



# EURISOL-DF and beyond ENSAR2

**Update, June 8, 2018**

Gerda Neyens



# WHAT AFTER ENSAR2

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# ENSAR 2: March 2016 – Feb. 2020

- ➔ very important for Transnational Access (TA) to support users for going to experiments in European facilities
- ➔ JRA (Joint Research Activities) and NA (Network Activities)
- ➔ TA part (now just below 50%) should be higher in the next call
  
- **June 8: EU program committee meeting for Research Infrastructure**  
Outcome of this meeting (from Marek Lewitowics):
  - ➔ there is a good chance that the next nuclear physics call will be part of the **EU H2020 calls for the period 2019-2020**
  - ➔ call to be published by the European Commission in **November 2018** and with a **dead-line for the submission of the proposals in March 2019!**
  
- We need to get organized !

# ENSAR 2: March 2016 – Feb. 2020

## ● Decision made at ENSAR2 Town Meeting Groningen (April):

- Set-up a **Scientific Steering Committee (SSC)** to prepare for the next Integrated Activity – 1 representative from each current RI (done)
  - ✓ Marek Lewotowicz (GANIL), Fadi Ibrahim (Alto), Paul Greenlees (JYFL), Adam Maj (Poland), Pawel Napiorkowski (Poland), Jochen Wambach (ECT\*), Marco Cinausero (Legnaro), Romano (LNS), Ad Van den Bergh (KVI), C. Scheidenberger (GSI), Dan Ghita (Romania), GN (ISOLDE)
- First meeting of this SSC (phone conf.): June 27,28 ?
- Next meeting: Pisa, July 2-4

## ● Start thinking about who will be the scientific coordinator

- which institution will coordinate the preparation of the new proposal, and the project itself ?
- Who from that institution will be the scientific coordinator ?

# EURISOL AND BEYOND

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- Get the EURISOL project back onto the ESFRI list
- Method: unify the current ISOL-facilities (existing or under construction) in a 'distributed facility' consortium – in preparation of the ultimate future EURISOL facility
- Is being prepared by the EURISOL steering committee

