



H2020-MSCA networks: opportunities and lessons learned

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Outline

- Introduction
 - Spirit of H2020-MSCA networks
 - Jargon
- Innovative Training Networks (ITN)
- Research & Innovation Staff Exchange (RISE)
- My personal experience

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MSCA networks: general spirit

- "Making bridges" is valued in H2020-MSCA, e.g.:
 - Multidisciplinarity
 - Connection between academia and private sector
 - Collaborative tools, shared data, etc.
- Training (in a broad sense) is the key (especially for ITN)
 - Schools, workshops, invited lectures
 - ITN: emphasis on *training through research*
 - Not mandatory that Early Stage Researchers (ESRs) get PhD titles, but it is strongly encouraged
 - Both ITN & RISE: emphasis on *dissemination*
 - Outreach to society
 - Open data, citizen science \rightarrow in my opinion, very fit for muography!

	ETN	EID	EJD				
Beneficiaries	≥3 from 3 diff. MS/AC	≥2 from 2 diff. MS/AC: (≥1 academic + ≥1 non-academic)	≥3 from 3 diff. MS/AC ≥3 awarding PhD, of which ≥2 in MS/AC				
Person-months	Max. 540	Max. 180 / 540	Max. 540				
Researchers	ESRs only (3-36 months)						
Partner Organ.	Unlimited (any country / sector / discipline)						
PhD enrolment	typically expected	mandatory mandatory					
Non-academic participation	essential	mandatory	essential				
Inter-sectoral exposure	possible through secondments	≥50% in non-academic International (for beneficiaries	possible through secondments				
Panels and rank lists	8 panels: CHE, ECO, ENG, ENV, LIF, MAT, PHY, SOC (400 M€)	EID panel (35 M€)	EJD panel (35 M€)				

Action	Call opening	Call closure (at 17:00:00 Brussels time)	Budget*
ITN 2019	13/09/2018	15/01/2019	470.00 M€ (ETN 400 M€; EID 35 M€; EJD 35 M€)

4

Maybe already too late to build a new proposal from scratch for this call, but what about starting to think about next year's call?

Secondments in ITN

From the FAQs:

Q45: (ETN) - Are secondments important in ETN mode?

A: Yes. Secondments are strongly encouraged and expected. Secondments can contribute to the inter-sector experience and may also contribute to the multi/inter-disciplinary experience of the researchers. They will be assessed by the expert evaluators under the criterion "excellence". Secondments may not, however, exceed 30% of a fellow's recruitment period.

- 30% of a 3-year ESR contract means up to 10 months
 - Not necessarily consecutive, not necessarily with the same partner
 - Typically, private-sector partners prefer long secondments, to maximize the ratio between return and training investment

Secondments in ITN

- ESR's interest (the main consideration in an ITN):
 - Experience in a variety of work environments
 - Partners provide complementary skills
 - Possible risk: incoherence in supervision
- Partner's point of view:
 - Burden of supervision (but it pays off if secondment is long)
 - ESRs help transfer of knowledge (beneficiary \rightarrow partner)
 - Access to brilliant young graduates for prospective hires
- Beneficiary's point of view:
 - Loss of precious months of personpower
 - ESRs help transfer of knowledge (partner \rightarrow beneficiary)

ITN evaluation criteria

Award Criterion	Threshold	Weight	Priority if ex-aequo	
Excellence	n/a	50 %	1	
Impact	n/a	30%	2	
Implementation	n/a	20%	3	
Total	70%			

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2. IMPACT

- Enhancing the career perspectives and employability of researchers and contribution to their skills development
- Contribution to structuring doctoral / early-stage research training at the European level and to strengthening European innovation capacity, including the potential for:
 - a) meaningful contribution of the non-academic sector to the doctoral/research training, as appropriate to the implementation mode and research field
 - b) developing sustainable joint doctoral degree structures (for EJD projects only)
- Quality of the proposed measures to exploit and disseminate
- Quality of the proposed measures to communicate the project activities to different target audiences

1. EXCELLENCE

- Quality, innovative aspects and credibility of the research programme (including inter/multidisciplinary and intersectoral aspects)
- Quality and innovative aspects of the training programme (including transferable skills, inter/multidisciplinary, inter-sectoral and, where appropriate, gender aspects)
- Quality of the supervision (including mandatory joint supervision for EID and EJD projects)
- Quality of the proposed interaction between the participating organisations

