









Introduction to Arcadis

Arcadis is wholly dedicated to providing digital technologies to organizations that manage infrastructure and physical assets enabling the best intervention and investment decisions possible.

Our mission is to address not only the current challenges organizations face – compliance, regulatory, sustainability, resilience – but the future challenges that will come. Infused with a wealth of rich domain of industry and consulting experience, Arcadis brings the breadth of Arcadis's global presence and expertise in the complete lifecycle of assets.

Unlock the power of data for a more sustainable, efficient, and resilient world.

Our solutions enable customers to maximize the value of their data using technology to improve asset performance and optimize decision-making.

Across the markets in which we operate, our goal is to solve our customer's problems, enabling them to better understand their asset lifecycle, and help improve reliability, performance, and safety of those assets

Benefits we deliver



MAINTAIN

Manage maintenance requirements centrally, enabling you to identify issues, schedule preventative and corrective maintenance, improve asset availability, and extend the service life of assets with complete traceability.



OPERATE

Optimize your day-to-day operations from a central source of truth about asset availability, updated in real time from a desktop or mobile device, and recover quickly to unplanned work, to improve operational resilience and meet customer demands.



AUTOMATE

Utilize digital business processes and automated workflows, reduce the need for paper-based systems, and monitor assets remotely, improving workforce efficiency and workforce productivity.



COMPLY

Meet regulatory and safety requirements by tracking and reporting on asset status, maintenance, and safety data to improve compliance and avoid costly penalties.



SAVE

Plan workforce priorities efficiently, visually schedule work, increase time on tools, predict failures, and reduce rework incidents to get the most value out of your most important assets – your people and time.

The Arcadis Enterprise Asset Management (EAM) solution

The Arcadis EAM solution reshapes the resilience of transportation networks to withstand unexpected change and pave the way for growth.

Our asset maintenance and operations support solution sits on top of IBM Maximo asset management suite, helping you enhance your operational performance and keeping you on track with your operations optimization and asset maintenance – no matter the challenge that lies ahead.

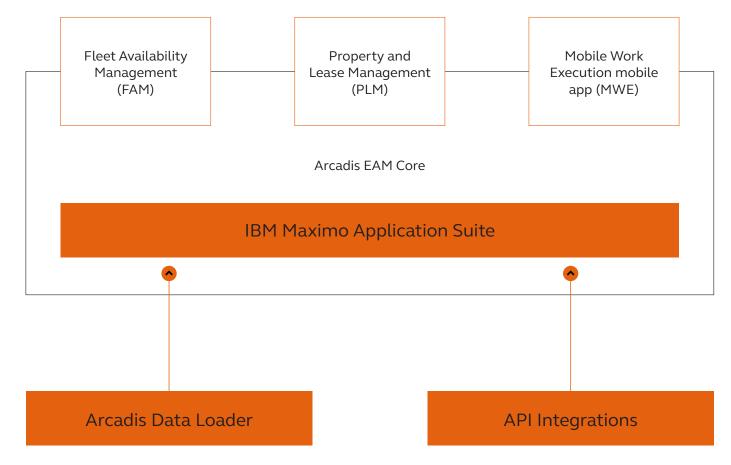
The solution comprises a set of out-ofthe-box desktop and mobile apps:

- Arcadis EAM Core (core functionality)
- Arcadis EAM Mobile Work Execution
- Arcadis EAM Fleet Availability Management
- Arcadis EAM Property
 & Lease Management

The Arcadis EAM solution optimizes outcomes for all operations and maintenance workforce by combining IBM's best-in-class automated intelligence and Arcadis extensive transport industry expertise into prebuilt yet tailored user actions and rules that augment existing capabilities. This way, the solution becomes the single source of truth for everyone who does the hard work on the ground daily.

Because it operates in-database, all the data is inherently explorable from day one of implementation, driving operational excellence on all facets of your transport network, from signals and stations to fleet depots, maintenance and general infrastructure. Greater uptime, longer lifespan, more flexibility for all your assets.







