4'678</u>	<del>802</del> <u>753</u>	<del>40'441</del> <u>39367</u>

The CERN contribution formalized in the current mid-term plan (MTP2017-2021), considering past and future expenditure is 26.4 MCHF and covers civil engineering and general services (19.5 MCHF), the machine and the 3rd beam line (5.4 MCHF), the Design Study for the intensity upgrade (1.2 MCHF), Safety (0.6 MCHF) and project management (0.3 MCHF). The contribution from external partners, including the ISOLDE collaboration, is 12.9 MCHF and covers the Superconducting linear accelerator (Phases 1 and 2) and the high-energy beam transfer lines. Table 2 summarizes the contributions in kCHF pledged at the date of December 2018. Former contributions to the RILIS source and the RFQ cooler ISCOOL, as part of the beam quality upgrade, are detailed in annex 7.1 and not reported here.

# Update of Annexes

## ● Annex 13: HIE-ISOLDE project

### B. FUNDING

**Table 2 – Cash Funding Sources secured by the Collaboration**

Funding Source	2007-2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Total
<b>FWO Big Science I (BE)</b>	4'460										4'460
<b>ISOLDE Coll.</b>	2'477	500									2'977
<b>MPI (DE)</b>	115										115
<b>Uni. Aarhus (DK)</b>	77										77
<b>CERN loan (KM2180)</b>			140	140	140	140	140				700
<b>Phase 1</b>	7'129	500	140	140	140	140	140				8'329
<b>FWO Big Science II (BE)</b>	494	104									598
<b>ISOLDE Coll.</b>			433								433
<b>CERN pre-payment</b>			400	400	400	400	400	400	400	391	3191
<b>Phase 2</b>	494	104	833	400	400	400	400	400	400	391	4222
<b>Total Machine</b>	7'623	604	973	540	540	540	540	400	400	391	12'551

# Update of Annexes

## ● Annex 13: HIE-ISOLDE project C. Structure

The Project **was** coordinated by a **Project Leader**, a member of the EN department at CERN. It is overseen by a **Steering Committee (SC)** which represents the stakeholders of the Project. Exchange of information between the users and the technical team is ensured by a **Physics Coordination Group (PCG)**. Advice on all aspects of the project is given by an **International Advisory Panel (IAP)**.

The ~~current~~-HIE-ISOLDE Project Leader **was** ~~is~~-Yacine Kadi (CERN-EN) **until the approved end of Phase 2, on 31.12.2018**

**The SC represents the stakeholders of the project.** The ISOLDE spokesperson, the Chair of the ISCC, the Chair of the INTC, the ISOLDE coordinators, the Project Leader **and the ISOLDE OP Section Leader** are ex-officio members of the SC. **The SC elects its chairperson and meets at least 3 times per year. The current composition of the SC is:**

Yorick Blumenfeld (Chair)

Bertram Blank (ISCC chair)

Gerda Neyens (ISOLDE Spokesperson)

Karsten Riisager (INTC Chair)

Richard Catherall (ISOLDE Technical Coordinator)

Erwin Siesling (Deputy ISOLDE Technical Coordinator, in charge of REX and HIE-ISOLDE)

Jose Alberto Rodriguez Rodriguez (ISOLDE Operations Section Leader)Joakim Cederkall (Sweden)

Riccardo Raabe (Belgium)

Yacine Kadi (EN dept, CERN, Project Leader)

Karl Johnston (ISOLDE Physics Coordinator)

Roberto Losito (EN dept, CERN)

# Summary

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- Final updates to be submitted by October 1.
  - Hope to have some clarifications from Slovakia by then
  
- Suggested updates were discussed and approved with
  - Rende Steerenberg (OP Group Leader) and sent to Paul Collier, head of BE
  - Simone Giraldoni (STI Group Leader) and Roberto Losito, head of EN