

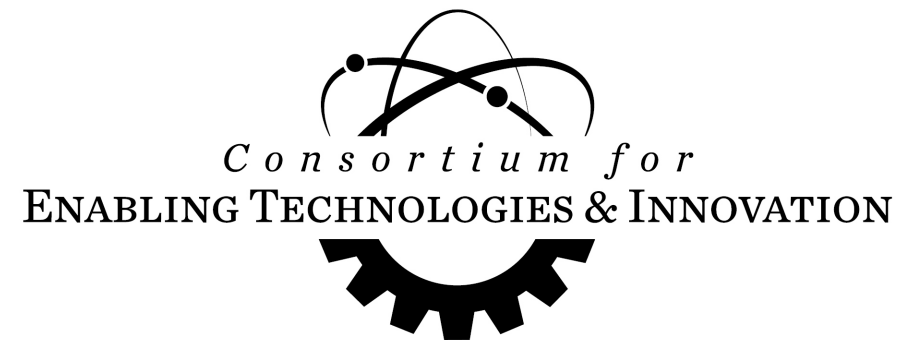


# Consortium for Enabling Technologies and Innovation

Anna Erickson

July 7-8, 2020

ETI Virtual Summer Meeting for Young Researchers

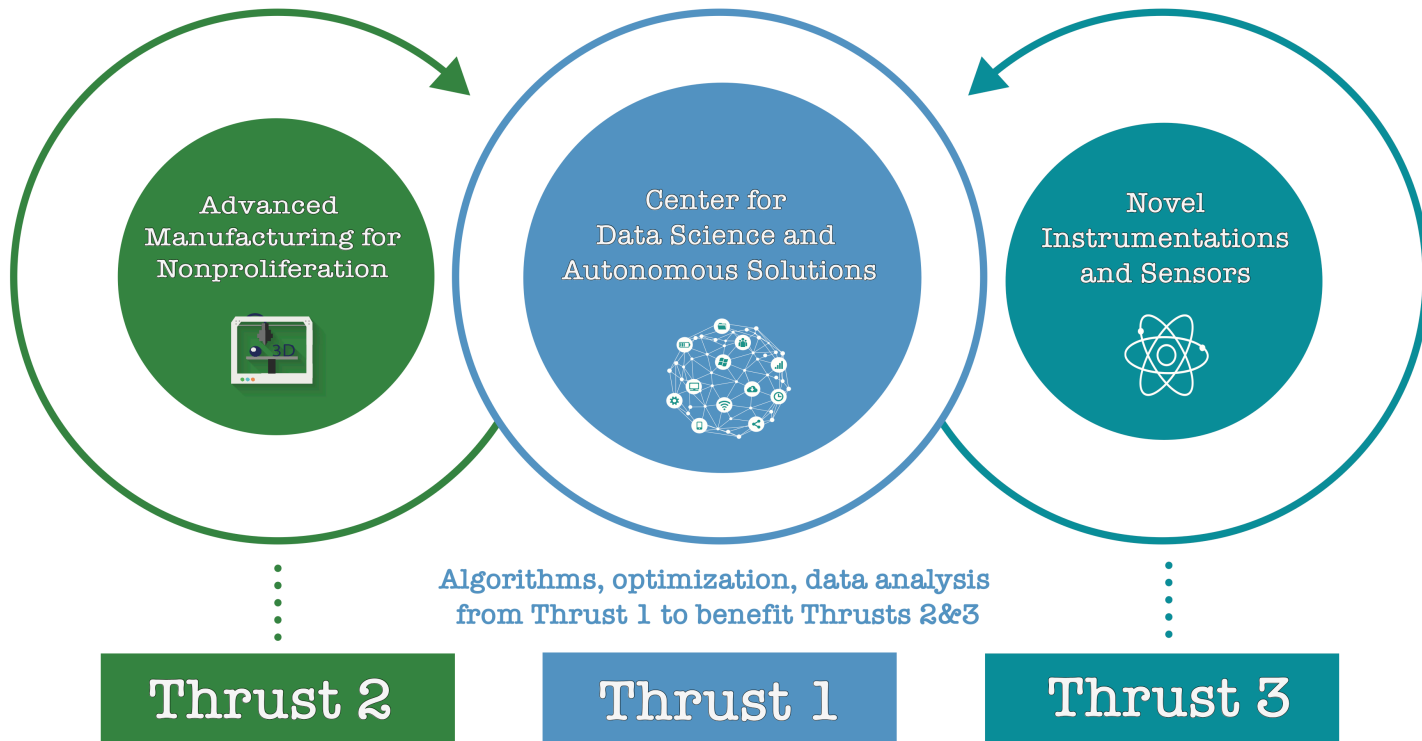




# ETI Structure and objectives

Data sets from maker communities, signatures, and manufacturing methods

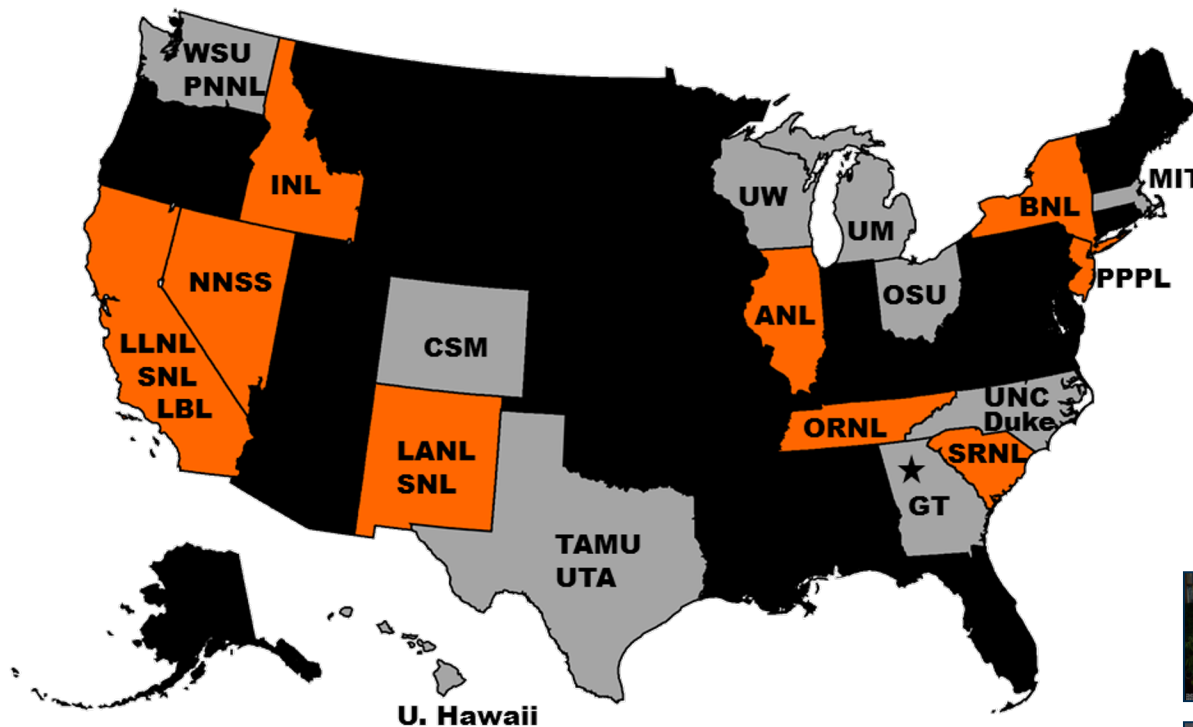
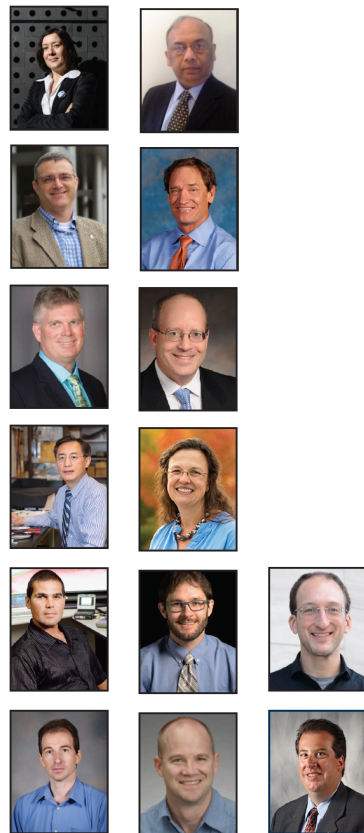
Data sets from sensors, biota and robotic instruments