Who is the Arcadis EAM solution for

Our asset management software is ideal for the transportation organizations that rely on the output of their assets daily:

- Asset managers
- Engineers
- Operations managers
- Maintenance managers and technicians in the field
- · Fleet managers
- Facilities managers
- Safety supervisors
- · Inventory managers

All depend on software to roll out preventive maintenance, operate a smooth service for passengers and freight, and analyze asset performance and costs through all phases of the asset lifecycle, from acquisition to disposal.

Benefits of using the Arcadis EAM solution

- Improve vehicle performance and availability on a while lowering costs with out-of-the-box workflows that give real-time information
- Enhance passenger and freight experience by improving the reliability and availability of the transportation network
- Enable collaboration and coordination between teams in real time
- Optimize asset resilience and Health & Safety compliance with proactive maintenance
- Streamline asset information access to improve collaboration and data security
- Identify your total cost of operation and maintenance via an intuitive and simple UI
- Unify operations across silos and maintain business continuity with minimal disruption, whether you are working from an office or on the ground
- Adjust your operations and maintenance strategy based on asset performance, staff productivity, and costs impact

Why use the Arcadis EAM solution

Leveraging our decades of expertise in the industry, we are leading the way with our sector-specific business logic helping transportation organizations increase time-to-value, accelerate growth, and draw conclusions at a glance. You can find more than 200 predefined, out-of-the-box accelerators that include industry-standard automated workflows, standard hierarchies, data attributes, business processes and more.

Our EAM solution acts as the single source of truth for everyone who does the hard work in the field. This way, transport operations and maintenance teams can scale up and out faster than other transportation networks and make better decisions on the spot saving them time, lowering costs, and driving true value to passenger and freight operators under any circumstances.



How can Arcadis EAM help you

Arcadis EAM is the first step in your journey towards your fully realized digital transformation. Powered by IBM's award-winning Maximo asset management technology platform, Arcadis EAM expands the capabilities of what you can see and do with your system of choice and brings additional value with the out-of-the-box workflows that are based on transportation business logic and comply with international industry standards. Because of its versatility in picking and choosing your modules to fit your organizational needs and goals, Arcadis EAM is the only solution in the market that helps you scale up and out faster than your competition, improving timeto-value:

- Manage your day-to-day operations and maintenance of high-value assets easier
- Optimize asset performance at a glance
- Reduce costs and downtime come rain or shine.
- Increase reliability of your transport network to improve passenger and freight mobility

