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From Data to Action: Leveraging Analytics in Asset Management

Turn your data into a decision-making tool that optimises performance, justifies investment, and unlocks long-term value

Introduction & Contents

Is your organisation sitting on a wealth of asset data but struggling to turn it into meaningful action? Without the right strategies, data can remain underused – leading to missed opportunities to improve efficiency, extend asset life, and reduce risk.

In this guide, we explore how to harness your asset management system to apply data analytics effectively. Learn how raw data can be transformed into actionable insights that drive smarter decisions, enhance asset performance, and lower costs.

The data analytics process and why it matters

Good asset management depends on good data. Yet with diverse assets at different lifecycle stages and the increased use of IoT devices, the challenge isn't collecting data – it's making sense of it.

Almost every local government or asset-intensive organisation collects data. But is it the right data? Do you know where the gaps are in your data? Or how to turn it into meaningful action?

Getting data analytics right means taking a structured approach to extract insights, identify trends, and support decision-making. In asset management, this means gaining visibility into asset condition, performance, usage, and maintenance needs for better preventative maintenance, smarter capital planning, and greater transparency in financial decision-making.

Let's look at the different stages of data analytics and the steps to turning your data into insights and action.

The two stages of data analytics

Analytics happens in two stages: before analysis (preparing your data) and after analysis (turning results into action).

Before analysis: Preparing the data

1. **Define the problem** – Start by being clear about what you want to solve. It might be identifying roads for next year's maintenance. Or aligning asset investment plans with strategic goals like reducing costs, improving service, or complying with regulations. Without a clear problem statement, it's easy to go down a rabbit hole chasing irrelevant data.
2. **Collect the right data** – Gather both static data (e.g. material, age, installation date) and dynamic data (e.g. sensor readings, maintenance history, usage patterns) from multiple sources. Only collect data you'll actually use to answer the questions at hand.
3. **Prepare your dataset** – Clean, standardise, and align your data. This includes removing errors and duplicates, aligning formats, and filling missing values. A well-prepared dataset is the foundation for trustworthy analysis.
4. **Analyse the data** – You can use tools ranging from spreadsheets to advanced platforms like Brightly Confirm, Assetic, or Predictor.

After analysis: Turning insights into action

1. **Interpret results** – Translate technical findings into clear insights. This might include identifying risks, forecasting issues, or finding optimal renewal times. For example, you may identify that bridges in zone three will reach critical condition within 12 months.
2. **Communicate insights** – Tailor reporting for the audience: technical staff need detail, while executives and the public benefit from clear visuals like dashboards, charts, or maps.
3. **Act on findings** – Apply findings to capital planning, budget optimisation, and maintenance prioritisation. This is the point where data stops being data and starts being value.
4. **Monitor and improve –** Feed results back into the system. Track outcomes, refine your approach, and continuously improve data quality and decision-making.

Why regular analysis creates value

Analytics shouldn't be reserved for major projects or annual reviews. Regular, ongoing analysis turns asset management from reactive to proactive, and from guesswork to evidence.

- Predict failures before they happen
- Schedule maintenance to reduce downtime and extend asset life
- Detect anomalies, recurring faults or bottlenecks that drive up costs
- Optimise use of idle assets, improving ROI
- Replace gut-feel decisions with data-backed evidence
- Save money by avoiding over-maintenance
- Improve service quality by identifying performance gaps early
- Demonstrate compliance with ISO standards and regulatory mandates
- Model future scenarios to reduce risks and support sustainability goals
- Ensure environmental and service sustainability with long-term scenario models
- Enable continuous improvement by feeding outcomes back into the system.

The rise of real-time analytics

Real-time analytics has moved from being a niche technology to an essential business tool available to organisations of all sizes, driven by a massive growth in data streams and the need for more agile and responsive operations.

Real-time analytics processes information as it is generated, turning continuous data streams into instant insights. In asset management, this often means automating flows from IoT sensors or monitoring systems to provide immediate alerts.

With immediate insight into problems, or ones that may be simmering, decisions can be made on the spot. For example, anomalies detected by sensors can highlight potential failures before they occur, allowing preventive measures to be taken early.

This capability is particularly valuable in time-sensitive situations, such as severe weather events or unexpected asset failures, where fast responses can prevent costly disruptions. Real-time analytics is becoming increasingly important as Australia faces increasing natural disasters requiring immediate decisions, as well as the need for continuous adaptation measures to improve climate resilience.

With up-to-the-minute information, another benefit is that people, equipment, and materials can be allocated more effectively, ensuring they are deployed exactly where and when they are most needed. Continuous monitoring also helps optimise how assets are used, reducing idle time and improving performance. Taken together, these benefits translate into reduced downtime, lower operating costs, and longer asset life.

Using dashboards to view and interpret data

Many asset management systems include dashboards that can provide a live feed of your data, including real-time asset conditions and work orders, with the ability to export information for reporting or further analysis. For example, a manager can instantly see how many maintenance activities are outstanding for a particular staff member and take immediate action by assigning tasks or following up. By providing near real-time updates, dashboards give users full visibility of their own workload and that of their teams, without needing to navigate deep into the system.

