2020 JFMIP*Virtual*

Innovation in the Federal Government

Tim Persons, Chief Scientist, Government Accountability Office
Amy Edwards, Deputy Assistant Secretary, Department of the Treasury
Caryl Brzymialkiewicz, Deputy Inspector General, Department of the Interior
Renata Maziarz Miskell, Acting Chief Data and Analytics Officer, HHS OIG
Taka Ariga, Chief Data Scientist, Government Accountability Office

October 21, 2020

Science, Technology Assessment, & Analytics

Tim Persons, Chief Scientist, GAO and Managing Director, STAA

GAO
U.S. GOVERNMENT ACCOUNTABILITY OFFICE

As the federal workforce continues to evolve, advanced technologies such as AI, data analytics, and blockchain are helping financial professionals and the accountability community work smarter and with greater agility.
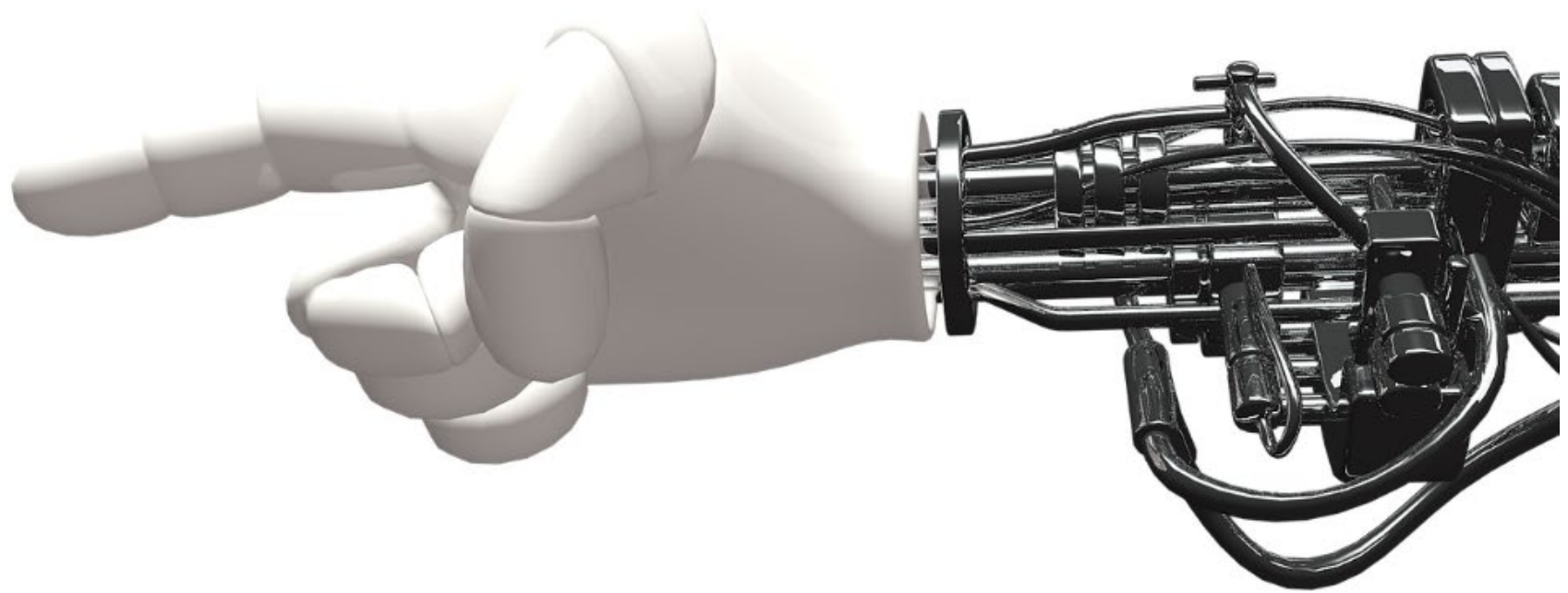
GAO predicts over a trillion dollars of improper payments over the next decade, unless we learn better prevention techniques.

Imagine a future where we use advanced technologies to accurately predict improper payments and prevent the payments before they are disbursed.

The government could save billions and improve public service in ways we can't even yet imagine.

The pandemic is transforming our world, creating the future *now*. As we pivot to a more flexible and agile workplace based on design-thinking and more automation, agencies are using technology to better serve people, keeping them healthy *and* efficient.
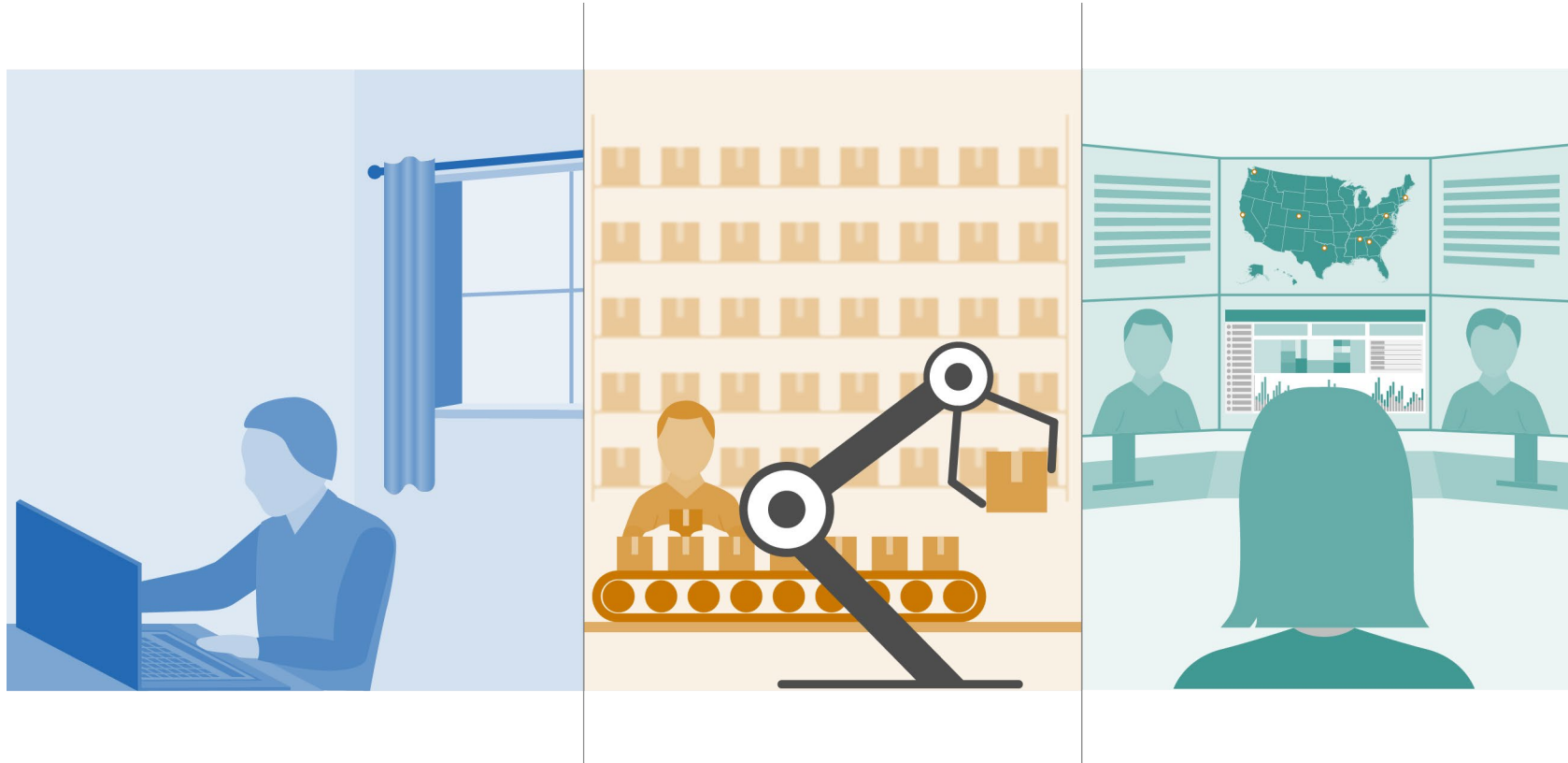
How are you using artificial intelligence at work now?

