Privacy Journey

Security vs. Privacy

Privacy Enabling Technologies

Risks and Threats to Protected Data

Technology Policy and Privacy

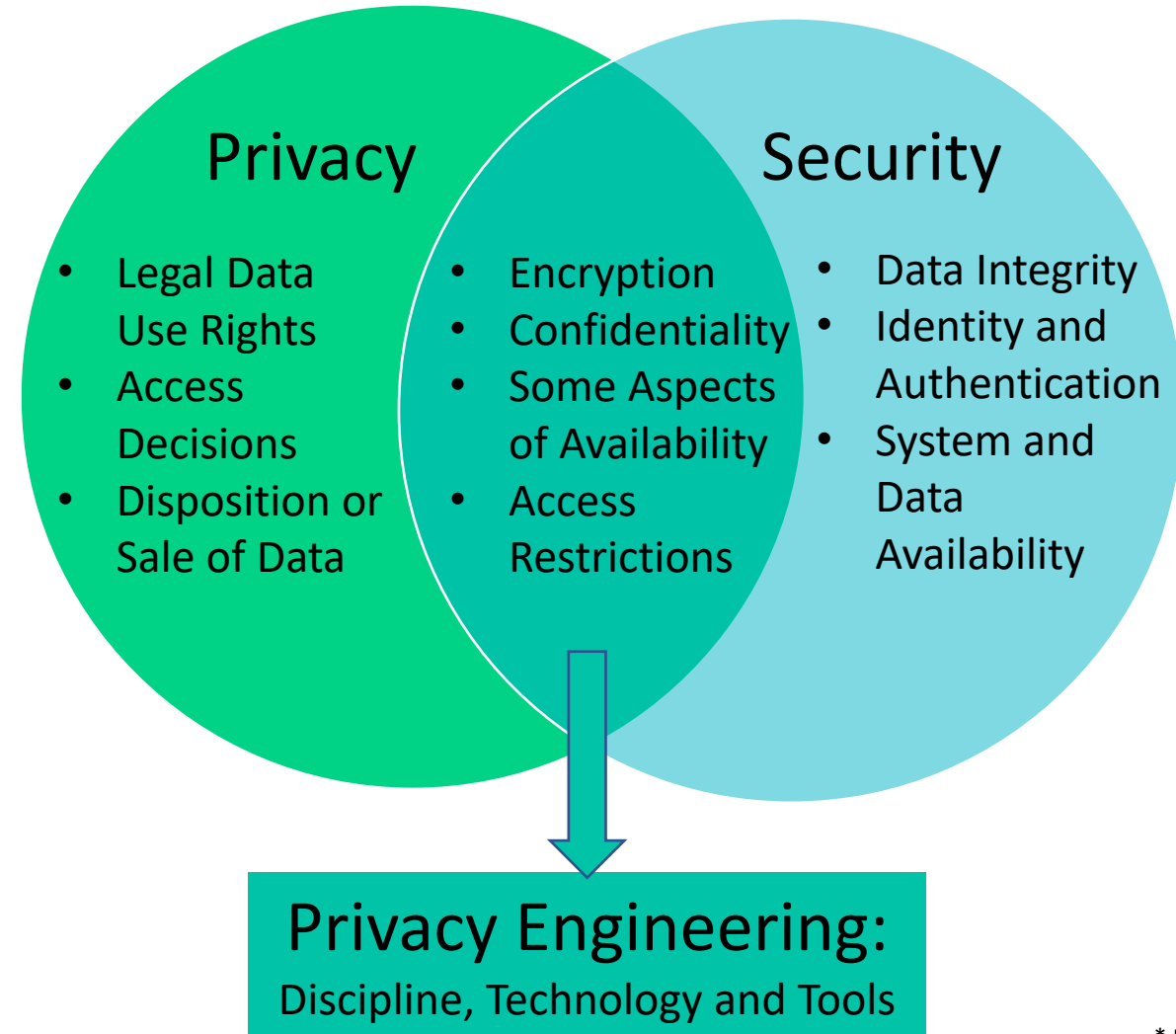The Privacy Standards Community

Security and Privacy

Privacy:

