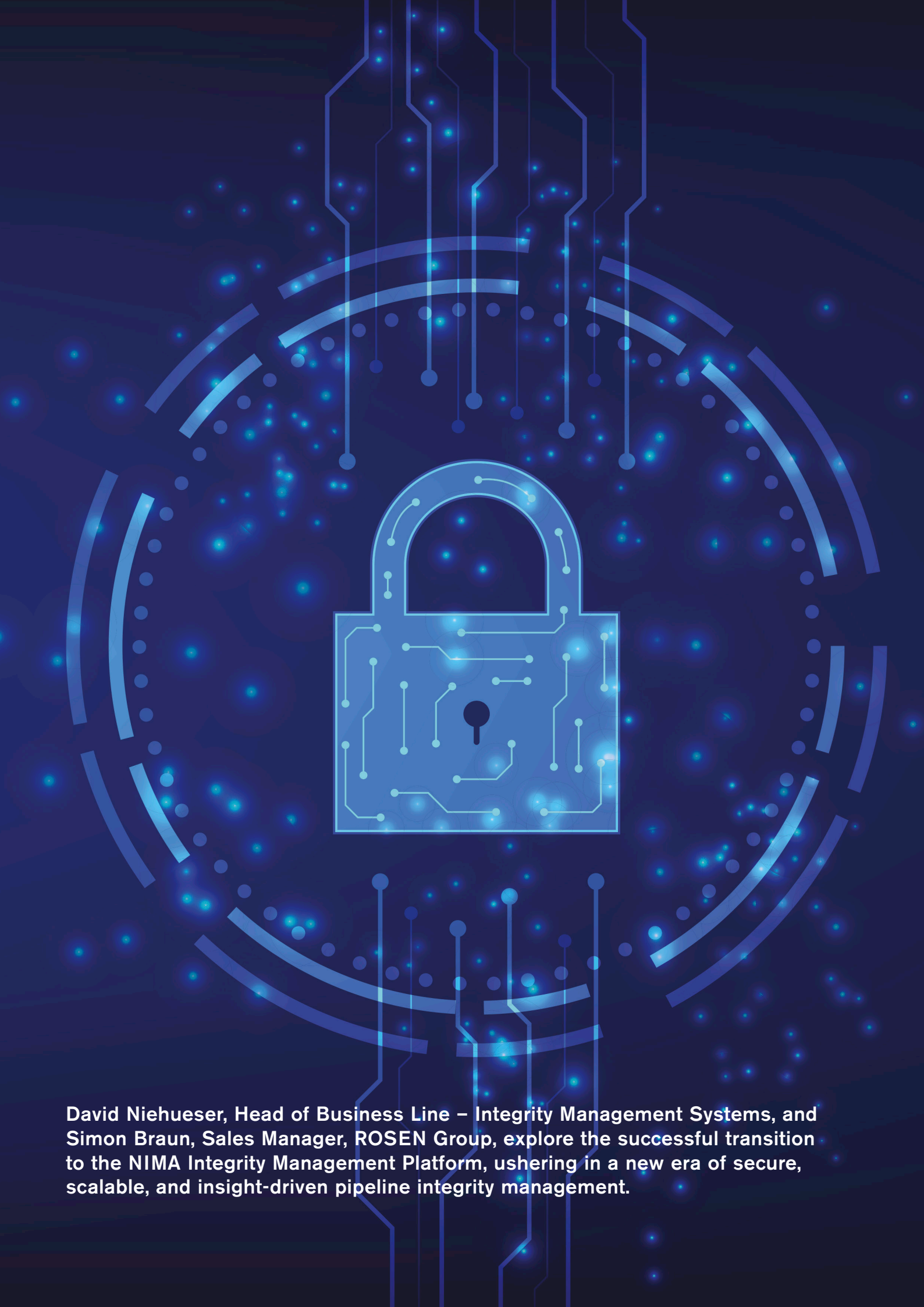

**David Niehueser, Head of Business Line – Integrity Management Systems, and Simon Braun, Sales Manager, ROSEN Group, explore the successful transition to the NIMA Integrity Management Platform, ushering in a new era of secure, scalable, and insight-driven pipeline integrity management.**

# SECURING THE FUTURE OF PIPELINE INTEGRITY

In the ever-evolving landscape of pipeline integrity management, digital transformation is no longer a luxury – but a necessity. For one major gas transmission operator in Oceania, the end-of-life of a long-standing software system presented both a challenge and an opportunity: modernising its asset integrity management approach while ensuring the highest data security and operational efficiency standards.