A. EMAIL SPAM FILTERS
B. VOICE ASSISTANTS
C. RIDE HAILING SERVICES
D. WEB SEARCHES

Today's speakers will share their experiences with using technology to improve their agency operations. Along the way, we will ask you to answer a few of our questions. And we'll wrap up with a Q&A when you can ask us about what's on your mind.

AMY EDWARDS
Deputy Assistant Secretary
Department of Treasury

CARYL BRZYMIALKIEWICZ
Deputy Inspector General
Department of the Interior

RENATA MAZIARZ MISKELL
Acting Chief Data & Analytics Officer
Health and Human Services OIG

TAKA ARIGA
Chief Data Scientist and Director of Innovation Lab
Government Accountability Office

Expanding Innovation in Federal Financial Management

Amy Edwards
Deputy Assistant Secretary
Accounting Policy and Financial Transparency

Discussion

- **Expanding Access and Use of Data**

- **Understanding Customers and Users Needs**

- **Transform with Technology**

- **Process Improvement**

Expanding the Access and Use of Data

Understanding Customers and Users Needs

The Treasury Financial eXperience (TFX) is being built as a user-centric resource, integrating information across multiple areas to streamline access to federal financial guidance.

Transform with Technology: Blockchain Proof of Concept

Improving the Grant Payment Process – Enabling Sub-Recipient Payment Visibility

Current State

Federal Agencies → Multiple Grant Drawdown Platforms ← Prime Recipient → Unknown Sub-Recipients

Future State

Federal Agencies → One Grant Drawdown Platform ← Prime Recipient → Known Sub-Recipients
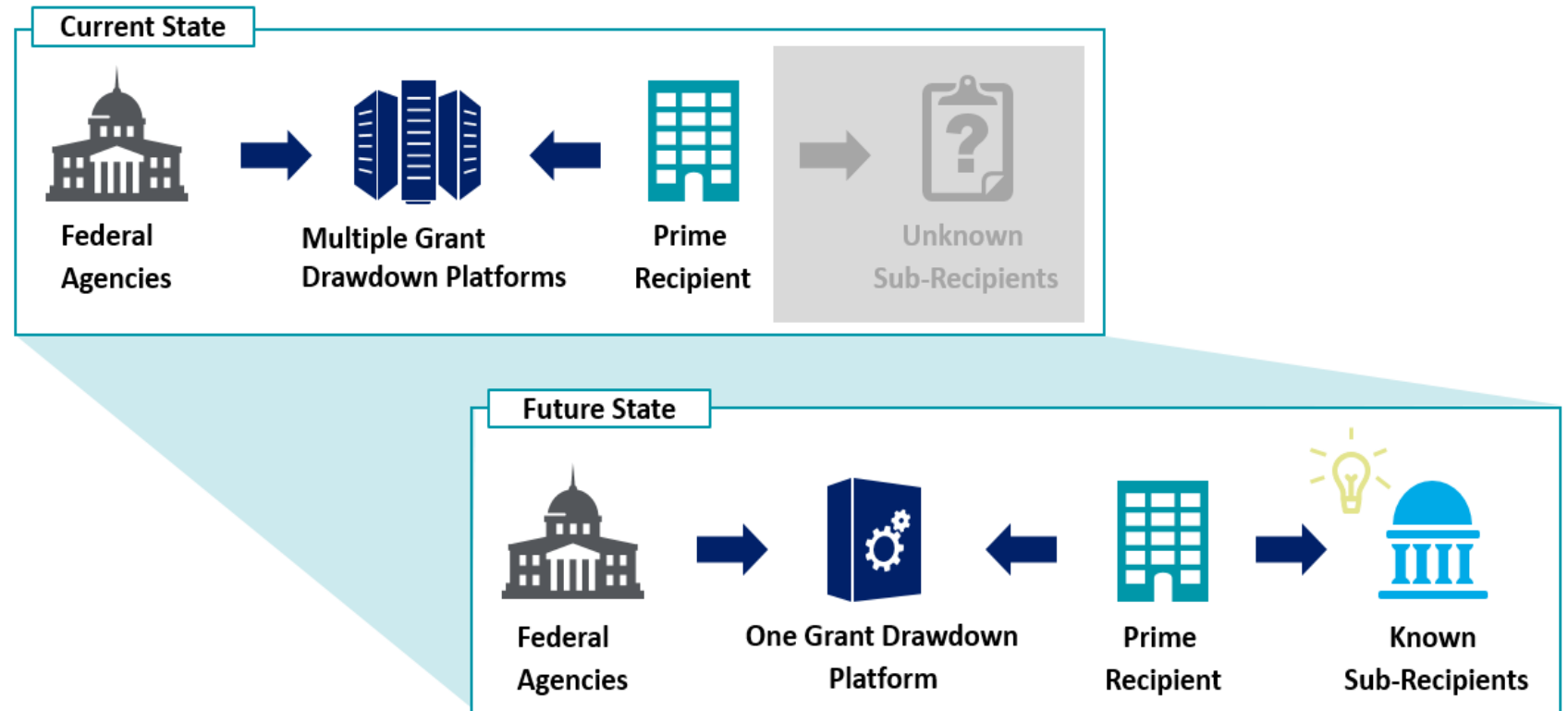
Process Improvement

