MIT Industrial Liaison Program Faculty Knowledgebase Report

MIT Data Center Day

September 30, 2025 9:00 am - 5:00 pm

8:30 AM	Registration and Check-in
8:50 AM	Welcome and Introduction Jim Flynn Program Director, MIT Industrial Liaison Program

Jim Flynn
Program Director
MIT Industrial Liaison Program

Before MIT, Jim was the assistant dean of research business development at the UMass Amherst College of Information and Computer Sciences. Jim founded, built, and sold multiple technology companies in fintech and online media. He has bootstrapped startups and closed venture capital, angel, and private equity funding rounds. Jim also served as the Chief Operating Officer of a public company and a subsidiary of Pitney Bowes. He began his career at AT&T as a software developer, hardware engineer, and national account manager. Jim has authored patents and wrote one of the first books on Java programming. Out of all the roles he's held, Jim's favorite job title by far is dedicated dad of four. He earned a BS from Manhattan College and an MBA with concentrations in finance and international business from New York University.

An introduction to the day's themes, objectives, and structure. A representative from MIT Corporate Relations will highlight the relevance of data center innovation in the era of AI and global digitization.

9:00 AM	AI-Driven Demand: How Foundation Models Are Reshaping Compute and Infrastructure Jonathan Rosenfeld

The rapid rise of foundation models and real-time inference is transforming the scale and nature of compute demand, outpacing historical trends and stressing existing infrastructure. This session explores how the evolution of modern AI workloads is driving the need for new data center strategies, including decisions around compute scaling, energy use, system architecture, and geographic deployment. It will also examine how research and innovation at the intersection of AI and compute economics are shaping the future of infrastructure planning.

9:30 AM	Quantum Computing 101: Foundations, Frontiers, and Future Impact Will Oliver Quantum computing is moving rapidly from theoretical curiosity to an emerging tool with the potential to reshape entire industries. This session will introduce the core principles, terminology, and architectures of quantum systems, outline what they can and cannot do compared to classical computing, and explore where the field is headed. We'll also touch on the potential implications for high?performance computing environments and why forward?looking organizations are tracking quantum's progress now.
10:00 AM	Designing for Resilience: Scaling Infrastructure for Environmental and System Uncertainty Saurabh Amin Data centers must be designed to operate reliably in the face of environmental shocks, resource constraints, and long-term system uncertainty. This session explores how scenario modeling and system-level foresight can inform infrastructure planning, balancing performance, sustainability, and adaptability in an evolving energy and policy landscape. We'll examine how advanced modeling tools and data-driven strategies can help decision-makers anticipate and adapt to a rapidly changing environment.
10:30 AM	Coffee & Networking Break
11:00 AM	Beyond Bricks: Modularity and Adaptive Infrastructure Christoph Reinhart Modular and climate-adaptive data centers can provide flexibility and resilience. We'll explore how new design strategies and dynamic building envelopes can support evolving workloads.
11:30 AM	Securing the Stack: Risk, Resilience, and the Future of Data Center Security Hamed Okhravi As data centers grow more critical to new AI applications, finance, and industrial operations, they've become prime targets for cyber, physical, and supply chain threats. This session explores strategies to identify, prioritize, and mitigate risks across the infrastructure stack, from hardware and software to organizational workflows. Topics include zero-trust architecture, threat modeling, ransomware readiness, and systemic resilience. Drawing from real-world cases and research, we'll examine how leaders can design secure systems that are also agile and scalable.
12:00 PM	Smarter Grids, Stronger Data Centers: Meeting the Next Power Challenge Morgan Andreae AI and cloud growth are pushing electric grids to their limits, reshaping where and how data centers can be built. In this session, a principal investigator from the MIT Energy Initiative (MITei) will share strategies for securing low-carbon, reliable power while integrating facilities into urban and industrial systems. Topics include grid-aware siting, on-site generation, advanced cooling, and policy frameworks that balance the needs of operators, utilities, and communities.

12:15 PM

From Core to Edge: Decentralized AI and the Future of Data Centers

Michael Casey

Tricia Wang

As AI evolves, decentralized architectures—processing at the edge rather than in massive centralized facilities—are reshaping data center roles and requirements. This talk will examine how these approaches can ease grid reliance, boost resilience, and shift the balance between edge and core infrastructure. Drawing on MIT research, the speaker will outline the technical, operational, and policy implications for building data centers that thrive in a distributed AI landscape.

12:30 PM

Lunch & Networking

1:30 PM

Climate and Sustainability Implications of Computing Hardware
Elsa Olivetti

Jerry McAfee (1940) Professor, Department of Materials Science and Engineering

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Jerry McAfee (1940) Professor, Department of Materials Science and Engineering

Professor Olivetti received a BS in engineering science from the University of Virginia in 2000, and a PhD in materials science and engineering from MIT in 2007. She spent her PhD program studying the electrochemistry of polymer and inorganic materials for electrodes in lithium-ion batteries. In 2014, she joined DMSE as an assistant professor. As an educator, Olivetti overhauled DMSE's undergraduate curriculum and developed new courses, including one for the MIT Climate and Sustainability Consortium Climate Scholars. She's a member of the MIT Climate Nucleus and co-director of the MIT Climate & Sustainability Consortium.

Professor Elsa Olivetti's research focuses on improving the environmental and economic sustainability of materials. Specifically, she develops analytical and computational models to provide early-stage information on the cost and environmental impact of materials. Professor Olivetti and her research-group colleagues work toward improving sustainability through increased use of recycled and renewable materials, recycling-friendly material design, and intelligent waste disposition. The Olivetti Group also focuses on understanding the implications of substitution, dematerialization, and waste mining on materials markets.

