Daniel J. Weitzner, Principal Research Scientist, CSAIL
Founding Director, MIT Internet Policy Research Initiative
Objective

The mission of the Internet Policy Research Initiative is to build a new **new field** to create public policy and engineering frameworks that will increase the trustworthiness of the interconnected digital systems we rely on today.

We accomplish this through **engineering** and public policy research, **education** and engagement.
Research
Current research across four themes

21 research projects in the following areas:

- **Security**: Encryption policy, IoT, ISP/client comms, understanding cybersecurity
- **Privacy**: Consumer privacy, health analytics, Wi-Fi leakages, EU/US bridges
- **Networks**: Reliability of networks, architectures, spectrum, performance
- **Internet experience**: App Inventor, social linked data, foundations of Internet policy, accountable systems, autonomous vehicle sensor data interpretation

https://internetpolicy.mit.edu/research
Challenge: Law enforcement officials are again calling on technology designers to dumb down user’s Internet security to enable guaranteed access to all data and communications, even if encrypted.

- 15 experts, including the world’s leading cryptographers show there are grave risks to building “exceptional access” systems for law enforcement.
- Once those back doors are available, all of our private communications become much more vulnerable to attack by malicious criminals and terrorists.
FBI vs. End-to-End Encryption

‘BI to ‘Tech Companies’
At least Don't Offer End-to-End Encryption
Apple vs. FBI

“If you halt or weaken encryption, the people that you hurt are not the folks that want to do bad things. It’s the good people. The other people know where to go.”

— TIM COOK, APPLE CEO
Consensus shifts away from mandatory back doors

As we together engineer approaches to overall human security in the information age, I know enough to recognize that there will not be some simple, overall technical solution—a so-called 'back door' that does it all.... I'm not a believer in backdoors or a single technical approach. I don't think that's realistic.

--US Secretary of Defense Ash Carter

Much of GCHQ's work is on cyber security, and given the industrial-scale theft of intellectual property from our companies and universities, I'm acutely aware of the importance of promoting strong protections in general, and strong encryption in particular. The stakes are high and they are not all about counter terrorism.

--UK GCHQ Director Robert Hannigan

“How will people trust the results of the election if they know that the government has a back door into the technology used to collect citizen’s votes?”

--EU Vice President Anders Ansip
Privacy Bridges (2015)

**Challenge:** What steps that the European Union and the United States can take together to address the shared challenge to privacy protection posed by new technologies and new global businesses?

20 legal and computer science experts drawn half from the United States and half from Europe

Recommendations were the centerpiece of the 37th International Conference of Privacy and Data Protection Regulators.

https://privacybridges.mit.edu/
Privacy and Big Data analysis

**FairML: Architecture**

- Input Data
- Black Box
- Output

**Variable Ranking Methodologies**
- Iterative Orthogonal Feature Projection
- MRMR
- LASSO
- Random Forest Feature Ranking

**Graphing Module**

**Legend**
- Optional
- Required

**Gender Audit: Combined Ranking from FairML**

**Combined Feature Importance across all Methodologies**

**Gender Ranking**

Participants based their decision on:

- Familiarity (i.e. trust) with the app.
- The type of app, in particular what kinds of information the app already has already access to.

**Frequency of use had no effect;**
Education
Urgent need: Policy making with tech + policy skills

Example from the United States:
Backgrounds of 535 voting members - US Congress

- 225 Law
- 201 Business
- 94 Education
- 24 Health care
- **5 Engineering**
- 3 Physics
- 1 Chemistry
Courses 2015/2016 academic year

Fall

• 6.805/STS085: Foundations of Internet Policy
• 17.310/17.309/ESD103/STS82 Science Technology & Public Policy
• 17.446/17.445 - International Relations Theory in the Cyber Age

Spring

• 6.S978 - Privacy Legislation & Technology (Jointly taught with Georgetown Law School)
• 6.S898 Cybersecurity Policy
Engagement
Engagement
Thank you