A Digital End-to-End Efficiency (DEEE) will yield substantial savings and bring a higher level of performance and value

DEEE provides a framework to identify opportunities for digitizing financial management processes in order to improve productivity and end-to-end customer and employee experiences and expectations

Procure to Pay | Bill to Collect | Book to Reimburse (Travel) | Request to Procure | Acquire to Dispose (Property) | Apply to Perform (Grants) | Budget Formulation | Agree to Reimburse | Hire to Retire | Apply to Repay (Loans) | Record to Report

(75-92% automatable*)

(30-50% automatable)
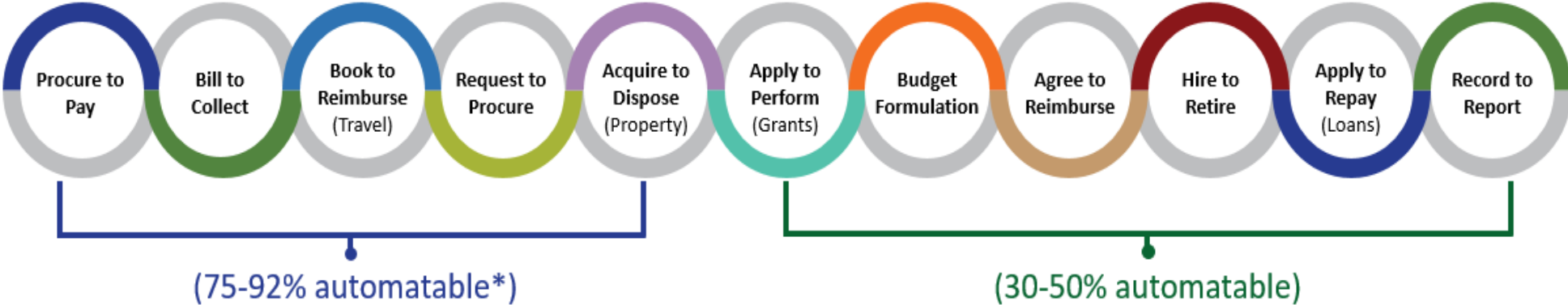
At my agency, blockchain is a:

A.   MYTHICAL UNICORN
B.   WORKING GROUP THAT RARELY MEETS
C.   TIGER TEAM OF DEDICATED STAFF
D.   EXECUTIVE VISION WITH FULL SUPPORT

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Caryl Brzymialkiewicz

Deputy Inspector General, Department of the Interior

When a recipient makes a grant drawdown request, my agency can tell what the money was used for?

A.   ALWAYS
B.   SOMETIMES
C.   NEVER

Expanding Innovation in Federal Financial Management

Renata Miskell, Acting Chief Data Officer

Department of Health and Human Services

Office of Inspector General

Office of the Chief Data Officer

TOTAL PAYMENTS & RETURNS

ADVANCED ACCELERATED PAYMENTS

CARES BY EFT

CARES BY CHECK

FinCEN SARs
RESTRICTED

NPI LEVEL SUMMARY

FRAUD INDICATOR FLAGS
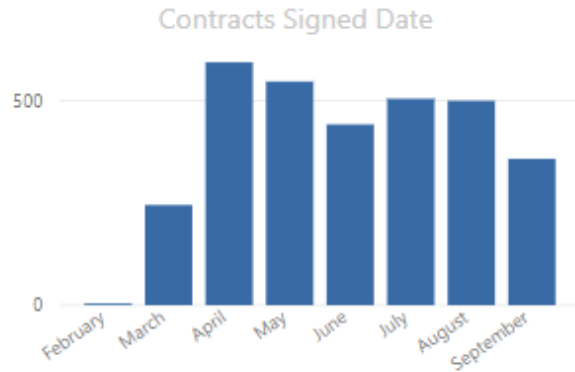
STATE BREAKOUTS

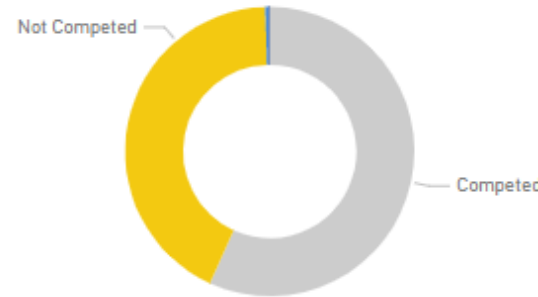PROVIDER SPECIALTIES

PROVIDER TAXONOMY
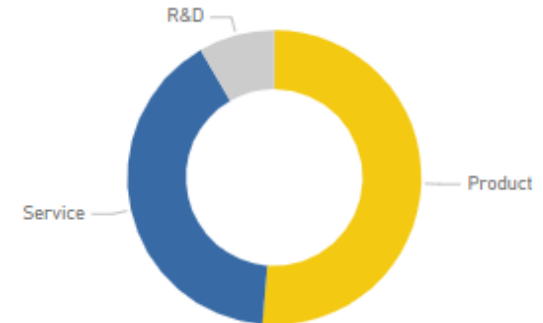
2385
Number of Contracts

1197
Number of Vendors

$13.50bn
Amount Obligated

Contracts Signed Date

Extent to which Contracts were Competed

Not Competed — Competed

Contract Deliverable Type

R&D — Service — Product

Award Amount by OpDiv

OpDiv	Amount
OFFICE OF ASSISTANT SECRETARY FOR PREPAREDNESS A...	$9.8bn
NATIONAL INSTITUTES OF HEALTH	$1.6bn
OFFICE OF THE ASSISTANT SECRETARY FOR ADMINISTRA...	$0.8bn
CENTERS FOR DISEASE CONTROL AND PREVENTION	$0.5bn
HEALTH RESOURCES AND SERVICES ADMINISTRATION	$0.4bn
INDIAN HEALTH SERVICE	$0.2bn
CENTERS FOR MEDICARE AND MEDICAID SERVICES	$0.1bn
FOOD AND DRUG ADMINISTRATION	$0.1bn
AGENCY FOR HEALTHCARE RESEARCH AND QUALITY	$0.0bn
SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES AD...	$0.0bn

Number of Contracts by OpDiv

OpDiv	Number
NATIONAL INSTITUTES OF HEALTH	814
INDIAN HEALTH SERVICE	755
CENTERS FOR DISEASE CONTROL AND P...	350
OFFICE OF ASSISTANT SECRETARY FOR P...	253
OFFICE OF THE ASSISTANT SECRETARY F...	61
FOOD AND DRUG ADMINISTRATION	57
CENTERS FOR MEDICARE AND MEDICAID...	53
HEALTH RESOURCES AND SERVICES ADM...	36
AGENCY FOR HEALTHCARE RESEARCH A...	5
SUBSTANCE ABUSE AND MENTAL HEALT...	1