The decisions that surround competing claims for access to, modification of, deletion of, and altering the disposition of information, as well as the legal right, uses, and potential ownership of data.*

Security:

The confidentiality, integrity, and availability of the data being accessible to only those people or systems with appropriate identity and credentials

Privacy

- Legal Data Use Rights
- Access Decisions
- Disposition or Sale of Data

- Encryption
- Confidentiality
- Some Aspects of Availability
- Access Restrictions

Security

- Data Integrity
- Identity and Authentication
- System and Data Availability

Privacy Engineering:
Discipline, Technology and Tools

* Bambauer, 2013

Creating Infinite Possibilities.

Privacy Enabling Technologies

Compliance, Market Solutions, and Innovations

Privacy Enabling Technologies

Privacy Compliance Tooling

Dependency Complexities:

- Industry, geography, legal jurisdiction, retention purpose, retention duration, and more

Requirement Complexities:

- Reporting/audit, provenance, protections, grants (opt in/out), sales/sharing, and more

Tooling needs

- Global $US3.26B in 2021 (41% CAGR)

- North America: $US682.9M in 2021

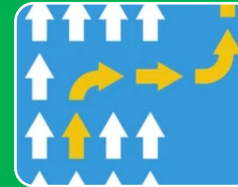North America Data Privacy Software Market Size, 2018-2029 (USD Million)

www.fortunebusinessinsights.com
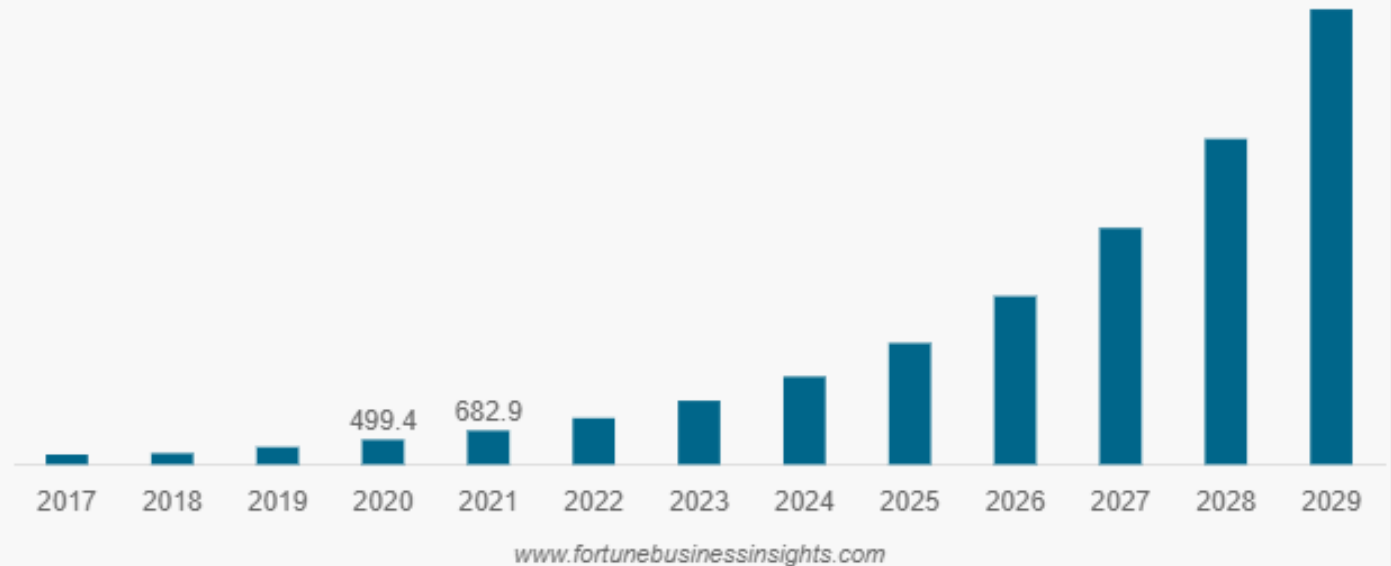
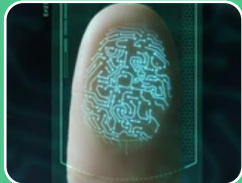# Privacy Enabling Technologies

