THE MIT INTERNET POLICY RESEARCH INITIATIVE

Improving the trustworthiness of interconnected digital systems
Mission

MIT’s Internet Policy Research Initiative (IPRI) leads the development of policy-aware, technically grounded research that enables policy makers to increase the trustworthiness of interconnected digital systems like the Internet and related technologies.

IPRI bridges the gap between the technical and policy communities via three distinct goals:

1. Producing increasingly cross-disciplinary research that global governments, technology companies, scholars, and civil society rely on
2. Engaging with global public policy debates
3. Developing educational pathways for a new generation of students with both technical and policy expertise
The cybersecurity research team focuses on the technical and policy aspects of cybersecurity issues as they relate to the communication networks and software systems affecting the global society and economy. Their multidisciplinary research covers encryption policy, accountability, cryptography, data sharing, securing core economic and social infrastructure, measuring cyber risk, and more.

One example of this group’s work occurred in 2015, when fifteen top computer scientists, cryptographers, and cybersecurity experts — convened by IPRI Founding Director Daniel Weitzner — published a report titled “Keys Under Doormats: Mandating Insecurity by Requiring Government Access to All Data and Communications.” These specialists found that forcing law enforcement access would undermine the technological innovations that underlie the security of the Internet economy as a whole. They also reported that malicious actors would likely focus attacks on government access systems and that protecting these systems would be exceptionally difficult.

“Keys Under Doormats” has been cited favorably in leading policy documents, including the House Encryption Working Group report, and resulted in Daniel Weitzner’s testimony before an Australian parliamentary committee in response to proposed and passed legislation.

Another example of IPRI’s Cybersecurity work is the Cyber Risk project of 2018, which brings together leading CISOs from a variety of industries with the goal of pooling data to better understand cyber risks and the effectiveness of defenses and security controls.


Recent Publications:

Making Artificial Intelligence and Machine Learning Explainable and Accountable

The AI Policy research team focuses on increasing the trustworthiness of artificial intelligence (AI) and machine learning (ML) systems by enhancing their explainability and accountability. Current research areas include: studying the role of AI in financial decision making, increasing access to new training data sets with policy, working with stakeholders on AI principles, and shaping global Internet policymaking via policymaker engagement and informing the public debate.

One example of the group’s work is the IPRI-driven research project, Symbolic Interpretability & Robustness in Applied Machine Learning (“Trust.ML”), which began in 2018.

As part of the group’s international focus, IPRI researchers also co-authored the OECD’s background report on AI policy and are members of the AI Expert Working Group at the OECD (AIGO).

Recent Publications:
Debating Global AI Policy with International Experts

On January 15, 2019, world-leading machine learning experts, global policymakers, and industry executives met for the first MIT AI Policy Congress. The Congress worked toward aligning the benefits of artificial intelligence with the obligations of public trust.

The event involved a daylong, agenda-setting conversation that explored how we should govern AI systems and how to enable AI systems to meet society’s needs domestically and internationally.

The Congress included panels on:

- Transportation and safety
- Manufacturing and labor
- Healthcare
- Criminal justice and fairness
- National security and defense
- International perspectives
- The governance of AI systems

These topics have an impact both on the global scale and to MIT itself, especially with the upcoming Stephen A. Schwarzman College of Computing.

The event and its discussion are covered in a New York Times article titled, "How Do You Govern Machines That Can Learn? Policymakers Are Trying to Figure That Out" and an MIT News article titled “AI, the law, and our future.”

Read more about this event on the IPRI blog: https://internetpolicy.mit.edu/tag/mit-ai-policy-congress-series/.
Ensuring Privacy in Our Digital World

The Privacy research team at IPRI focuses on privacy policy and its role in maintaining trustworthiness for the public. The group's work on privacy covers a wide variety of topics with worldwide implications, including evaluating the international privacy policy landscape and studying privacy incentives using human-computer interaction methodology.

Current research projects focus on broadband privacy, web surveillance, how an excess of information can cause forgetfulness, the implications of silently listening, and providing overarching insight into the global privacy research area. The team collaborates with researchers and professors in social science, anthropology, visualization, and lawyers located in the U.S. and Europe.

One of the group's research projects is the Privacy Bridges project, a collaboration between the University of Amsterdam and MIT that began with a series of IPRI-convened discussions held by independent privacy and data protection experts from the U.S. and the EU. The project ended with the publication of a research report featuring a list of 10 “bridges” that warrant policy action.