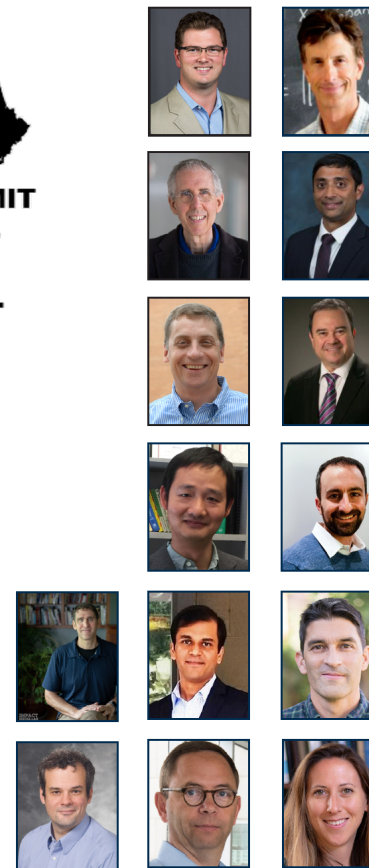
- ▶ To direct the research and innovation to enable the technologies that support the NNSA's mission and to bridge the gap between the university basic research and national laboratories mission-specific applications.
- ▶ To create a research and education environment to support cross-cutting technologies across three core disciplines.
- ▶ To support education, development, and transition to national laboratories or NNSA of students and postdocs.



