

# Challenges and a Path Forward for Realizing Data-Driven Federal Internet Policy

## A Research Agenda for Law and Computer Science and Internet Data

8th Workshop on Internet Economics (WIE 2017)

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University, Washington College of Law

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# Disclaimer



The opinions expressed are those of the author and do not necessarily represent the views of the Federal Communications Commission or the United States Government.

本人の見解によるものであり、アメリカ合衆国  
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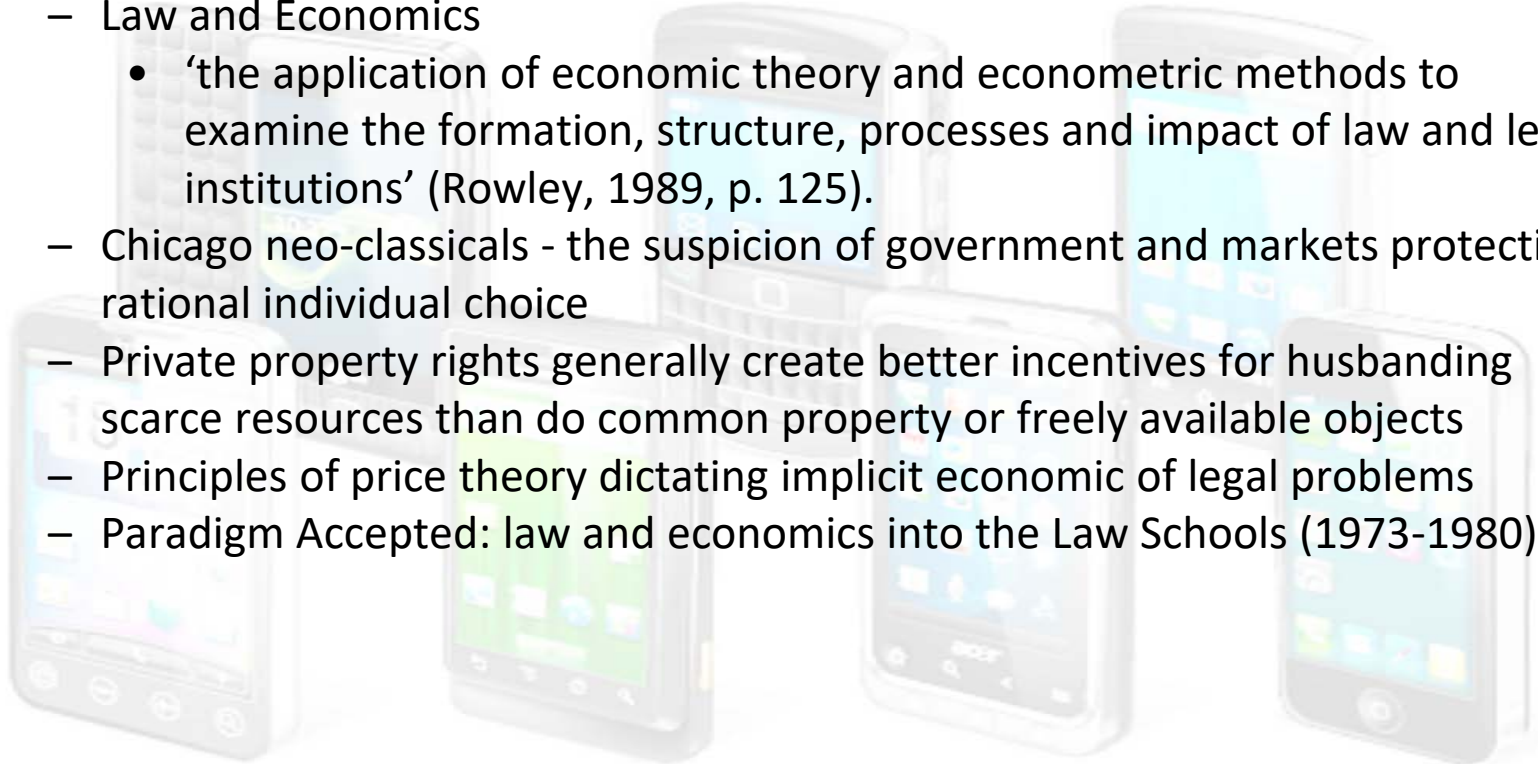
‘For the rational study of the law the black-letter man may be the man of the present, but *the man of the future is the man of statistics and the master of economics*’ (Holmes, 1897)

- Data Driven / Evidence-Based Policy Making and Challenges for Law and Policy Practice
- Data Collection, Analysis and Sharing of Data  
Follow the moccasins of a staffer working a public policy data trail
- Research Agendas, Pedagogy and Management of "Legal Hackers" and the Field of Law and Computer Science

# Law and Economics

## A Roadmap for Law and Computer Science

- Scottish Enlightenment
- Rights contingent upon economic and social conditions Marx 1859
- Law and Economics
  - ‘the application of economic theory and econometric methods to examine the formation, structure, processes and impact of law and legal institutions’ (Rowley, 1989, p. 125).
- Chicago neo-classicals - the suspicion of government and markets protecting rational individual choice
- Private property rights generally create better incentives for husbanding scarce resources than do common property or freely available objects
- Principles of price theory dictating implicit economic of legal problems
- Paradigm Accepted: law and economics into the Law Schools (1973-1980)