50%

of the UK rail fleet is now managed by our EAM solution 15%

Of electric road vehicles for Network Rail UK managed by our FAM solution

20%

maintenance costs reduced

15%

increased asset productivity

Industries we serve



Rail



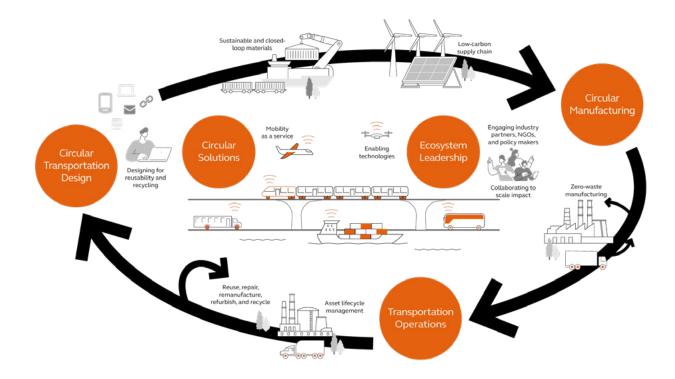
Aviation



Highway, Road, and Fleet



Ports



Sustainability

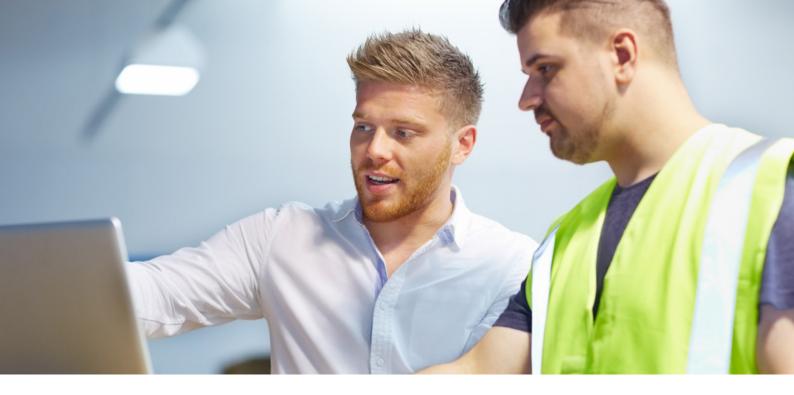
The transportation industry has a vital role to play in promoting sustainability and circular economy practices. Through its operations, the industry contributes significantly to greenhouse gas emissions, energy consumption, and waste generation. However, some forms of transport, eg trains, can have a relatively low carbon footprint compared to other transportation modes, making it an essential part of sustainable mobility. In a circular economy, products and services are intentionally designed to enable their reuse in either the biological or technical cycles. This approach aims to reduce waste and promote resource efficiency by reducing waste, promoting the reuse of materials, and extending asset life cycles.

Digital technologies can help drive the transition towards a circular economy. By facilitating more sustainable business practices, you don't only benefit the environment, but you support your organization to stay competitive and achieve long-term success. The Arcadis EAM solution allows customers to accelerate their journey towards Net-Zero and becoming part of that circular economy:

- The EAM Core can help you monitor and track your assets more efficiently, moving from a reactive to proactive planning and reducing energy during maintenance cycles;
- By using the maps functionality on the EAM Mobile
 Work Execution app on your phone, you can now
 plan your work order journeys more efficiently, saving
 energy, fuel, and lowering your CO2 emissions;
- The EAM Fleet Availability Management module can increase productivity gains in real time with its drag-anddrop functionality, helping the maintainers and shunters to lower operational carbon emissions and save energy.

A decrease in maintenance will also lead to fewer materials being used and stored, thereby eliminating the carbon emissions that would have resulted from the production and storage of surplus materials. Furthermore, using and procuring materials more efficiently will assist in their progress towards becoming more circular. There will also be a societal impact from the use of EAM. EAM will aid in maintaining business-as-usual services, and recovery from disruptions. This all culminates in a better served community and a more sustainable circular economy, extending the lifespan of all your assets, reducing waste and avoiding the unnecessary disposal of still functional equipment to real, sustainable, tangible benefits for utility organizations.



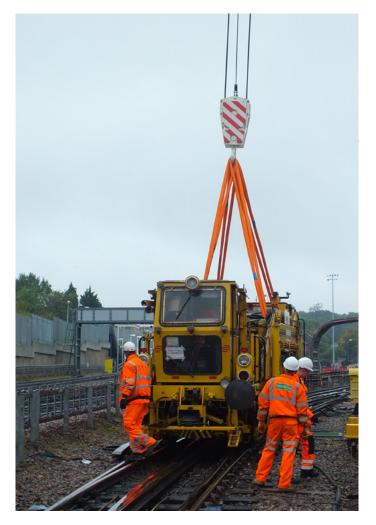


Arcadis Professional Services

Developing your vision into growth

With a combined 100+ years of asset management methods expertise, asset management software systems implementation experience, ISO 55001 best practices, engineering design and inspection capabilities, not only do we understand our client's business operations, our transportation subject matter experts (SMEs) have been on front lines of railroad asset management, maintenance, and engineering for decades.