3. IMPLEMENTATION

- Overall coherence and effectiveness of the work plan, including appropriateness of the allocation of tasks and resources This includes the awarding of the doctoral degrees for EID and EJD projects
- Appropriateness of the management structures and procedures, including quality management and risk management (with a mandatory joint governing structure for EID and EJD projects)
- Appropriateness of the infrastructure of the participating organisations
- Competences, experience and complementarity of the participating organisations and their commitment to the programme

Next RISE calls

H2020-MSCA-RISE call	2019	2020
Opening Date Closing Date	4 DEC 2018 2 APR 2019	5 DEC 2019 7 APR 2020
Budget	80 million €	80 million €

My ITN and RISE experiences

- Funded:
 - ITN: AMVA4NewPhysics
 - Fundamental physics (LHC+theory) + Statistics + Data Science
 - Running from 2016 to 2019
 - Deputy Coordinator since 2017
 - RISE: INTENSE
 - Fundamental physics (v & μ -decay experiments) + Muography
 - Will run from 2019 to 2022
 - Coordinator of Muography work package
- Failed:
 - ITN: European Muography Network (EMN)
 - Failed in 2017 / 2018 with score 94.6% / 94.0% (threshold: ~96%), will try again in 2019, again as main coordinator

"European Muography Network", ITN 2018



Work Packages

WP No.	WP Title	Lead Beneficiary No.	Start Month	End month	Activity Type	Lead Beneficiary Short Name	ESR involvement
1	Management	1	1	48	Management	UCL	All (two ESRs in the Supervisory Board)
2	Training	7	4	40	Education	Sheffield	All
3	Events	1	4	48	Education	UCL	All
4	Outreach	12	2	48	Education	INAF	All
5	Simulations	11	4	40	Tools&Standards	UNISA	All
6	Analysis Tools	9&3	4	40	Tools&Standards	INFN & UCA	All
7	Combination with Standard Methods	4 & 8	4	40	Tools&Standards	UCBL & Durham	All
8	Open Data	6	2	48	Tools&Standards	WRCP	All
9	Volcano Studies	10	4	40	Applications	UNINA	1,3,4,8,10,11,12
10	New Applications ²⁵	5	4	40	Applications	IRIS	2,5,6,7,9

"New applications" WP

	WP Number	10	Start Month: 4 – End Month: 40			
	WP Title	New Applications				
	Lead Beneficiary	IRIS (Coordinator: C.Truffert)				
	 Objectives Promoting a broad class of applications of muography to the characterization of several natural or man-made objects. Despite the diversity of the targets and of the problems to be addressed there is a large potential for finding common solutions and through a true collaborative spirit and frequent interaction, we expect new ideas to sprout from this WP. Description of Work and Role of Specific Beneficiaries / Partner Organisations The archaeological site of Cumae (Italy), the site of the LSBB laboratory of CNRS, and a nuclear power plant will serve as three references to benchmark detectors provided by UNINA/TECNO IN/INFN, IRIS/CNRS, UCBL, Sheffield, and WRCP. ESR 2, 5, 6, 7, 9 will participate to this WP. Among the partners, key contributors will be CNRS, TECNO IN, LabLogic, NEC, Ky UNIFI, UNICAMP. Two transversal tasks will be pursued for these three different applications: Task 1: Inclusion of the diffusion process. Diffusion (Coulomb diffraction) helps to signal, by deflection, strong density variations shallow depth, and it is a nuisance in transmission-based muography as it introduces a bias by the muon flux intercepted by the detectors⁵⁷. A standard reference code will be developed for 3D imaging (inverse problem) combining transmission and diffusion, jointly with WP 6 and WP 7. Task 2: Optimization of spatial and temporal resolution. Resolutions and uncertainties achievable for a given detector geometry an surface depend on the time dynamics and spatial scale of the heterogeneities, on the type of target and on the survey constraints (p 					
	Description of Deliverables D10.1: Start of data-taking at Cumae. (Month 9) D10.2: Start of data-taking at LSBB. (Month 9) D10.3: Start of data-taking at a European nuclear power plant. (Month 9) D10.4, 10.5, 10.6: Articles deposited on arXiv.org and submitted for peer-review, reporting the conclusions from D10.1, 1 respectively. (Month 35) D10.7: Organisation of a New Applications mini-workshop during an EMN workshop, to review the results of this WP an- actions. (Month 36)					