Fc

*Includes contracts/contract modifications with the COVID-19 national indicator flag or a contract description that includes "COVID" or "Corona"

A-133 Audit Findings Identifed through HHS OIG Modeling

Year	Structured Data	Interpolate Model	Text Model
2019 (partial year)	975	607	513
2018	12,135	4,233	3,538
2017	13,899	4,864	9,199
2016	14,028	5,240	9,717
2015	16,360	6,246	11,684
2014	17,474	6,878	11,754
2013	16,098	6,630	11,053

■ Structured Data ■ Interpolate Model ■ Text Model

Grants Analytics Portal
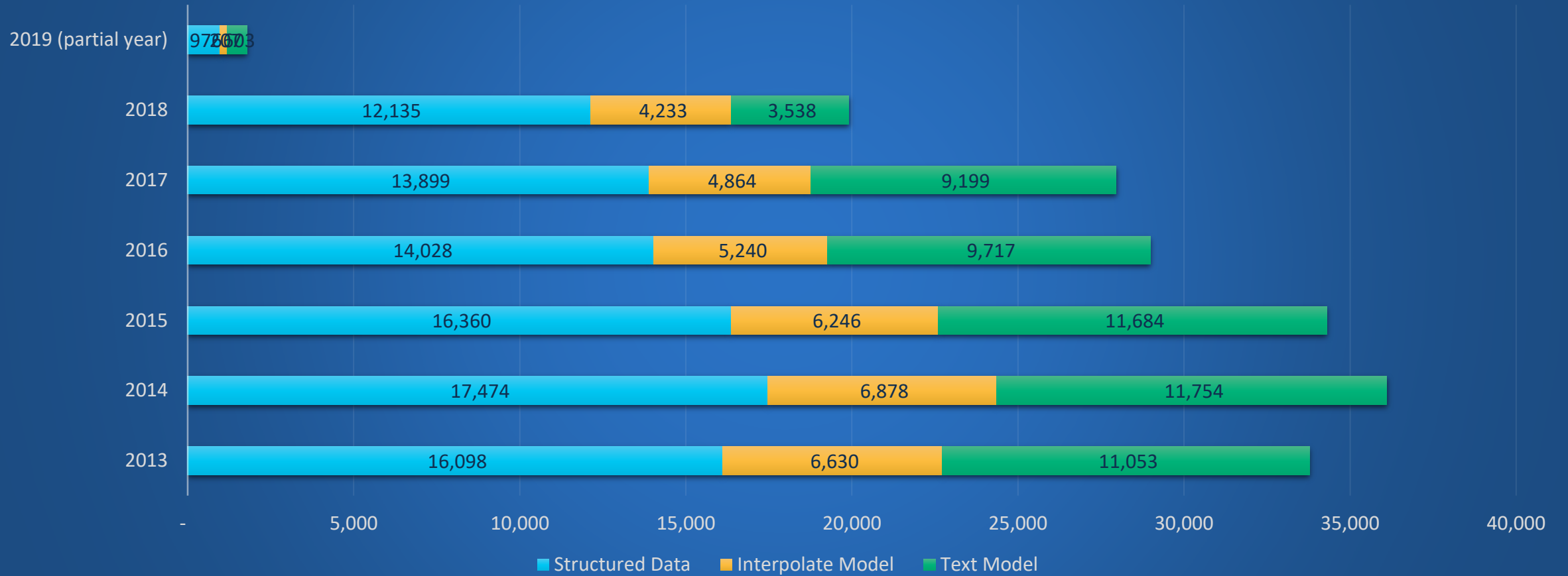
Financial Findings
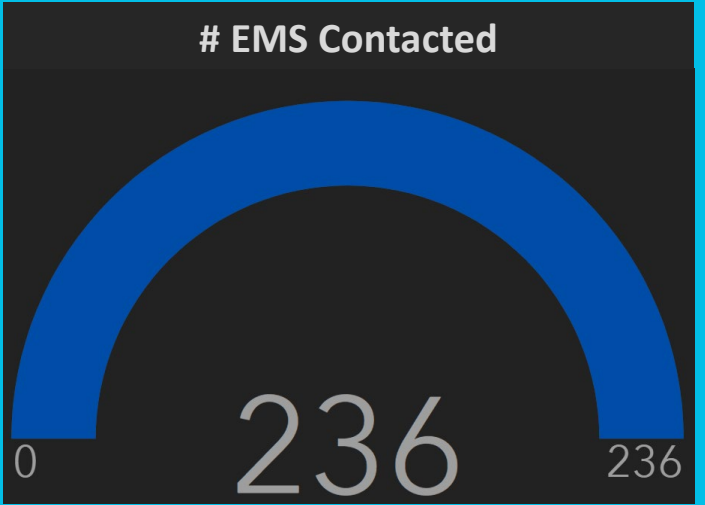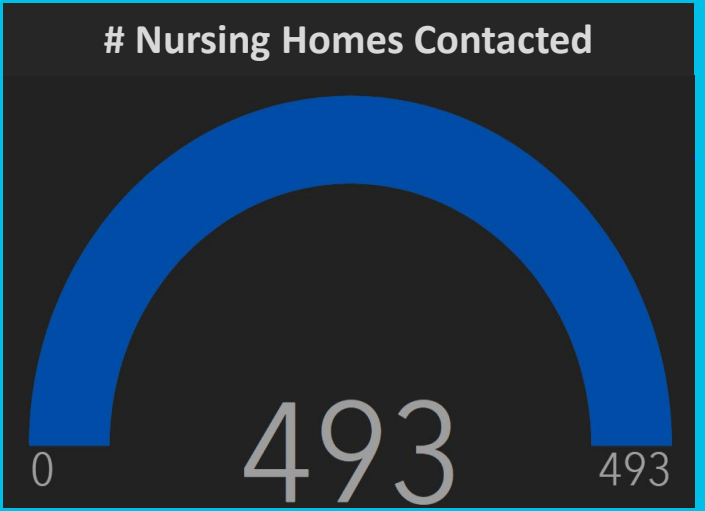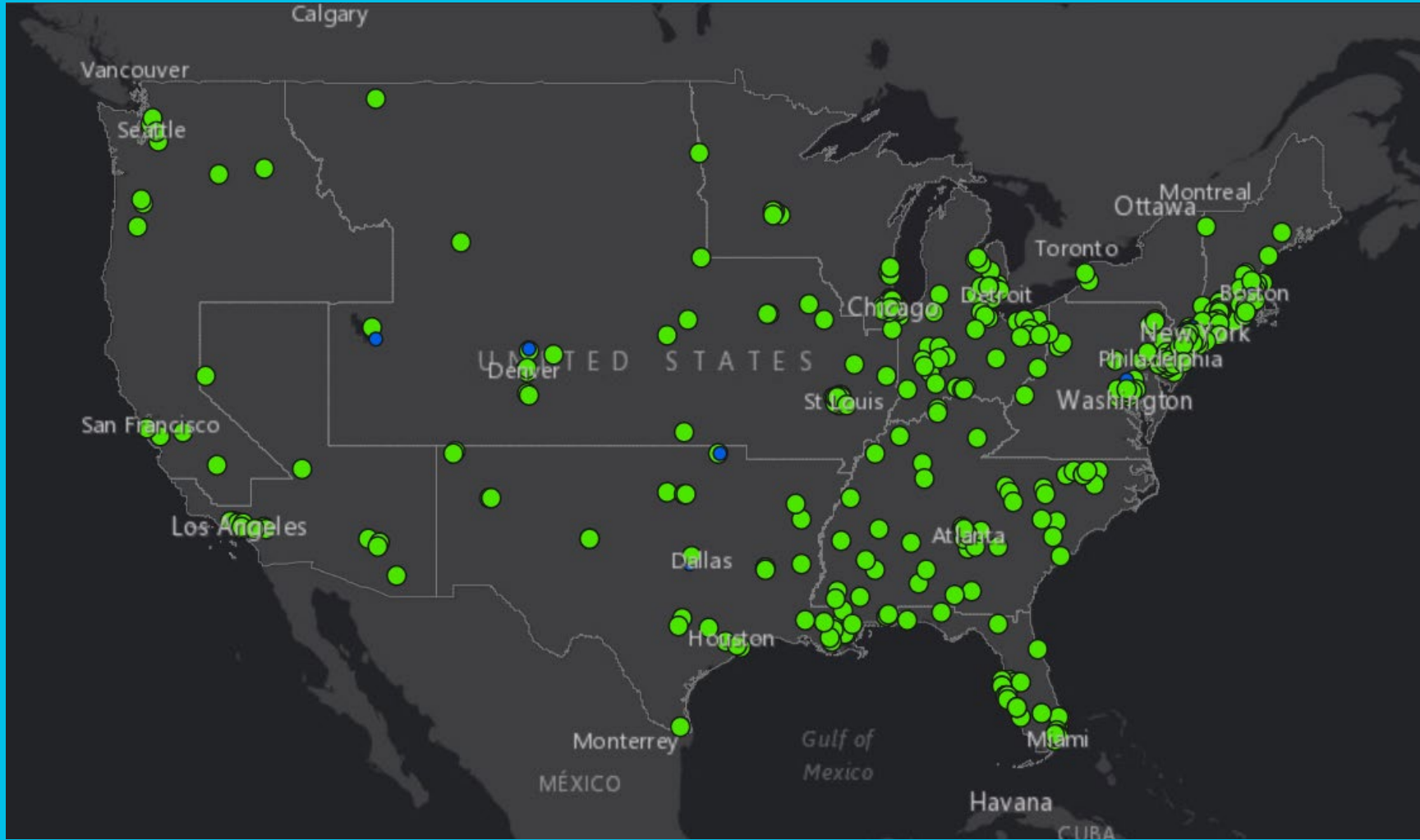
