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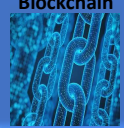





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**Division of Financial Management
Innovation Lab**

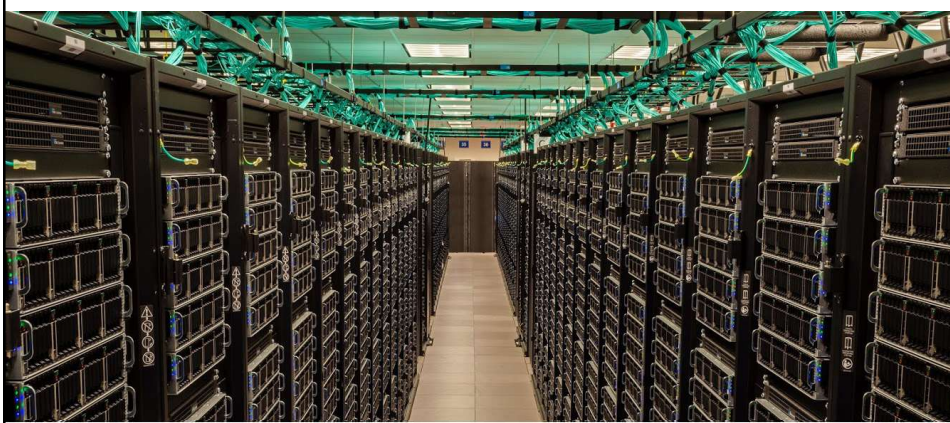
Deal with Data | Leverage Automation | Reduce Compliance Burdens | Build Stronger Organizations | Unlock Value

A	B	C	D	E
Automation 	Blockchain 	Cybersecurity 	Data Science 	ERM and IC 

Change Management

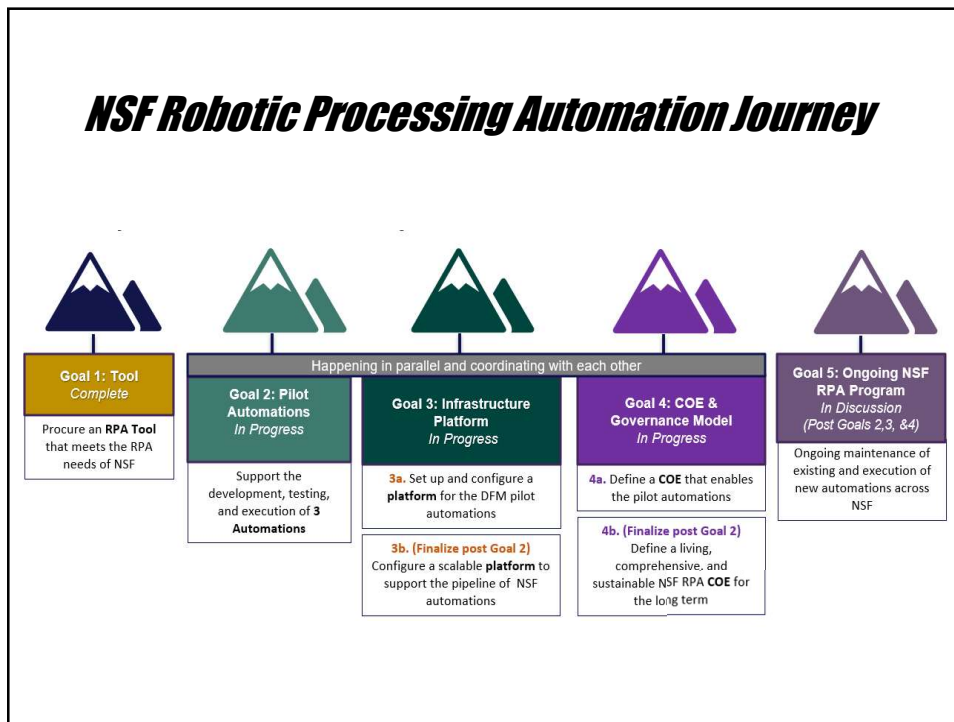
Reference/based on: EAO Innovation Lab, COSO ERM, and UMD Professor Larry Gordon, The Impact of Technology on Contemporary Accounting: An ABCD Perspective

