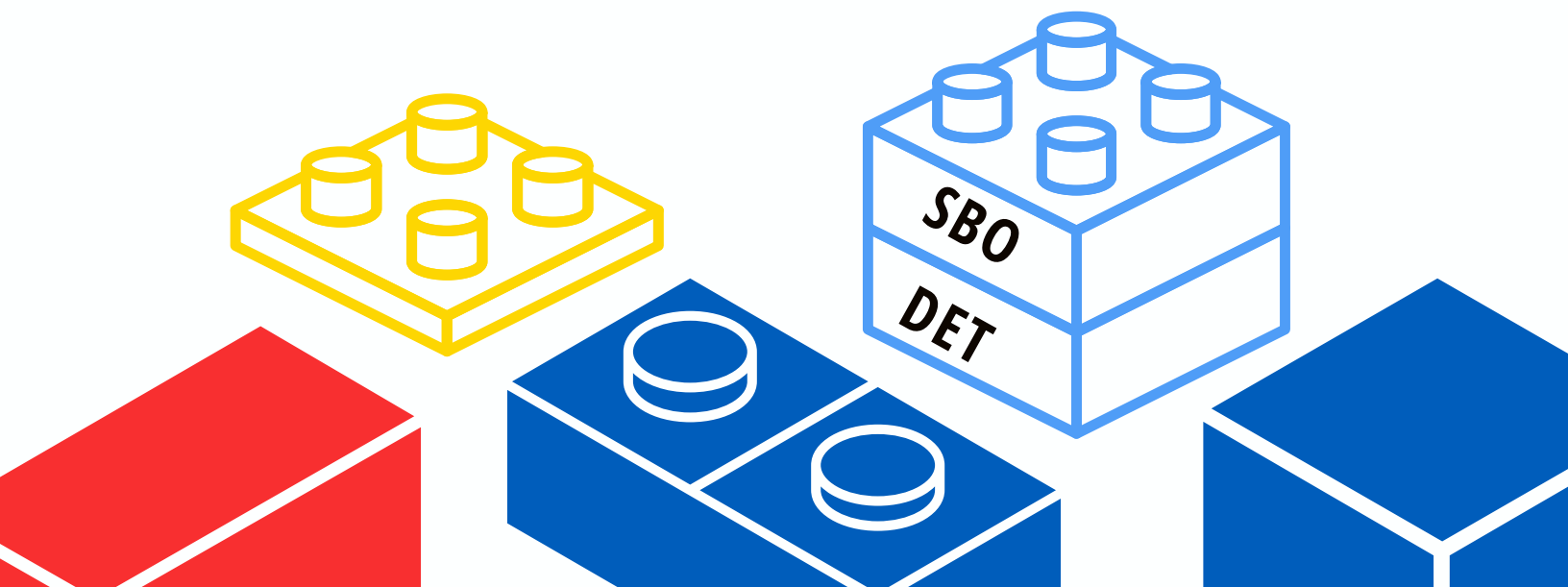


2023 NASCIO STATE IT RECOGNITION AWARDS

BUSINESS PROCESS INNOVATIONS

Wisconsin Budget
System
Project Start: April 2021
Project End: April 2023

The State of Wisconsin had a budget to write...the Division of Enterprise Technology (DET) and State Budget Office (SBO) had a web application to re-write and an opportunity to transform the way software applications are built.



Executive Summary



The State of Wisconsin's budget covers a 2-year period from July 1 of an odd-numbered year through June 30 of the next odd-numbered year. To get an officially signed budget, the legislature, the governor, and each agency must determine the programs and policies they want to maintain, reduce, or initiate and the financial requirements needed to carry out the job.

The budget process in Wisconsin can best be described as incremental budgeting, moving from submittal of agency budget requests to legislative authorization of appropriations to agency expenditure of those appropriations, to review of agency expenditures, and then, beginning again, with subsequent agency budget requests. It is a continuous cycle of planning, requests, review, consideration, hearings, amending, reporting, and ultimately the signing of a budget. Then there is more amending and modifying until the process starts all over again.

