TIBCO®

NASA Launches Integration to Land on Productivity Gains

Data democratization, cultural change, faster data access, accuracy, confidence

"When we presented the data we can provide, senior management said, 'Hey, this is a good thing.' That's how we impacted the culture, because people at a higher level said 'Let's use this technology, let's extend it, use it for external systems, so we can all communicate and be happy.'"

—Jim Matheson, Principal Software Engineer

CHALLENGE

"About 12 years ago, we used Excel spreadsheets, versions of Word docs, PDFs. There was a lot of duplicated effort and duplicated data, and an inability to trust data because of a lack of version control," says Jim Matheson, principal software engineer. "We had to do something to update source systems in real time, make accurate data accessible, and generate reports on-demand instead of using data that was a week old.

"Across the agency, space centers had various software applications, with no way to communicate, no way to share data. Our goal was to do what we've done, to use the TIBCO platform to integrate so there is a single point for accessing data from multiple systems.

SOLUTION

"NASA's decision was based on the Human Exploration and Operations Mission Directorate that specifies commercial off-the-shelf (COTS) software. After evaluating a few SOA tools, we decided on TIBCO because it was COTS, well supported, and recognized in the industry. We used TIBCO BusinessWorks™ 5 for years, and then needed to meet other requirements, maybe NASA's security needs, so we moved to TIBCO BusinessWorks 6.

"TIBCO Professional Services launched the integration platform and provided a very good source of education and knowledge on how to maintain it. They also taught people how to extend and scale it to where it is today.

DETAIL

83%

reduction in time to review projects

NASA

The National Aeronautics and Space Administration is an independent agency of the executive branch of the US government responsible for the civilian space program, as well as aeronautics and aerospace research. Thousands of people have been working for decades, trying to answer some basic questions. What's out there? How do we get there? What will we find? What can we learn there, or learn just by trying to get there, that will make life better here on Earth?

FAST FACTS

Founded: 1958
2018 missions planned: 40
2018 missions operating: 60
Scientists supported: >10,000
Partnerships: 12 federal agencies, 60 nations
FY2017 budget: $19.7 billion

BENEFITS

DATA DEMOCRATIZATION AND SUCCESSFUL CULTURAL CHANGE

"We improved workforce productivity by streamlining data aggregation. NASA is nothing if not data old and new—younger and older engineers, experienced and less experienced. Using the integration tool helps equalize that so a junior person can extract the data they need to answer questions. That in itself increases productivity.

"We set it up so people who don't want to change can still bring data forward—and that led to cultural change. People would say: 'Hey, this stuff really works.' 'It's really improved my process, my workflow.' 'I'm more productive.' 'I can go sleep at night because I don't have to read 700 pages to find 10 points of data.' When we presented the data we can provide, senior management said, 'Hey, this is a good thing.' That's how we impacted the culture, because people at a higher level said 'Let's use this technology, let's extend it, use it for external systems, so we can all communicate and be happy.'

FASTER DATA ACCESS, HUGE TIME SAVINGS

"The other thing is, now they can get data quickly. It does not take minutes, hours, days of research. Now, they can enter a couple of queries and extract the data they need, and if they have any doubts, they can get it verified quickly, instead of it taking a day or two.

FASTER REPORTING, GREATER ACCURACY, INCREASED CONFIDENCE

"Report requirements differ based on the mission. If it involves a human going into space, there are several iterations and redundancies. Imagine the level of sophistication, the requirements, risks, risk management, the whole gamut of product life cycle management that an engineer needs in order to build a rocket and send it up. They have to go through a ton of data, a ton of verifications, of reviews. It used to be manual. Now we have an application that uses the TIBCO platform to create real-time, visual, web-based reporting so engineers can see the actual documentation, verifications, waivers, everything that's related to a review. Instead of thumbing through a thousand pages, they can enter some keywords and find the specific paragraph they need. Instead of PowerPoint slides, they review online in real time. And not only is the web interface real time, it's fresh, real-time data. They can review in a week instead of six.

"We want to cut time, but we also want to be accurate so that when we do a review, it's signed off. We don't want things to fail; It's expensive. So the better our data, the more accessible, the more value it has, the more assurance that there's another level of security for feeling very comfortable about signing off and sending a project on its way.

FUTURE

"I want to do a bit of machine learning and AI so we could develop using a recommender system. It's very possible just extending TIBCO BusinessWorks to integrate, for example, in-memory databases, file systems, anything they want, or add Java classes and functionality to make it a better tool. The sky is the limit."

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