

# Bringing the High Costs of Doing Business in Space Down to Earth

Spaceflight Industries Propels Space Exploration Forward & Upward Using Jama

## SPACEFLIGHT

### Company Summary:

- 120 employees
- Satellite building, launching, and imaging
- Enabling a timely and affordable model for accessing space and observing the planet

Companies that need satellite services typically consider two options: Buy or build. The problem? Both incur tremendous expenses.

But when rocket ownership and maintenance isn't in the plan or the budget, there is Spaceflight Industries, an innovative provider of satellite design, rideshare launch offerings, global communications networking and a geospatial intelligence platform.

As Curt Blake, President of Spaceflight, explains, what Spaceflight does is work with launch vehicle providers to offer cubesats, microsats, telecommunications satellites (and everything in between) a choice of launch options via dedicated ride-share missions, or launches to sun-synchronous and geosynchronous transfer orbits, and other destinations.

The reason? Because astronomical costs deny or delay space access to 99 percent of the organizations that need it.

### Challenge:

- Verifying regulatory compliance
- Structuring requirements management, traceability and technical review
- Organizing product development processes from stakeholder requirements to validation

While Spaceflight's offering is uncommon, the challenges endemic to complex product development are not.

Spaceflight's previous method lacked a single, structured process for requirements change management, team reviews and traceability. Teams were collaborating, but weren't able to identify or understand the potential downstream impact of requirement and design changes without a time-consuming review of the baseline.

**“Review Center is my favorite feature. All the comments are right there, and there's an integrated 'show changes' feature so I can see exactly how my feedback was incorporated.”**

Spaceflight also needed the flexibility to marry traditional systems engineering practices with an agile approach to development. The goal: A solution that facilitates shorter design cycles and the rapid integration of new technologies, and which is easy to learn and maintain.

Industry best practices also needed to be accounted for, including launch vehicle and range safety regulatory requirements, FCC licensing, radiation environments, and many others.

Spaceflight sought a robust software system capable of documenting and understanding those drivers, and each set of program-specific requirements, across its fast-growing portfolio. Teams needed to leverage institutional knowledge from across the company and have clear sets of requirements at the beginning to help define the end.

**“Don't even bother trying to link up a requirements baseline without a tool like Jama—therein lies madness and futility.”**

### Solution:

- Clear requirements from start to completion
- End-to-end traceability for compliance and impact assessment
- Intuitive and self-contained review process

Spaceflight knew that it wanted the solution of choice to work seamlessly across the enterprise, from satellite design to launch system integration and constellation operations.



With many seasoned aerospace veterans involved in the selection of a solution, IBM's DOORS was a familiar option, but the team needed a more dynamic and collaborative solution. As luck would have it, a former SpaceX employee now at Spaceflight introduced the teams to Jama.

During an early conversation, Adam Wuerl, Spaceflight's Systems Engineering lead and satellite programs Chief Systems Engineer, quickly recognized similarities between what Jama offered and what Spaceflight needed and said, "I can see a direct, one-to-one correlation between each of the artifacts in the Integrated Systems framework; this is perfect."

## Results:

- Review times decreased from seemingly indefinite to merely days
- Auditing the upstream and downstream linkages identified gaps in requirements decomposition
- Dashboard widgets make reporting review status trivial and easy

What Spaceflight's teams didn't know they needed, but quickly came to appreciate the most, was Jama's intuitive Review Center feature.

Previously, teams would receive massive documents to review. Without knowing where to find the information they needed, or which aspects of the document they were expected to review, getting busy people to wade through dense documentation was a struggle.

Review Center—specifically, its ability to tailor reviews around customizable filters—clarified for stakeholders and engineers exactly what items they need to review and approve.

The ability to see upstream and downstream links also provided critical context to clarify a requirement's intent and provide evidence that it was flowed down and decomposed correctly.

**"We're in this for the long haul, with a goal of continuously iterating and improving our products. Having a structured way to capture and reuse foundational requirement and design artifacts will be huge."**

Traceability is a productivity boon to development as well. Jama's Trace View makes data navigation interactive. Teams can fix what's broken and ask: Is this covered or tested? Who wrote this? Why are we building this? When was this built? Spaceflight's teams can see and understand the impact of a choice they're considering before they decide. Then once a decision is made, the Suspect Links feature helps ensure potential impacts receive thorough assessment.

Spaceflight's teams came equipped with a high degree of in-house capability and knowledge, and they took to Jama quickly. Teams appreciate the ability to easily access requirements data and make and see connections to that data, and to trace changes and assess versions.

Some teams prefer Jama "out of the box" and others enjoy creating their own detailed relationship diagrams. What both groups like is that Jama has the tools to make either approach work. And whatever teams choose, Spaceflight uses Jama to connect them to live data to enable more efficient collaboration, accelerate decision-making and mitigate risks.

Doing business in space used to require incredible financial means. Today, thanks to the perceptive, problem-solving people behind Spaceflight, it's not only possible, it's increasingly economical.

Reaching the future, faster, has never been easier.