The Biennial Budget System is used to collect all the required agency program and financial information (revenue and expenditures) needed to operate for a biennium (2-year period) and is vital to official state business by establishing a process, uniform view, simple data collection and the capturing of the historical audit of changes made in each phase of the budget (and by whom), then reporting on it.

The Idea:

This story begins like so many other big technology projects...



There was no viable path to modernize or upgrade the mission-critical and official State of Wisconsin budget system, which was developed circa 2011. The risks and pain points were too severe, and the decision was made to initiate a complete rewrite of the Budget System.

Known issues of the legacy application:

- The budgeting process was impacted by a slow and unfriendly user interface.
- Processing and downloading certain reports took 20 minutes.
- An outdated web application posed numerous potential security threats.
- Some routine business processes required intensive developer support.
- Developers complained about old code and how difficult it was to maintain after 10+ years of band-aid fixes.
- Numerous customized components made server upgrades risky and difficult, and sometimes altogether impossible.
- Obsolete platform upgrades failed several times and required rollbacks in production.

The development and business teams were assembled, planning started, and roadmaps and requirements were drafted. The teams understood the unique opportunity and they had to show the impact on how the State's business was conducted.

Implementation:

Who was involved?



The budget business team requested the project to optimize and improve the budgeting process and the development team needed to replace the underlying application and infrastructure with a more modern, secure, and easier-to-maintain web application. The project team, which consisted of business and IT leaders and staff, first focused on the overall business process and technical condition of the current system and collaborated phase by phase to incrementally improve the budgeting process and experience for the sixty-two agencies, offices, and organizations that create Wisconsin's Biennial Budget.

DET and SBO leadership and staff saw opportunities to solve potential problems by collaborating as a team.

- Complete re-write of legacy application.
- Phased statutory deadline delivery dates.
- Modern infrastructure.
- Dev Ops processes and best practices.
- Maintain all current functionality and features.
- Enhance reporting to be configurable.
- Reduce data footprint from multiple copies to a single repository.
- Ensure ease of use for our VIP end-users such as Wisconsin's Governor, State Legislators, and Agency Secretaries and their staff.

What was the roadmap?

The easy part of this process was determining statutory dates and phases for writing the Wisconsin budget.

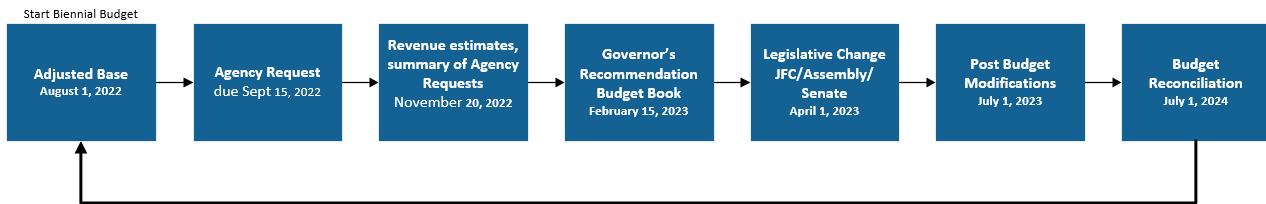


Figure 1: The figure above shows the statutory dates and phases for the Biennial Budgeting process.

The most difficult part was developing a critical web application for the State Budget Office while the budget process and phases are in motion:

