



CUSTOMER STORY

Loram Rides the Fast Track to Software Safety with Jama Connect[®]

Railway maintenance services and equipment provider switches from Word and Excel to Jama Connect for greater efficiency in achieving standards compliance.

- Founded in 1954 as Loram Maintenance of Way (parent founded in 1898)
- Headquartered in Hamel, Minnesota
- Develops railway track maintenance, inspection services, and infrastructure optimization services and equipment
- Focused on developing solutions that comply with industry standards and customer needs

Loram is a leading supplier of track maintenance, inspection services, and infrastructure optimization services and equipment in North America and around the globe. Since 1954 under the name Loram Maintenance of Way, Inc., Loram has provided the most advanced, productive, and innovative railroad maintenance services and equipment with exceptionally high standards of quality and performance.

Customer Story Overview

Safety is at the center of everything that Loram does. Their customers depend on them for maintenance solutions that deliver the reliability, speed, and performance needed to protect the safety of train passengers and equipment. Before Loram can bring their railway solutions to market, they must first demonstrate that their maintenance equipment which includes software integrated with electronics is developed, deployed, and maintained in compliance with the applicable functional safety standards.

For Loram's software development team, the key to staying on track is following EN 50128 issued by the European Committee for Electrotechnical Standardization (CENELEC) which specifies the process and technical requirements for developing and testing of software for safety critical electronic systems in railway applications. EN 50128 is applicable in the UK, Europe, and Australia and its principles have been adopted across the board at Loram. In practice, it requires a structured, robust development process to reduce systematic failures and demonstrate the required Safety Integrity Level has been achieved.

CHALLENGES

- Wasted time due to reliance on manual processes using Word and Excel
- Failing to update documents when changes occurred resulted in costly errors
- Project delays due to addressing the many questions and findings from assessment bodies

EVALUATION

- Full traceability through automated relationships between all requirements and tests
- Ease of use to promote broader adoption
- Quick and easy configuration and deployment

OUTCOMES

- In use and producing results within six months
- Up to 24% reduction in software gate engineering hours
- Increased credibility and trust with assessment bodies

For each gate or phase of a software project, Loram is required to submit documentation to an independent assessment body responsible for analyzing whether they have fulfilled the requirements of the standard. The assessor has the ability and responsibility to ask questions and record findings if Loram is found to be non-compliant with EN 50128. While some findings may be informational in nature, any serious findings must be resolved to the assessment body's satisfaction before the Loram team can move on to the next gate which can be a time-consuming process.

Over the years, Loram has made improvements in their software development as their understanding of the EN 50128 standard grew. Challenges remained, however, as a result of Loram's reliance on disparate Word and Excel documents to track software requirements, testing, and manage change.

"The problem was that if we wanted to make a change, it was a very manual process when using Word and Excel to make sure there were no errors in documents covering any references downstream from the changed requirement or upstream in the top-level requirements," says Dan Henderson, Global Standards Manager at Loram Maintenance of Way, Inc. who managed the evaluation and implementation of Jama Connect®.

At one point, a member of the team was almost 100% dedicated to impact analysis to ensure that the waterfall of changes was fully accounted for.

Despite the team's efforts, projects tended to have a plethora of questions and findings from the assessment body that required staff attention and engineering hours. Quite a few of the findings from the software assessor related to the lack of a systematic process for updating requirements documents impacted by changes. The primary consequence of having so many findings was a longer duration of gates, which extended the duration of the project. As a result, it could take up to a year to close a particular project gate.



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MANAGER AT LORAM

Loram identified several parameters for evaluating and selecting a requirements management and traceability solution.

First, Loram needed a solution that would help them comply with the EN 50128 standards more efficiently by ensuring things like automated bidirectional traceability and proper test coverage.

Second, they needed a solution that could be implemented and adopted quickly.

“How long it would take to get us up and productive was one of my key parameters. I needed to be able to use this solution quickly if I was going to use it because we had projects in the pipeline,” says Henderson.

Having a solution that would be easy to use for the team was important for adoption. “Word and Excel are pretty universal pieces of software that everyone knows. Looking for a new solution was an uphill push because engineers can be a little bit resistant to change,” says Henderson.

To accelerate their discovery, Loram asked assessment bodies and consultants what software they have seen and what software they trust. Most were familiar with IBM® DOORS® and warned that while requirements management solutions are good, they can be expensive and take a fairly long time to implement. Through Google searches for requirements management and EN 50128, Loram identified two additional solutions to add to their evaluation list — Jama Connect and Siemens Polarion®.