# EURISOL STEERING COMMITTEE

## ● **Members of EURISOL Steering Committee:**

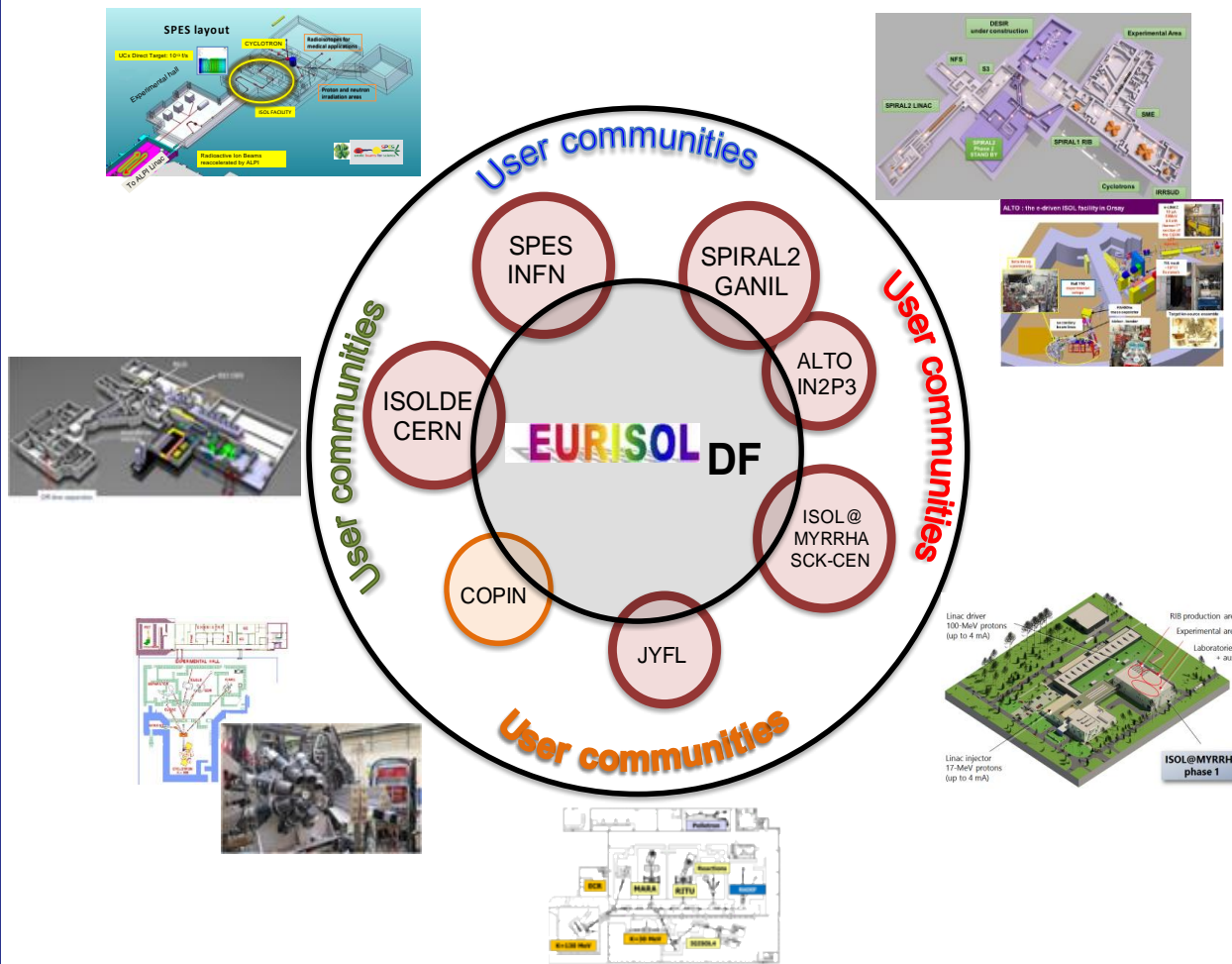
- EURISOL User Group: Berta Rubio
- ENSAR2 (JRA EURISOL): Yorick Blumenfeld
- SPIRAL2-GANIL: Marek Lewitowicz (Chair), Ketel Turzó (Scientific Secretary)
- SPES-INFN: Sara Pirrone
- ISOLDE-CERN: Gerda Neyens
- COPIN: Adam Maj
- NuPECC: Angela Bracco
- BEC: Lucia Popescu
- JYU: Ari Jokinen

## ● **Meetings:**

- February 26 (phone)
- March 29 (phone)
- June 13 (phone)
- July 2, Pisa (before the EURISOL Town meeting)

# EURISOL – Distributed Facility (DF) Initiative

- The next step on the way to the EURISOL facility
- The way to get EURISOL back into the ESFRI list



# EURISOL – DF Preparatory Phase 2021-2023

3-4 MEuro, of which 2 MEuro for facility upgrades  
(about 350 kEuro/facility)