# Law and Computer Science

## The legal toolset for data, algorithms and Internet Technology

Privacy

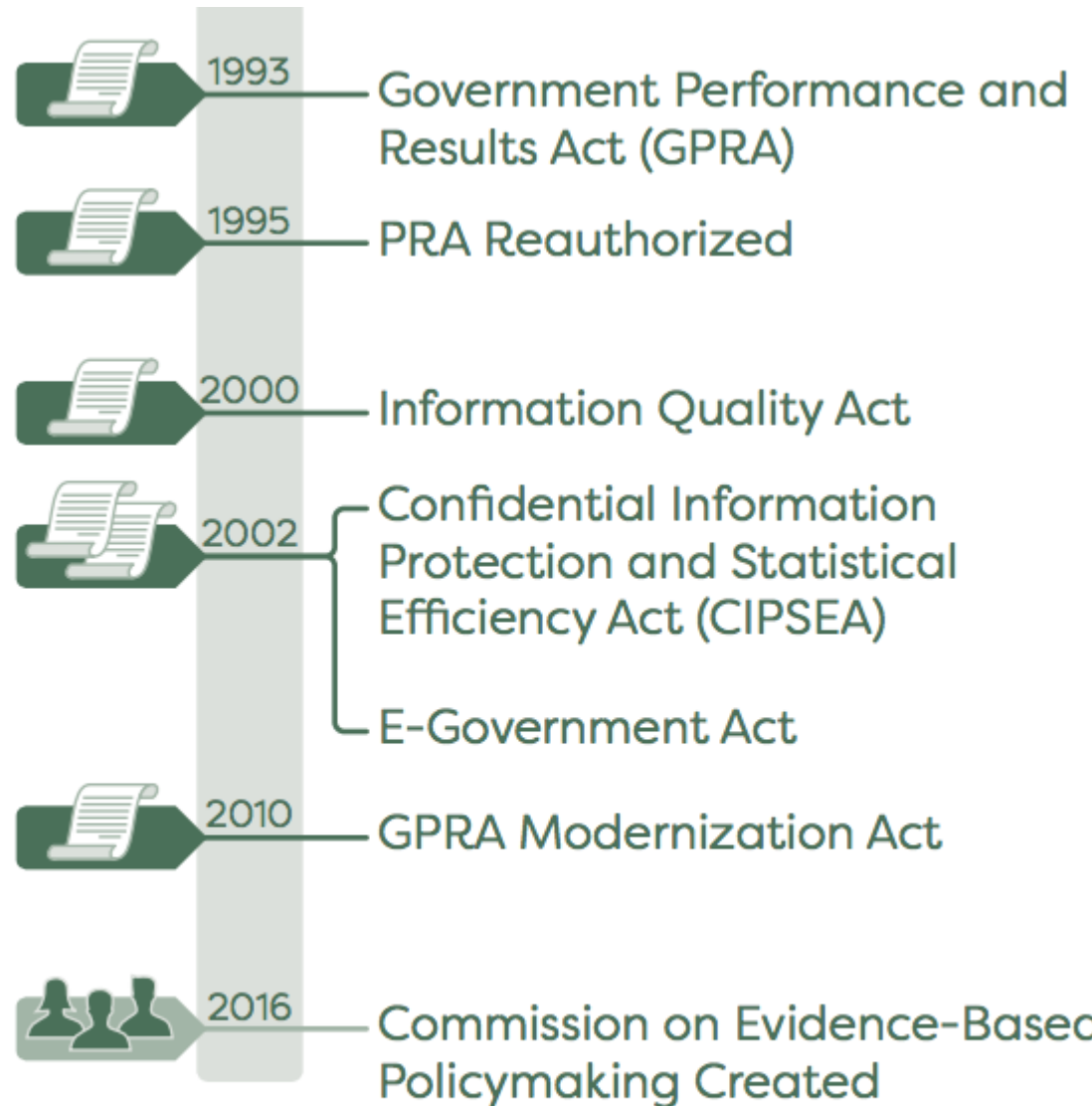
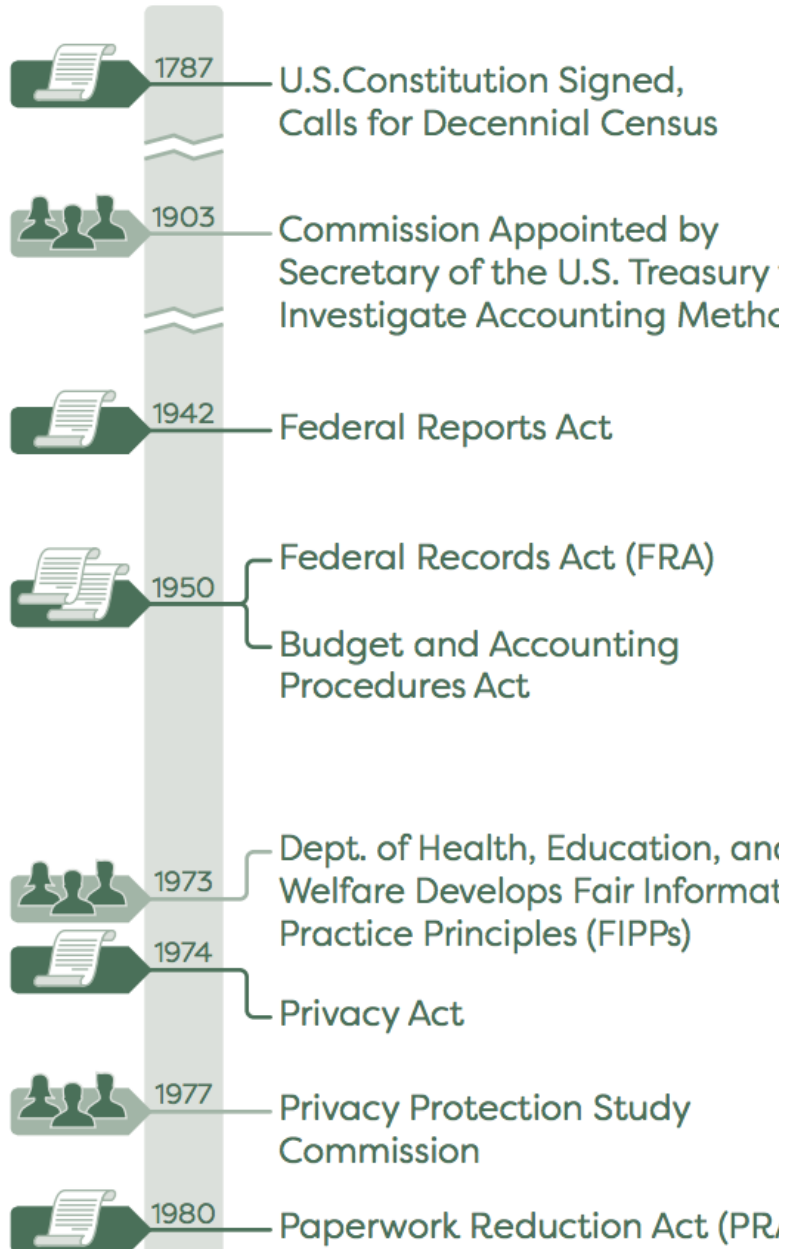
Internet Regulation

