Innovation Tools – Catalyzing Their Adoption

Dr. Julie Linsey, Dr. Michael Helms, Kristoffer Sjolund, Shiho Nakamura
Georgia Institute of Technology

IRI 2026 Innovators Summit
May 6th, 2026

INNOVATION RESEARCH INTERCHANGE
Accelerating Value Creation

Georgia Tech

Introductions

Professor Julie Linsey, PI
Professor
Mechanical Engineering
Georgia Institute of Technology
julie.linsey@me.gatech.edu

Dr. Michael Helms, Co-PI
Sr. Research Scientist
Mechanical Engineering
Georgia Institute of Technology
michael.helms@me.gatech.edu

Kristoffer Sjolund
Ph.D. Candidate
Mechanical Engineering
Georgia Institute of Technology
ksjolund3@gatech.edu

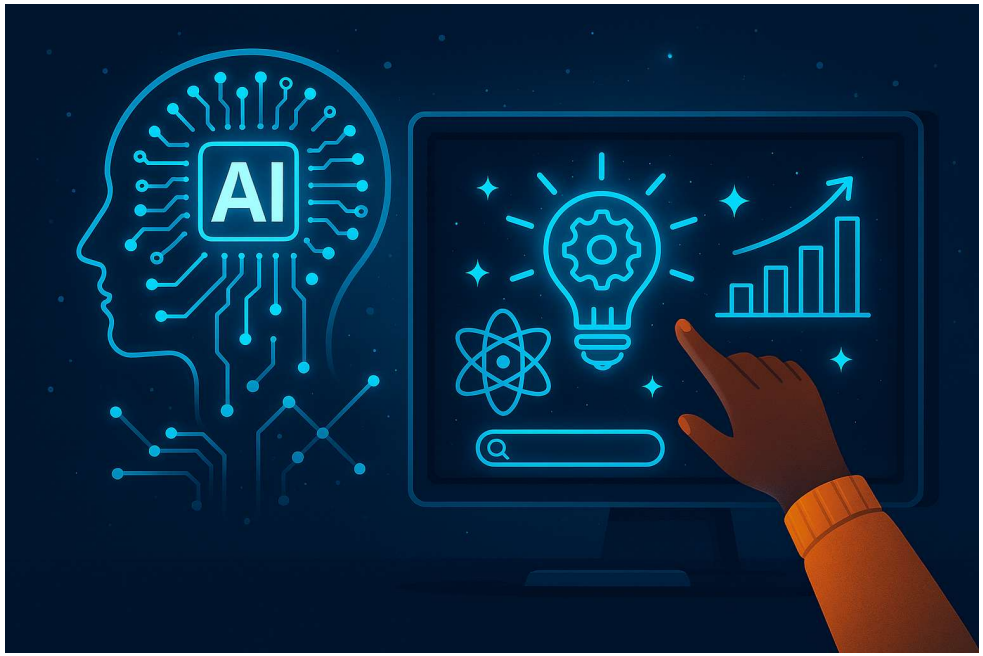
Shiho Nakamura
Ph. D. Candidate
Mechanical Engineering
Georgia Institute of Technology
snakamura8@gatech.edu

Georgia Tech

AI for Innovation

- **AI tools are proliferating in innovation**
  - Idea generation
  - Summarize customer insight
  - Product image generation
  - Novel material/protein formulations