Financial Findings (Type Z) are identified from A-133 Single Audit PDFs using a text mining model, which also categorizes them into topics. They can affect all of a grantee's funds, including grant funds.
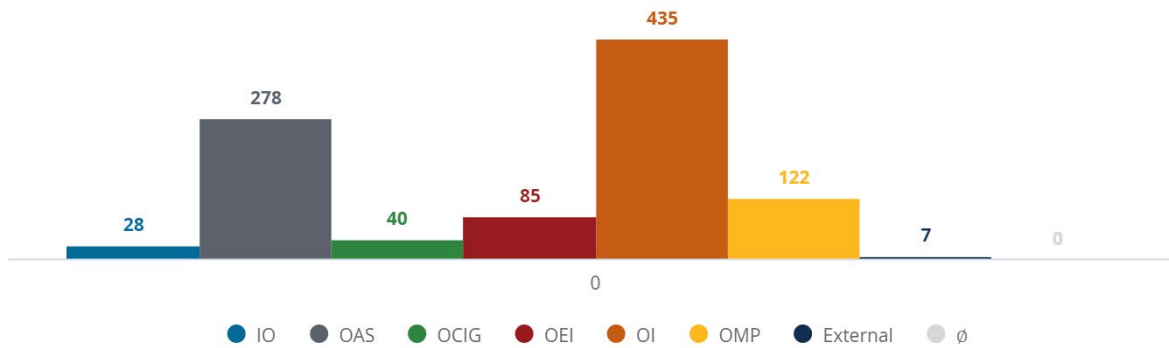
Year	2013	2014	2015	2016	2017	2018	2019
Topic	Findings	Findings	Findings	Findings	Findings	Findings	Findings
Assets and Inventory Acco	23	33	19	12	18	7	0
Cash and Bank Account Re	49	63	41	46	41	12	0
Financial Statements	38	30	38	36	37	15	0
Grant Budgetary	27	15	6	7	4	2	0
Grant Compliance	63	47	38	62	65	20	0
Grant Documentation	6	9	6	12	6	1	0
No Topic Identified	275	245	237	281	316	285	12
Payroll and Management I	159	141	118	112	102	39	0
Payroll and Segregation of	15	17	23	20	12	6	0
School and Students	8	2	4	1	3	0	0
Totals	663	602	530	589	604	387	12