3

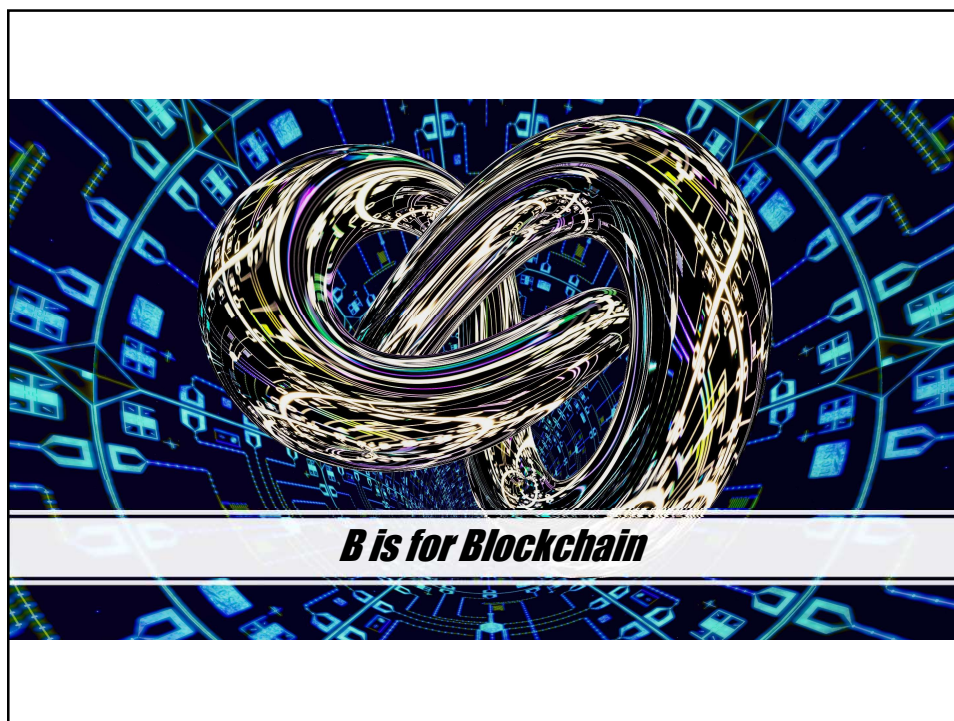


A is for Automation

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Blockchain Proof of Concept Overview

FIT took a user-centric approach to enhance an existing prototype based on stakeholder feedback, assessed regulatory and legal implications of the blockchain prototype, and deployed the solution in the Bureau's first innovation sandbox.

Objectives	Approach
<ul style="list-style-type: none"> Identify the legal/policy/regulatory barriers to tokenize Federal grant payments Stand up a stakeholder ecosystem to provide feedback on blockchain solution Make functional and technical enhancements to POC based on feedback Assess what metrics a DLT solution would improve over the current state 	<ul style="list-style-type: none"> 100+ stakeholders engaged across 9 demos, 2 workshops, and SME working sessions Conducted outreach with 15 government organizations and 57 universities 30+ laws, regulations and policies identified related to grant payments Developed a clickable prototype to maximize MVP socialization and feedback Deployed MVP in Bureau innovation "sandbox" environment

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Reducing Grantee Burden To Submit Federal Financial Reports

The SF-425 is one of the most time-consuming reporting requirements for university grant administrators. With DLT, the grant information and payment data are digitized and stored on a token, enabling one-click auto population of the report.