The Arcadis Solutions team is positioned to support clients on every step of the asset management transformation journey. We encourage clients to think of EAM implementation as a holistic program. We have developed a set of repeatable, modular, Discovery processes where we interact directly with our client's primary business areas (engineering, mechanical, signals, estate management) to identify the key asset classes they want to focus on, understand current processes, data sources and help them to define their requirements and priorities covering financial planning, work and maintenance scheduling, fleet availability, and increased operational efficiencies.



Our Services offerings include:

Asset Ma	nagement
Solution	Recovery

Assess an existing asset management solution implementation and provide technical, security, user/license, reporting, system architecture, integration, and usage assessments followed by recommendations to get the EAM program back on track.

Maximo Application Suite (MAS8) Transition Support

Assess an existing IBM Maximo implementation, investigate current customizations and configurations, solution hosting, AppPoint licensing, access to new functionality through MAS licenses, and document/advise on roadmap to upgrade the organization to MAS8.

Digital Diagnostics

We complete a baseline assessment of the organization's current asset management maturity, broken down by asset group, with a gap assessment against ISO55001 best practices and a ranking of where to focus efforts for the greatest improvements.

Business Operations / Target Operating Model

Building on the Digital Diagnostic, we document the organizations strategic goals and quickest wins, assess how best to align business processes and systems to achieve those goals, and deliver a Target Operating Model (people, process, tools and reporting) required to achieve those goals.

Technical, Architecture & Data Diagnostics

Based on the goals and compliance requirements of the organization, we assess the current asset management systems (paper based, spreadsheets, and software), integrations between systems, current data (completeness, sources, quality, and structure), solution hosting and system integrity to meet documented goals.

Business Process Diagnostics

An "As Is" vs "To Be" analysis of specific processes identified in the digital diagnostic, TOM, or identified by the client to document one or more current business processes, compare them to global best practices/standards, and provide a roadmap of changes the organization can make to reach their "To Be" goals.

Digital Twin Design

Design and document the data attributes and standards required to transform digital asset designs, building information models, and linear models into a digital twin of the asset in the EAM solution. Change Management - include messaging on making staff more effective/efficient, not redundant. Document the change management required for individual functions, multiple departments, or the entire organization that are required to adopt and utilize an EAM solution and become an asset management led organization.

Arcadis EAM Core

Asset management done better

Arcadis's EAM Core solution is a value-add set of out-of-the-box, industry-tailored processes, modules, and functionality designed to increase the value you get from IBM Maximo. The solution sits on top of IBM Maximo and is powered by the proven IBM technology stack in combination with the Arcadis business logic and out-of-the-box transportation specific workflows.

Using the Arcadis value-add solution enhances the day-today operations of your assets, from signals and stations to fleet depots, maintenance and general infrastructure, by increasing interoperability no matter the location of the workforce. This results in improving productivity, efficiency, safety compliance, and profitability of your assets to accelerate growth.

EAM Core components

The solution comprises the below components:

EAM Core	The bundle of functionality and automation that drives operational excellence for transport organizations that operate and maintain transport fleet and infrastructure, through the maintenance of physical assets by managing asset data and workflows.
EAM Mobile Work Execution	A mobile app that streamlines field maintenance with real-time data updates, multi-user connectivity and a simplified user interface to efficiently complete even the most complex jobs.
EAM Fleet Availability Management	Module that helps with visually managing fleet status in depots and yards, unit composition and positioning and inbuilt controls for safe return of assets back into service, real time, from a single UI.
EAM Property and Lease Management	Module that helps with managing property & buildings, commercial lease agreements, payments, and vacancy data to yield more out of your buildings' investments.

The EAM Core solution was designed with one thing in mind: for Arcadis to do all the hard work so our customers won't have to. We standardized industry-led business logic in order to implement it in a repeatable way, saving time, resources, and budget for all our customers.

