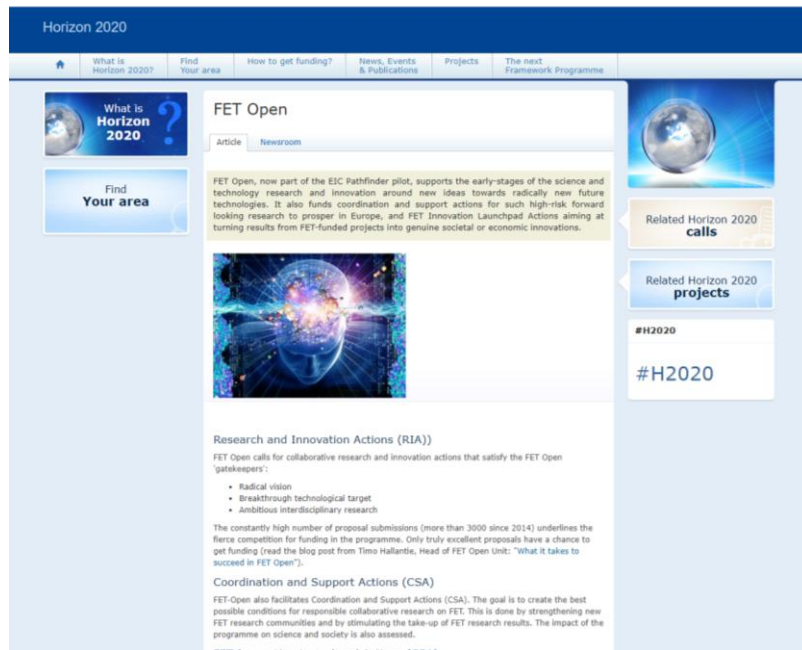




# FET Open Proposal: Challenges you can meet and be friends with

Robin Augustine

[Robin.Augustine@Angstrom.uu.se](mailto:Robin.Augustine@Angstrom.uu.se)



## H2020 FET OPEN Project

### B-CRATOS: Wireless Brain-Connect interRfAce TO machines

“B-CRATOS overcomes technological barriers of wireless brain↔machine↔body communication, and represents the beginning of a paradigm shift in how signals can be sent to restore function and empower individuals”

**Coordinator:**  
**Assoc. Prof. Robin Augustine**  
*PhD, Docent*  
*University Lecturer in Solid State Electronics*  
*Head of The Microwaves in Medical Engineering Group (MMG)*  
*Solid State Electronics Division*  
*Department of Electrical Engineering*  
*Uppsala University*  
<https://elektroteknik.uu.se/forskning/fasta-tillstandets-elektronik>  
[/forskning/research-groups/mikrovagor-inom-medicinteknik/](https://forskning/research-groups/mikrovagor-inom-medicinteknik/)  
[Robin.Augustine@angstrom.uu.se](mailto:Robin.Augustine@angstrom.uu.se)





**Some B-CRATOS figures:**

- 7 Excellent partners in the consortium ( 1 SME, 3 research institutes and 3 Universities)
- Scored 4.95/5 and ranked 10 among 58 funded projects
- The most funded project (4.59 M Euros for 4 years) in FET - Open 2020 cut-off
- FET Open success rate (2020) around 6.6 %



**2 - Participants & contacts**

#	Participant Legal Name	Country	Action
1	UPPSALA UNIVERSITET	SE	
2	INSTITUT SINANO ASSOCIATION	FR	
3	SCUOLA SUPERIORE DI STUDI UNIVERSITARI E DI PERFEZIONAMENTO S ANNA	IT	
4	Blackrock Microsystems Europe GmbH	Germany	
5	FONDAZIONE LINKS - LEADING INNOVATION & KNOWLEDGE FOR SOCIETY	IT	
6	DEUTSCHES PRIMATENZENTRUM GMBH	DE	
7	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	





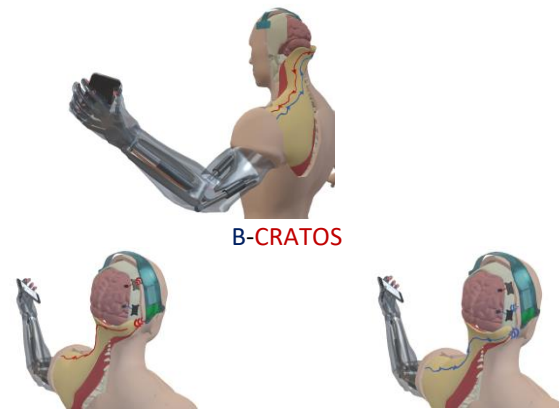
## B-CRATOS: Wireless Brain-Connect interfAce TO machines

**Radical Vision:** for the first time a battery-free high-speed wireless in-body communication platform for Brain-Machine-Body connectivity

**Breakthrough technological target:** Groundbreaking technological components - wireless two-way microwave fat intra-body and RF backscatter communication, battery-free powering technology, bio-inspired sensing, dexterous biomechatronic extremity - all codesigned and a proof-of-concept, revolutionary untethered brain-machine interface will be created

**Ambitious interdisciplinary research:** B-CRATOS combines expertise in diverse fields spanning Electrical Engineering (RF Communication systems, Wireless Power Transfer, Microwave Intra-Body Communication, Implantable Electronics), Biomedical Engineering (Brain implants, Bio-Mechatronics, Electronic Skin), Artificial Intelligence and Machine Learning (Deep learning, High-Performance Computing), Medicine (Neuroscience, Neurosurgery)

Societal challenge : *"Amputees tend to discard their prosthetic extremities as they are not integrated to the person's cognition"*,