This report served as a launching point for a policy dialogue between IPRI researchers and policy makers both in the U.S. and abroad. The findings of the report were also incorporated into MIT's curriculum.

Recent Publications:


Research Area: Networks

Exploring the Future of the Internet

The Advanced Network Architecture (ANA) Group works to understand and shape the future of the Internet. This goal is achieved with the understanding that the future of the Internet is defined by the economic, social, regulatory, legal, and political concerns involving the Internet. As such, the ANA group is organized around five themes: Internet architecture, Internet security, Internet economics, Internet policy, and network management.

One recent research topic and accomplishment was the group’s first major release of data on the interconnection congestion on the Internet. This work has already been cited by industry and the FCC and received the Best Paper award the ACM SigComm conference, the premier networking conference in the world.

For some time we have known that the future of the Internet is not primarily shaped by technology. To understand the future, or to improve it, we must contemplate issues of economics, society and law, and the reality of malicious behavior. Malice implies that we must consider what the Internet should prevent, not only what it should do.”

- David Clark, Senior Research Scientist

Recent Publications:

Focusing on Data and Systems Governance

The Decentralized Information Group (DIG) focuses on data and systems governance (primarily on the Web) and explores both policy and technical issues. Current projects cover a wide range of research areas and technologies and include a decentralized privacy preserving platform for clinical research, evaluating the trustworthiness of autonomous systems, studying the relationship between privacy and machine learning, developing explanations for complex machines and models, securely aggregating distributed data, and developing smart contracts for data sharing.

The Decentralized Information Group also continues its work on the Solid platform, led by Tim Berners-Lee, to re-decentralize the Web and give users back control over their own data. In 2018, Tim co-founded Inrupt to promote the decentralization of web content around the Solid platform. This launch was widely covered in the media in channels such as Wired, Forbes, Vanity Fair, and TechCrunch.

Enabling Young People to Develop Life-Changing Apps

The core goal of the MIT App Inventor team is to empower young people to develop truly useful apps that serve as novel digital solutions to the problems young people face in their lives, communities, and world.

MIT App Inventor’s simple graphical interface democratizes app development and demystifies a process that might otherwise seem inaccessible. Using graphical drag-and-drop blocks helps make the design and development process easy enough that even novice users can create and publish simple apps in under an hour.

The MIT team has built App Inventor to enable anyone to use mobile computing for significant, real-world impact. Because the platform provides access to the entire technological infrastructure of the Internet, the apps can be vastly powerful.

Recent Publications:

Policy-awareness, transparency, and trust ensure that technologies work in ways to make the Web and the world better for humanity.”

-Lalana Kagal, Principal Research Scientist

Recent Publications:

Mathematics is about how you think about what’s true, following from various axioms. Computing is how you think about how to do things.”

-Hal Abelson, Professor of Electrical Engineering and Computer Science
IPRI Course Offerings

IPRI researchers are involved in teaching the following courses:

- Foundations of Internet Policy (6.805/STS085)
- Privacy Legislation: Law and Technology (6.S978) with Georgetown Law
- Artificial Intelligence and Global Risks (6.S092)
- Democratizing AI through K-12 AI Education for All (6.S898/MAS.S65)
- Deep Learning Practicum (6.S198)

In the News

In order to reach more people and better inform the public policy debate, members of the IPRI leadership team frequently write op-eds and speak out on key policy issues that benefit from public attention.


IPRI Education

Inspiring the Next Generation of Scholars and Policy Makers

Since its founding, IPRI has worked toward building a network of students that can engage in the ever-evolving Internet policy field using disciplinary strength in both engineering and social studies.

In conjunction with the traditional engineering strength of MIT, IPRI students benefit from active engagement with leaders in the global Internet policy debate. This combination of academic excellence and engagement with the policy community prepares students to enter academic, commercial, government, and civil society leadership positions on Internet policy.

IPRI achieves its educational goals by involving students in policy research, teaching MIT courses and online courses, as well as providing professional education opportunities.
Recent Publications

Cybersecurity


Artificial Intelligence Policy


Privacy


Networks and Internet Measurement

• Clark, David D. Designing an Internet. Cambridge, MA: MIT Press, 2018


**Decentralized Information Group**


**App Inventor**