IoT and Software Systems and Sensors





**Figure 1. Key Milestones in the U.S. Evidence-Building System**



Legend



Laws



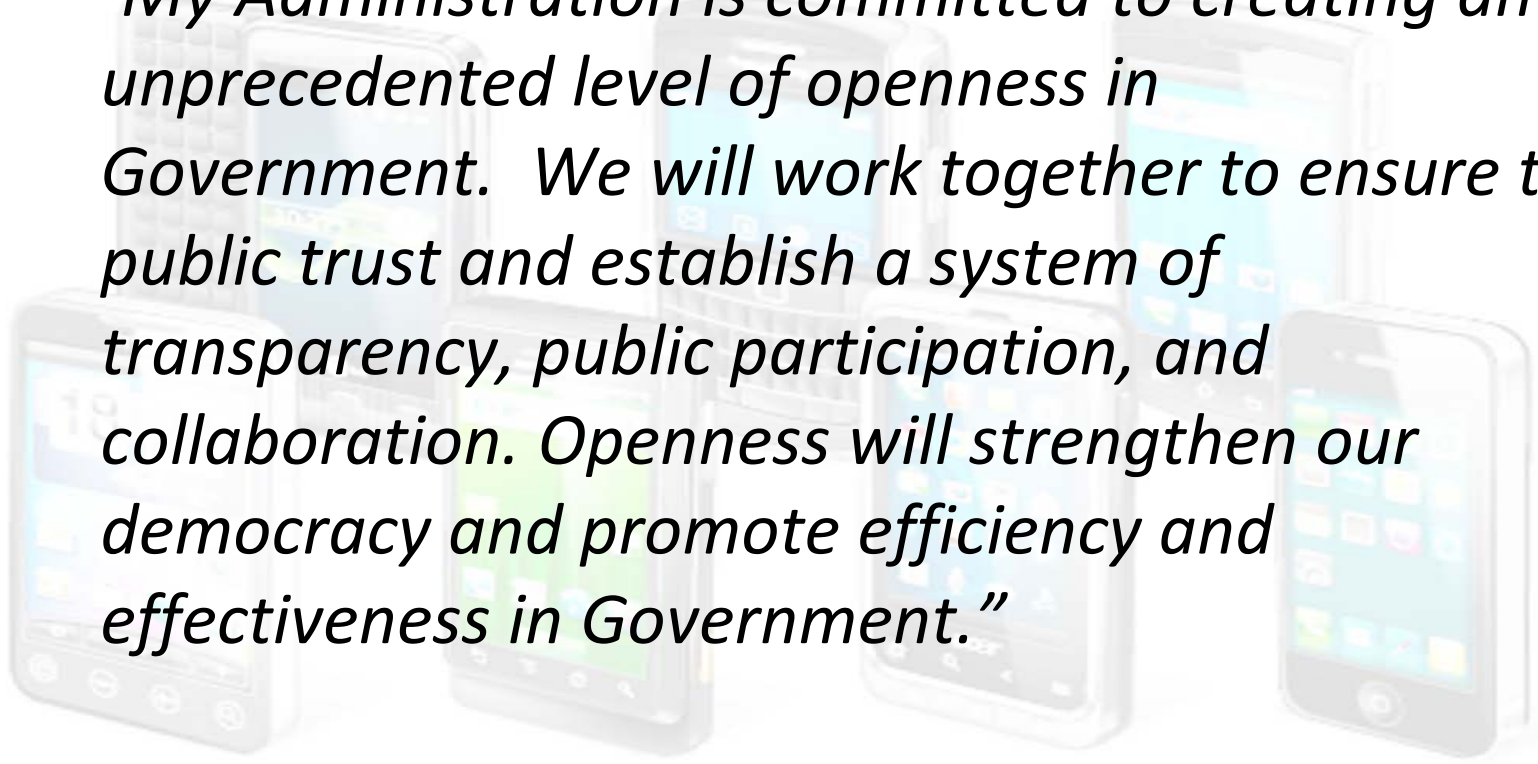
Commissions

*\*Timeline not to scale*

# Transparency & Open Government

- **POTUS Memorandum for the Heads of Executive Departments and Agencies**

*“My Administration is committed to creating an unprecedented level of openness in Government. We will work together to ensure the public trust and establish a system of transparency, public participation, and collaboration. Openness will strengthen our democracy and promote efficiency and effectiveness in Government.”*

The background of the slide features a collection of several smartphones, likely iPhones, arranged in a slightly overlapping and semi-transparent manner. They are positioned behind the main text, creating a modern, digital aesthetic. The phones are shown from various angles, some displaying their home screens with app icons.

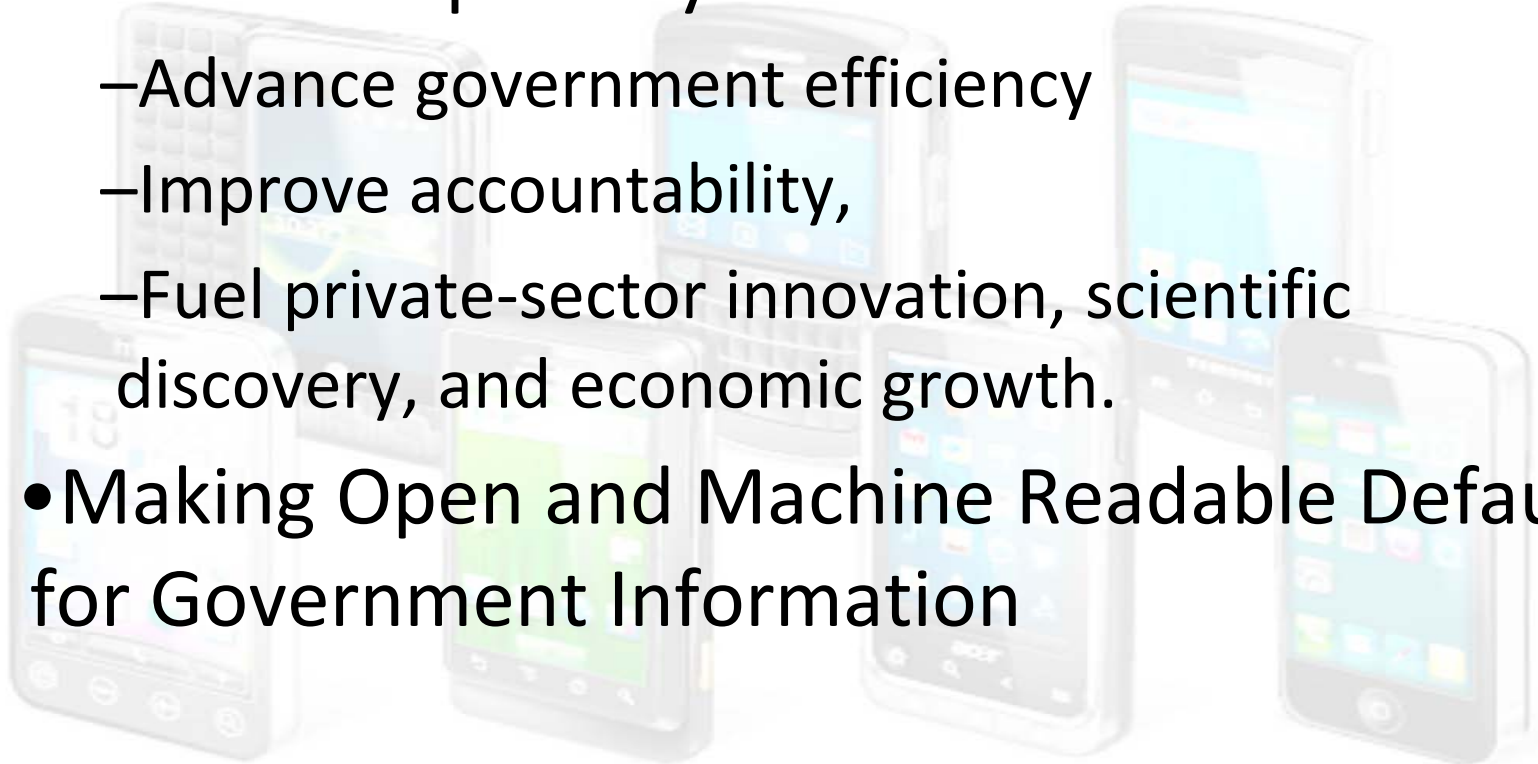


# Strategy for American Innovation

- Harnessing Creativity of the American People through **Incentive Prizes**
- Tapping Talents of Innovators through Making, **Crowdsourcing, and Citizen Science**
- Adopting an **Innovation Toolkit** for Public-Sector Problem-Solving
- **Building & Using Evidence** for Social Innovation
- Federally-funded research freely accessible to innovators, scientists, general public

# Strategy for American Innovation

- Defines Open Federal Data a national asset to be made publicly available
  - Advance government efficiency
  - Improve accountability,
  - Fuel private-sector innovation, scientific discovery, and economic growth.
- Making Open and Machine Readable Default for Government Information





EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

THE DIRECTOR

# "Open Data Policy-Managing Information as an Asset" May 9, 2013

**Executive Order of May 9, 2013, Making Open and Machine Readable the New Default for Government Information**

- 1. Collect or create information in a way that supports downstream information processing and dissemination activities**
- 2. Build information systems to support interoperability and information accessibility**
- 3. Strengthen data management and release practices**
- 4. Strengthen measures to ensure that privacy and confidentiality are fully protected and that data are properly secured**
- 5. Incorporate new interoperability and openness requirements into core agency processes**

