Lessons Learned Preparing an EU MSCA RISE Proposal

Maria Papadopouli, Professor of Computer Science
University of Crete & Institute of Computer Science, FORTH
https://neuronsxnets.eu/
mgp@ics.forth.gr

Marie Skłodowska-Curie (MSCA) in Horizon Europe: Staff Exchanges and COFUND
9.11.2021

EU Horizon 2020 MSCA RISE
under grant agreement 101007926

neurons nets

FORTH
FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS

Network Analysis in Neocortex during Passive & Active Learning

FORTH
FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS

IBM

NEUROCOM

www.pagni.gr
Πα.Γ.Ν.Η

PROMETRONICS

UCLA

Universität Zürich[UZH]

Universiteit Antwerpen

BRIGHAM HEALTH
BWH BRIGHAM AND WOMEN'S HOSPITAL

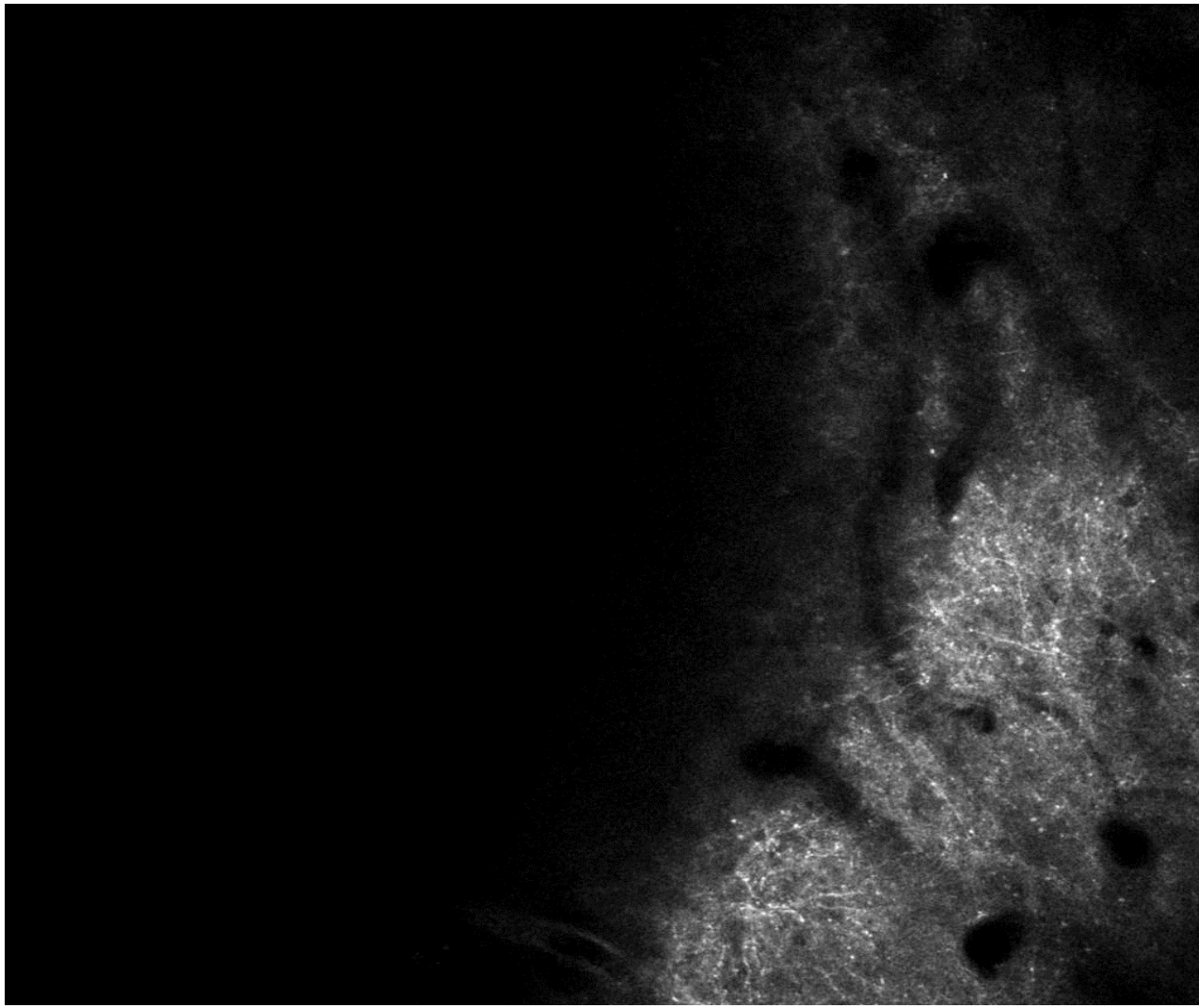
BRUKER

How does the brain perform the complicated computations that allow us to **learn about & interact with the environment ?**

The rapid advances in **optical imaging, ML & the availability of computational resources** provide a unique opportunity to decipher this fundamental question

- Improve the understanding of neural circuit function
- Integrate the findings in deep learning architectures & in neuromorphic circuits

aiming to develop a **new generation of computing technologies** based on the organizing principles of the biological nervous system, optimized for higher levels of cognition



Recorded by Sminakis Lab, Harvard Medical School.