Nursing Homes Contacted

0   493   493

EMS Contacted

0   236   236

Users by Component

Value	Component
28	IO
278	OAS
40	OCIG
85	OEI
435	OI
122	OMP
7	External
0	ø

Actions by Component

Value	Component
1,988	IO
10,757	OAS
924	OCIG
2,116	OEI
32,393	OI
26,319	OMP
233	External
3	ø
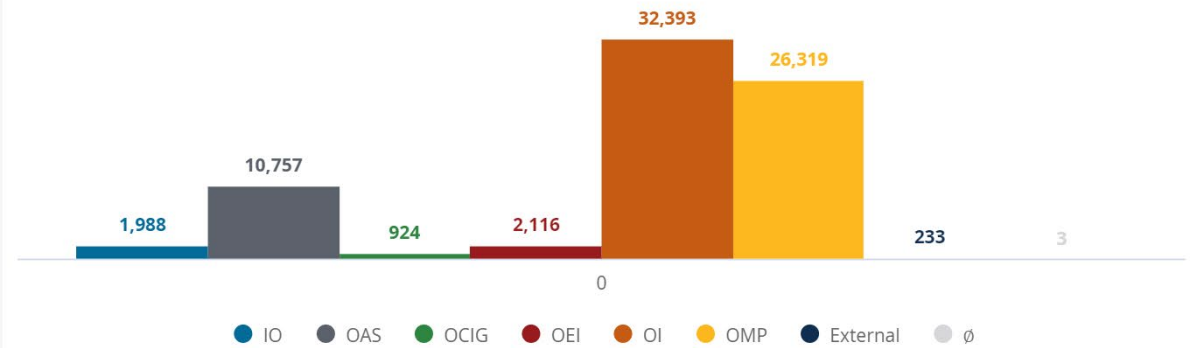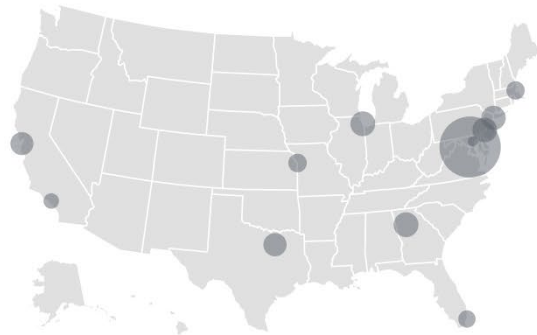
Users by Region

Region	Users
Headquarters	347
Chicago	88
Atlanta	88
Philadelphia	87
New York	85
Dallas	79
San Francisco	78
Kansas City	53
Boston	52
Miami	46
Los Angeles	36
External	7
Baltimore	5

Actions by Region
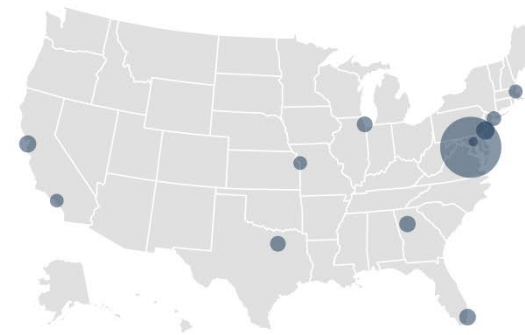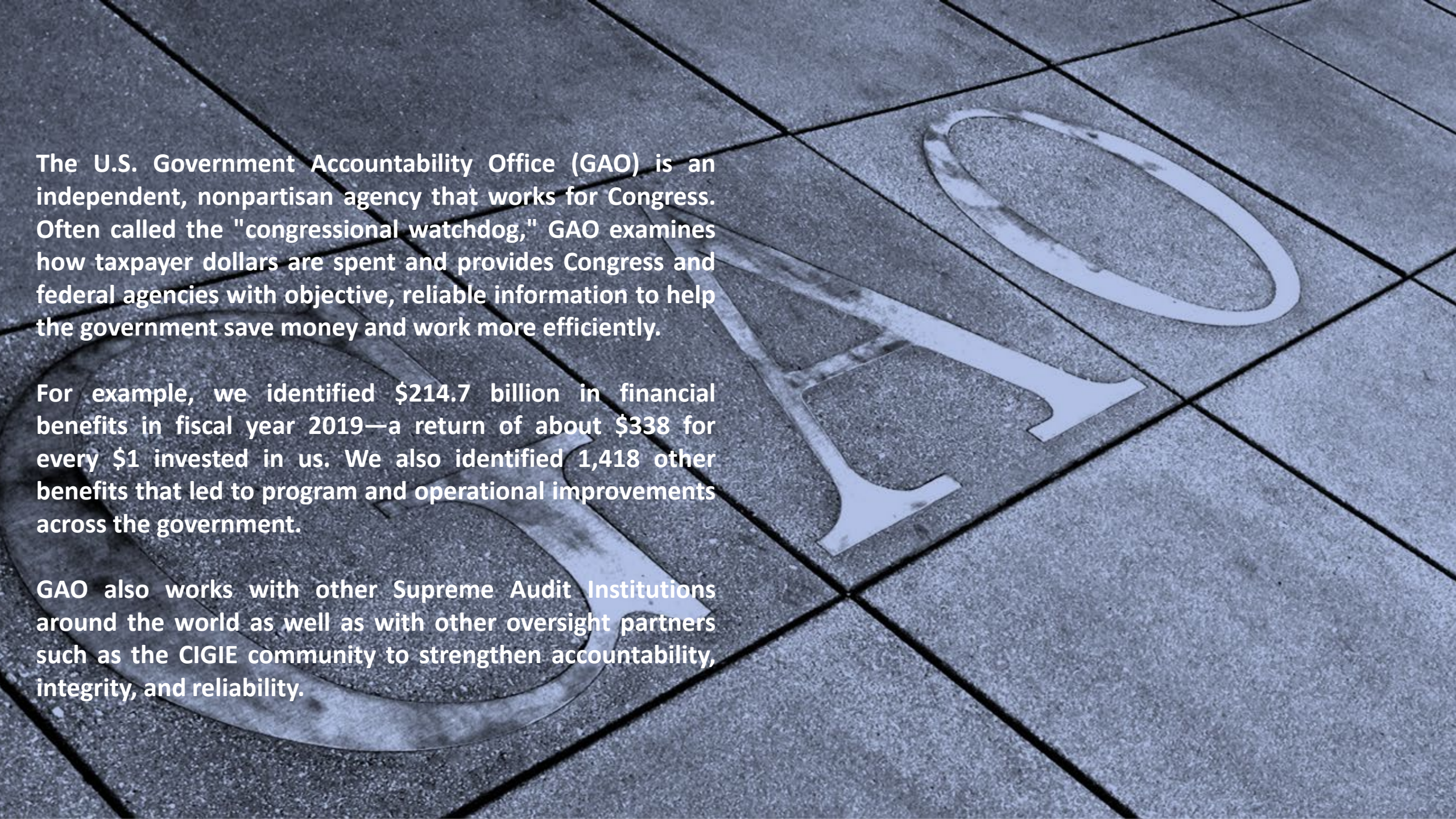
Region	Actions
Headquarters	51,664
Philadelphia	5,764
San Francisco	5,130
Miami	4,788
Atlanta	4,643
Chicago	4,285
Dallas	4,141
New York	3,495
Boston	3,042
Kansas City	2,922
Los Angeles	2,861
External	233
Baltimore	54

Sailing or Flailing? Driving Innovations in the Digital World

Taka Ariga
Chief Data Scientist
**Government Accountability Office**

The U.S. Government Accountability Office (GAO) is an independent, nonpartisan agency that works for Congress. Often called the "congressional watchdog," GAO examines how taxpayer dollars are spent and provides Congress and federal agencies with objective, reliable information to help the government save money and work more efficiently.