This article explores how the operator, in collaboration with ROSEN, successfully transitioned to the NIMA Integrity Management Platform – an ISO/IEC 27001:2022-certified solution – ushering in a new era of secure, scalable, and insight-driven pipeline integrity management.

## The challenge: aging software in a data-intensive environment

For over a decade, the operator relied on a legacy software system to manage the integrity of its extensive gas transmission network. As the software approached the end of its lifecycle, the operator faced a critical decision: how to continue managing a growing volume of pipeline data and integrity activities without compromising on compliance, safety, or efficiency, especially in the face of limited internal resources and staffing constraints.

Key requirements included:

- A centralised, accessible repository for pipeline data.
- Compliance with international standards and regulations.
- Enhanced decision-making capabilities through advanced analytics.
- A secure, scalable, and future-proof digital asset integrity management platform.
- Expert support enabling effective operations despite limited staffing.

## The solution

ROSEN answered the call with a comprehensive solution: the NIMA Integrity Management Platform, which is deployed as a Software as a Service (SaaS) within the operator's dedicated environment. Crucially, this environment is hosted on ROSEN's ISO/IEC 27001:2022-certified IT infrastructure, ensuring that data security and information governance are embedded at the core of the solution.

## Why ISO 27001 matters

In today's hyper-connected world, where organisations rely heavily on digital systems, safeguarding sensitive information has become a mission-critical, strategic priority. Cyber threats are growing in frequency, sophistication, and impact, ranging from data breaches and ransomware attacks to insider threats and system vulnerabilities. In this environment, information security is not just an IT concern but a critical business imperative. Organisations must not only protect sensitive data but also demonstrate accountability and resilience while proactively managing related evolving risks.

ISO/IEC 27001:2022 is the globally recognised standard for information security management systems (ISMS). Certification to this standard demonstrates that an organisation has implemented a systematic approach to managing sensitive information, ensuring its confidentiality, integrity, and availability. The standard embeds a cycle of continuous (re-)evaluation and improvement, guaranteeing that security practices evolve in response to emerging threats, technological changes, and organisational growth.

For pipeline operators, where data accuracy and security are paramount, an ISO/IEC 27001:2022-certified solution affirms:

- Risk mitigation against cyber threats and data breaches: a structured framework for identifying vulnerabilities, implementing protective measures, and minimising the likelihood and impact of security incidents across digital infrastructure.
- Regulatory compliance with industry and governmental standards: a documented and auditable approach supporting national and international regulatory requirements, e.g. data protection, minimising legal exposure, and supporting long-term compliance sustainability.
- Operational resilience through structured information governance: clearly defined policies, roles, and procedures that support business continuity, enable rapid incident response, and affirm the consistent protection of critical data assets.
- Stakeholder confidence in the integrity of digital systems and services: a visible demonstration of commitment to information security, enhancing trust among regulators, partners, investors, and customers in the reliability and maturity of digital operations.

## Independent security validation

In addition to leveraging the infrastructure, the operator also initiated an external penetration test conducted by an independent auditor. This proactive measure was aimed at validating the robustness of the software's security posture. The penetration test objectively assessed the system's defenses against potential cyber threats and confirmed the platform's resilience and compliance with industry best practices. This additional layer of scrutiny reinforced the operator's confidence in the software platform's ability to safeguard critical pipeline data.

## From legacy to leading-edge: a seamless transition

The transition to the NIMA Integrity Management Platform was designed to be as seamless as it was transformative. ROSEN's services ensured that the migration from the legacy system was smooth, secure, and comprehensive.

Key features of the transition:

- Web-based access: the SaaS model allows secure, browser-based access to the platform from any internet-connected device, enabling field teams, integrity engineers, and decision-makers to collaborate effectively, regardless of their work location.


Figure 1. Pipeline Anomaly Assessment Workflow.