- NeuronsXnets will perform knowledge transfer through **hands-on training and research activities** during **196 secondments, courses, 4 international workshops, and seminars**, to train a new generation of highly-skilled systems neuroscientists & computer scientists.
- All partners, especially the **SMEs**, will benefit from the cross-fertilization, by integrating the findings and systems they have developed in their existing solutions or in new systems, capitalizing on the research results that will be achieved, and creating a long-term link **between business, research, higher education & hospitals.**
- Through **open access** to the developed tools & collected data, neuronsXnets can make significant impact on the scientific community.
- Committed to **educate and mentor young students** and **raise the public knowledge** about the fascinating field of neuroscience.
- Strive for **research excellence, to develop innovative systems**, and pursue **entrepreneurial objectives**, leading to a new era of collaborative research in neuroscience & bio-inspired technologies.

My (personal) Decalogue

1. Emphasize the **training & knowledge transfer activities with secondments of sufficient time**
2. Emphasize the **inter-/multi- disciplinary** aspects, their **innovation and impact**
3. Read carefully the guidelines, even use *similar wording,* to address the specific requested information
4. Review successful MC RISE proposals and ask for advice
5. Have at least two other partners committed in the proposed research, with whom you create a strong "core"; Start early the interactions with the colleagues/potential partners of the consortium
6. Include in the consortium **well-established company**, **startup(s)**, and **world-wide leading expert(s)**
7. Indicate recent EU projects (e.g., ERC, FET) that address similar problems to further emphasize the importance of the proposed research
8. Demonstrate impact – potentially "connect" it to local activities, resources, infrastructures, centers
9. Make sure that you have sufficient **representation from EU countries**
10. Prepare a well-written proposal, in terms of content, structure, editorially

Emphasis on the training & knowledge transfer activities

- The abstract should summarize the training & knowledge transfer activities
- Make sure that the secondments are of sufficient duration, well-aligned with the planned research activities
- Develop summer/winter schools, international workshops (organized in conjunction with larger conferences/events)
- Include seminars on academic entrepreneurship, exploitation of research outcomes, intellectual property management
- Plan mentoring activities
- Organize public outreach activities

All partners should contribute & participate in such activities

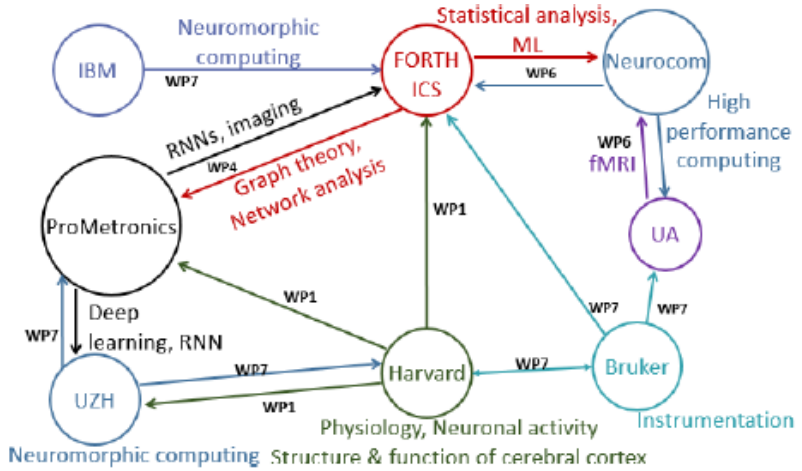
Figures & Tables that Summarize the Knowledge Transfer & Innovation

New knowledge generation & acquisition **across partners; across WPs**

"▲" New knowledge generation/creation, + "Acquired new expertise", Knowledge hub

Knowledge Hubs →	Heraklion				Boston				Zurich	
New Knowledge/Advances Area	FORTH	PAGNI	UA	UCLA	Harvard	Bruker	ProMetronics	Neurcom	IBM	UZH
Brain anatomy, physiology	▲	+	▲	▲	▲	+	+	+	+	+
Prefrontal cortex properties	▲	+		▲	▲	+	+	+	+	
Humanized mouse model	+	▲	+		+					
In vivo imaging in behavioural tasks	+	▲			+		+		+	
Neurological disorders symptoms, brain alterations	+	▲	+		+					
2-photon imaging, SLM	+	+		▲	▲	▲	+			+
Large-scale imaging, fMRI	+	+	▲		+		+			
fMRI protocols in mice	+	+	▲							
Miniscope instrumentation	+		+	▲	+					
Microscopy instrumentation	+	+		+	+	▲	+			
Neuromorphic computing	+				+				▲	▲
Nano-scale imaging analysis	+		+		+	+	▲	+		+
Statistical analysis & ML	▲	+	+	+	▲	+	▲	+		+
Network analysis	▲	+	+	▲	+	+		+	+	+
High Performance Computing	+		+		+			▲	▲	+
IPP/Entrepreneurship	+	+	+			▲	▲	▲	▲	▲

Figure 2.2.2 Summary of the new knowledge creation as well as the acquisition of new expertise in the various fields. It also



Ask for advice from colleagues & access to successful MC RISE proposals!

High-level advisory services like proofreading (feedback on full draft of the proposal)

The National Documentation Centre (EKT) is a public organisation that promotes knowledge, research, innovation and digital transformation. It is supervised by the Ministry of Digital Governance and develops state-of-the-art infrastructures that support knowledge circulation and the transition to a digital society and economy. EKT is a Scientific Infrastructure and a National Authority of the Hellenic Statistical System. Its institutional role is to collect, organize and preserve the entire Greek scientific, research and cultural output (content and data) disseminating it at both national and global level. more...

Gender Dimension

- Plans for experiments or user studies?

✓ Review literature & consider evidence, e.g., from behavioral, neurophysiological and neuroimaging studies, as well as statistical methodological issues to address potential **sex differences**

Involvement of women

✓ Promote & support the involvement of women in research

Thank you for your attention!