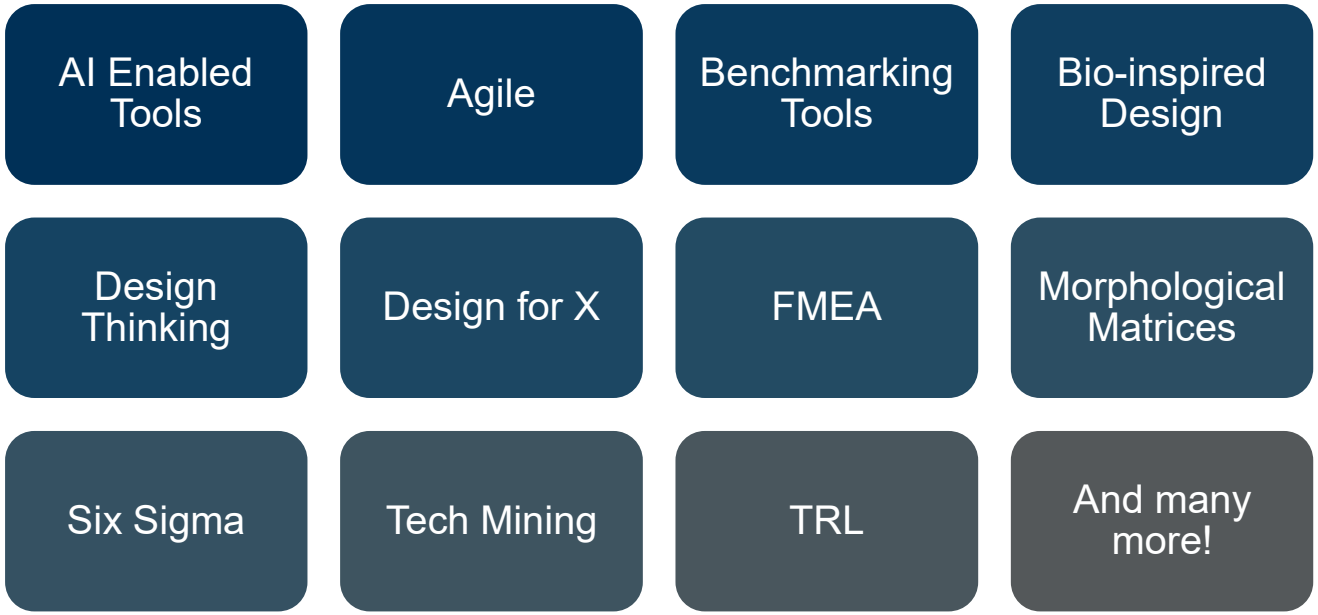
What are *best practices* for implementing novel innovation methods and tools like Generative AI effectively in large R&D organizations?



All images in this presentation are AI generated.

Georgia Tech

Innovation Methods, Tools, and Processes



We use the term '**Methods**' to refer to all the above

We exclude innovation portfolio management

Georgia Tech

Method adoption challenges in Industry

- **Many methods struggle to achieve widespread implementation**
  - Struggling with mixed adoption
  - Failure to translate across domains
  - Difficulty overcoming cultural differences

Bio-inspired design	• Produced many valuable devices but is not embraced by many industry sectors
Agile	• Revolutionized software development, implementation in physical product development faces challenges
Design Thinking	• Industry sectors seeing value in serving customers, but measuring impact is difficult

Discussion (10 min)

Take a minute to think about a time when you implemented an innovation method.

Consider

- What methods have you adopted?
- Why did you select those?
- What went well?
- What went poorly?

Talk at your tables to compare your experiences

Georgia Tech

Pre-Discussion (2 min)

Recall a time in your career when you were involved in the implementation of a new innovation method.

Consider:

- What was the method.
- Why was it selected, and by whom?
- What went well?
- What went poorly?

Catalysts

- Factors that supported widespread method use.

Barriers

- Issues that prevented or slowed method use.

Discussion (15 min):

5 minutes	5 minutes	5 minutes
Catalysts to Adoption. Discuss factors that *supported* widespread method use.	**Barriers to Adoption.** Discuss issues that *prevented* or *slowed* method use.	**Recap:** Each table will provide a readout of their top catalysts and barriers.
Outcome: have the scribe note all *catalysts*	**Outcome:** have the scribe note all *barriers*	

Georgia Tech

Goals of NSF Magnifying Innovation

With respect to the adoption of new design methods and tools at large industrial and governmental organization R&D teams:

1. Understand How and Why
2. Discover the Barriers and Catalysts
3. Identify and Transfer Best Practices

National Science Foundation
WHERE DISCOVERIES BEGIN

Award #2230550: Magnifying Innovation: Understanding Organizations' Adoption of Novel Design Practices