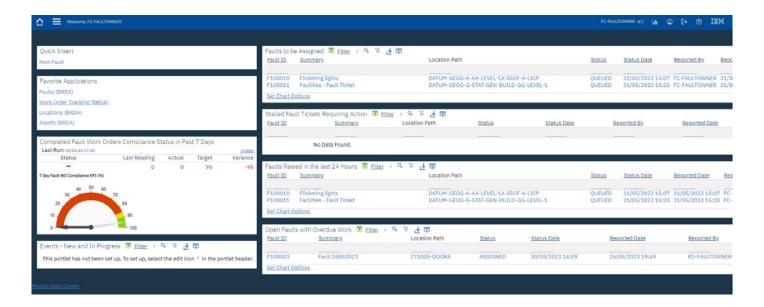
The EAM Core solution includes:

- Data structures for vehicles and rolling stock, buildings and facilities, track and infrastructure
- Transportation specific business processes & workflows
- Transportation specific asset hierarchies & attributes
- Transportation specific user configuration and security model

The Arcadis Data Loader is a query tool for the bulk import or export of your data from IBM Maximo. It complements the EAM Core bundle and helps with querying, modifying, and loading complex field mappings on a regular basis.

The Arcadis business logic serves as a basis for all organizations to manage communication between the IBM Maximo UI and the database. It is the automation including a series of protocols that occur after employees create or change lines of data. This supports interpretation and acting on data that can improve productivity of assets, organizational efficiencies, and cutting of costs.





Key Core Features

· Industry specific Asset Modelling

Gain unparalleled visibility and control over your assets. EAM Core's industry-focused solution captures and manages complex industry specific infrastructure asset hierarchies, such as tracks, switches, signalling systems, and rolling stock, as well as facilities, buildings, bridges, structures, electrical systems, and ancillary equipment.

Linear Asset Management

Optimize maintenance planning, minimize disruptions, and ensure accurate asset records. EAM Core's innovative linear asset management solution, featuring asset register manager and supersede-source functionality, tracks and allows you to precisely maintain continuous assets like tracks and power lines.

• Regulatory Compliance

Experience robust regulatory compliance features that facilitate adherence to industry standards and regulations while accommodating controlled routes for temporary non-compliance acceptance and derogations when required. This way you can mitigate risks, avoid penalties, and maintain a safe, reliable transport network.

· Asset Lifecycle Management

Our asset lifecycle management covers acquisition to disposal, incorporating asset swaps and work order asset register updates. Our end-to-end solution ensures seamless management, efficiency, and cost savings throughout your asset portfolio.

· Fault and Incident Management

Streamline the process of identifying, diagnosing, and resolving industry-specific issues with advanced fault and incident management, including customizable fault templates. Our comprehensive solution enhances maintenance efficiency, improves safety, and boosts the reliability of your transportation network.

Failure Reporting

Capture and analyze asset failure data with EAM Core's robust failure reporting functionality. Identify trends, track performance, and implement targeted improvements to drive operational excellence.

Materials, Stock, and Logistics

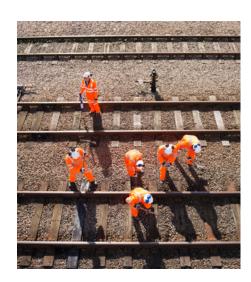
Streamline procurement, inventory, and logistics operations with our integrated approach. With comprehensive materials, stock, and logistics management including tooling and warranty tracking, our solution ensures optimal resource utilization and cost control.

Workforce Management

Optimize planning, qualifications, and certifications with EAM Core's workforce management. Surpass competitors in managing one of your most valuable assets - your people - with efficient resource allocation and workforce productivity.

· Work Management

Leverage comprehensive work management capabilities, including work campaigns, monitor routines, customizable work order templates, and advanced sector-specific workflows. Improve maintenance execution and achieve superior operation management with our industry-focused solution.