**SUBJECT: Open Data Policy—Managing Information as an Asset**

## Figure 2. Federal Principal Statistical Agencies (PSAs)

U.S. Department of Agriculture

**Economic Research Service**

**National Agricultural Statistics Service**

U.S. Department of Commerce

**Bureau of Economic Analysis**

**Census Bureau**

U.S. Department of Education

**National Center for Education Statistics**

U.S. Department of Energy

**Energy Information Administration**

U.S. Department of Health and Human Services

**National Center for Health Statistics**

U.S. Department of Justice

**Bureau of Justice Statistics**

U.S. Department of Labor

**Bureau of Labor Statistics**

U.S. Department of Transportation

**Bureau of Transportation Statistics**

U.S. Department of the Treasury

**Internal Revenue Service  
Statistics of Income Division**

National Science Foundation

**National Center for Science and  
Engineering Statistics**

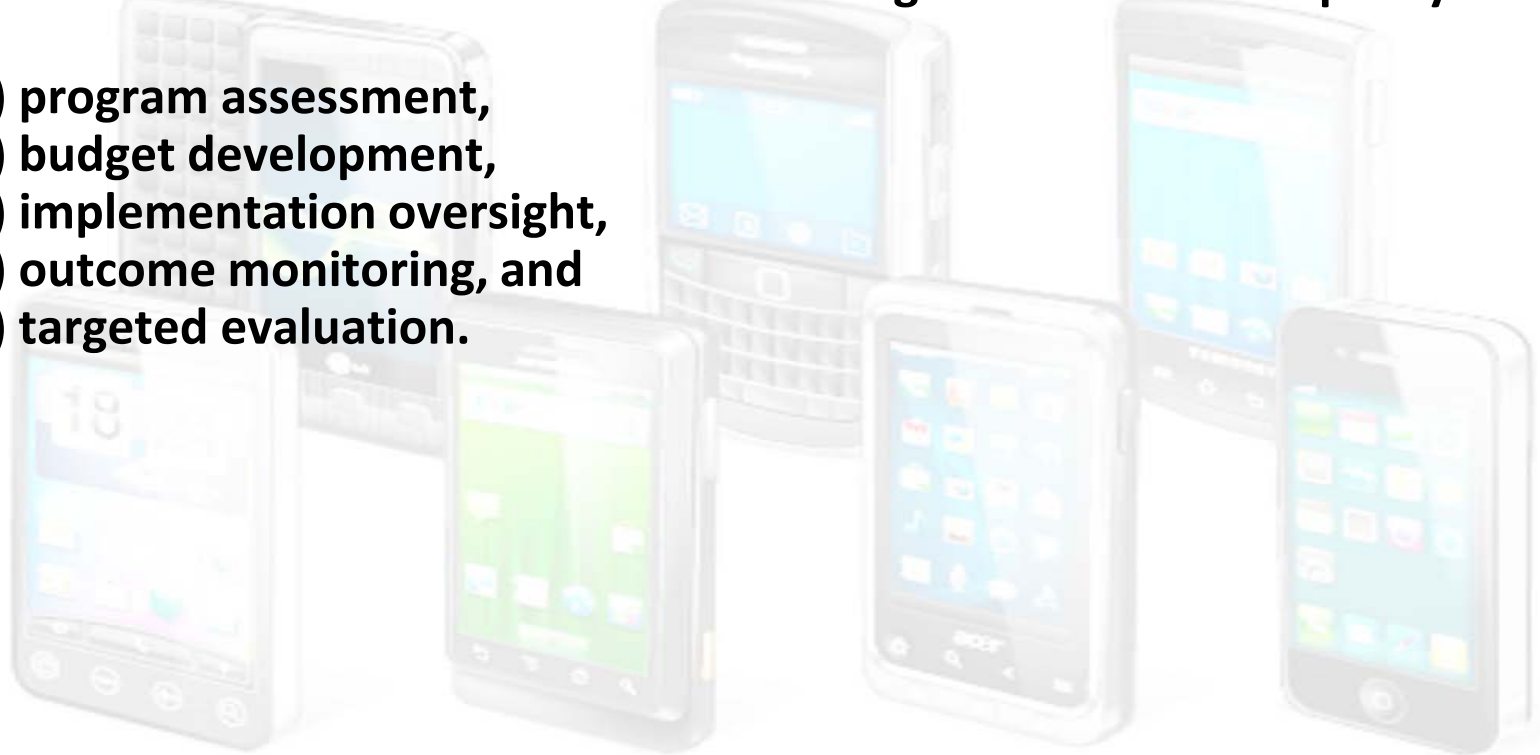
U.S. Social Security Administration

**Office of Research,  
Evaluation, and Statistics**

# **Evidence-Based Policymaking A guide for effective government - A report from the Pew-MacArthur Results First Initiative Nov 2014**

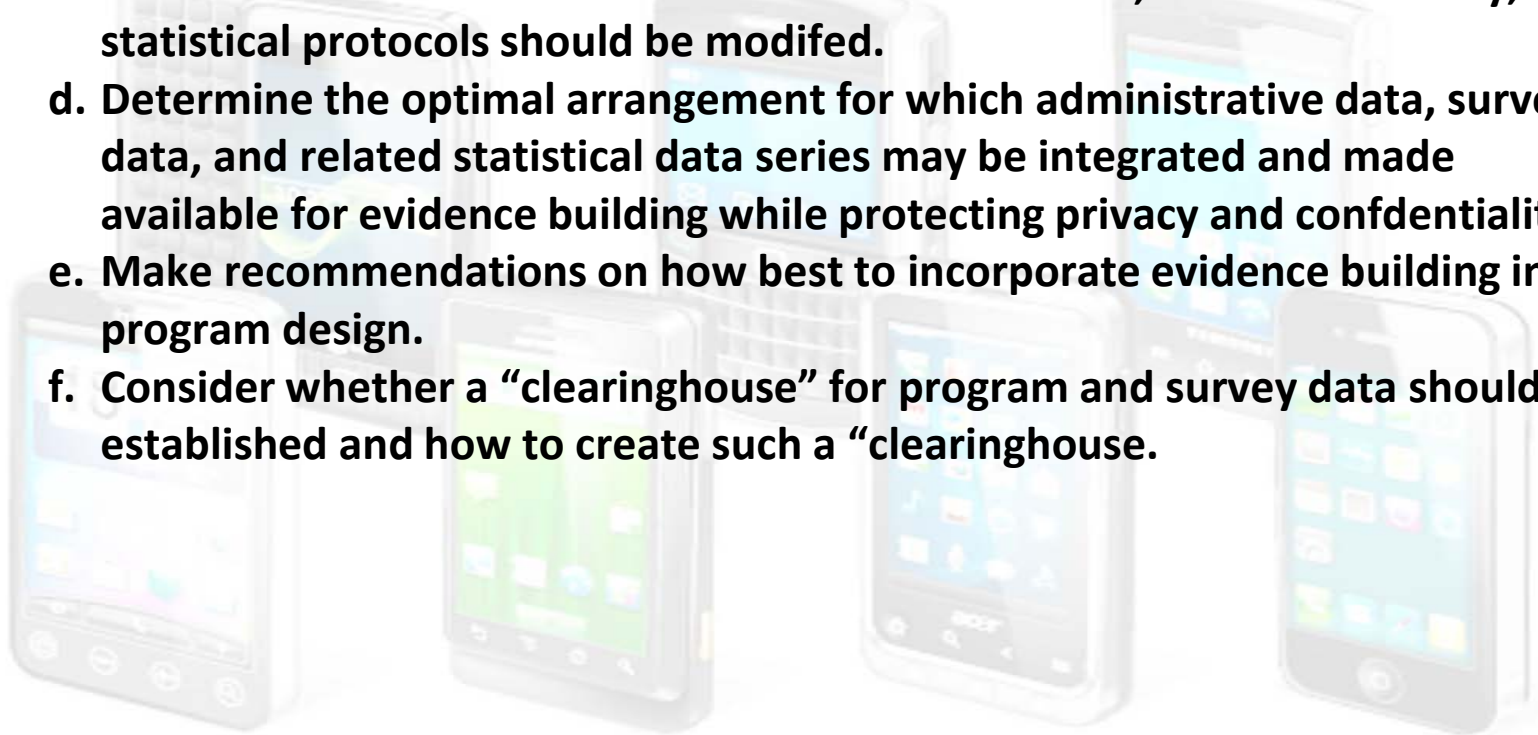
**Framework has five key components, each with multiple steps that enable governments to make better choices through evidence-based policymaking:**

- (1) program assessment,**
- (2) budget development,**
- (3) implementation oversight,**
- (4) outcome monitoring, and**
- (5) targeted evaluation.**



# Evidence-Based Policymaking Commission Act of 2016

- a. Commission TO:
- b. Study the data inventory, data infrastructure, database security, and statistical protocols related to Federal policymaking.
- c. Make recommendations on how data infrastructure, database security, and statistical protocols should be modified.
- d. Determine the optimal arrangement for which administrative data, survey data, and related statistical data series may be integrated and made available for evidence building while protecting privacy and confidentiality.
- e. Make recommendations on how best to incorporate evidence building into program design.
- f. Consider whether a “clearinghouse” for program and survey data should be established and how to create such a “clearinghouse.”