Georgia Tech

Our Research Process

Thread 1

Innovation Adoption Interviews

- Exploratory study
- 60 interviews in up to 7 participating organizations

Thread 2

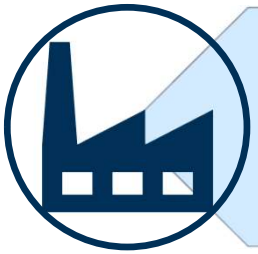
Innovation Adoption Surveys*

- Online survey
- >200 participants across many organizations

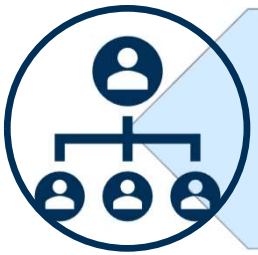
Georgia Tech

Industry Interviews

In-depth discussions with industry professionals



Targeting Fortune 500 companies



Individual Practitioners, Managers, Executives

Georgia Tech


ORGANIZATIONAL FACTORS
Leadership
1. Executive sponsorship
2. Executive buy-in
3. Understanding of costs & benefits
4. Influential individuals championed method
Organizational Fit
1. Org domain & products fit method
2. Org accounted for local needs
3. Consistent language for method
4. Results met expectations
Organizational Resourcing
1. Little to no turnover in personnel
2. Financial investment
3. Sufficient personnel
4. Dedicated team for implementation
5. Provided continued support
6. Access to subject matter experts
7. Institutional knowledge
Organizational Change Culture
1. Comfort with learning from failure
2. Effective change management
3. Mandated use of method
PRACTITIONER & METHOD FACTORS
Confidence in the Method
1. Successful internal use
2. Successful external use
3. Support from successful practitioners
Characteristics of Method
1. Formal structure
2. Low barrier to getting started
3. Leveraged large amounts of data
4. Transparent computer support
Practitioner benefits
1. Easy to use
2. Results not obtained elsewhere
3. Method saved time
4. Direct benefits
Characteristics of Practitioner
1. Prior awareness of method
2. Alignment with work approach
3. Enjoyment
4. Open to change
5. Risk tolerant
Method Training
1. Training showed context
2. Included relevant examples
3. Demonstrated clear value

Takeaways – Best Practices

Five best practices emerged.

- We use *frequency* as a proxy for importance
- Analysis is independent of position or rank
- Best practices are interdependent – no panacea

Full list of Catalysts and Barriers

1: Ensure the method aligns with the organization.

2: Leadership must be invested in the results.

3: Dedicate personnel to detailed implementation.

4: Ensure benefits are understood by practitioners.

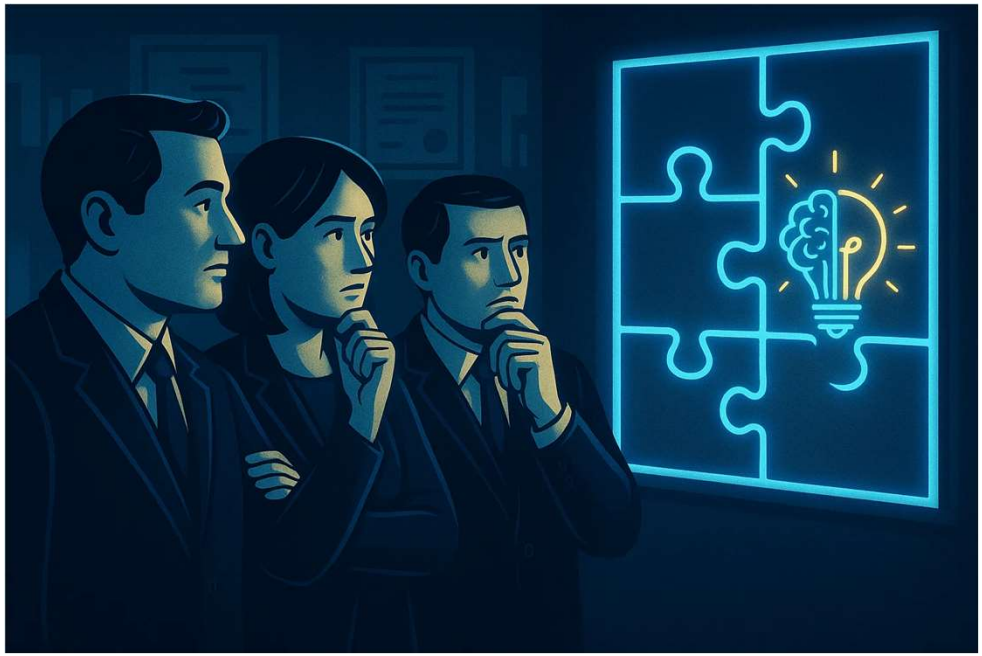
5: Require the use of methods…or not?

Helms, Michael E., Sjolund, Kristoffer G., and Linsey, Julie S. "Catalysts and Barriers to the Adoption of New Innovation Methods." *XXXVI ISPIM Innovation Conference*. 2025.

Georgia Tech

Best Practice 1: Ensure the method aligns with the organization.

- **Consider upfront investment to adapt tool to organization needs.**
  - Beware of one-size fits all.
  - Slow roll-out with iteration.
- **Relevant examples of success within organization (or very similar case study).**
- **Not invented here vs “roll your own”**
  - Not all organizations are sufficiently skilled to implement modern tools
  - We can do this ourselves, but should we?



Best Practice 2: Leadership must be invested in the results.