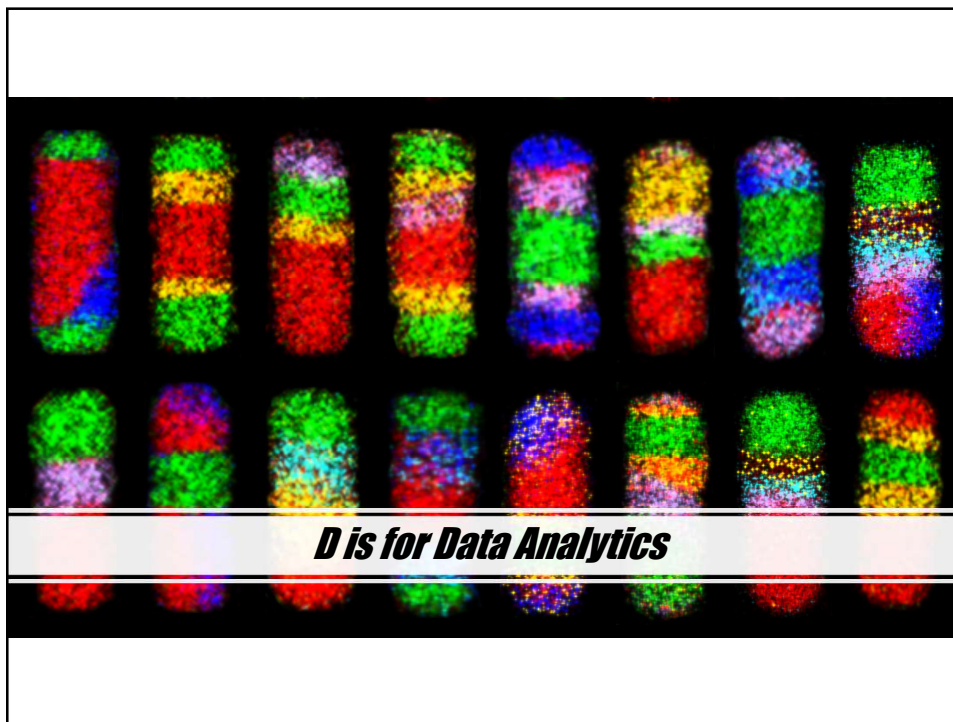
Today, an average of 8 FTEs spend 5 hours collecting 15+ data elements to populate a single SF-425. A DLT token would be able to auto-populate this report within seconds.

- Cash Flow Balances
- Expenditure Data
- Recipient Details
- Program Income

"This would be a terrific, administrative saving feature." – Lynette Arias, Univ of Washington

Federal Financial Report		OMB Number: 4040-0014
Federal Cash (To report multiple grants, also use FFR attachment):		
a. Cash Receipts	0.00	
b. Cash Disbursements	0.00	
c. Cash on Hand (line a minus b)	0.00	
<i>(Use lines d-o for single grant reporting)</i>		
Federal Expenditures and Unobligated Balance:		
d. Total Federal funds authorized	0.00	
e. Federal share of expenditures	0.00	
f. Federal share of unliquidated obligations	0.00	
g. Total Federal share (sum of lines e and f)	0.00	
h. Unobligated balance of Federal Funds (line d minus g)	0.00	
Recipient Share:		
i. Total recipient share required	0.00	
j. Recipient share of expenditures	0.00	
k. Remaining recipient share to be provided (line i minus j)	0.00	
Program Income:		
l. Total Federal program income earned	0.00	

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Statistical Learning and Modeling Improper Payments Logistic Model

- Initial use case to begin implementing data science techniques
- Streamline PIIA compliance and reporting requirements
- Turning data into information to drive decision making
- Professional development opportunity - upskilling for the workforce of the future

Agency → **Federal Expenditures**

Financial and Operational Data

- Single Audit Data¹
- USASpending.gov Data
- Independent performance data
- Agency monitoring and award data

Institution Types

- Universities
- Collegiate systems
- Research facilities
- State governments
- Local governments
- K-12 school districts

Compliance Factors

- Unallowable costs
- Inaccurate grant accounting
- Ineffective control environment
- Noncompliance with Federal Regulations

#TTS20

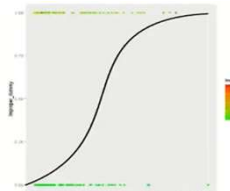
¹ Federal Audit Clearinghouse Single Audit summary data

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Statistical Learning and Modeling Improper Payments Logistic Model

Model Development

```
In [11]: M Logistic_demo <- readPNG("Logistic_demo.png")
plot.new()
rasterImage(Logistic_demo,0,0,1,1)
```






Model Results

Using the initial results as a basis for prediction, the model predicted with **87% accuracy** whether an institution would have an improper payment over a five-year period.

