

## Exponential Electronics Seed Grant Program – Call for Proposals

**Deadline: October 16, 2023**

Institute for Electronics and Nanotechnology

Georgia Institute of Technology

### Summary

The Institute for Electronics and Nanotechnology's Exponential Electronics (IEN-E<sup>X</sup>) program supports early-stage research and development to create revolutionary electronic systems. Convergent teams of Georgia Tech researchers can request up to \$75k per year (direct) for up to 3 years to advance "1000x" ideas to the point where external funding entities can support them.

### Program goals and motivation

IEN-E<sup>X</sup> provides seed funding for Georgia Tech researchers to pursue "1000x" ideas within electronics or that bridge electronics with other technical domains. "1000x" ideas are those with the potential to improve one or more well-defined, but often overlooked or underappreciated, performance metrics by at least 1000x.

IEN-E<sup>X</sup> is based on the belief that:

- 1000x ideas can change the world and improve people's lives.
- 1000x ideas change the world by revealing new trajectories for innovation.
- 1000x ideas are far more common than most recognize.

Unfortunately, research programs pursuing 1000x ideas are rare because they require more coordinated systems-level work and longer timescales than most institutions typically support.

IEN-E<sup>X</sup> aims to change the status quo by supporting:

- Building of convergent teams with the expertise necessary to pursue 1000x ideas.
- Research and development to demonstrate enabling subcomponents of 1000x ideas.
- Writing of perspective pieces to roadmap or promote 1000x ideas.
- Travel to meet with potential future team members or external funders of 1000x ideas.

### Proposal format and submission guidelines

Submit an IEN-E<sup>X</sup> proposal using the provided template via email to Ms. Kaci McCoy ([kaci.mccoy@ien.gatech.edu](mailto:kaci.mccoy@ien.gatech.edu)) no later than October 16, 2023. IEN-E<sup>X</sup> proposals are limited to 4-pages exclusive of figures, references, budget, and budget justification. Each of the following questions must be explicitly answered:

1. What fundamentally new science or technology paradigm do you aim to enable? What will be the benefit to science/engineering and society?
2. What set of unique metrics can communicate and quantify why your science or technology will be better than the state-of-the-art by at least 1000x? The definition of new or overlooked metrics are encouraged.
3. Why does your science or technology not exist today? Why do others not see this opportunity? Why will it not be funded (today) via traditional mechanisms?
4. What expertise (scientific, engineering, or otherwise) is required to bring your science or technology paradigm to fruition?
5. Why is your science or technology paradigm technically possible?

6. Why is the PI the right person to lead the effort? What about each team member's technical background makes them appropriate for the effort? Why would they be committed to the work?
7. What are the critical "demonstrators" that will de-risk your science or technology to the point where it can be funded by external entities? Over what timeframe do you expect to complete the necessary research and development? What resources are needed?
8. Who are the likely or targeted external funding entities that would support the next phase of the work and why?
9. How will you expand and strengthen the community interested in your science or technology? Who else, both internally and externally, would be excited about your idea and why? How will you engage them?

Allowable budget items include graduate student or postdoc support, materials & supplies, user facility access, travel, workshops, and publication fees. Other activities will be considered on a case-by-case basis.

Proposals will be reviewed by an interdisciplinary committee of Georgia Tech researchers. Funding decisions will be announced no later than December 2023 and funded projects will begin January 1, 2024. It is anticipated that 1-2 IEN-E<sup>X</sup> proposals will be funded in the current cycle, but the final number will depend on the quality of submissions and available funding.

### **Project reporting**

PIs of funded projects must submit a progress report at the end of each fiscal year. Funding beyond the first fiscal year will depend on progress toward the project's goals and available funding.

### **FAQ**

*Can my team contain researchers from outside of Georgia Tech?* Yes. However, no more than 25% of the team can come from outside Georgia Tech.

*If I have previously received IEN funding, can I still apply to the IEN-E<sup>X</sup> program?* Yes. However, you must make the case that the proposed work is fundamentally distinct from your previously funded effort.

*What is meant by "coordinated systems-level work"?* This type of work integrates seemingly disparate pieces of science and engineering into a coherent whole. The individual pieces are motivated by an overarching vision and do not necessarily make sense independent of it. Systems-level work is not solely the domain of technology development. It enables new scientific paradigms as well.

*How is IEN-E<sup>X</sup> different from the IEN Core Facilities Seed Grant Program (CFSGP)?* The scopes of the two programs are distinct. IEN-E<sup>X</sup> grants are larger, more sustained funding vehicles to build the convergent teams needed for and demonstrate key components of 1000x ideas. CFSGP grants are smaller, shorter term funding vehicles for graduate students to collect preliminary data requiring core facility (cleanroom or MCF) access.

### **Additional questions**

Do not hesitate to contact Michael Filler (mfiller@gatech.edu) with any questions or to discuss a potential 1000x idea.