Enterprise Asset Management

For DOTs

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What is Enterprise Asset Management?

Every organization has an asset management strategy, but most don't have an end-to-end approach. Due to strained budgets, lack of data, legacy systems, and workforce challenges, asset management is performed on an ad hoc basis without a strategic or systematic approach. As a result, assets may be neglected, poorly maintained, or managed on a reactive basis rather than proactively.

To turn things around, owners need to be able to track, manage, and analyze asset performance for the entire asset lifecycle. That is enterprise asset management. It's a formalized, systematic approach to managing the entire asset lifecycle using connected data and workflows.

Key benefits of enterprise asset management

These benefits...	Asset Preservation	Better Record-Keeping	Improved Engagement
Enable you to...	Identify the maintenance tasks and techniques that preserve the lifespan of assets.	Maintain accurate, up-to-date records as required by regulators an internal policies.	Generate real-time dashboards, maps, and interactive tools to communicate with stakeholders.
	Use asset intelligence to predict failures and intervene before they occur.	Empower teams to collaborate with shared data to solve complex challenges, like reducing waste and emissions.	Enable field teams to view asset data and report on their activities in a centralized platform.

Going from ad-hoc asset management to proactive asset management can be like turning around a massive ship. Staff at all levels — field technicians, administrators, supervisors, and directors — need to embrace these improvements. Here's a step-by-step process to help you make the transformation.

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1 Shift to a GIS-centric approach

Implementing an accurate, up-to-date asset repository is the first step to unleashing the potential of enterprise asset management. Using GIS as your system of record enables you to see which assets are in your portfolio and geocode your assets, features, and work activities.

The right asset management platform should allow you to:

- **Understand exactly where assets are located.**
- **Track historical work.**
- **Monitor associated costs.**
- **Establish and streamline workflows.**
- **Schedule preventative maintenance**
- **Create powerful data visualizations and map dashboards.**

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2 Document your process

In order to use technology effectively for enterprise asset management, your processes need to evolve. Start by establishing a firm understanding of where you currently are.

To ensure your documentation process is thorough, take the following steps:

- **Identify and define desired outcomes.**
- **Engage stakeholders to review and refine workflows.**
- **Train employees and encourage them to make technology their own.**
- **Establish a regular schedule for ongoing process review.**

3 Create a system of engagement

GIS-centric enterprise asset management is the stepping stone to better asset intelligence and engagement for everyone — internal teams, investors, partners, and constituents. To streamline information sharing, you can leverage BIM data from the construction phase to populate your GIS system.

- **Geolocate assets:** Tie work, labor, and costs to assets in geodatabase
- **Search by asset class, system, or service:** Enable field crews, financial stakeholders, and users to engage with the data
- **Visually understand asset data:** Use data to optimize strategic approaches

4 Refine your data

Collecting data is just the start. The next step is to refine your data for accuracy, relevance, and usefulness:

- **Assess data quality and relevance, how it's collected, and whether there are any information gaps.**
- **Transform your data into a useful format so it can be shared across technologies.**
- **Determine who will be responsible for maintaining data accuracy.**
- **Establish metrics and calculations for data modeling.**
- **Develop data visualizations to support transparency and decision-making.**

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5 Identify and prioritize risk

With your technology, processes, and data in alignment, it's time to put digital information to work to determine which assets are critical and why. Critical assets require a scoring methodology to identify how and why they might fail.

Use the following metrics to assess risk:

- **Probability of failure (POF) - Sourced from GIS attribute information, maintenance data, and failure histories**
- **Consequence of failure (COF) - Considers the financial, social, and environmental costs of failure, as well as impacts on users**
- **Business Risk exposure (BRE) - Combines POF and COF to understand overall risk**
- **Maintenance strategy effectiveness - Tracks work order activity to understand whether assets are under-maintained or over-maintained**

Periodically review your analysis and make adjustments to account for changes in the POF and COF.

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6 Refine your business process

Adopting a data-driven enterprise asset management strategy isn't set-it-and-forget-it. Each new work activity and lifecycle plan offers a new opportunity to enhance your operations.

To continually improve your approach, consider these four questions:

- **What workflows still need refinement?**
- **Can your budget be fine tuned?**
- **Should the size of your work crews increase, decrease, or stay the same?**
- **Should your levels of service be maintained, enhanced or reduced?**

7 Shift from reactive to proactive maintenance

With a combination of connected technologies, collaborative processes, and staff training, you can shift from reactive to proactive asset maintenance. That's what allows you to stretch your funds further and prevent unplanned downtime. And as you look to adopt innovative technologies like digital twins and artificial intelligence, you'll have the digital foundation to implement them effectively.