# Report of the Commission on Evidence-Based Policymaking

## Guiding Principles for Evidence-Based Policymaking

- a. Privacy. Individual privacy and confidentiality must be respected in the generation and use of data and evidence.
- b. Rigor. Evidence should be developed using well-designed and well-implemented methods tailored to the questions being asked.
- c. Transparency. Those engaged in generating and using data and evidence should operate transparently, providing meaningful channels for public input and comment and ensuring that evidence produced is made publicly available.
- d. Humility. Care should be taken not to over-generalize from findings that may be specific to a particular study or context.
- e. Capacity. The capacity to generate and use data and evidence should be integrated within government institutions and adequately funded and staffed.**





# Challenges



# Numbers

Docket 09-191 [filings](#)

[Commission Documents](#)

[Opens a New Window.](#)

In the Matter of Preserving the Open Internet Broadband Industry Practices. .

**Bureau Name**

[General \(Multiple Bureaus\)](#)

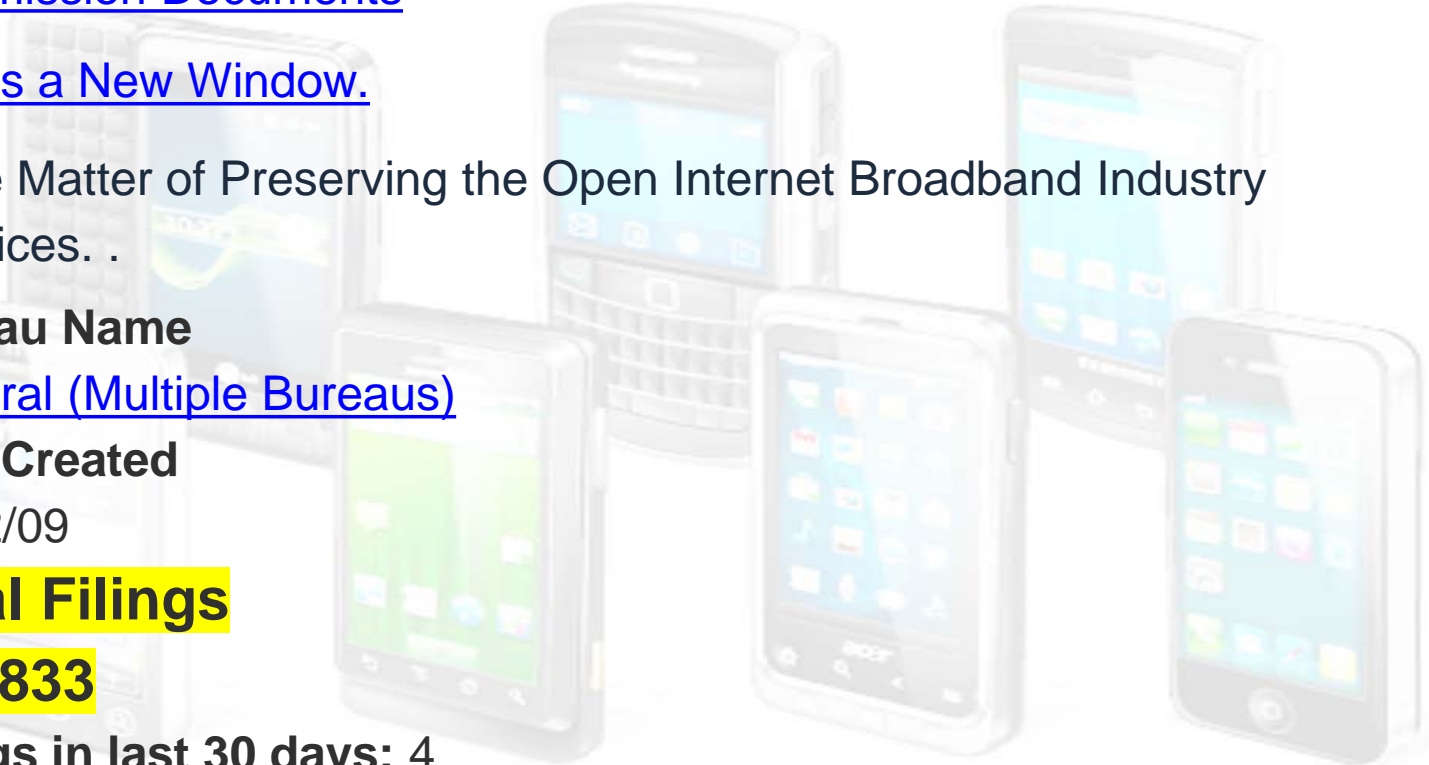
**Date Created**

10/22/09

**Total Filings**

**116,833**

**Filings in last 30 days: 4**



# Numbers

Docket 14-28 [filings](#)

[Commission Documents](#)

[Opens a New Window.](#)

Protecting and Promoting the Open Internet

**Bureau Name**

[General \(Multiple Bureaus\)](#)

**Date Created**

2/19/14

**Total Filings**

**2,189,846**

**Filings in last 30 days**

62



# Numbers

Docket 17-108 [filings](#)

[Commission Documents](#)

[Opens a New Window.](#) Small Business Impact

**Restoring Internet Freedom**

Bureau Name

[Wireline Competition Bureau](#)