Technology Solution Categories

Traditional Data Masking
- Anonymizers, pseudonymization, data minimization, obfuscation, code review & ID

Differential Privacy
- Adding noise & randomness to protect aggregate and individual results

Self-Sovereign Identity
- Smart contracts, blockchains, rules for use
- Audit records, multi-party verification

Federated Learning / Privacy Enhanced FL
- Machine learning with shared weights/bias but distributed data
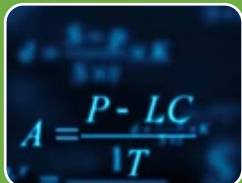
Mathematics
- Homomorphic encryption and Zero-Knowledge Proofs to operate on encrypted data.
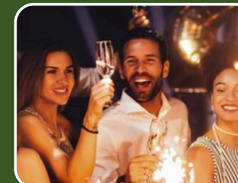
Secure Multi-Party Computation
- Machine learning like FL/PEFL but rules shared using finite-field cryptography

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Risks and Threats to Protected Data

Risks Resulting In Data Exposure

Risks From Data Exposure

Risks and Threats to Protected Data

Risks Resulting in Data Exposure

Accidental exposure (misplaced docs)

Endpoint sale of data (online service revenue model)

Online tracking (browser fingerprinting, cookies, etc.)

Intentional aggregation (profile building)

Linked data sets (intentional or otherwise)

Active fraud ("social engineering", "phishing", etc.)
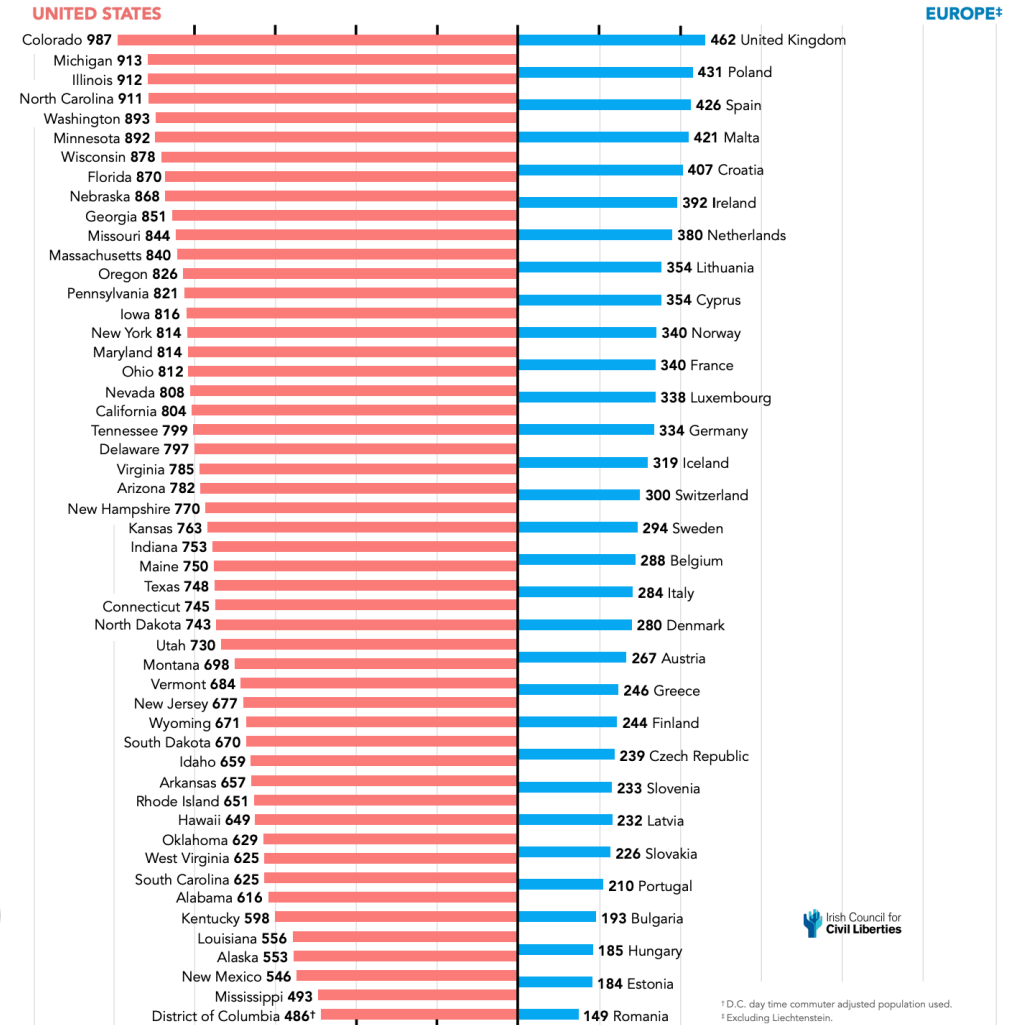
Insider threats (pay employees to exfiltrate)