DOTs Can Use Real-time Data to Transform Transportation Construction Projects

According to the American Society of Civil Engineers, **40% of America's roadways are in poor or mediocre condition**. With a sprawling portfolio of assets and limited resources for managing them, DOTs need a strategic, data-driven approach to operations, maintenance, and decommissioning.

However, there are hurdles to effectively gathering, understanding, and acting on asset data.

Asset Management Challenges

- **Limited Budgets:** Tight budgets force you to choose between short-term wins and long-term projects.
- **Decentralized Data:** DOTs often rely on paper-based, decentralized asset information, making it difficult to use data to inform decision-making.
- **Compliance Complexities:** The FHWA requires state DOTs to develop a formal risk management plan and evaluate assets for resilience.

Beyond these challenges, there are also opportunities to make long-overdue improvements to the performance of critical assets.

Opportunities

- **Better Public Engagement:** Interactive, web-based tools enable you to share information with the public in new ways.
- **Preventive Maintenance:** Reduce the total cost of ownership and extend the lifespan of your assets with preventive maintenance.
- **Specialized Grants:** Grants like SMART and RAISE enable you to address issues like sustainability, equity, and asset connectivity.

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To take on challenges and opportunities,

DOTs need enterprise asset management

To modernize your assets, you need to modernize the way you operate. Enterprise asset management enables you to see the full picture of your portfolio and make smarter decisions about how you operate it.

Here's how:

- **Improve transparency and accountability around asset monitoring and maintenance.**
- **Reduce the total costs of ownership.**
- **Set the foundation for technologies like intelligent transportation systems (ITS) and digital twins.**

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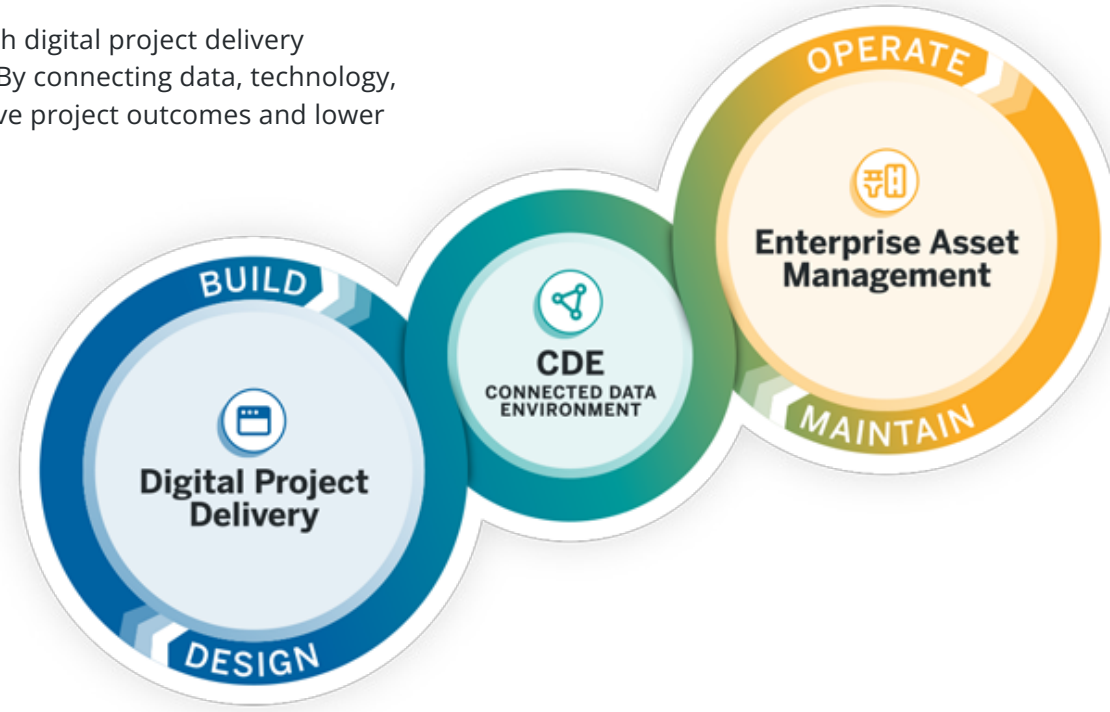
The bigger picture:

Asset Lifecycle Management

Enterprise asset management works best when you combine it with digital project delivery. Once you take steps to digitize the construction process and centralize information in a common data environment (CDE), you can begin to connect all phases of the asset lifecycle, from design and construction, through operations and maintenance. This strategic, holistic approach to infrastructure is known as asset lifecycle management.

Implementing enterprise asset management in conjunction with digital project delivery enables you to take advantage of asset lifecycle management. By connecting data, technology, and processes across all phases of the lifecycle, you can improve project outcomes and lower total asset costs.

Learn more about asset lifecycle management



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