

The Journey to Reaching Federal Data Goals

Agencies are prioritizing data governance, organizational culture and emerging technologies in efforts to gain data-driven insights.

The number of devices and sources generating data is increasing at an exponential rate, and organizations are looking for ways to harness the power of that data and unlock its value. To do so, they're turning to innovative technologies, networks and capabilities.

Government and industry experts spoke at a recent [FedInsider webinar](#) about how they're implementing emerging technologies into their existing systems to gain data-driven insights and make better decisions.

The following are some of the most important aspects of those efforts.

Modernizing with & Managing Data

As agencies face an ever-increasing flow of data, they are also continuing with digital transformation initiatives. In fact, thanks to technology transformation efforts over the past year, agencies have expanded the possibilities of what they can do with their data, according to Brian Carnell, chief artificial intelligence architect in the federal office of the chief technology officer for Dell Technologies.

Edge computing is also making data more accessible and useful for agencies. "Edge computing is a really big topic for data and how to deal with data because the edge facilitates are processing at or near the source of data generation," Carnell said. This

will be incredibly helpful as data from connected devices increases.

This data also requires rapid analysis and response at the edge so it can be used for realtime or near-realtime decision making. So, agencies are adopting 5G capabilities and stronger connectivity to get the most from accessible, available data.

The U.S. Patent and Trademark Office (USPTO), for instance, is experiencing a steady exponential increase of data and is looking to leverage that information as an asset to govern, according to Scott Beliveau, the agency's chief of enterprise advanced analytics in the office of the CTO.

"If you think about innovations as critical to growth, as innovation grows, we really need to have that data management strategy to be able to manage all of that new innovation growth data associated with it," Beliveau said. Rather than just managing the data, Beliveau said the agency is trying to make it more useful and improve its quality in order to take advantage of emerging technologies.

Implementing Strong Data Governance

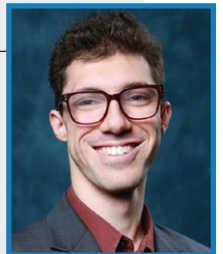
Avital Percher, assistant to the chief data officer for analytics and strategy for the National Science Foundation (NSF), said he's focused on the governance element of data and in establishing a strong foundation and framework

that allows for proper data management, transparency and accessibility.

"We are strengthening our data and inventory as part of the [Evidence Act](#), and really we're making sure that everybody has the opportunity and access to get the information they need to make an informed decision about the data that they're using," Percher said.

Featuring:

- **Avital Percher**
Assistant to the CDO for Analytics & Strategy, National Science Foundation (NSF)



- **Scott Beliveau**
Chief of Enterprise Advanced Analytics, Office of the CTO, United States Patent & Trademark Office (USPTO)



- **Brian Carnell**
Chief AI Architect, Dell Technologies



Having quality information for informed decision-making relies on data governance. Carnell said it's essential in the journey to using effective AI and machine learning — because if bad data is put into AI tools, unreliable analysis will come out. Plus, the pandemic accelerated digital transformation within government, making the importance of quality data even more critical.

"As remote [work] is likely to remain part of the workforce moving forward, that data governance, that data modeling, that critical metadata has really changed and become more important," Carnell added.

Adopting Emerging Technologies and a Forward-Thinking Culture

For the NSF, implementing sound data governance and modernizing technologies to utilize that data begins with culture and processes. "We're still in the foundational stages of really investing in a data culture, and helping promote this concept that people can be centralized, things can be shared, and things can be built for everyone's benefit," Percher said.

The NSF is focused on cultural practices, data documentation and accessibility, so it can ensure reliable, trustworthy data is being funneled into the emerging technologies of the future. Then, it can investigate the advanced tools that empower these efforts.

The USPTO is tackling a classifications challenge with advanced methodologies. The agency was using a manual classification system, which was extremely time consuming, costly and tedious.

To improve this system, Beliveau said they challenged a small agile team to deliver an at-scale production solution for a multilabel, accurate AI classification process.

In doing so, the team trained the system using expert supervision and unsupervised learning techniques to classify incoming data and explain why it classified data the way it did.

"If you could see why the AI did it, you had a better feeling of trust for that particular adoption," Beliveau said. "We then piggybacked that system for internal policy review processes." This allowed the USPTO to receive feedback from examiners as part of their normal activity to continually be validating and adapting the system models as needed.

"We have the system now, and it has saved people time. It's actually paid for itself in the first year," Beliveau added, and it continues to generate millions for the agency in terms of cost savings and operational improvement.

Overcoming Barriers to Achieve Data-Driven Insights

Carnell said perhaps the greatest barrier to leveraging emerging technologies when making data-driven decisions is overcoming the technical debt that exists in the government. Many of the biggest challenges agencies face when bringing data back to the core or to data centers and trying to sort through it using AI or ML is caused by technical debt.

"Not all data that is historically valuable is immediately actionable. But every

bit of immediately actionable data is historically valuable. If you take it from that vantage point, technical debt, and getting the data back to where you can process it, are probably the two biggest barriers that exist today," Carnell said.

Once agencies can process data, pretrain algorithms and gain accurate insights and results from advanced technologies using quality data, they can truly begin to benefit from applying AI and ML to datasets. For instance, technology can sift through much more data than a single analyst possibly could when looking for vulnerabilities or possible breaches.

"If you train them on what you are looking for and if you train them to look against anomalies, you get back a lot better results," Carnell said. "If we don't keep our information or innovations secure until it can be statutorily shared, it really has disastrous consequences to small businesses and the nation's competitiveness."

Ultimately, strong data governance, security and purpose-driven initiatives can help agencies reach their data goals. Once the fundamentals are in place, utilizing advanced technologies and securing networks becomes more effective and cost efficient. Agencies like the USPTO and the NSF are working with industry partners to overcome those challenges and employ emerging technology like artificial intelligence to ensure that the oceans of data being generated in the future can quickly be turned into actionable and useful intelligence to support agency missions. 

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