Misclassification (deletion or unintentional sharing)

Technical (insufficient security, media, CM, cloud)

Realtime bidding markets ($US117B user behavior tracking)

**RTB broadcasts per person (daily)**
Estimated RTB broadcasts per day[2]

UNITED STATES		EUROPE[‡]
Colorado 987	United Kingdom 462	
Michigan 913	Poland 431	
Illinois 912	Spain 426	
North Carolina 911	Malta 421	
Washington 893	Croatia 407	
Minnesota 892	Ireland 392	
Wisconsin 878	Netherlands 380	
Florida 870	Lithuania 354	
Nebraska 868	Cyprus 354	
Georgia 851	Norway 340	
Missouri 844	France 340	
Massachusetts 840	Luxembourg 338	
Oregon 826	Germany 334	
Pennsylvania 821	Iceland 319	
Iowa 816	Switzerland 300	
New York 814	Sweden 294	
Maryland 814	Belgium 288	
Ohio 812	Italy 284	
Nevada 808	Denmark 280	
California 804	Austria 267	
Tennessee 799	Greece 246	
Delaware 797	Finland 244	
Virginia 785	Czech Republic 239	
Arizona 782	Slovenia 233	
New Hampshire 770	Latvia 232	
Kansas 763	Slovakia 226	
Indiana 753	Portugal 210	
Maine 750	Bulgaria 193	
Texas 748	Hungary 185	
Connecticut 745	Estonia 184	
North Dakota 743	Romania 149	
Utah 730		
Montana 698		
Vermont 684		
New Jersey 677		
Wyoming 671		
South Dakota 670		
Idaho 659		
Arkansas 657		
Rhode Island 651		
Hawaii 649		
Oklahoma 629		
West Virginia 625		
South Carolina 625		
Alabama 616		
Kentucky 598		
Louisiana 556		
Alaska 553		
New Mexico 546		
Mississippi 493		
District of Columbia 486[†]		

† D.C. day time commuter adjusted population used.
‡ Excluding Liechtenstein.