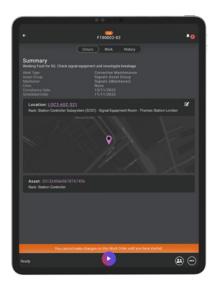
Arcadis EAM Mobile Work Execution (MWE)

Flexibility in the palm of your hands







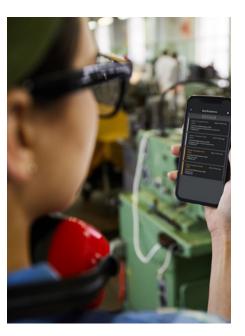


Arcadis Mobile Work Execution is a purpose-built iOS/Android application, optimized for both mobile and tablet devices, which has been designed to simplify and modernize the way users interact with enterprise applications on-the-go. It presents key data in widgets and feeds, making it easy for users to interact with the application and process tasks quickly. The app is designed with a focus on work order and task processing, optimizing the experience to give users a clear layout with the fewest number of taps.

One of the standout features of the app is the ability for multiple users to access and process work at the same time, creating significant efficiencies for users working on large or complex work orders. The app was specially designed for efficiency in interrogating data hierarchies, removing the complexity of accessing large sets of asset and location data which means there is no significant waiting for data downloads. It also features an auto-sync functionality while in a networked area, reducing downtime for end users and increasing collaboration and communication.

Arcadis Mobile Platform

The Arcadis Mobile Platform is an advanced development platform with the capability to enhance the performance between Arcadis mobile and web applications and EAM Core on IBM Maximo. Access EAM data anytime, anywhere with seamless offline experience to allow users to continue working in areas of poor/ no network coverage including real-time data synchronization to turn information into insights faster.

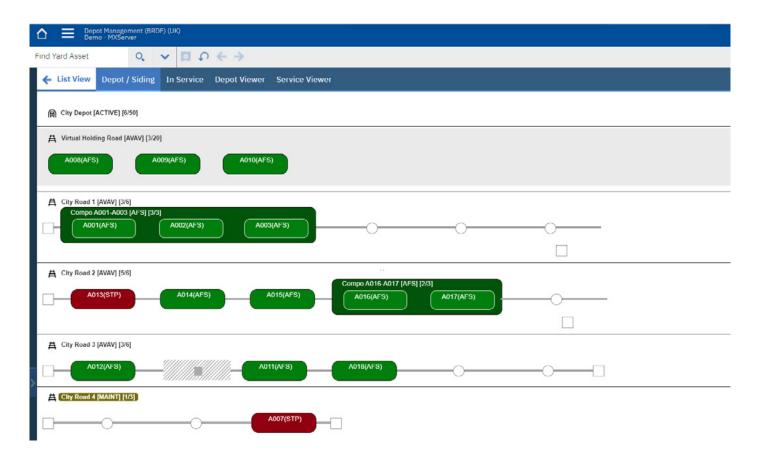


Key MWE Features

- View assigned work orders and plan route effectively with map view, improving work efficiency.
- Receive push notifications for new work, ensuring timely action.
- Capture time on task, update status, and add comments for real-time visibility, enhancing communication and collaboration.
- Process job plans and add measurements, with an impressive user experience, regardless of the work complexity, improving work quality.
- Raise follow-on work, capture failure information, work logs, photographs, and access attachments, ensuring data accuracy and complete documentation.
- Minimize data input errors and speed up the process with barcode or QR code reading on asset swaps, improving productivity.
- Get real-time data updates with auto-sync while in a networked area, ensuring data accuracy and consistency.
- Capture data accurately in lownetwork conditions with advanced data queuing system, ensuring data integrity and continuity even when offline.

Arcadis EAM Fleet Availability Management (FAM)

Visually manage your fleet for better outcomes



Arcadis's Fleet Availability Management module is a comprehensive platform that simplifies fleet management for rail and bus fleets. Our FAM solution provides a user-friendly interface that offers complete visibility into your fleet's positioning, availability, work orders and more. With intuitive drag-and-drop capabilities and visual representations of unit status and location, managing rail asset shunting across roads, coupling and uncoupling has never been easier.