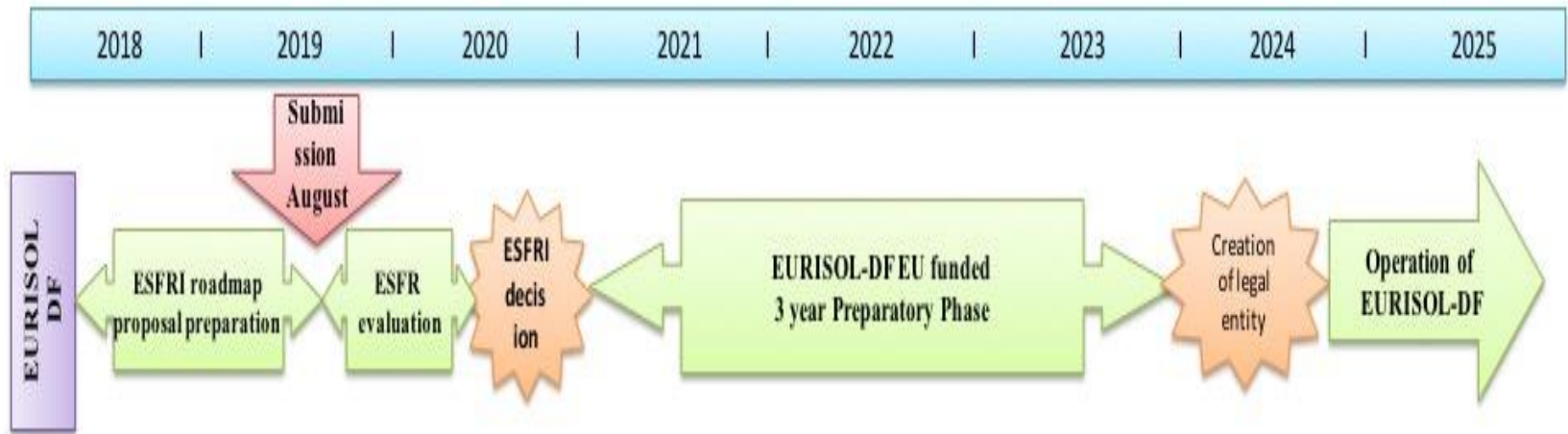


**Core members :**  
ISOLDE/CERN  
SPES-INFN  
SPIRAL2-GANIL (+ALTO)  
JYFL  
ISOL@MYRRHA-SCK\*CEN

**Associated Member**  
COPIN Consortium, Poland



## TIME LINE PROPOSAL PREPARATION



May 2018: reports prepared by working groups are ready

June 2018: Write executive summary of the PP proposal  
July 2-4, 2018: present to the EURISOL community at Pisa Town meeting

# EURISOL-DF PP project preparation (to submit to ESFRI summer 2019)

## Writing group for EURISOL-DF PP proposal:

- *Marek Lewitowicz (EURISOL SC chair)*
- *Berta Rubio (EURISOL users group)*
- *Yorick Blumenfeld (JRA EURISOL in Ensar2)*
- *Angela Bracco (NuPECC Chair) – now ML*
  - ***With input from the facilities***
  - *Draft version of executive summary (18 pages) to be distributed soon*

**Request:** what does each infrastructure want to put in EURISOL-DF as upgrade of its facility, in terms of equipment and costs, for two different periods:

- Preparatory phase: 2021-2023
- Following period: 2024-2028

# ISOLDE upgrades 2021-2023

- **Prepare ISOLDE to receive higher proton powers (13 kW instead of 2.8 kW) (part 1 of HIE-ISOLDE phase 3)**

- This is based on two CERN accelerator improvements (ready 2020):
  - LINAC4 should provide at least **2x higher proton intensities (up to 3x more)**
  - The booster will be modified to deliver **2 GeV beams (now 1.4 GeV)**

MODIFICATIONS NEEDED for ISOLDE to receive these higher-power p-beam:

- **new beam dumps** to receive up to 13 kW power (currently 2.8 kW)
  - Estimated full cost (2015) ~ 3-4 MCHF
- **new transfer line to receive 2 GeV proton beams** (with option for 1.4 GeV)
  - Estimated full cost (2015) ~ 3 MCHF

- **Upgrade of REX-ISOLDE (part 2 of phase 3): modify to a superconducting low-energy section**

- Cost estimation to be done ~ 3-4 MCHF

- **Upgrades of ISOLDE beam purity and emittance** ~1 MCHF

- MR-TOF-MS at 30 keV for beam characterization and optionally purification (1/50.000)
- Upgraded cooler/buncher (performance tests in off-line laboratory)
- A new HRS

- **HIFI: a fragment identifier behind MINIBALL** ~ 500 kCHF – 2 MCHF (new)

- Prepare for receiving AGATA ? - installation of a liquid Nitrogen distribution system in the hall