Irish Council for Civil Liberties

Risks and Threats to Protected Data

Risks From Data Exposure
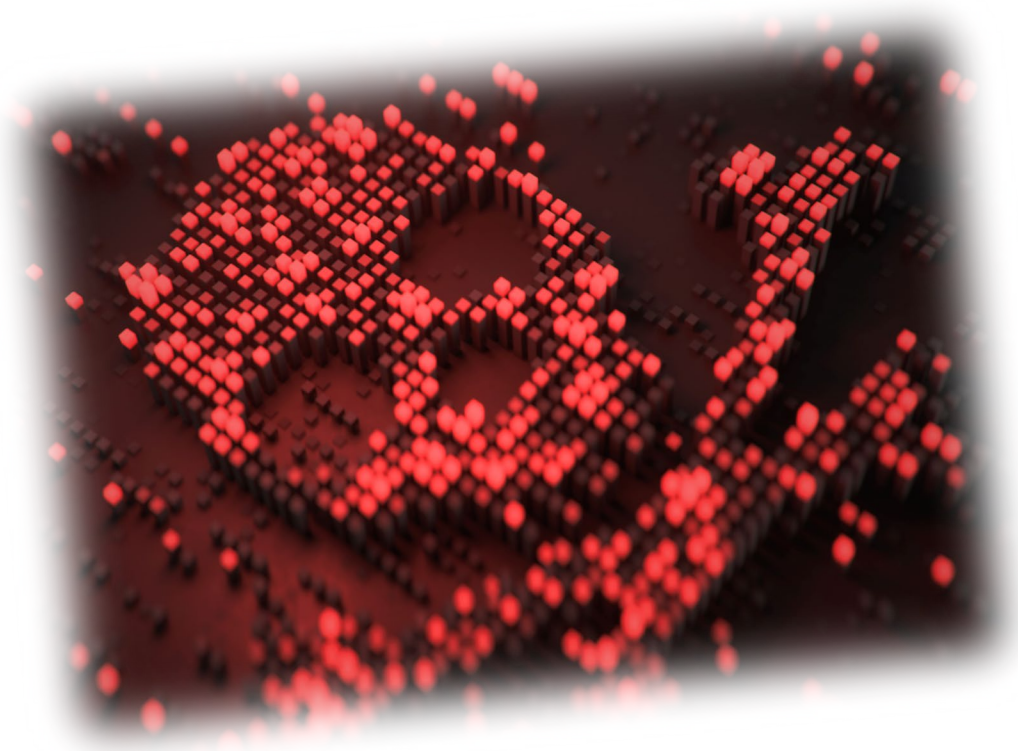
Malicious Actors

Everyone can be a victim, no matter how banal they may believe their own life.

How is this monetized?

- **Resale** of personal information to others
- **Direct ransom** for return or disuse
- **Extortion** with threat of public release

Ransomware with threat of exfiltrated data release: from 22% in 2020 to 82% in 2021

Risks and Threats to Protected Data

Risks From Data Exposure

Regulatory, Reputational, and Legal

Notification requirements dependent upon:
Jurisdiction, industry, company size, data breach size, and breach content

Regulatory response and fines: in the EU, GDPR violations can result in fines up to 4% of the company gross annual revenue for each offense.

Reputational impact: care should be taken in balancing mitigations against reputation of being ineffective or careless.