	Actual Positive	Actual Negative
Predicted Positive	34 (8.9%)	25 (5.7%)
Predicted Negative	39 (7.8%)	339 (77.6%)

Equation for Probability of an Improper Payment Finding

$$\log \frac{1}{1-p} = \beta X_1 + \beta X_2 + \dots + \beta X_9$$

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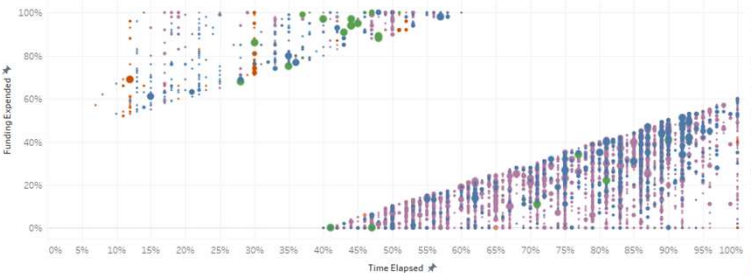
Data Aggregation and Visualization Burn Rate Explorer

BFA Financial Indicators | Burn Rate Explorer

Unliquidated Balances by Directorate

CISE	MPS	ENG	GEO	EHR	BIO	SBE	O/D	Total
\$213.7M	\$203.4M	\$175.4M	\$169.3M	\$166.1M	\$114.5M	\$66.4M	\$40.4M	\$1,248.4M

Award Spending vs. Period of Performance



Award Count: **5,344**

Funding vs. Time Variance: 40% - 100%

Funding Expended (%): 0% - 100%

POP Elapsed (%): 7% - 100%

Award Amount: \$0K - \$1,073,793K

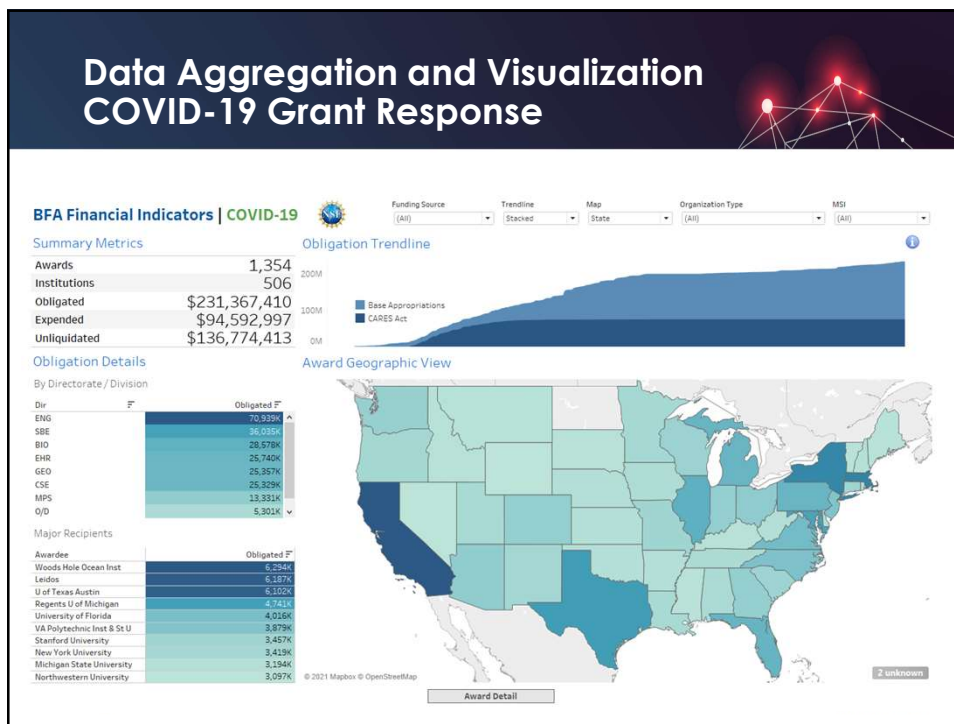
Award Type: (All)