Facility or Partner	Preparatory Phase (in k€) EC request is limited to 2M€ total for all facilities together		Operation of the facilities for the EURISOL-DF experiments 2021-2026 offered by facilities				Upgrades of individual facilities 2021-2023 in k€	Upgrades of individual facilities 2024- 2030 in k€
	Request from EC k€	Offered by the Facility or partner	in months of RIB/year	in k€/year	in months of other beams/year	in k€/year		
<b>ISOLDE</b>	350	see comments	up to 2 months, upon recommendation of the experiments by the INTC to the CERN research board.	4500	ISOLDE has only RIB beams	0	3000	>>5000 (up to 40.000)
<b>SPES</b>	350	see comments	4	2300			5000	5000
<b>GANIL-SPIRAL2</b>	350	see comments	3	12000	0,25	1000	23000	130000
<b>ALTO</b>	350		1	400			400	900
<b>ISOL@MYRRHA</b>	350	750 k€ (= 5,1 M€ total R&D cost in '19-'21 / 10 months operation per year * 1.5 months made available to EURISOL DF). R&D cost in '19-'21 (incl. ISOL) amounts to EUR 5,1m (all labour cost).	1,5	3 500	2	200	3 500	See comment
<b>JYFL</b>	350	see comments	2	1600			1000	20000
<b>COPIN Consortium</b>	350				1	350		

Facility or Partner	Comments Preparatory phase: Offered by the facility	Comments on Operation of the facilities for the EURISOL-DF experiments 2021-2026 offered by facilities	Comments Upgrades of individual facilities 2021-2023	Comments Upgrades of individual facilities 2024-2030
ISOLDE	Offered CERN-staff: group leader, user support, physics coordinator, target development, ion source development, ...	Users ask beamtime via the INTC, which recommends to the CERN Research Board for a final approval. Cost to operate ISOLDE (full cost, including electricity, manpower ...) for one year	Preparation studies for new beam dumps and new transfer line to receive 2 GeV proton beams. Upgrade of the REX-part to a SC low-beta cavities. Upgrades of ISOLDE beam purity and emittance (MR-TOF-MS, cooler/buncher, HRS). HIE-ISOLDE Fragment Identifier ?	Intensity upgrade (beam dumps) = 3-4 MCHF ? Intensity upgrade (transfer lines for 2 GeV): 3-4 MCHF ? Storage ring = 25 MCHF ? AGATA ?
SPES		50% of total running time	Upgrades: briefly described in the SPES document in attachment, for 2021-23 and 2024-26. - 2021-23: HRMS and Beam cooler	2024-26: upgrade for higher intensity and higher energy: new charge breeder, Alpi cavities upgrade, new target,...
GANIL-SPIRAL2	Support of the EU Office and other administrative services, participation in all WP of the preparatory Phase	Full cost 30M€/year for 7 months of operation on average -> 12M€ cost of 3 months (1months at S3, 2 months at SPIRAL1)	Construction of the DESIR facility	Construction of re-defined SPIRAL2 Phase 2 - estimate
ALTO				
SOL@MYRRHA	2 components of budget requested for preparatory work: A) 100 k€/year for technical development + B) a total budget of either i) 100 k€ out of the 2 M€ or ii) 75 k€ out of 1 M€	According to current planning: ISOL@MYRRHA can be made available to EURISOL DF for 1 year (basecase), potentially 1.5 years based on recommendations of beam time allocation by MYRRHA Scientific Board	Budget required to: 1) develop the RFQcb and HRS mass separator and 2) extension of the experimental hall.	Upgrade the 100 MeV proton linac into 600 MeV, including the p-beam transport from the 600 MeV beam line to the ISOL facility and the ISOL-facility upgrade (shielding, beam dumps,...) to operate with 600 MeV protons. Estimate planning of upgrading: start 2025, finish 2030.
JYFL	?? for EC request, to be discussed, what is included in the part offered by partner	0 guaranteed / typically 2 months	Upgrade of 18 GHz ECR for non-gaseous beams. Upgrade of MCC30. Preparation for AGATA. Large gas cell construction at IGISOL	Realization of VISION2030 strategy of JYFL-ACCLAB. Major accelerator infrastructure upgrade; different scenarios under evaluation at the moment.
COPIN Consortium		Stable Beam for testing of detectors (2 weeks for ICC Krakow+ 2 weeks for HIL Warsaw)		