For example, we identified $214.7 billion in financial benefits in fiscal year 2019—a return of about $338 for every $1 invested in us. We also identified 1,418 other benefits that led to program and operational improvements across the government.

GAO also works with other Supreme Audit Institutions around the world as well as with other oversight partners such as the CIGIE community to strengthen accountability, integrity, and reliability.

Driving audit-focused innovations
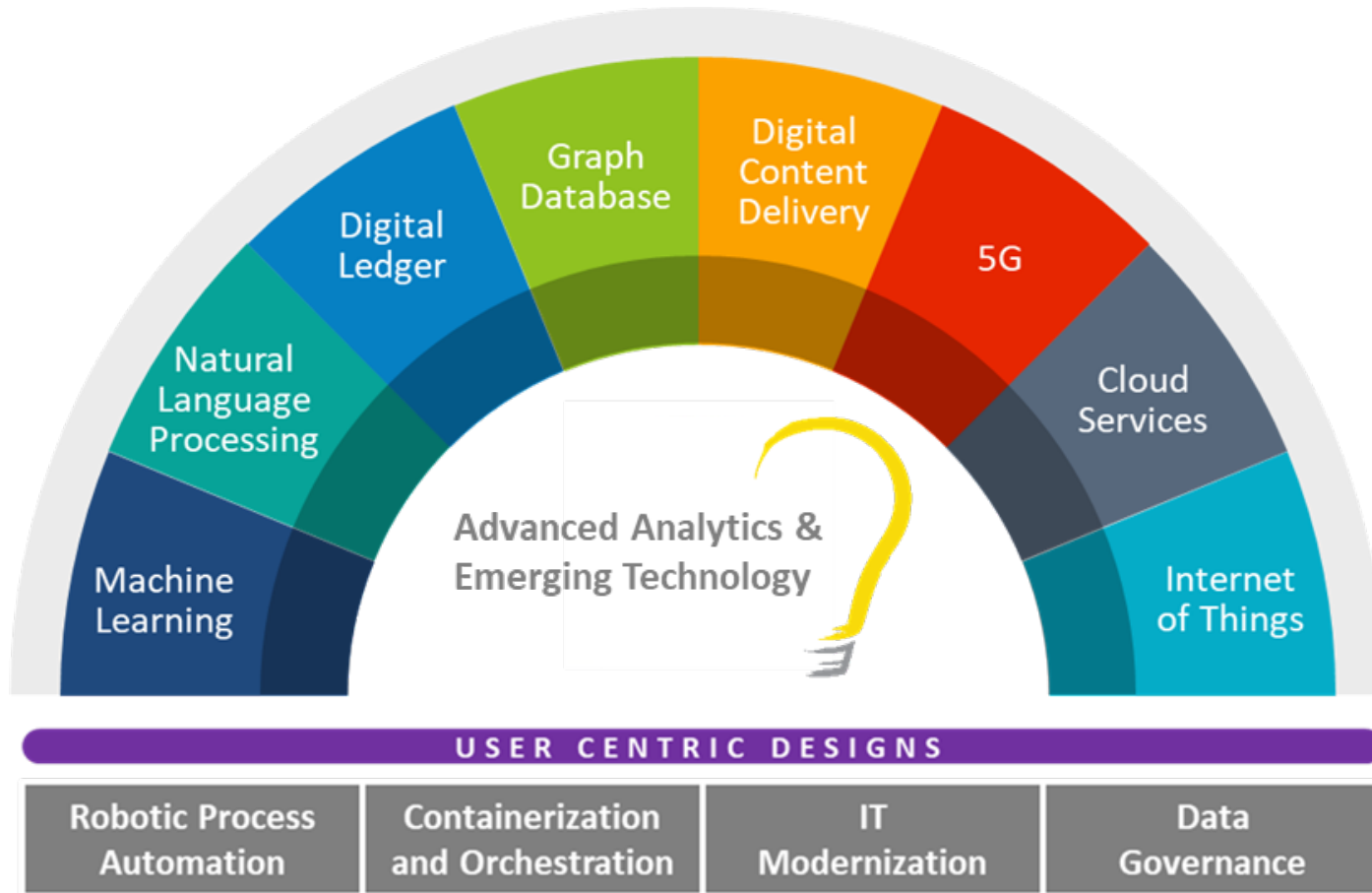
GAO established the Innovation Lab as a platform to experiment on use of advanced analytics and emerging technologies. Leveraging the power of cloud computing, our data scientists and technologists collaborate with mission teams to ideate, incubate, iterate, and evaluate prototypes with the goal of tackling evolving oversight challenges that cannot be fully addressed through conventional approaches alone. We aim to be a customer-centric organization to drive new capabilities with greater speed, scale, and depth.

Strategic execution – because innovation is not *automagical*

1 DE-RISK NOVEL THINKING

TIME

QUALITY

BUDGET

Establish an independent sandbox

Form a parallel universe

Make it free

2 ENGAGE WITH AGILITY

Iteration 1 — Accept, Build, Test, Design, Plan, Deploy

Iteration 2 — Accept, Build, Test, Design, Plan, Deploy

Iteration 3 — Accept, Build, Test, Design, Plan, Deploy

3 MAKE UTILITY FUNCTIONS FRICTIONLESS

App. Programming Interface

SFTP, FTPS, or FTP

Manual Handling

GOVERNANCE M O T
CATALOGING M O T
PROFILING M

Exploratory GIS & Visualization
Descriptive Statistics

AUDIT STANDARDS
QUALITY ASSURANCE

Hypotheses-based research questions

Machine Learning   Digital Contents
NLP   Agile Collaboration

M Mission Data
O Open-Source Data
T Third-Party Data

Object Storage
• Nearly infinitely scalable
• Nearly infinitely available
• Pennies in terms of cost

Data Governance Layer
• Automate quality profiling at ingest to avoid downstream impacts
• Lower the friction to access available data across mission teams
• Maintain lineage and metadata management to enhance reliability

Data Exploration & Prototyping
• Allow front-line analysts to explore relevant trends, patterns, anomalies, and relationships
• Whiteboard formats of product outputs with enhanced interactivity

Advanced Analytics Tool Stack
• Ability to leverage latest open-source packages
• COTS tool to augment scaled needs
• Enhance user interactivity