Applicant

Date Created

4/26/17

**Total Filings**

**22,157,658**

Filings in last 30 days

5,282



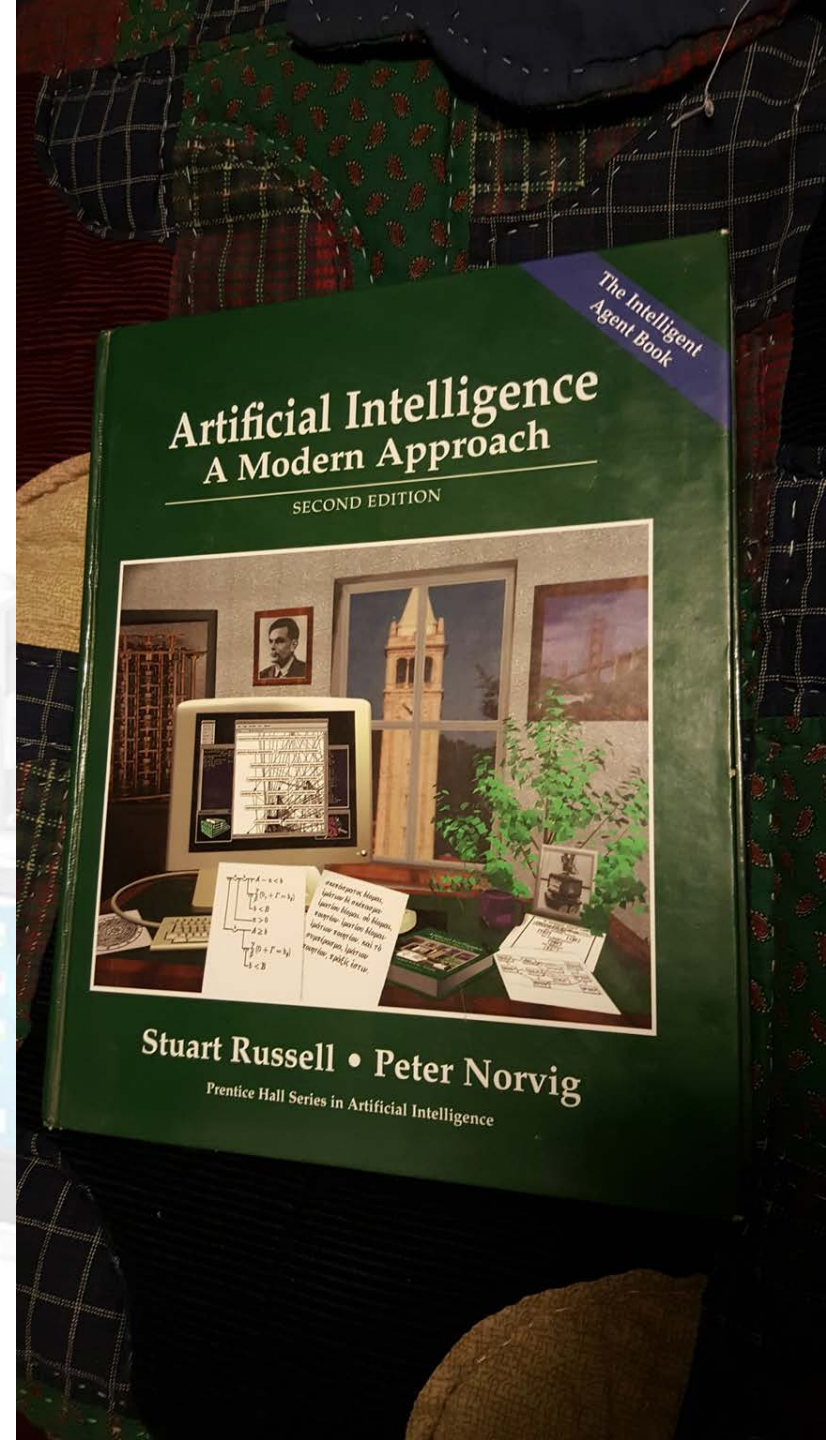
# Challenges

- **Regulatory Practice**
- **IT Modernization**
- **Data-Driven Law**



# Data Driven Computational Law

- Regulatory Practice
- IT Modernization
- Data Driven Law decision making
- fragility AND verifiability of algorithms
- "big data" implications
  - volume
  - veracity
  - variety
  - velocity
  - Value



# Research Questions

- What are the set of skills and approaches necessary for data-driven law and policy practice? Computer Scientists - Law Schools
- What Kinds of Legal Knowledge and Reasoning are amenable to computational approaches?
- How do we evaluate the "law'y'ness" of computational legal solutions?
- What is the role of technical knowledge in legal practice?

# DATA 101 for Attorneys or...

*"Where to start with data for the tech-savvy attorney"*

- Collecting, cleaning, and managing data
  - “wrangling”, Regex, CSV’s, databases, SQL
- Processing and Exploring Data
  - SQL, R, Statistics, BI and other Tools
- Sharing and Storytelling with Data
  - Mapping, Charting, CDFs and Stats

And what  
“Foreign Law?”  
Start with AI!!

Norvig &  
Russell



# Law Schools and Teaching for "Legalhackers"

Programming for Lawyers

Data Science for Lawyers

AI and Blockchain for Lawyers



# Legal Reasoning and Jurisprudence

## Legal argument

### – Textual

- Plain Meaning

- Lay usage

- Dictionary definitions

- “Terms of Art”

- Definitional sections

- Canons of Construction

- Intratextual Arguments

- Intent, Precedent, Tradition, and Policy

Logic / Rhetoric / Persuasion / Abductive reasoning

$$\begin{array}{c}
 \frac{}{\text{iden} : A \vdash A} \\
 \frac{s : A \vdash B \quad t : B \vdash C}{\text{comp } st : A \vdash C} \\
 \frac{}{\text{unit} : A \vdash 1} \\
 \frac{t : A \vdash B}{\text{injl } t : A \vdash B + C} \qquad \frac{t : A \vdash C}{\text{injrt } t : A \vdash B + C} \\
 \frac{s : A \times C \vdash D \quad t : B \times C \vdash D}{\text{case } st : (A + B) \times C \vdash D} \qquad \frac{s : A \vdash B \quad t : A \vdash C}{\text{pair } st : A \vdash B \times C} \\
 \frac{t : A \vdash C}{\text{take } t : A \times B \vdash C} \qquad \frac{t : B \vdash C}{\text{dropt } t : A \times B \vdash C}
 \end{array}$$

Figure 1: Typing rules for the terms of core Simplicity. <https://russellcannock.github.io/papers/2018-02-20-simplicity.pdf>

# What does Comparative Law have to do with Hacking Law?

- Legal Hackers seek to understand the role and capabilities of legal and technology systems in order to improve on social goals

- Legal Hacking as a synergy **necessitating both technical and legal skills** to solve a new set of problems akin to “Law and Economics”

- Two tracks:

- Technologists exploring ways technology can improve legal systems

- Legal practitioners exploring the legal and policy implications of technology

ご清聴ありがとうございました！

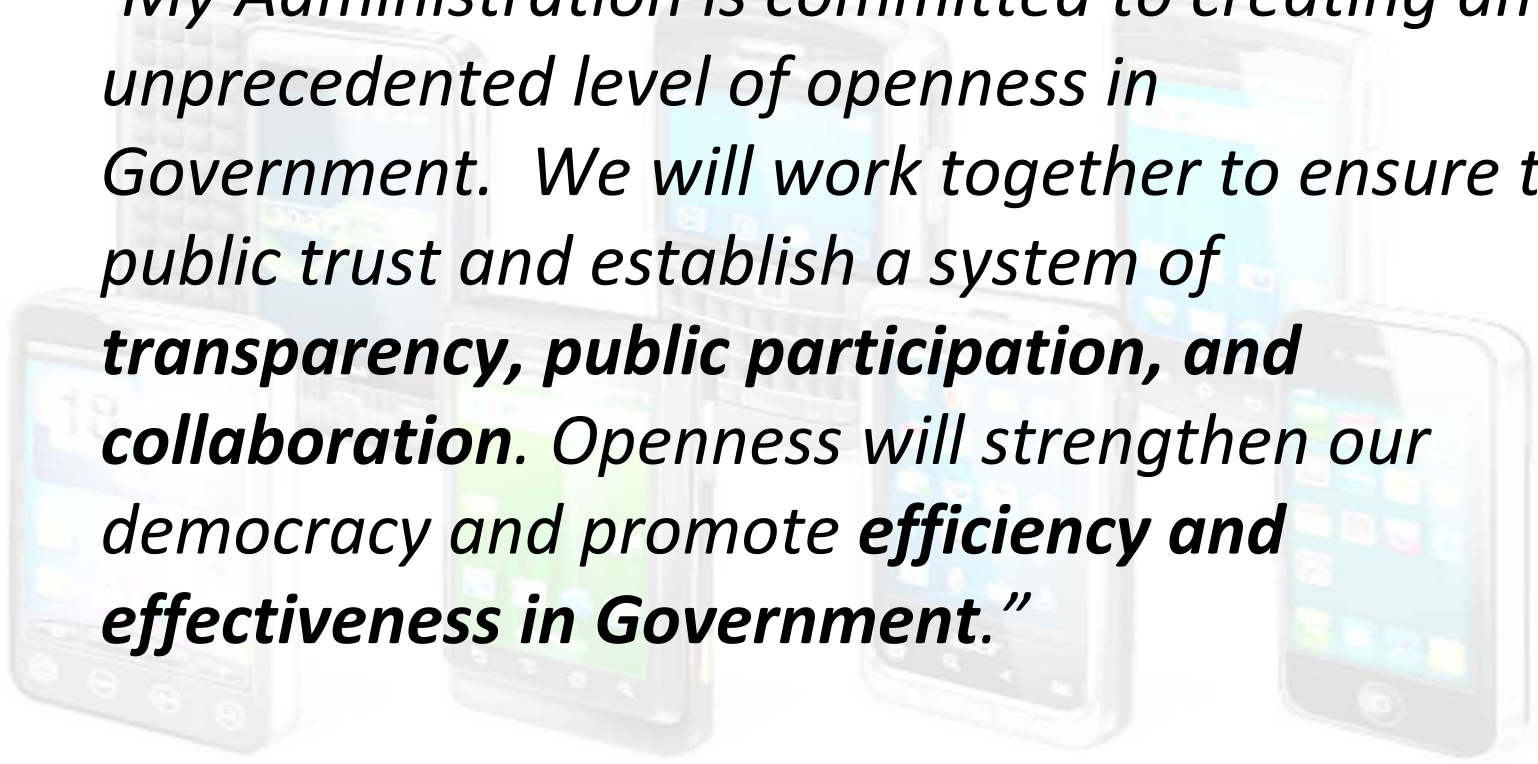




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# Realizing a change in Government

