Data and Analytics Concierge Service
"Budget Analytics"

Category: Data Management, Analytics and Visualization

State: Illinois
Contact: Tara.Kessler@illinois.gov

Initiation Date: 2021 August
End Date: Project Continues

DoIT
Illinois Department of
Innovation & Technology

EXECUTIVE SUMMARY

Improving administrative functions to deliver critical services more effectively and efficiently to Illinois residents is an important priority for the State of Illinois. In 2014, the State began the process of modernizing the financial, procurement and human resources systems across agencies by implementing an integrated enterprise resource planning (ERP) system. Today, with over 97% of the Governor's budget on the integrated Finance platform (as compared to many disparate legacy systems across agencies before), the ERP system has enabled and increased statewide financial transparency.

With this statewide integrated core financial backbone in place, the State now has the goldmine of data needed to make efficient, effective, and meaningful decisions from one easily accessible place. In 2021, the Illinois Department of Innovation and Technology (DoIT) launched the Data and Analytics Concierge Service: an initiative to build self-service data and analytics products and capabilities leveraging the comprehensive repository of financial data on statewide integrated ERP platform. The goal of this initiative is to build dashboards to enable self-service, provide transparency, increase capabilities and insights to agencies and State leadership on financial-related data, and help agencies make better decisions.

The first product launched under this initiative is the Agency Budget Analytics Dashboard, which allows agencies to quickly access data in real-time and make decisions on their budget consumption and funds availability at the desired levels of granularity in an extremely easy-to-use manner based on next-gen technology. Before this dashboard was developed, the consumption of information from the ERP system was far more complex, tedious, and time consuming. Although the system was helpful in producing transactional reports, it required significant manual effort in collecting information across several screens, reports, processes, and sources to even obtain an aggregated view of budget and availability. This information then had to be compiled to provide insights for decision making.

DoIT stood up an Agile cross-functional team with product management, design, data engineering, and State budget subject-matter expertise. DoIT also leveraged strategic relationships with vendors for critical capabilities. The dashboard was built by the users for the users leveraging Agile sprints through a product-centric approach and using principles of design thinking. The Minimum Viable Product (MVP) was released in four months and the product, iteratively enhanced with user feedback, was launched to all agencies in six months.

Critical to the product pilot and launch was change management and communications around the product to make the agencies adopt a new technology and suite of products. This effort included the creation of product infographics and flyers, technology and product training guides, a product website, and YouTube style "do it yourself" two-minute capability building videos.

Since launch, the dashboard has garnered positive reviews from all agencies on the ease and usefulness of product, and an increased appetite from agencies for more data and analytics products. Based on preliminary feedback, the dashboard is expected to save 5,000-10,000 hours a year for every 100 users. To date, 34 agencies (200+ users) have opted in to use the dashboard to drive key decisions for their agencies.

IDEA

With the adoption of a state-of-the-art ERP system, the State of Illinois has delivered on its mission to standardize and increase financial transparency across 70+ state agencies and increase the efficiency of the various Finance teams in the agencies. However, DoIT realized that agencies were still a few steps away from truly utilizing information available to make effective data-driven decisions across Finance, Procurement, and Grants Management, even though all data was in one ERP backbone across the State.

- Agencies were still spending a lot of time and significant manual effort to find the right data to answer key questions and to then analyze the data to derive meaningful insights. They were being "*data hunters*" as opposed to being "*data users*."

- While the new ERP system has been a boon in ensuring that all agencies have a standardized way of making data-driven decisions, it has required additional training for persons in key roles like budget managers and agency leadership. Agencies needed a way to access this data without first having to learn how to write ERP queries or transaction codes.

- Data was not readily available in "one place."   Instead, it was across various screens or ERP reports and required additional manual efforts in collecting and assembling subsets of data from various sources into Excel.

- For example, when it came to budget, commitment, and consumption data, the agencies needed an efficient and easy way to access and view the data to inform critical budget management decisions (*e.g.*, are there sufficient funds to process payroll for the remaining months, how do current expenditures compare to previous two years, what are the areas needing attention, which funds are running low). This data compilation was time consuming and stress inducing

- Most agencies did not have ready access to cutting-edge data analytics products or self-service capabilities to allow them to deliver their mission-critical administrative services easily.