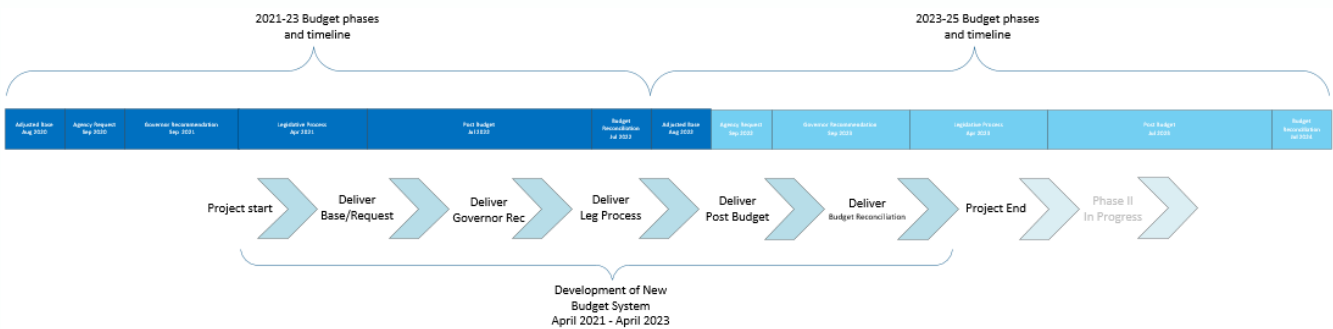


Figure 2: The figure above shows the timeline for the Biennial Budgeting process.

What makes it universal?



The new Biennial Budget System project would provide a unified and streamlined process for submitting, reviewing, and publishing agency budget documents and allows DET and SBO to continue to support state agencies, the governor, and the legislature with a system that is secure, efficient, and easily accessible. This project will allow DET to incorporate new features for a better user experience, modernize IT infrastructure, and reduce software licensing and software/hardware maintenance costs.

The leadership and development team were tasked with a software application rewrite and non-negotiable statutory deadlines to meet. The development of each phase would need to be completed and tested by the beginning of each business phase. Subsequent phases were delivered at planned intervals with development wrapped up by Summer of 2023. In addition, the Leadership and Dev teams saw an opportunity to reorganize, innovate, and utilize a dedicated development team who uses Agile and Scrum development processes, incorporating more modern industry standards for application development.

The development team would have one Solution Architect, three Developers, one Quality Assurance Analyst, and one Business Analyst operating as a dedicated application development team. They would follow Agile and Scrum processes, self-organizing and managing, cross-functional and accountable for delivering value in an incrementally and collaborative way.

The development team delivered value to their business partners in every iteration and phase.