Arcadis's FAM module comprises two main components:

Yard management

Visual management of fleet asset status and positioning along with maintenance status

Service management

Timetable and fleet operations with service readiness focus for increased safety

Being both embedded within EAM Core but also able to sit on top of IBM Maximo by itself, FAM allows for a seamless integration between the operations and maintenance functions of the depot, providing simple click through access to asset information, history, and work orders which enables the ability to restrict movement of units with safety critical work from going into service, to ensure the safety of your passengers. With a configurable depot and road setup, disallowed movement of units is prevented, helping to reduce errors, increase efficiency, and maintain the safety of your team.

Key FAM Features

- Visual representation of unit status, positioning, location and compositions
- Drag and drop user interface, facilitating asset coupling, uncoupling and shunting across roads
- Unit availability visual indicators providing predicted availability for service and preventing units with safety critical work outstanding from going into service
- Direct integration into your IBM Maximo EAM solution with simple click through to work orders, asset information, work and shunting history
- Configurable depot and road setup with logic to prevent asset movement based on capacity and access rules





Arcadis EAM Property and Lease Management (PLM)

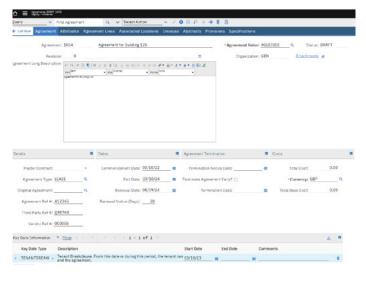
Yield more out of your buildings' investment at a glance

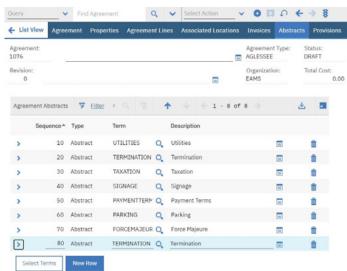
The Arcadis EAM Property and Lease Management (PLM) module provides Real Estate Managers or Building Managers with everything they need to manage the commercial agreements and leases for the organization's property portfolio, whether that is retail, office, or other type of property space.

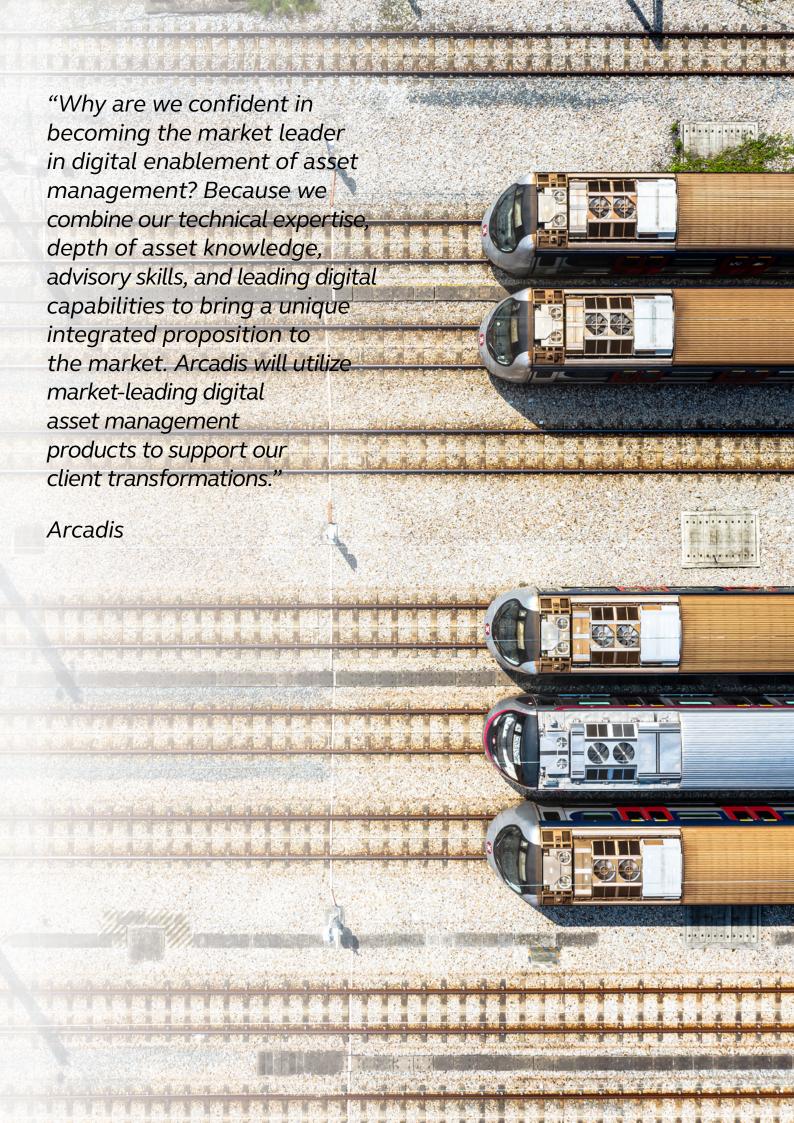
Embedded within EAM Core, this module allows you to manage property and leases and link your building asset and location records at a granular level within your asset management system. Unlock further operational efficiency, financial optimization, and compliance assurance within your property portfolio, all within a purpose-built solution designed to meet the unique needs of both lessees and lessors.