- **Government should be transparent**
- **Government should be participatory**
- **Government should be collaborative**



# Strategy for American Innovation

- POTUS 2009 Defines Two Areas of Innovation Focus
  - Innovation to drive economic growth and address national priorities
  - Institutional and public-sector innovation
- Developed and expanded strategy through administration
- OMB Guidance on the Use of Challenges and Prizes to Promote Open Government and other innovation topics



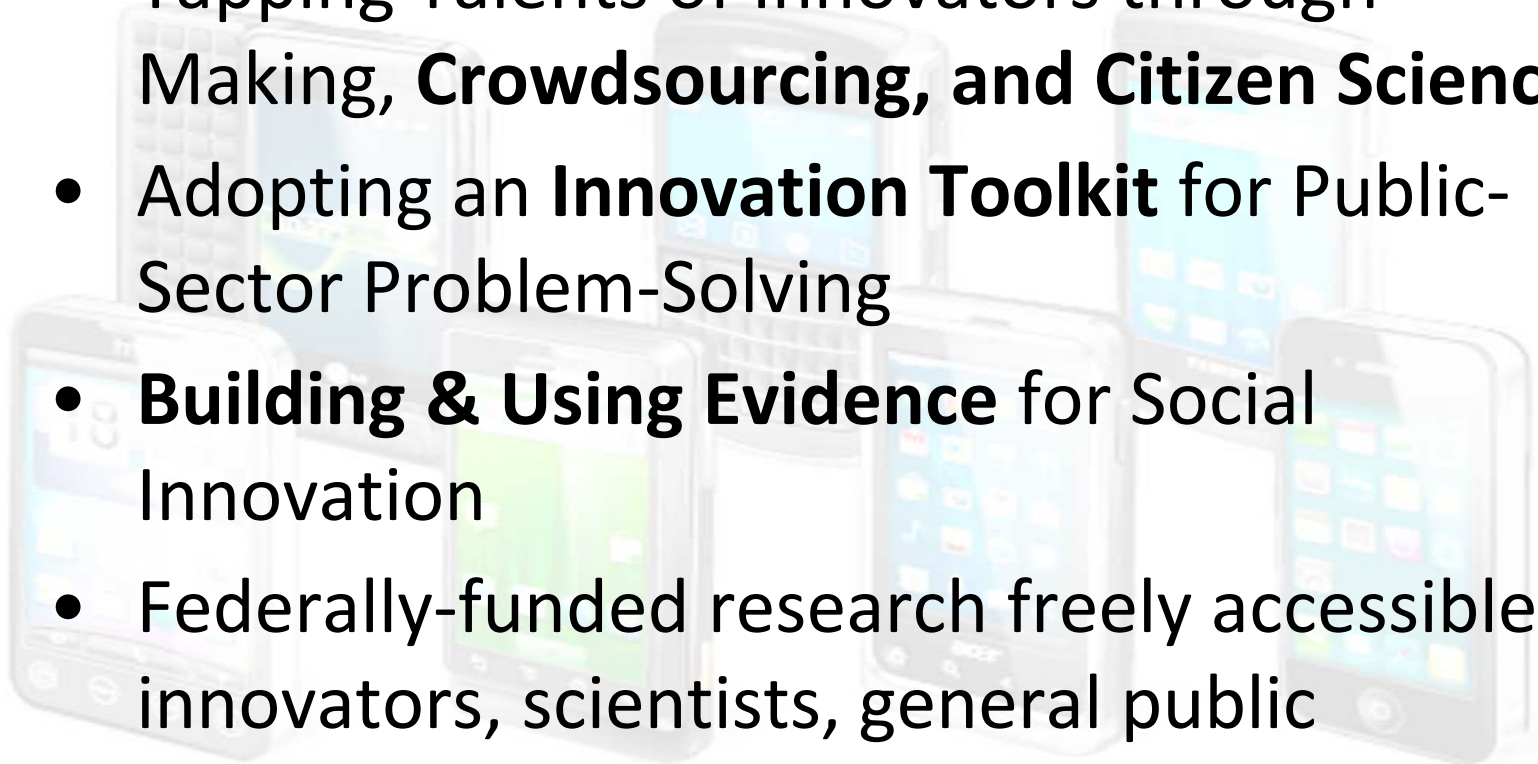
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# Emerging Best Practices on How to Collect, Understand, & Share Data

Information exchange  
on collection,  
processing, & sharing  
of Information

## –Privacy

- IRB
- Terms of Use

## –Admin

- PRA
- FOIA
- DQA

## –Procurement

- ADA, Gift Exceptions, Open Source, IP and Data Rights



# What does Open Data have to do with a Dinner Party?

- We bond with whom we share food
- Guests eat what we eat
- Sharing is reciprocated
- Features of Data

- Is it fresh?
- Is it clean?
- Is it labeled?

**Greg Elin**  
**First Chief Data Officer,**  
**Federal Communication Commission**



# Open Government Data Principles

Government data shall be considered open if it is made public in a way that complies with the principles below:

1. Complete

*All public data is made available. Public data is data that is not subject to valid privacy, security or privilege limitations.*

2. Primary

*Data is as collected at the source, with the highest possible level of granularity, not in aggregate or modified forms.*

3. Timely

*Data is made available as quickly as necessary to preserve the value of the data.*

4. Accessible

*Data is available to the widest range of users for the widest range of purposes.*

5. Machine processable

*Data is reasonably structured to allow automated processing.*

6. Non-discriminatory

*Data is available to anyone, with no requirement of registration.*

7. Non-proprietary

*Data is available in a format over which no entity has exclusive control.*

8. License-free

*Data is not subject to any copyright, patent, trademark or trade secret regulation. Reasonable privacy, security and privilege restrictions may be allowed.*