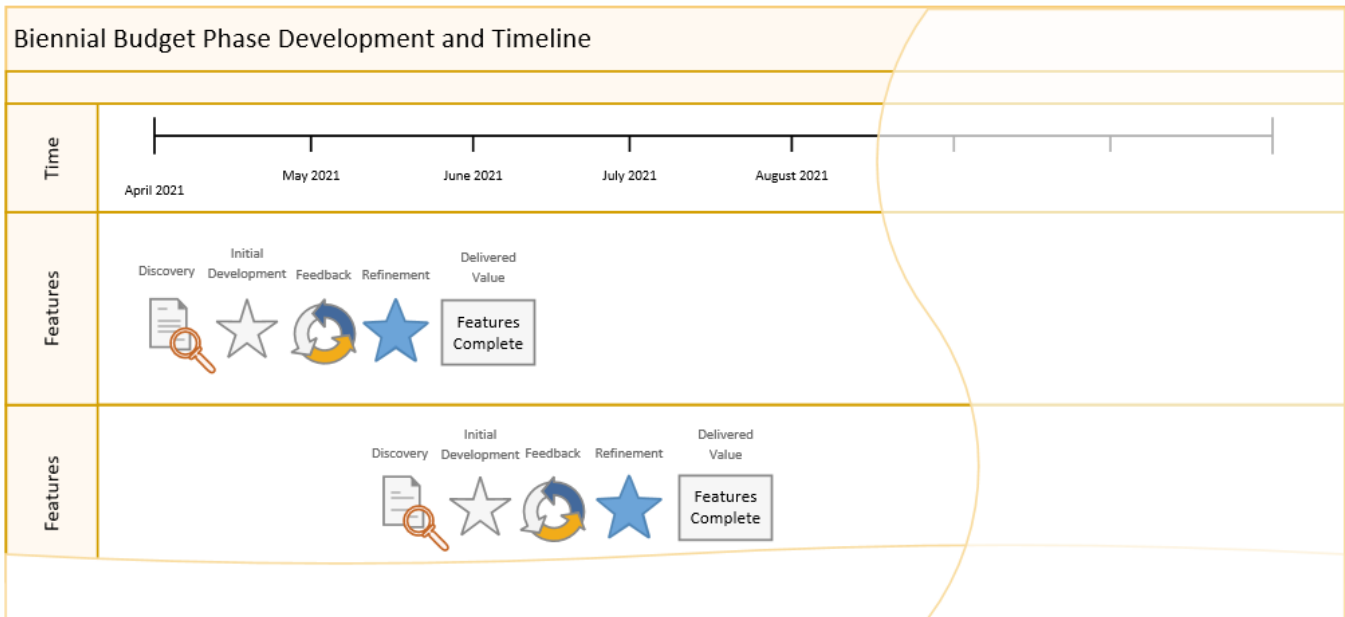


Figure 3: The illustration above shows two of many development cycles. Each set of features incrementally added value to the minimal viable product enough to support each budget phase.

The development team set out to create a relationship with the business group where ideas and discussions were professional and collaborative. Also, there was a collaborative environment where not only did the development team learn about the budgeting process and its fiscal peculiarities (or math), but the business group also learned about application development. The business group willingly adopted our iterative approach to gather requirements and develop the web application. Both teams learned from each other.

How did you do it?



Beginning in April 2021, the project teams (DET and SBO) started analysis and discovery. They reported they would develop a budget system in phases that align with the statutory dates of the budget process and with the expectation that the initial phase of the budgeting process could begin in August of 2022. Due to the criticality of the State of Wisconsin budgeting office, a dedicated IT scrum team would analyze, design, build, test, and deliver the budgeting application free from supporting other IT projects.

By the first quarter of the project, the business units spoke eloquently to their end-users about the need to test the new application and provide feedback. This was especially important to the development team as numerous projects before not fully tested resulted in production support nightmares for both the development and the business team. By the halfway point in the project, the business group was leading the demo of new features for the upcoming phase and advising their end-users to test and provide reproduction steps if we discovered a problem. Both teams regularly gathered and discussed requirements, analyzing our minimum viable product, and providing excellent feedback for the enhancement. One of the many collaboration areas included rehearsal meetings, where we discussed upcoming demonstrations and solicited feedback from developers and analysts alike. This type of collaboration was key to the success of the project.

The team collaborated with our business partners, the budgeting experts, to better understand the needs of each end-user group. They had planning sessions where team analysts would discuss requirements and development stories and collaborate with the developers to produce a small-sized initial piece of development to demo to our budgeting experts. Our partners happily tested and provided feedback to optimize the feature to fit their needs, which the development team happily refined. The team also analyzed and reverse-engineered the legacy app to ensure all existing business rules were accounted for.

Impact:

What did the project make better?



At each phase, the business group and the development team collaborated on system design, resulting in impactful software-inspired business process innovations. In the previous system, it was uncovered during a demonstration of the legacy system that repetitive data entry was needed. A string of user-entered data, which often has the same four out of five repeated entries had the fifth value as the only variant. The development team suggested a "clone" feature allowing those repetitive values to copy to the subsequent data entry record if the clone feature is selected. This feature saved agency and State Budget Office staff numerous hours of data entry labor and reduced errors. This feature alone resulted in a member of the business group exclaiming, "You're a hero. This is fabulous! You have no idea how happy this is going to make everyone!"

During the Governor's Recommendation phase, a report for each agency needed to combine hundreds of narrative Word documents and tables summarizing the quantitative financial data in the system for the agency. This report serves as the agency's portion of the Governor's Budget Book summarised the Governor's state budget proposal. The development team produced a single report for each agency with minimal need for end-user ad-hoc manipulation or editing. Staff previously would spend hours refining the formatting of system-generated reports to produce the budget book document.

As the project progressed to the development of the Legislative phase, business demonstrations revealed the business often must manually reverse entries made during the Governor's Recommendation phase. These entries were often time-consuming and required multiple lines of entries per item. The development team suggested a

design feature to include a "reversal" button allowing the reversal of items at the appropriation level instead of requiring line-by-line entries. This innovation led to numerous hours saved for the business.