GAO

Digital content delivery

Enhance user experience of the Yellow Book beyond the current PDF format with modernized digital features using open-source capabilities.
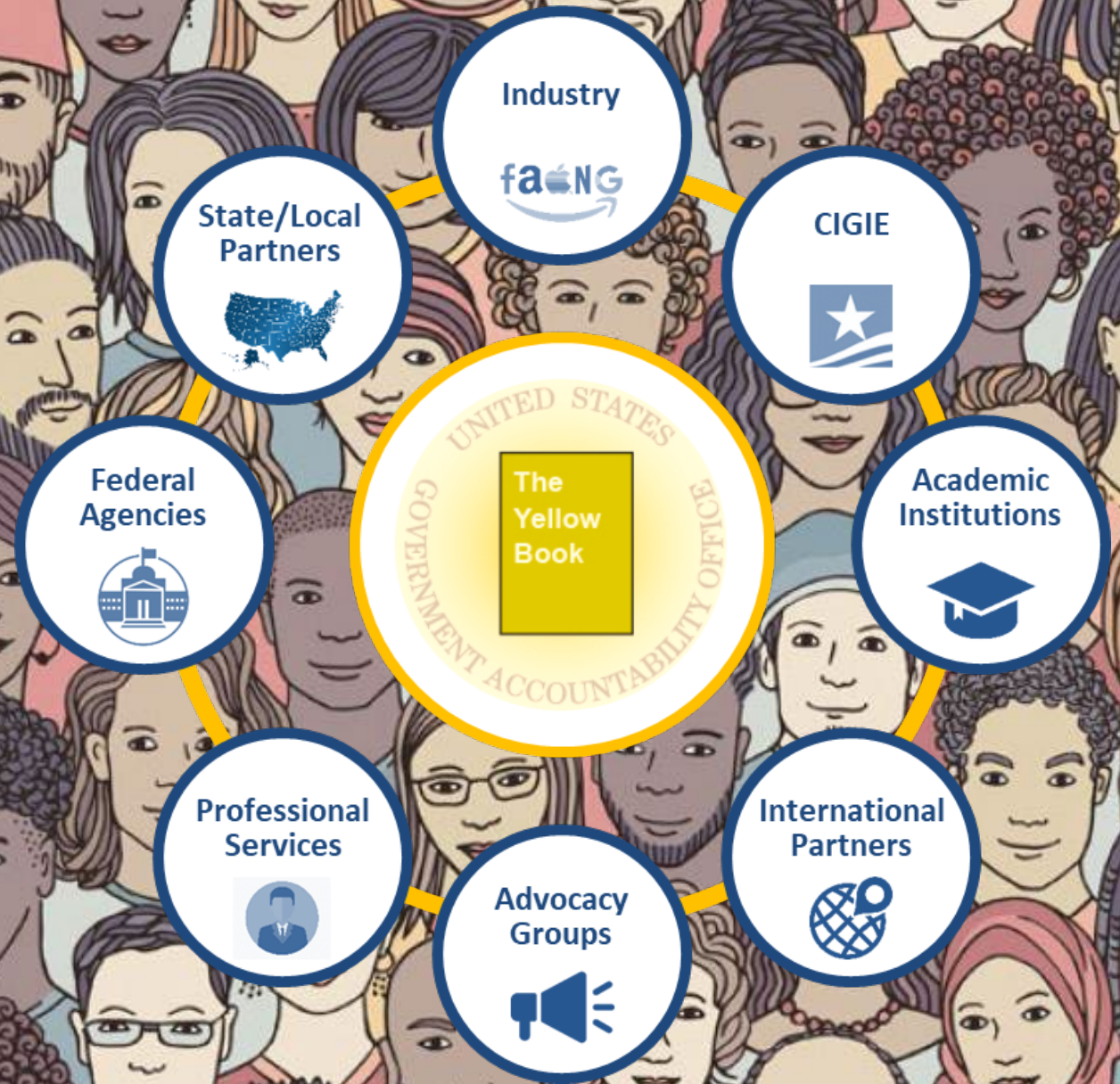
- Fully adaptive to a variety of consumption models, including smartphones and tablets
- Integrated keyword, reference, and footnote highlights
- Elastic search to support concepts, synonyms, and misspellings
- Embedded Google Analytics to track user behaviors
- Automated 508 compliance
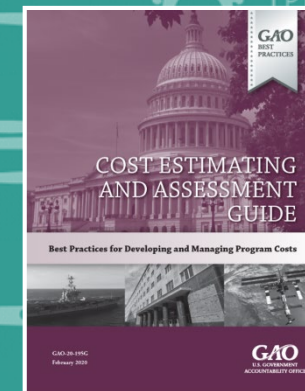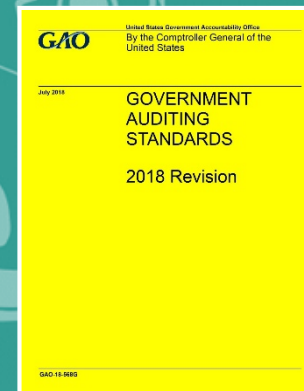
AI accountability

Convening a cross-sectoral panel of experts to develop an oversight framework of models and algorithm aligned with the Generally Accepted Government Audit Standards (GAGAS).

The forum under the Comptroller General's authority will evaluate assessment criteria and identify related technical artifacts necessary to provide assurance on AI systems.

Industry

State/Local Partners

CIGIE

Federal Agencies

The Yellow Book

UNITED STATES GOVERNMENT ACCOUNTABILITY OFFICE

Academic Institutions

Professional Services

Advocacy Groups

International Partners

Continuous auditing

GAO's audit of the US General Fund is a prototypical accounting review – scaled to $14 trillion. How might we take a novel application of graph database technology to persistently and scalably manifest continuous auditing?

- Mapping relationships of posting logics to evaluate inconsistencies

- Pivot away from sample-based selections by ingesting all data points

- Enhance the ability to identify outliers, anomalies, and other audit-relevant issues with greater speed, depth, and scale

Blockchain (distributed ledger)

Beyond cryptocurrency applications, a distributed ledger's decentralized transparency and security features are starting to find use cases across federal agencies.

- What is the current state of technologies (e.g., open-source vs. proprietary platform vs. –as-a-service)?

- How might we think about future audits of blockchains?

- What are the inherent change management challenges?

Decentralized Ledger

ALICE

BOB

Natural language processing

Soliciting public comments is an important element of rule making. However, dealing with the volume, cacophony, and variety of inputs solicited through sites like Regulation.gov is no small challenge.

- Leverage AWS's Comprehend service to perform topic modeling at scale
- Develop knowledge wheels to help user quickly navigate through relevant contents
- Design the architecture in ways that can extend use case to a variety of unstructured data

Panel Discussion

Moderator: Tim Persons

Panelists: Amy Edwards, Caryl Brzymialkiewicz, Renata Maziarz Miskell, Taka Ariga