Motor cortex -> Mechanical control    Sensory inputs-> Somatory receptors



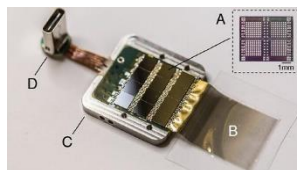
*B-CRATOS shares the vision with  
but goes beyond it!*



<https://neuralink.com/>

**NEURALINK:**

*A symbiosis with AI  
Brain Computer Interface  
Augment human capabilities  
Treat neural and mobility issues  
Control machines*



**B-CRATOS:**

*Cognitive integration of prosthetics  
Autonomous organ control  
Expansion of neuroceuticals  
Security and Privacy  
Connect to exo-skeletons  
Bridge central and peripheral nervous system*



FitBit in your brain with tiny wires : Elon Musk





## **FET Open project entails projects of groundbreaking and radical vision**

**Every proposal is unique, the project goal makes the difference**

- No generic rules (maybe one can find some indications)

**My account is from my experience in writing a FET-Open proposal**

- It could be my own personal view
- Don't count on the element of luck

**A proposal on EU level involves many partners and everyone should have a role and of course the coordinator should have the big picture**

- The projects are essentially vision driven
- Focus on coordinators perspective
- Partners perspective should align with coordinator (mirror)



### **First line of challenges:**

- *Consortium formation*
- *Target*
- *Gathering idea-brainstorming*

### **Addressing the gate keepers**

- *Formulating long term vision*
- *Describing foundational character*
- *Identifying novelty*
- *Balancing between high risk vs unrealistic*

### **When to Start**

### **Handling interdisciplinary issues:**

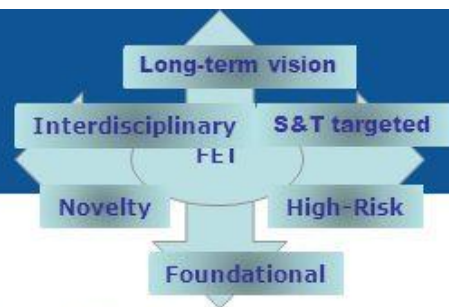
### **Success factors/recommendations**

- **Good idea**
- **Strong consortium**
- **Time management – time for reflection, iteration...**
- **Topic has to be hot (political and scientific relevance)**





# FET Gatekeepers



**Long-term vision:** a new, original or radical long-term vision of technology-enabled possibilities going far beyond the state of the art

**Breakthrough S&T target:** scientifically ambitious and technologically concrete breakthroughs plausibly attainable within the life-time of the project.

**Foundational:** the breakthroughs must be foundational in the sense that they can establish a basis for a new line of technology not currently anticipated.

**Novelty:** new ideas and concepts, rather than the application or incremental refinement of existing ones.

**High-risk:** the potential of a new technological direction depends on a whole range of factors that cannot be apprehended from a single disciplinary viewpoint.

- This inherent high-risk has to be countered by a strongly interdisciplinary research approach, where needed expanding well beyond the strictly technological realm.

**Interdisciplinary:** the proposed collaborations must go beyond current mainstream collaboration configurations in joint S&T research, and must aim to advance different scientific and technological disciplines together and in synergy towards a breakthrough.

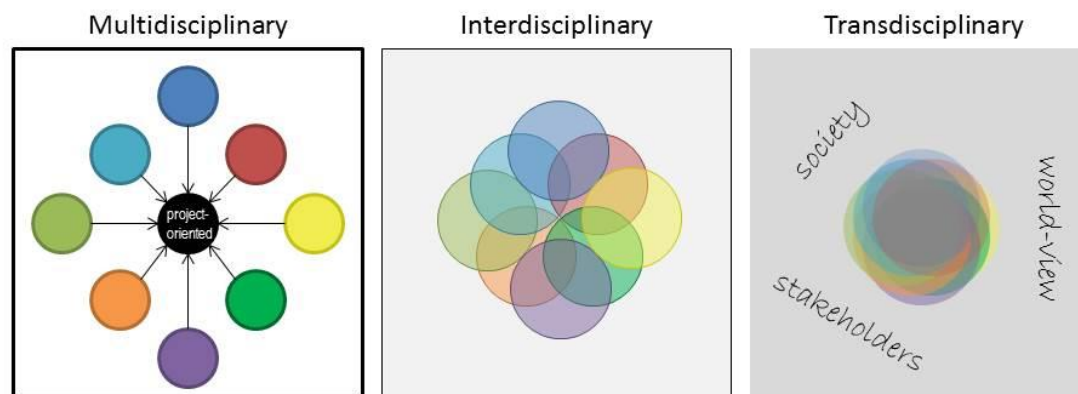




- Do not hesitate inviting your friends with needed competence!
- The coordinator should have the vision and responsibility whereas the partners should share and champion the vision

### Handle interdisciplinarity

Multi- → Inter- → Transdisciplinary



- **Integration:** Separated → Integrated → "Become One"
- **Perspective:** ≥ 2 disciplinary → include stakeholders+
- **Team's Goals:** Project → Learning, New Ideas → Problem Oriented
- **Leadership:** Varied Leadership → Rotating Leadership?



## **Writing proposal!**

***Time is important: Start early enough and if possible start a year ahead!***

***Proposal structuring: Enough technical substance – nit too detaile/not too vague either***

***Give due focus on the abstract***

- ***Reading tha abstract should enable the reviewer to manouneur through the proposal with ease!***
  - ***Make it impactful!***
  - ***Help referees to find answer***
  - ***Write to the point, address the call text, section by section, line by line:***
  - ***It will help you score as well as the reviewer's life easier!***
- 
- ***The writing should be pitch perfect, don't leave anything to chance/luck, it's not a lottery!***



**Thank You**