Data centers have a significant embodied and operational carbon footprint. This talk presents MIT's perspective on how to balance the benefit of the use of data flowing into and out of data centers with the burden of computing and data center equipment.

2:00 PM

Data Center Cooling: From the External Environment to Individual Components

Leon Glicksman

High-performance data centers demand advanced thermal management, electrical design, and infrastructure resilience. This session will explore best practices and emerging frontiers in core systems engineering.

2:30 PM

AI Orchestration: Scheduling Intelligence at Scale

Vijay Gadepally

As AI workloads grow increasingly complex, orchestration is becoming a crucial layer in modern data centers. This session examines how intelligent scheduling, workload-aware optimization, and infrastructure co-design can enhance performance, reduce costs, and maximize the efficient use of compute, storage, and networking resources across edge, cloud, and hybrid environments.

3:00 PM

Coffee & Networking Break

3:30 PM

MIT Startup Exchange: Lightning Talks
Tricia Dinkel
Manager of Partnerships & Engagement, MIT Startup Exchange

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Manager of Partnerships & Engagement
MIT Startup Exchange

Tricia Dinkel comes to Corporate Relations with several years of experience in the innovation ecosystem and managing relationships with startups and corporates. Tricia previously worked as Director of Navigate (NECEC's flagship innovation program) at the Northeast Clean Energy Council (NECEC) in Boston where she led all operations and partnership development for 400+ startups, 65+ innovation partners, and 200+ investors & corporates in North America and Europe. Prior to that role, Tricia held positions with increasing responsibility in program management at NECEC. Before that, her experience included Director of Data Analytics and Sustainability Reporting Manager at WegoWise Inc. in Boston, Associate Director at the Committee on Capital Markets Regulation in Cambridge, Senior Sustainability Coordinator at A Better City in Boston, and Assistant Director at The Green Alliance in Portsmouth, NH.

Tricia earned her B.A., in Environmental Studies/Natural Resource Policy at the University of Colorado, and her M.A., in Environmental Science Education at the University of New Hampshire. She served on the NECEC Diversity & Inclusion Committee and as a member of the USGBC (U.S. Green Building Council), Massachusetts Chapter.

Tim Carr

Cory Waltrip

3:50 PM

Intelligence Everywhere: Redefining AI Infrastructure from the City Edge to the Data Center Core

Nir Shavit

AI inference workloads are exploding—and with them a new type of parameter-driven computation that, unlike the data-driven computations of the past, requires a new execution layer between the models and the hardware they run on. In steps Red-Hat with its VLLM based Inference Server, a highly efficient run-time that provides seamless efficient execution of models, no matter how large, on a multitude of state-of-the-art acceleration hardware. I will discuss VLLM, the technical issues in designing this new inference abstraction layer, and how it will change the industry.

4:00 PM

When the Unthinkable Happens: Real-World Lessons in Data Center Resilience

Kevin Bradshaw

What happens when the lights go out, the cooling fails, or a flood reaches the server room? From their unique role insuring and protecting mission-critical facilities worldwide, FM has seen and helped clients recover from the kinds of events that can take a data center offline and cost millions in minutes. In this thought-provoking session, Kevin Bradshaw will share real-world patterns in risk and resilience, why costly failures often aren't the most obvious, and how leaders can make data centers not just highly efficient, but truly unshakable.

4:15 PM

Visionary Keynote – Future Data Centers: From Bits to Atoms
Neil Gershenfeld

Director, Center for Bits and Atoms

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Prof. Neil Gershenfeld is the Director of MIT's Center for Bits and Atoms, where his unique laboratory is breaking down boundaries between the digital and physical worlds, from pioneering quantum computing to digital fabrication to the Internet of Things. Technology from his lab has been seen and used in settings including New York's Museum of Modern Art and rural Indian villages, the White House and the World Economic Forum, inner-city community centers and automobile safety systems, Las Vegas shows and Sami herds. He is the author of numerous technical publications, patents, and books including *Designing Reality*, *Fab*, *When Things Start To Think*, *The Nature of Mathematical Modeling*, and *The Physics of Information Technology*, and has been featured in media such as The New York Times, The Economist, NPR, CNN, and PBS. He is a Fellow of the American Association for the Advancement of Science and the American Physical Society, has been named one of Scientific American's 50 leaders in science and technology, as one of 40 Modern-Day Leonardos by the Museum of Science and Industry, one of Popular Mechanic's 25 Makers, has been selected as a CNN/Time/Fortune Principal Voice, and by Prospect/Foreign Policy as one of the top 100 public intellectuals. He's been called the intellectual father of the maker movement, founding a growing global network of over two thousand fab labs in 125 countries that provide widespread access to prototype tools for personal fabrication, directing the Fab Academy for distributed research and education in the principles and practices of digital fabrication, and chairing the Fab Foundation. He is a co-founder of the Interspecies Internet and of the Science and Entertainment Exchange. Dr. Gershenfeld has a BA in Physics with High Honors from Swarthmore College, a Ph.D. in Applied Physics from Cornell University, honorary doctorates from Swarthmore College, Strathclyde University and the University of Antwerp, was a Junior Fellow of the Harvard University Society of Fellows, and a member of the research staff at Bell Labs.

View full bio

Imagine a radically different future for compute infrastructure. This keynote explores emerging insights into the construction of computation, from programming atoms to buildings.

4:50 PM

Closing Reflections
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MIT Corporate Relations wraps up the day with key takeaways and a look at where the Data Center conversation goes next.

5:00 PM

Pizza, Beer & Brainstorming

Wrap up the day over pizza and beer with fellow attendees. Compare notes, swap takeaways, and explore ideas sparked by the sessions in a relaxed, informal setting.