Other archaeometric activities by physicists in the network

INFN, Naples, Florence:



CEA (Paris-Saclay):





Common tools



- WP 5: Simulations
 - Common open-software tools to simulate cosmic showers, particle transport, detector response
- WP 6: Analysis Tools
 - Common open-software tools for 2D and 3D imaging
- WP 7: Combination with Standard Methods
 - Here "Standard Method" refers to non-muographic methods from geophysics (e.g., gravimetry)
 - Several ongoing disconnected efforts, to be merged
- WP 8: Open Data
 - Open to other scientists, "citizen scientists", outreach, ...

"INTENSE", RISE 2018

- 5 scientific work packages (WP); 4 on fundamental physics, and 1 on technological spin-off in Muography applications
- Will run from 2019 to 2022

Work Package No	Work Package Title	Activity	Number of person-months	Beneficiary leading	Start Month	End month	
1	Neutrino detectors	Research, Training	109	UNIBE	1	48	
2	Neutrino physics: event reconstruction tools	Research, Training	59	UCAM	1	48	
3	Neutrino physics: data analysis	Research, Training	98	INFN	1	48	
4	CLFV experiments	Research, Training	128	UNIMAN	1	48	4
5	Muography	Research, Training	26	UCL	1	48	
6	Dissemination and Outreach	Dissemination, Communication	3	INFN	1	48	7
7	Transfer of Knowledge	Training, Dissemination	36	INFN	1	48	
8	Management	Management, Communication	1	UNIPI	1	48	

Work Package Muography

Work Package Number	5			Start/End Month			1/48		
Work Package Title	Muog	Muography (Research, Training)							
Lead Beneficiary	UCL	UCL							
Participating organisation Short Name**	UCL	INFN	UNIBE	INGV	B12	TECNOIN	UGHENT	UTOKYO	UNAGOYA
Total Person Months per Participating organisation:	10	1	5	2		2	6		
-							F		

Private companies

extra-EU

• Secondments:

- In the EU zone: inter-sectorial (i.e., academic \rightarrow non-academic or viceversa)
- EU \rightarrow non-EU can be intrasectorial (e.g., academic \rightarrow academic)
- Both use cases are of interest for Muography people in EU
- In some other WP, most secondments are of EU researchers to a lab in the US

Conclusion

- Applying for large networks is a lot of work but can be useful even in case of failure: useful contacts with new potential collaborators, including other sectors/disciplines
- I will resubmit the "EMN" proposal (a very large and unspecific network), but I think we should maximize our chances by also submitting proposals for smaller and specialized networks
 - We can also insert muography as WP in broad networks on other topics (as in RISE "INTENSE"; see also ITN "CHANCE")
- ITN-ETN are so competitive that, close to the threshold, luck plays an oversized role; ITN-EID and ITN-EJD have better success rate, but are more demanding in the implementation
- RISE have a nice success ratio; but only useful if you already have personpower, and need to send people abroad
- What about INFRAIA? (Remember "G-ENDEAVOR")

Thanks for your attention!



Backup slides

Antecedents

- First large-scale EU-funding bid for a muography consortium in EU (+ Japan): G-ENDEAVOR, coordinated by Salerno University
 - INFRAIA call in 2016, meant for funding of research infrastructures, including budget for personnel (post-docs)
 - Below the threshold for "step 2", but encouraging score
- October 2016: discussion on EU funding opportunities during topical muography workshop in Tokyo
- I suggested that muography is intrinsically fit for H2020-MSCA, and we could build upon the G-ENDEAVOR experience
 - General rule: if you propose extra work, you do it yourself :)
 - Already familiar with ITNs as member of AMVA4NewPhysics (coopted after funding in 2015, deputy coordinator since 2017)

"European Muography Network", ITN 2017



Referee reports: 2017 vs 2018

Evaluation Result

Total score: 94.60% (Threshold: 70/100.00)

Criterion 1 - Excellence

Score: 4.80 (Threshold: 0/5.00, Weight: 50.00%)

Criterion 2 - Impact

Score: 4.70 (Threshold: 0/5.00, Weight: 30.00%)

Criterion 3 - Quality and Efficiency of the Implementation

Score: 4.60 (Threshold: 0/5.00, Weight: 20.00%)

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