DOIT'S STRATEGIC APPROACH

DoIT launched the new data and analytics initiative to provide better transparency and insights to agencies and State leadership through:

- Ready-to-go self-service datasets, dashboards, and models leveraging the statewide ERP backbone

- Training and capability building on how to use data and analytics

- Customizable support to use data and analytics better to serve agency-specific needs

The inaugural dashboard that was designed and built through this initiative was the Agency Budget Analytics Dashboard, which allows agencies to view, analyze, and make decisions about their agency's budget, commitments, and consumption in an intuitive and visually appealing manner. DoIT assessed various use cases before determining budgeting analytics was the first place to start given the value potential and implementation feasibility. Budgets are the bedrock and the starting point of all financial/procurement/grants decisions. Thus, this tool would be relevant to all agencies.

The Agency Budget Analytics Dashboard provides an interactive overview and visualizations of an agency's appropriations for a budget period, the summary commitments and expenditures that have been recognized, and the available balance based on chosen selected criteria by the user.

- It is linked to the state-of-the-art ERP system, leverages SAP HANA and Tableau, and provides a real-time view into an agency's budget and spend.

- The dashboard is built leveraging principles of design and accessibility to make sure all agency users can use it to maximum potential with maximum ease.

- It shows budget, consumption, and availability patterns over a three-year period with filtering selections based on various master data and cost elements such as Fund, Funded Program, Fund Center, etc. Supporting tabs provide details on types of commitments and expenditure categories consuming the budget.

- It provides various analyses and insights, such as three-year comparison of expenditures by type, which highlights areas needing attention due to low budget availability.

- It can also be leveraged for statewide overview and decision making on budgets (not just by individual agencies).

- Information and analyses can be downloaded or printed in easy-to-read formats such as PowerPoint and Excel. The dashboard is accessible across all mobile devices and laptops and is rendered in seconds.

- Users can request support directly from the dashboard for targeted items.

Figure 1: Agency Budget Analytics Dashboard, with various intuitive easy-to-use analyses

Figure 2: Agency Budget Analytics Dashboard - budget areas needing attention highlighted clearly


Figure 3: Agency Budget Analytics Dashboard - self-service visuals and analyses of varying levels of granularity
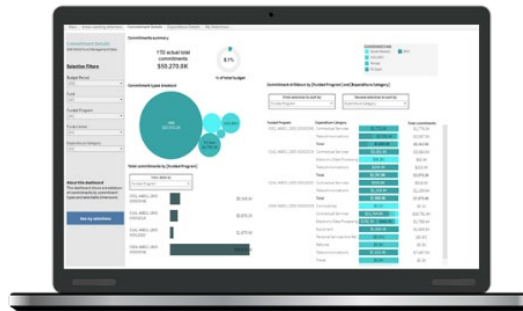
IMPLEMENTATION

The Agency Budget Analytics Dashboard was built over six months (four months to MVP) using a product-centric approach. The implementation process applied design-thinking and Agile principles to build an intuitive and easy-to-use Tableau dashboard leveraging ERP data. A cross-functional team of product owner, subject-matter experts, design expert, developers, and data engineers with knowledge of ERP data was assembled to build the tool. To facilitate enterprise-wide use, three pilot agencies volunteered to act on behalf of users to provide insights into their current-state experiences for targeted user personas (budget managers) and ideate on what an ideal future-state product could look like (interactive tools such as Miro Boards were used to ideate on future state).

Figure 4: Our Agile way of working through sprints
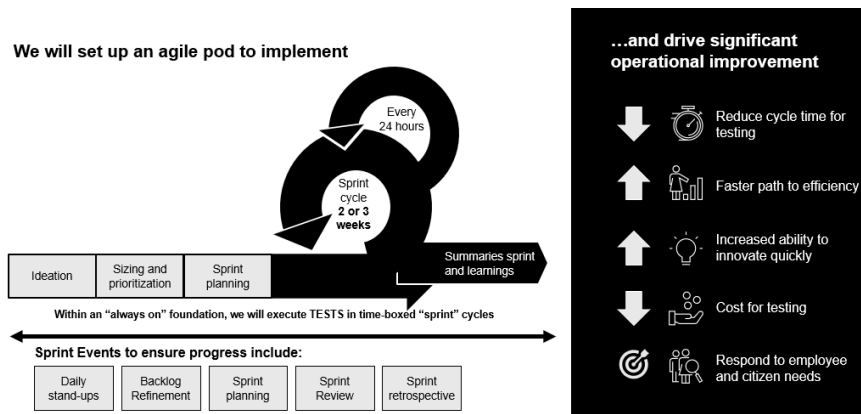
USER CENTRIC DESIGN

DoIT began with an ideation phase to identify the targeted user group for this dashboard. User personas were built (Budget manager "Budget Belinda"), and current and future state user journey maps were created to identify key use cases that would be most impactful for users. These insights were then used to build the product backlog comprised of user stories, which were then prioritized to determine the MVP (Minimum Viable Product). Product wireframes were designed using cutting-edge design thinking and live user input to build the product that made the most sense to the users. A plan to launch the MVP was then developed leveraging two to three-week sprints.