The development and business teams also collaborated on report writing, ensuring the business had the capability to design new reports without heavy support from the development team. This allowed the business to innovate and think of new and helpful reports generated by the software, which previously were manual or Excel-based tabulations. This level of collaboration has led to knowledge transfer for report writing to ensure innovations are likely to occur beyond the build phase of this project. Already the business has written a report for a task that previously took two analysts a day each to complete and now takes only one analyst less than a day.

Provisioning new users for the Budget application was a time-consuming task and required a large amount of administration and configuration across several systems. Users obtained access slowly and unreliably to the resources needed to perform their jobs. IT security staff needed to access and configure several identity utilities and identity repositories when onboarding a new user while adapting to Agency specific security policies. Utilizing an Active Directory on the cloud, we enabled new scenarios and easy-to-use capabilities for Agency employees and partners to reduce the time to onboard and modify user access throughout the budget lifecycle.

The development team was able to create an environment of collaboration and trust. During the first few months of analysis and requirements meetings, the development team was busy examining legacy data and transforming it from flat copies of phases and data to a more standardized way of collecting and reporting data. This was behind-the-scenes, back-end work and not easily seen or understood by our business partners. Our development team stood up DevOps practices which allowed us to scale out feature delivery in the coming months, which was instrumental in establishing trust and cadence in the budget phase deliverables. After the initial phase, we worked on building up a healthy backlog which benefited the developers by having a prioritized list to work from and benefited the Business Analyst and Solution Architect when planning future sprints.

In conclusion, a barely functioning budget system has ultimately persuaded business and IT leaders to commission an entirely new budgeting application. While there may have been some nervousness due to the criticality of the tool, along with the statutory dates for phased implementation, there was also a sense of opportunity to improve business processes and technologies and offer our development team a chance to learn new tools and code. Ultimately, the project team was able to incrementally deliver a modern software application to improve the biennial budget process for this cycle and many more in the future. Business and IT leaders understood the value and staff eagerly embraced the advancement of an innovative approach to developing the budget application.

What now?



To tie into the State of Wisconsin's strategic IT plan, we took a proactive approach with this project and explored the best solutions, priorities, and business process improvement practices, which ultimately achieved greater productivity and efficiency enterprise wide. The collaboration between the DET development team and the State Budget Office was transformational. This partnership was so effective that we are looking forward to replicating this process in future projects.

As part of the state's ongoing focus, efforts will continue to address appropriate protection, response, education, compliance, engagement, and transformation practices to secure state systems and data while mitigating risk. The team has already started to focus on Phase 2 - post-budget activity and decommissioning the old (now isolated) system.

Project Facts:

- 62 state agencies, universities, the governor's office, and the state legislature
- Account for over 100 billion taxpayer dollars
- 10,000+ code files
- 800,000+ lines of code
- 900+ test cases
- The processing and creation of the Budget Book which took more than 5 hours now takes 20 minutes
- Large agency reports that took more than 15 minutes to process now take less than 5 seconds
- Budget phase transition, which took 4-5 hours of IT support now takes 5 seconds without IT support
- 50+ sprints
- 2-year project
- 100's of hours saved in the creation and administration of the budget

How do you know?

The Division of Enterprise Technology developed awareness and received feedback from the Budgeting Team:

- Wonderful job on the new system. It was so easy to use and a huge improvement.
- I really like the new system and am so glad the page numbering worked! I usually have the most difficulty with formatting and page numbering.
- Loved the new system compared to the old one. Great job developing it!
- I loved the new system. Overall, it was intuitive, easy to use and simple to navigate. A gold star for this system.
- This was so much better. I could not believe how quickly those (reports) downloaded, we used to have to wait like 15 minutes for one.
- Impressed with how fast the budget books would generate and download.
- The new system is amazing. It worked so well that I could make last minute changes in a minute or two that would have been impossible to do in time with the old system because the old system was so unreasonably cumbersome. I really cannot say enough how good this system is.
- File maintenance is SO much better in this system, a million times better.
- This was such a breeze, a million times better than the old system.
- Overall, the system was very user friendly - a huge improvement.