One of the key advantages of using dashboards to view data is their configurability to show only the information each user needs. A works coordinator for water and sewer assets, for example, can configure a dashboard to display only water and sewage-related assets, work order costings, resource allocation, and outstanding tasks.

From a renewal planning perspective, dashboards can highlight assets with poor condition scores, allowing teams to prioritise interventions efficiently. Inspection results can feed directly into a dashboard, enabling rapid creation of work plans to address defects identified in the field.

For non-technical stakeholders, dashboards can translate complex analytics into simple, visual insights. By focusing on the impact rather than the method, visuals such as charts, heat maps, or condition indicators make it easier to communicate findings and justify decisions.

Detecting early warning signs of deterioration with data

Asset deterioration rarely happens without warning, and modern data analytics lets us catch it early. By bringing together multiple data sources into a single system, we can create a complete picture of each asset.

Data sources can include:

- Condition assessments from visual inspections
- Sensor data on vibration, moisture, and temperature
- Maintenance histories
- Usage statistics like traffic volumes or water flow
- Environmental factors, including weather or chemical exposure.

From this baseline, analytics helps define what "normal" performance looks like over time, tracking condition ratings, expected deterioration curves based on age, material, and use, and identifying deviations that could serve as early warning signs.

Techniques such as trend analysis can reveal accelerating decline – for instance, a bridge deteriorating 20% faster than expected. Anomaly detection from sensor data can highlight unusual vibrations or conditions, potentially indicating cracks or other faults. Meanwhile, regression models, deterioration curves, and risk scoring models can combine historical performance, environmental exposure, and asset age to prioritise high-risk assets before failure occurs.

The more time to act before failure, the lower the lifecycle costs and service disruptions, the greater the safety and sustainability, and the higher the flexibility for budget planning and decision-making.

Automating data and insights

Automation amplifies the impact of early detection. Defect reports and inquiries can be automatically analysed, triaged, and routed to the relevant task managers, reducing administrative overhead and minimising manual touchpoints.

Routine maintenance can be set up as "set-and-forget," automatically creating and sending tasks to contractors according to seasonal schedules, while dashboards and reporting provide near real-time visibility of progress. Mobile devices allow field personnel to update task status instantly, feeding back into the system for continuous monitoring and proactive management.

IoT sensors for instant condition readings

Integrating IoT sensors further enhances real-time asset management. Sensors and cameras provide instant condition-based insights, reducing the need for manual inspections and enabling operators to manage by exception. They can track performance, detect anomalies, and even monitor carbon impact, supporting sustainability goals.

When configured correctly, a sensor can trigger a fault in the asset management system, which then automatically prioritises the issue for maintenance or dispatches a technician with full visibility of the asset's status. Once resolved, the system verifies the sensor has returned to normal and resumes standard operations. This integration creates a single source of truth, combining automated monitoring, reporting, and intervention in one seamless workflow.

Integrating GIS and spatial analytics

GIS and spatial analytics are often underutilised in asset management, yet they have the potential to unlock powerful insights. At a basic level, every entity – assets, inspections, jobs, defects, and customer service requests – can be mapped with coordinates, providing a foundation for spatial analysis. Many organisations already integrate their asset management system with GIS, but the possibilities go far beyond simple mapping.

Hotspot mapping, for example, can reveal recurring problem areas. Some councils have even used this approach to track graffiti activity, enabling authorities to intervene more effectively.

In asset management, spatial data can be overlaid with additional information such as weather exposure, population density, CRM data, town plans, or historical defect and condition records to enhance predictive deterioration models and identify trends that might otherwise be missed. By combining multiple layers of data, organisations can transform isolated information into real, actionable insights.

Where GIS truly shines is in urgent response situations. Being able to see the location of teams and the tasks they are currently working on allows managers to deploy the nearest available personnel quickly, ensuring faster emergency response and safer outcomes.

Conclusion: From data to decisions, and decisions to value

With construction and maintenance costs rising, data analytics has become one of the most effective levers to stretch budgets further. It enables justifiable, transparent decisions that build community trust, such as showing why one road is prioritised for renewal over another during budget consultations. It drives lifecycle optimisation by informing long-term financial and asset plans. And it ensures the right treatment at the right time to deliver the same or better outcome at a fraction of the cost.

Data on its own doesn't improve services or save money; it's what you do with it that matters. By embedding analytics into everyday asset management, organisations can move from reactive fixes and gut-feel budget allocations to evidence-based decisions that stand up to scrutiny.

In a world of rising costs, increasing risks, and growing community expectations, data analytics has become an essential component of asset management. The organisations that get it right will be the ones that deliver safer, more sustainable, and more resilient services for their communities.

Let us help you get more from your data. **Contact us** to learn more

About Brightly Software

Brightly Software, a Siemens company, enables organisations to manage the entire lifecycle of their assets, facilities and infrastructure. As the global leader in intelligent asset management solutions for more than 25 years, Brightly's sophisticated cloud-based platform is expertly designed to improve capital planning through smarter, data-driven decision making, empower technicians to predict, prioritise and manage preventative maintenance activities, and support organisations to achieve sustainability, compliance and efficiency goals. Combined with award-winning training, legendary support and managed services, more than 12,000 clients worldwide depend on Brightly to optimise their teams, operations and strategic planning initiatives. For more information, visit brightlysoftware.com

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