The next step was lining up discussions and demos with representatives at the different organizations to get a feel for the software.

A cursory look at Polarion was enough to convince Loram that the software was too niche to warrant further consideration.

An IBM DOORS Next demo showed software was powerful but felt clunky. Loram’s communications with IBM and the consultant assigned to sell and implement DOORS Next made the Loram team feel like they were too small a fish for the consultant to be the partner that they needed.



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EVALUATION (CON'T)

A Jama Connect cloud demo followed by a 30-day trial showed software with a modern and user-friendly interface. Loram's experience dealing directly with the team at Jama Software® convinced them that Jama Software would be the kind of partner they needed.

“Before jumping into the software, the Jama Software consultant did something very useful by focusing our thoughts on what success would look by asking ourselves ‘What are our problems? What are we trying to fix?’” says Henderson. In addition, hearing that other organizations already use Jama Connect to comply with EN 50128 provided further validation that this was the right solution.

“In the 30-day trial period, we started putting together a bit of a sample project which felt promising,” says Henderson. “The user interface felt easy to use, to manipulate, and do what we needed to do with it.”



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Loram succeeded in quickly configuring and implementing their Jama Connect cloud software for EN 51028 compliance, as well as achieving broad adoption among team members. Within six months, Loram was fully committed to — and in production with — Jama Connect as the sole source of truth for their requirements. After one year, Loram’s software development team is fully onboard with Jama Connect for managing all software involved in performing safety functions. On a day-to-day basis, a core group of six to seven team members are actively using Jama Connect, with another 15 people who are going in as needed for reviews and work visibility. As a SaaS offering, Jama Connect makes it equally easy for team members based in the United States and Brazil to use the solution effectively.

Loram’s use of Jama Connect to manage their software development cycle has reduced gate duration and software engineering hours by reducing the number of questions and findings from assessment bodies. A comparison of a software project currently managed with Jama Connect with an older project managed with Excel and Word reveals an impressive reduction of up to 24% in engineering hours directly attributable to the use of Jama Connect.

That quantifiable achievement is due to fewer mistakes and the increased credibility and trust with assessment bodies that Loram now enjoys with Jama Connect.

“The assessment body relationship is a lot about establishing trust, that you’re competent, and that your processes are robust,” says Henderson. “Even though it’s hard to measure by itself, that trust is very tangible now that we use Jama Connect and the trust has increased.”

Jama Connect’s **Live Traceability™** capability feature enables any user at any time to see the most up-to-date and complete upstream and downstream information for any requirement. In addition to being the key to complying with product safety standards, Live Traceability improves productivity and accelerates time to market by reducing the risk of product delays, cost overruns, defects, rework, and recalls.

For Loram, the use of Jama Connect has meant improved end-to-end traceability, a simplified path to prove compliance, and better reuse and version control in their software development cycles. It has helped Loram adopt a more modern approach when thinking about requirements management and traceability.





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Loram has traveled a long distance in their understanding of requirements management as they replaced their old manual process involving Word and Excel documents. Jama Software continues to provide expertise and guidance to keep the Loram team on track.

“A key aspect in choosing Jama Connect has been working with a Jama Software consultant,” says Henderson. “When we come up with an issue that is frustrating, our consultant will help retrain us on how requirements management works by pointing out the need to rethink item-based rather than document-based.”

Jama Software’s customizable **Success Programs** offer onboarding and launch help ranging from self-service tutorials to bespoke private sessions that ensure optimal adoption and use of Jama Connect. Expert in-house consulting and training balance industry best practices with how a customer plans, builds, and tests products.

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Jama Software® is focused on maximizing innovation success in multidisciplinary engineering organizations. Numerous firsts for humanity in fields such as fuel cells, electrification, space, software-defined vehicles, surgical robotics, and more all rely on Jama Connect® requirements management software to minimize the risk of defects, rework, cost overruns, and recalls. Using Jama Connect, engineering organizations can now intelligently manage the development process by leveraging Live Traceability™ across best-of-breed tools to measurably improve outcomes. Our rapidly growing customer base spans the automotive, medical device, life sciences, semiconductor, aerospace & defense, industrial manufacturing, consumer electronics, financial services, and insurance industries. To learn more, visit us at jamasoftware.com.