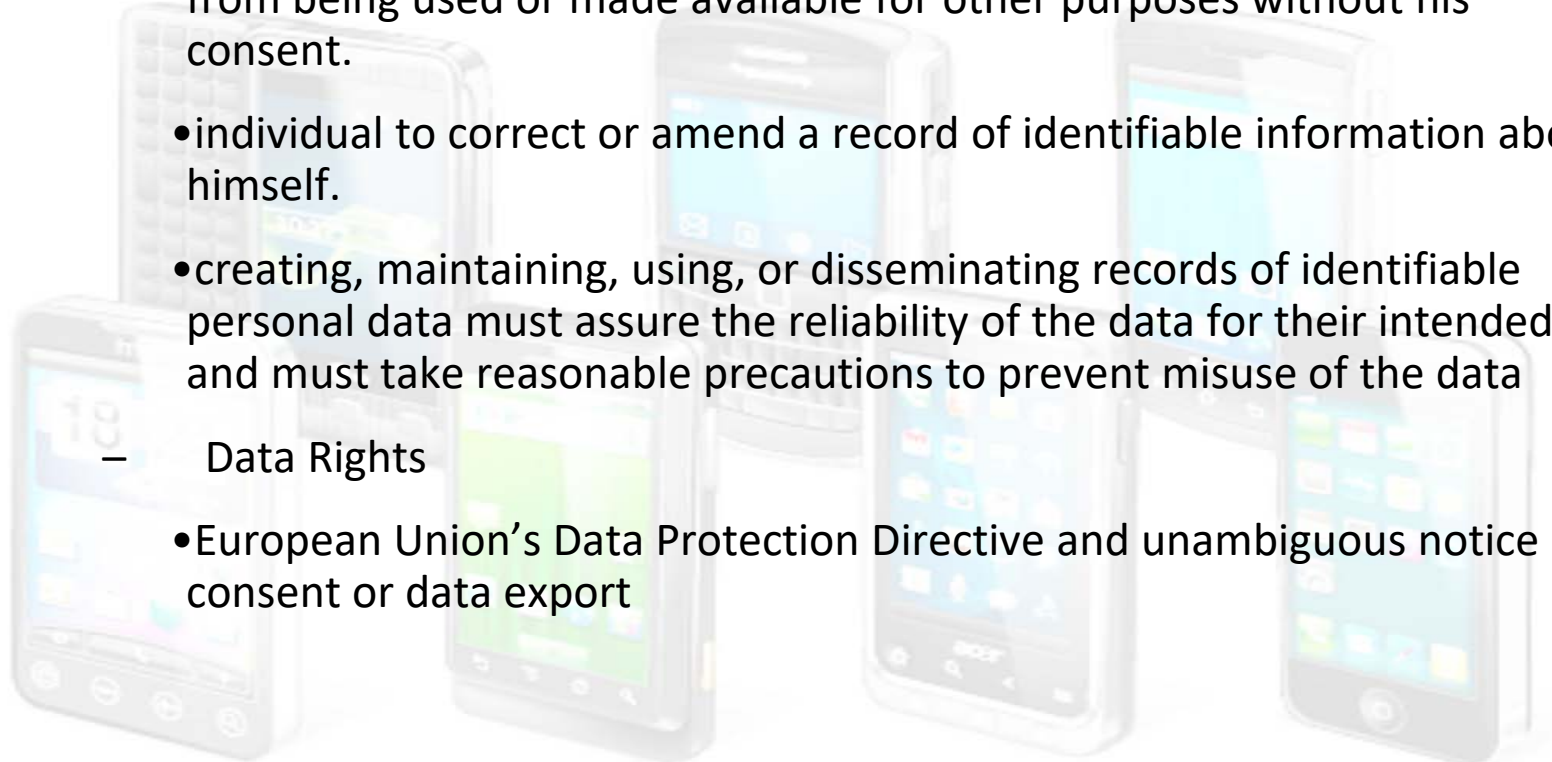
- Notice and Consent, Statutory Approaches, and Fair Information Practices

- HEW Advisory Committee and Fair Information Practices 1973

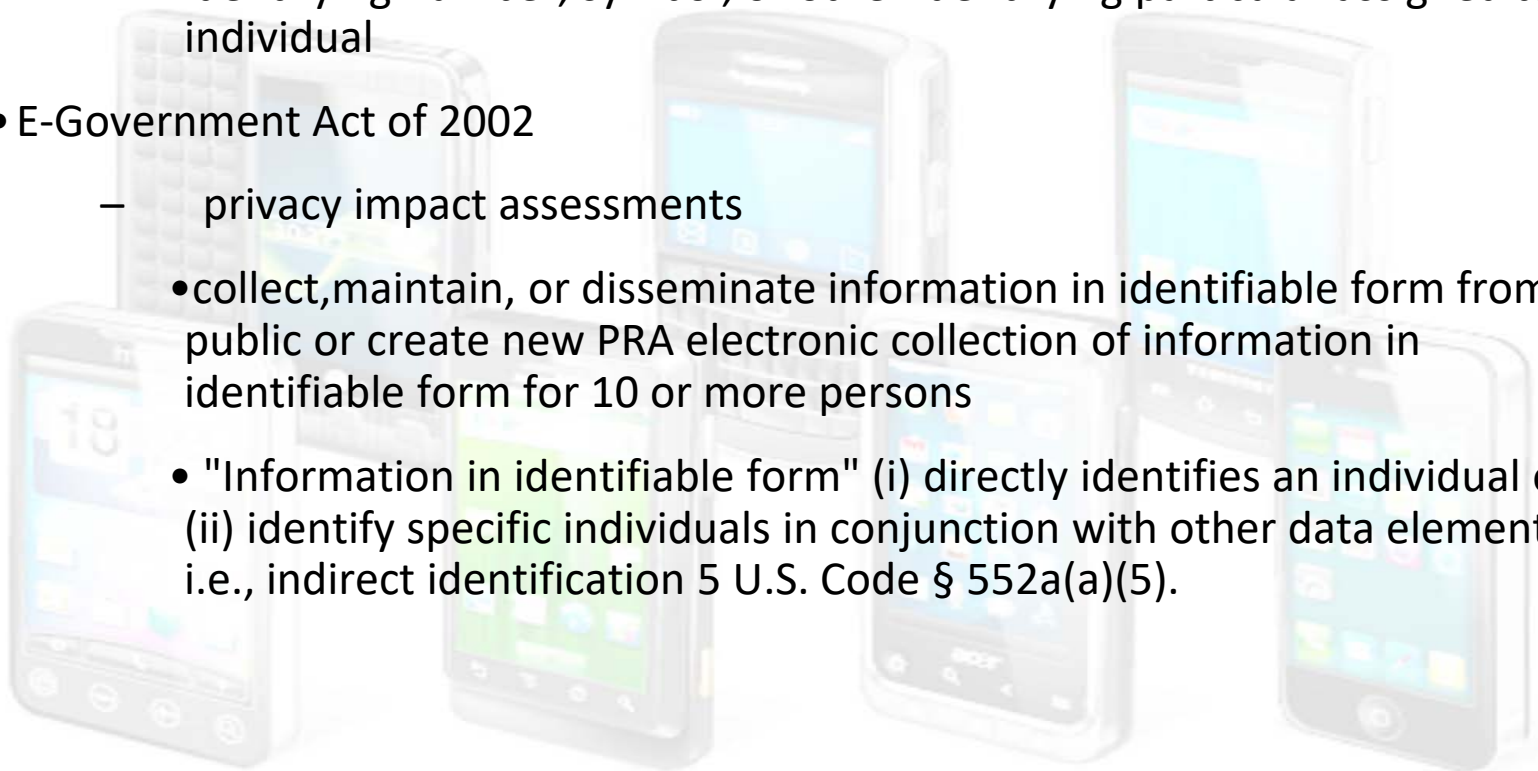
- no secret personal-data record-keeping systems
- individual to find out what information about him is in a record and how it is used.
- individual to prevent information about him obtained for one purpose from being used or made available for other purposes without his consent.
- individual to correct or amend a record of identifiable information about himself.
- creating, maintaining, using, or disseminating records of identifiable personal data must assure the reliability of the data for their intended use and must take reasonable precautions to prevent misuse of the data

- Data Rights

- European Union's Data Protection Directive and unambiguous notice and consent or data export



- Privacy Act of 1974
  - Collect or retrieve personal information
  - “system of records”
    - actually retrieve records using individual identifier
    - information about an individual, name of the individual or by some identifying number, symbol, or other identifying particular assigned to the individual
- E-Government Act of 2002
  - privacy impact assessments
    - collect, maintain, or disseminate information in identifiable form from the public or create new PRA electronic collection of information in identifiable form for 10 or more persons
    - "Information in identifiable form" (i) directly identifies an individual or (ii) identify specific individuals in conjunction with other data elements, i.e., indirect identification 5 U.S. Code § 552a(a)(5).



- FTC 2000 - notice, choice, access and correction
- DHS 2008 Fair Information Practice Principles (FIPPS): Transparency, Individual Participation, Purpose Specification, Data Minimization, Use Limitation, Data Quality and Integrity, Security, Accountability and Auditing
- FTC 2012 Privacy Report - Privacy by Design, Simplified Choice for Businesses and Consumers, Greater Transparency
- Privacy Multistakeholder Process: Mobile Application Transparency
  - 2012 White House - Consumer Data Privacy in a Networked World: A Framework for Protecting Privacy and Promoting Innovation in the Global Digital Economy