- Continuing Grant
- Coop. Agreement
- Fellowship
- IPA
- Standard Grant

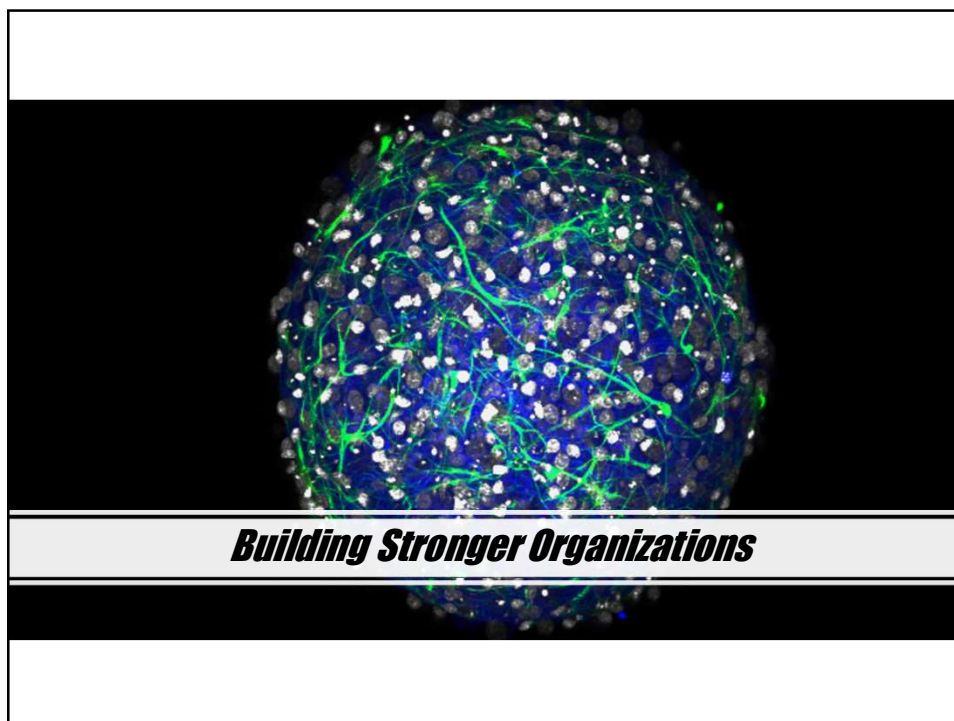
Awardee Summary

Awardee Name	F	Award Count	Obligated F	Expended F	Unliquidated F
University of Illinois at Urbana-Champaign		72	\$32,715,896	\$6,202,703	\$26,513,193
Associated Universities, Inc.		6	\$391,410,842	\$367,503,708	\$23,907,134
University of Texas at Austin		68	\$92,503,388	\$70,272,572	\$22,230,816
Carnegie-Mellon University		41	\$26,542,233	\$5,293,757	\$21,248,476
Regents of the University of Michigan - Ann Arbor		87	\$28,059,469	\$7,365,199	\$20,694,271

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CFO Act Visions for the Future

GAO United States Government Accountability Office
Report to Congressional Requesters

August 2020

FEDERAL FINANCIAL MANAGEMENT

Subcommittee on Federal Financial Management
Made Permanent
Enacted by the House of Representatives
Refined by the Senate
Yield A

116TH CONGRESS
2ND SESSION
S. 3287

AN ACT

To modify the governmentwide financial management plan, and for other purposes.

1 Be it enacted by the Senate and House of Representa-
2 tives of the United States of America in Congress assembled,
3
4 **SECTION 1. SHORT TITLE.**
5 This Act may be cited as the "CFO Vision Act of
6 2020".
7
8 **SEC. 2. CHIEF FINANCIAL OFFICERS, GOVERNMENTWIDE
FINANCIAL MANAGEMENT PLAN.**
9 (a) CHIEF FINANCIAL OFFICER AND DEPUTY CHIEF
10 FINANCIAL OFFICER.—Chapter 9 of title 31, United
11 States Code, is amended—

THE CFO OF THE FUTURE NOW

Strategic Goals

- Leveraging Data as a Strategic Asset
- Supporting the Current Workforce
- Recruiting the Future Workforce
- Planning for Succession
- Adapting to Technology
- Facilitating Culture Change
- Building Lasting Partnerships

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NSF Virtual Giftbag

Blockchain "Clickable" Prototype

- <https://projects.invisionapp.com/share/XR102NLZB9MD>
- **Password:** fit_gps

Improper Payment Logistic Model

- https://github.com/https://github.com/NSF-DFM/AGA_TTS2020_DataSciencePilot
- Github account required (Free)

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