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Technology Policy and Privacy
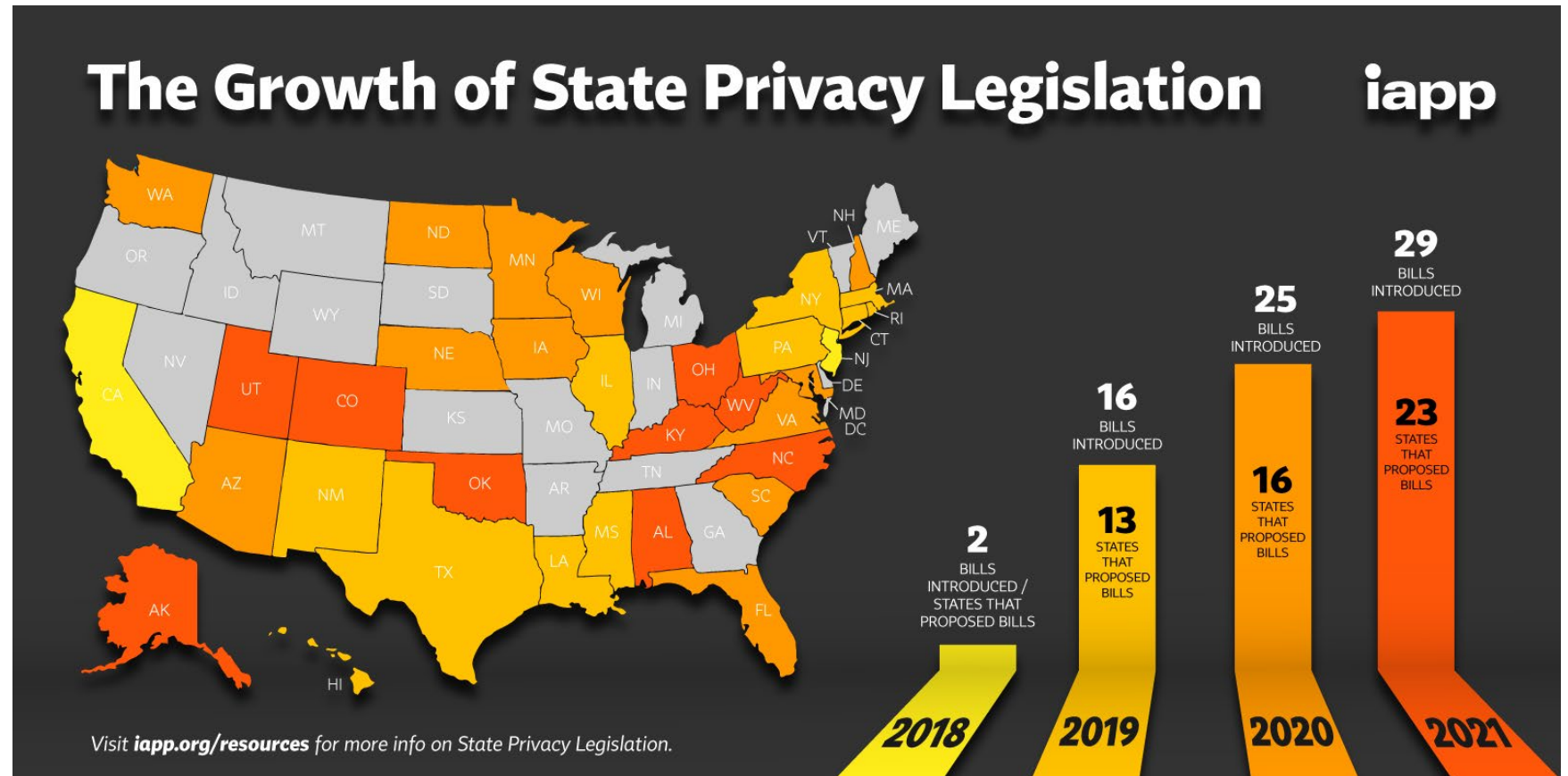
United States of America

International

Technology Policy and Privacy

United States

No preemptive national consumer privacy or data protection law, but a great deal of activity

National privacy protections do exist for sub-domains such as children, health and finance (e.g., COPPA, HIPAA, & GLBA)
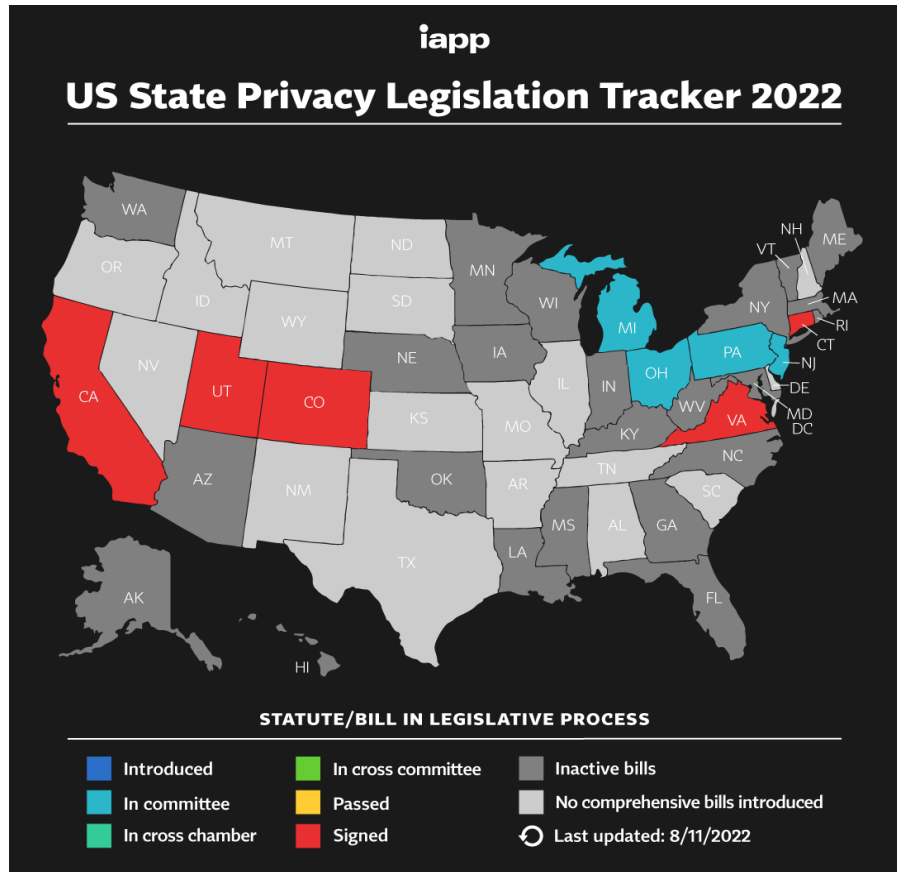
Bills introduced in state legislatures are increasing