Figure 5: Persona for first dashboard	*Figure 6: Current state user journey*	*Figure 7: Target state user journey*
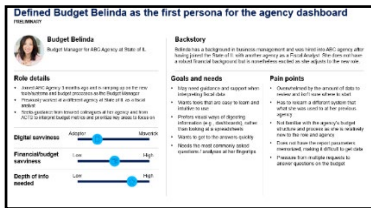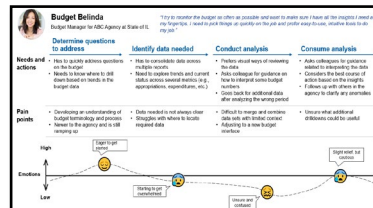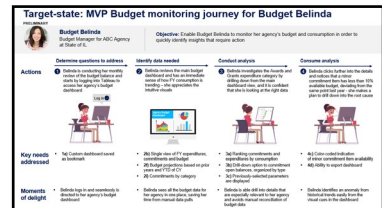
Important design and build considerations:

1. **Accessible and intuitive visualizations** – keeping in mind that some of our users may have difficulty in discerning colors, the dashboard adhered to accessibility criteria.

2. **Performance** – the dashboard loads in 30 seconds or less, and each interaction takes less than 10 seconds.

3. **Security** – each user can only see data for their own agency and requires Single Sign-On (SSO) to enable access to their data.

To enhance user capability building and product adoption, DoIT implemented a multi-faceted approach. DoIT ensured the agencies and users knew about the product and were excited to use it through creative marketing material (eye-catching product infographics, YouTube Style product tutorials, infomercials in CFO forums, etc.). The learning curve for users around the new technology (Tableau) and product was also flattened with the help of extensive user guides, demo videos, training materials on a centralized website, and office hours.

The MVP (Minimum Viable Product) was launched in four months to the pilot users across three agencies, who then provided feedback to help improve the product through additional two-week sprints. The dashboard was then launched to a cluster of 10 agencies to quantify the performance and impact of the dashboard. With additional feedback from this launch, DoIT was then able to finalize the product and launch to 60+ agencies in just six months from the initial conceptualization of the tool.

A strong feedback loop has been implemented to allow users to provide input on features they would like to see next. A plan for ongoing product improvements through three-month release cycles has also been put in place.

IMPACT

Prior to the launch of the dashboard, agencies needed to spend many hours in collecting data and performing analysis to inform decisions. With the dashboard, users now can immediately access key metrics to help with their decision-making and eliminate manual effort currently required of CFOs and budget managers on a regular basis (e.g., generate reports from HANA, fulfill approval/audit requests, create director-level report). DoIT has received positive reactions from users thus far on how useful the product is and how easy it is to use it through various user surveys.

Clear metrics have been established and are tracked by DoIT to determine product impact. Since launch, 34 state agencies (representing 200+ users) are using the dashboard. Efforts are underway to promote the dashboard amongst all agencies with a goal for 100% adoption by July 15, 2022. Based on preliminary feedback and metrics, there is steady adoption and daily usage of the product, and the dashboard is anticipated to save 5,000 to 10,000 hours for every 100 users who utilize it.

LONG-TERM ROADMAP

With the resounding success of Agency Budget Analytics Dashboard, DoIT has a two-year roadmap with both immediate and medium-term goals.

- Immediate term: Continue adding features to the Agency Budget Analytics Dashboard and broadening the reach by promoting adoption among agencies

- Over next six months: Continue building prescriptive dashboards across other functional areas (e.g., Procurement, Grants Management)

- Over next 12 months: Build more complex analytics products leveraging current product suite (*e.g.*, budget forecasting to enable agencies to plan more accurately for upcoming fiscal years in half the time based on historical trends)