# ETI Team



UNIVERSITY PARTNER  
NATIONAL LABORATORY PARTNER

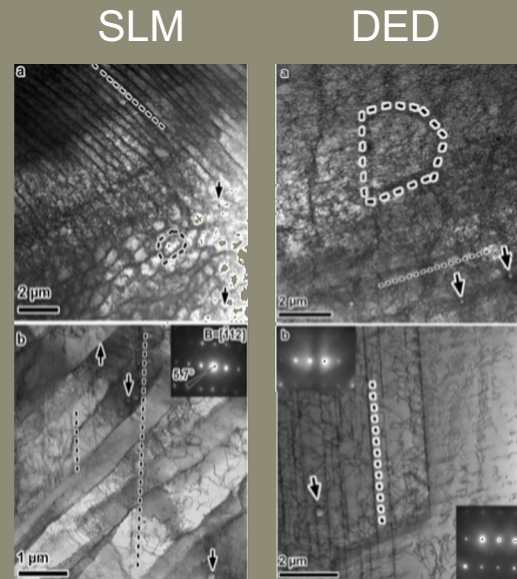


# ETI Mission



## Thrust Area 2: Additive Manufacturing (AM) for Nonproliferation.

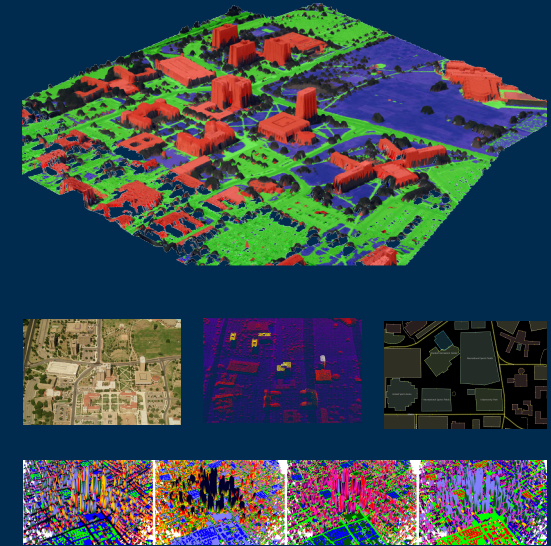
Material scientists, nuclear engineers and specialists in maker communities with a goal to address the most pressing needs in enabling technologies to determine unique signatures resulting from use of advanced manufacturing. Results will be a foundation for policy formulation to address these concerns.



D. Thoma (UW)

## Thrust Area 1: Computer and Engineering Sciences for Nonproliferation (CESN).

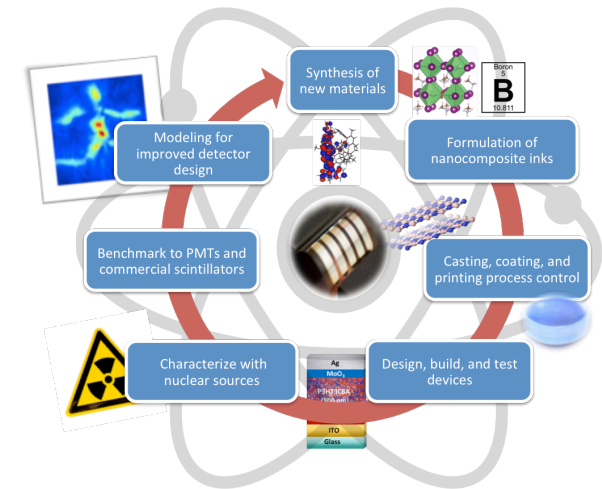
A multidisciplinary team composed of computer and data scientists, nuclear and aerospace engineers, chemists and biologists to take advantage of new-age computational and hardware capabilities in data science and remote detection.



J. Fisher (MIT)

## Thrust Area 3: Novel Instrumentation (NI) for Nuclear Fuel Cycle Monitoring.

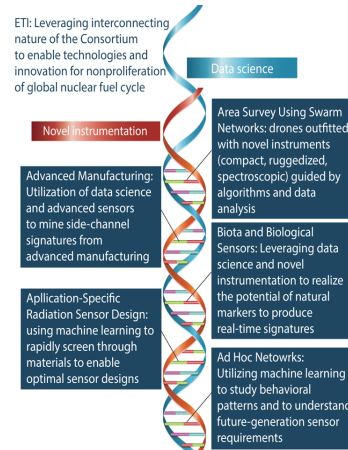
The aim is to integrate into MTV Consortium solutions and national laboratories' research using expertise from nuclear engineering, material scientists, chemists and electrical and computer engineers.