- **Executive Buy-in**
  - Openly discuss the method
  - Link to the success of the company.
  - Align managers with executive messaging.
  - *Leaders ask for the results of method; use those results to inform decisions.*
- **Leadership Understands the Tool**
  - Discuss the cost and benefits of the method, especially *from the perspective of the practitioner.*
- **Dedicated Resources**
  - Dedicate resources to the successful roll-out and support of the tool.

Best Practice 3: Dedicate personnel to implementation.

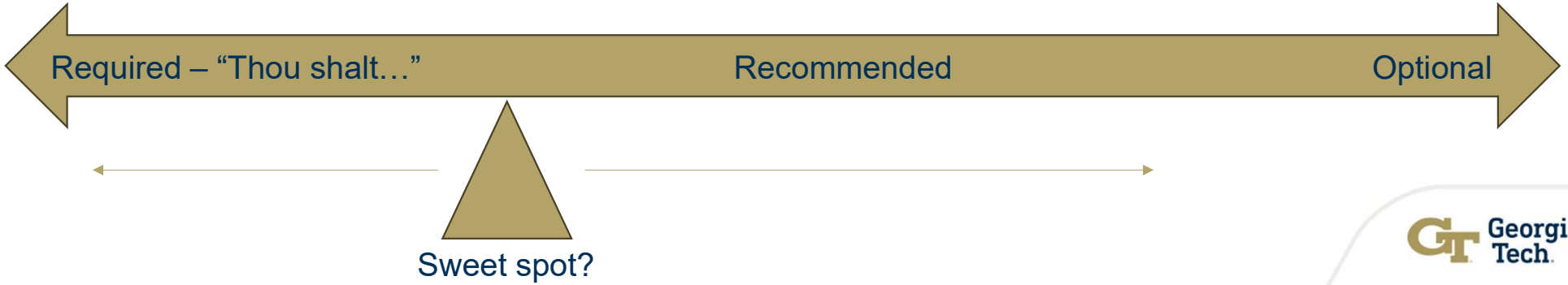
- **Dedicated adoption team**
  - Budgeted time & funding.
  - Team should be responsive to feedback; practitioners should feel heard.
  - Model side-by-side learning between expert practitioners and new adoptees.
- **Learning from failure should be encouraged**
- **Encourage consistent terminology, use, and training**

Best Practice 4: Ensure benefits are understood by employees

- **Benefits must warrant training and additional cost to use (if any).**
  - #1 Saves Time
  - #2 Increases Throughput
  - Otherwise makes life easier
- **Increases the perceived value of employee's work product.**
  - Link to job performance.
  - Link to peer competition.
- **Increases the perceived value of the employee to the market.**
- **Provides value to the organization**
  - Benefits to the collective must be tied to the benefits to the individual.

Best Practice 5: Require the use of methods…or not?

- **Top-down mandates seen as both good and bad.**
  - Some initiatives require company wide adoption to be effective.
  - Practitioners may chafe when required: “this too shall pass.”
  - “Soft” requirements such as integration into stage-gate processes, perception of peer competition, performance reviews.
  - May force out change resistant; risks marginalizing existing experts.



Georgia Tech

Survey

- Our best practices are based on 40+ interviews with executives, managers and other skilled R&D practitioners.
- We are seeking formal input from a broader audience. We have developed a 10-minute survey to go with this workshop to help us:
  - Validate outcomes
  - Prioritize findings
  - Discover anything we missed
- Please take 10 minutes to complete this survey sometime today.
- Please share with friends or propagate through your organization.

Survey

- Provide formal data from your perspective on the adoption of design methods in industry

Broad, Industry-Focused Survey

Georgia Tech

Measuring Success – The Known Unknown

How do R&D organizations evaluate the success of a new innovation method?

- What are the metrics used to determine success?
- What methods are used to gather the metrics?
- Why is this particularly challenging in an R&D organization?
- How does this influence decision-making?

Georgia Tech

Discussion:

Metrics and Methods

Discuss how you measure the success of new methods of innovation?

Outcome: have the scribe note *metrics and methods*

Challenges

What makes this particularly difficult in R&D?

Outcome: have the scribe note *challenges*

Recap:

Each table will provide a readout of metrics, methods and challenges.

Broad, Industry-Focused Survey

Thank you!

Contact:
Prof. Julie Linsey
julie.linsey@me.gatech.edu
sites.gatech.edu/magnifyinginnovation

This material is based upon work supported by the National Science Foundation under Grant No. 2230550. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation

Broad, Industry-Focused Survey

Full list of Catalysts and Barriers

Georgia Tech