The Growth of State Privacy Legislation — iapp

Visit **iapp.org/resources** for more info on State Privacy Legislation.

2018 — 2 BILLS INTRODUCED / STATES THAT PROPOSED BILLS

2019 — 16 BILLS INTRODUCED · 13 STATES THAT PROPOSED BILLS

2020 — 25 BILLS INTRODUCED · 16 STATES THAT PROPOSED BILLS

2021 — 29 BILLS INTRODUCED · 23 STATES THAT PROPOSED BILLS

Technology Policy and Privacy

5 States in the United States with Privacy Laws:

iapp
US State Privacy Legislation Tracker 2022

STATUTE/BILL IN LEGISLATIVE PROCESS
- Introduced
- In committee
- In cross chamber
- In cross committee
- Passed
- Signed
- Inactive bills
- No comprehensive bills introduced
- Last updated: 8/11/2022

Commonalities:

Consumer rights to access, rectify, delete and restrict records.

Business responsibilities for opt-in as the default, transparency, and limits on processing based on data purpose. Enterprises may not discriminate against consumers exercising their privacy rights.

UT doesn't have restrictions on automated decision-making but the other four do.

CA with private right of action, Attorneys General prosecute in the other four states.

Technology Policy and Privacy

International

The European Union and 18 other countries have comprehensive consumer privacy legislation and regulation.

Very similar in content to consumer and business requirements in the US

Some sector-specific regulations inconsistently scattered.

International data transfer requirements being tested in courts (TADPF, Privacy Shield & Schrems II decisions)

EU, Australia and a few others now require "privacy by design" which raises questions.

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Privacy Standards Community

Privacy Standards Community

Organization	Document, Spec, or Initiative	Notes
ISO/IEC	Privacy Information Management Systems Scheme (PIMS Scheme) 27701 & 27702 (ISO 2019)	
National Institute of Standards and Technology (NIST)	Privacy Framework	1.0 (Jan 16, 2020) United States Dept. of Commerce
International Association of Privacy Professionals (IAPP)	www.iapp.org	Policy-neutral information privacy organization. Certification and professional credentialing
World Wide Web Consortium (W3C)	https://www.w3.org/Privacy/IG/	Public-interest non-profit web-focused privacy standards group.
3rd Generation Partnership Project (3GPP)	https://www.3gpp.org/	Mobile broadband standards development organization. Consumer data privacy is a working group topic for R18 in 2022.
Connectivity Standards Alliance (CSA/Matter)	https://csa-iot.org/all-solutions/matter/	Consumer IoT standards development organization.
Institute for Electrical and Electronic Engineers (IEEE) Future Directions Digital Privacy Initiative	https://digitalprivacy.ieee.org/	Privacy collaboration, policy, and research for individual private needs online
Wireless Broadband Alliance (WBA)	https://wballiance.com/wi-fi-imsi-privacy-protection/	Permanent IMSI privacy protection initiative
Multi-Party Computation Alliance (MPC Alliance)	https://www.mpcalliance.org/	Standards and advocacy group focused on the adoption of MPC technology

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Privacy Posture 2022

Privacy technology advances, overlapping with security

New disciplines emerging with unique tools, technologies, and standards

Establishment of new and updated compliance and regulatory frameworks

Where and how should privacy technologies be applied within your organization?

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