B. Kippelen (GT)

# Objectives of the Summer Meeting

- Exchange of research and innovation between partnering laboratories and IHEs
- Integration of cross-cutting projects
- Student presentations
- NNSA feedback
- **Social interactions!**



# Exchange of research and innovation between partnering laboratories and IHEs

- Students and young researchers at partnering labs presenting their work

**The Consortium for Enabling Technologies & Innovation (ETI)**  
**Virtual Summer Meeting for Young Researchers**  
 July 7–8, 2020 (tentative)  
 11:00 a.m. till 4:00 p.m. EST

Technical sessions, panels, and Informal discussions about life and work at national laboratories

**Presenters:**

- ETI students
- Postdocs
- Young researchers (postdocs and staff) at national laboratories

**Proposed Topic Areas:**

- Technical perspectives on machine learning
- Robotics
- High-performance computing
- Advanced manufacturing
- Novel radiation detection instrumentation

**Registration:** <https://forms.gle/vUu5tr4r3Ko3AguQA>

<https://eti.gatech.edu>

## Information Exchange

- ETI is always looking for cross-cutting collaborations related to nonproliferation in nuclear fuel cycle!
- Join us for the ETI Annual Summer School (August 24-28, 2020)

**The Consortium for Enabling Technologies & Innovation (ETI)**  
**Annual Summer School**  
 Part I (Virtual) Theme: Data Science and Engineering  
 August 24 – August 28, 2020  
 Summer school meeting will begin at 11 a.m. ET

Register by July 15, 2020, at <https://forms.gle/pjTC4NGgnnrKdLc6>

Data science methods will be introduced, including hands-on tutorials on nonproliferation applications.

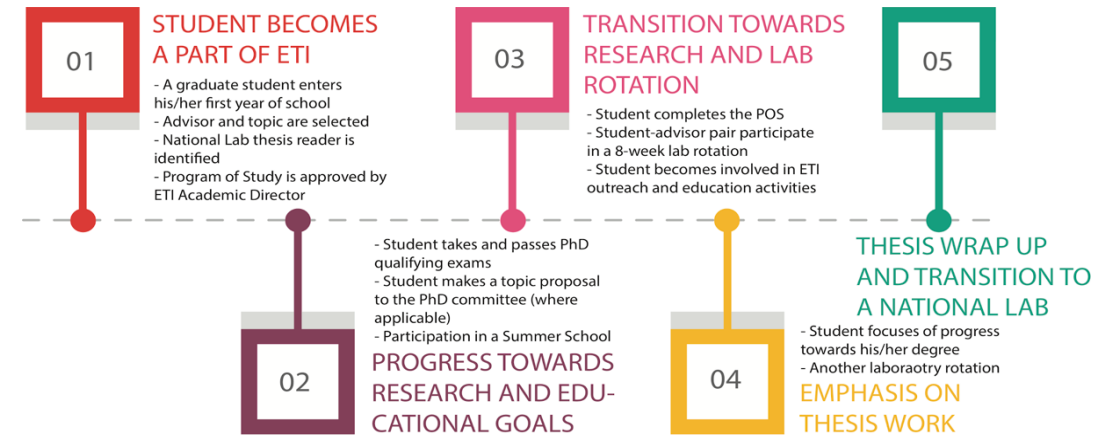
Join us! Here's what you'll get:

1. Connection between applications and data science
2. Education on the key topics
3. Introduction of resources
4. Immersive collaborative environment

**Topic Areas (Modules):**

- Day 1 – Fundamentals of Data Applications  
Steve Biagalski (Georgia Tech)
- Day 2 – Computational Machine Learning  
Alfred Hero (University of Michigan)
- Day 3 – Bayesian Modeling and Inference  
John Fisher (MIT)
- Day 4 – Data Science for Safeguards  
Karl Pazdernik (PNNL)
- Day 5 – Applications
  - Overview of UAV Technology, Jonathan Rogers (Georgia Tech)
  - Critical Aspects of Applying Machine Learning to Nuclear Threat Detection Problems, Simon Labor (LLNL)
  - Proliferation Detection Relevant Data Streams and Types, Will Ray (ORNL)
  - Nuclear-Data Analytics, Vlad Sobes (University of Tennessee)
  - Radiation Detection Data Analytics, James Ghawaly (ORNL)

<https://eti.gatech.edu>



**Laboratory-Student Engagement Panels**  
 What's life like at a national lab? How can we transition to a lab? How do you secure funding as a researcher at a lab?





# Thank you!