- Integrated integrity management workflows: replacing siloed software modules with fully auditable and transparent workflows – streamlining post-in-line inspection (ILI) integrity management processes and facilitating traceability, accountability, and regulatory alignment.
- Interactive dashboards: dynamic, real-time visualisations that provide clear, actionable insights into key integrity metrics related to fitness-for-service (FFS) evaluations, corrosion growth assessments (CGA), and other critical parameters – empowering data-driven decision-making and enhancing operational oversight.
- Data migration: seamless integration of over two decades of in-line inspection (ILI) and cathodic protection (CP) data into a centralised geodatabase structured according to the Esri® Utility and Pipeline Data Model (UPDM) – facilitating historical trend analysis and enhanced data governance.
- User enablement: a comprehensive hands-on training programme and continuous expert guidance to ensure rapid adoption and effective use of the platform to leverage its full capabilities confidently.
- Agile support: ongoing post-implementation services delivered through an agile, iterative framework – enabling continuous platform enhancement, swift adaptation to changing operational needs, and seamless, on-demand data integration and alignment based on both current and future requirements.

## The benefits: from data to decisions

The operator's transition, underpinned by ISO 27001-certified infrastructure, delivers many benefits that extend far beyond software functionality.

### Seamless implementation and rapid adoption

The SaaS deployment model enabled quick setup, allowing users to gain immediate access to the software platform without needing complex on-premise installations or extended IT infrastructure. Its intuitive, user-friendly interface and integration into daily workflows minimised disruption to operations and accelerated user adoption.

### Advanced integrity insights

Engineers now have access to a suite of integrity management workflows that could be extended to cover the entire asset integrity management cycle, from risk assessment to anomaly management and repair planning. The workflows are designed to provide deep, actionable insights into pipeline conditions by transforming large-scale data into actionable intelligence. This holistic understanding of asset conditions empowers operators' engineers to make informed, data-driven decisions to enhance safety and proactively optimise maintenance strategies for long-term asset reliability. The decision-making is heavily supported and accelerated by the SaaS approach, enabling secure, real-time data sharing and supporting efficient, collaborative workflows across distributed teams and organisational entities.

### Centralised, reliable data

By consolidating historical and future datasets into a single geodatabase, the operator now benefits from a reliable and consistent 'single source of truth'. This centralised data repository eliminates data silos, reduces duplication, and ensures that all stakeholders are working with the most current and accurate information available. The result is a fully traceable, verifiable, and complete record of asset data – a critical foundation for conducting accurate integrity assessments and demonstrating compliance with increasingly stringent regulatory requirements.

### Scalable and cost-efficient data management

ROSEN's data specialists manage and migrate critical asset data using advanced Geographic Information System (GIS) tools and industry-standard data models, guaranteeing high levels of data accuracy, consistency, and spatial integrity. The flexible, as-needed service model allows for precise and predictable budget planning, allowing operators to order services according to dynamic, operational demands. At the same time, it removes the need to invest in building, training, and maintaining a large, specialised in-house data team, reducing operational complexity and unnecessary overhead while ensuring access to expert-level task execution.

### Ongoing support and long-term partnership

The SaaS subscription model includes continuous maintenance services, including but not limited to proactive system updates and local helpdesk support for timely issue resolution. In addition, the operator benefits from direct, on-demand access to ROSEN's integrity and data management professionals, ensuring expert guidance is always within reach. The operator's users play an active role in this process, providing continuous feedback and collaborating closely with the relevant subject-matter experts. This long-term engagement model fosters a genuine, collaborative partnership that ensures the software platform evolves with the operator's needs and supports sustained operational excellence.

## A model for the industry

This case study exemplifies how pipeline operators can future-proof their integrity management systems while maintaining the highest data security standards. By choosing the implemented solution built on ISO/IEC 27001:2022-certified infrastructure, the operator not only safeguarded its data but also laid the foundation for a more agile, transparent, and efficient integrity management process.

As the industry continues to grapple with the combined challenges of aging asset infrastructure, expanding data volumes, increasing regulatory scrutiny, and the need for digital transformation, this project offers a practical blueprint for success: combine cutting-edge technology with certified security practices and expert support to unlock the full potential of pipeline data.

## Conclusion

The transition to the NIMA Integrity Management Platform marks a significant milestone in the operator's digital journey. With ISO/IEC 27001:2022 certification as a cornerstone, the solution delivers compliance and security and the agility, insight, and scalability needed to thrive in a data-driven future.

For pipeline operators worldwide, the message is clear: secure, smart, and scalable integrity management is not just possible – it is essential.