Key PLM Features

- Manage property and leases within your EAM solution, linking your building asset and location records.
- Lease agreement management, including perpetual and rolling.
- Mange lessee payments with invoice generation and payment reports.
- Streamlined to support both lessee and lessor needs.
- Terms and conditions and abstraction capability, capturing key information from legal documents for a summary view.











Transport for London (TfL) United Kingdom

Transport for London (TfL) is the government body responsible for most of the transport network in London, United Kingdom. TfL has responsibility for multiple rail networks including the London Underground and Docklands Light Railway, as well as London's buses, taxis, principal road routes, cycling provision, trams, and river services. It is also responsible for the London Overground and Elizabeth Line services. Arcadis with a 14-year strong relationship with TfL are working to introduce our Asset and Safety Management solution as the single digital system for all asset classes within all nine London Underground lines, London Tramlink and 270 stations. Upon completion, for the first time in its 157-year history, London Underground will have a single system responsible for optimizing management of every single asset on the network

Realized Benefits

- Single source of truth responsible for optimizing management of every single asset on the network.
- 4,000 employees will benefit from the upgraded and enhanced UI/UX deployed in a single desktop solution and mobile work management and inspection mobile apps.
- Overall savings of £1.2B enabled through maximizing work force utilization, asset life extension and running a lean transparent organization.



The Business Need

TfL operated two legacy enterprise asset management (EAM) systems, Metro Maximo (as previously designed and built by Arcadis) for a third of the underground network, and Ellipse for the remaining two thirds of the underground network and trams. These systems support fault and work management, inspections and hazardous material and maintenance team's safety management. The primary aim of the project is to consolidate the business onto a single EAM system, including significant data migration, migration and/or development of integrations key systems on the TfL technical estate, and development of new functionality as required to facilitate the transition phase of the project.

The Solution

The asset management information system (AMIS) project will bring the management of all assets within London Underground's stations, depots, and operational property onto a single EAM, employing a single (shared) asset hierarchy using a set of common business processes It will deploy mobile apps to complete asset condition and safety inspections. Where required, this project also incorporates an interface with (subcontract) maintainer systems for real time management of fault condition and rectification actions. Additional integrations, such as with the pumps alarm system enables automated workflows driving further operational efficiency. Arcadis are presently the sole vendor (no subcontractors) contracted to deliver an upgrade of the existing Metro Maximo system and associated mobile and planning applications, and to transition all legacy Ellipse users onto Metro Maximo.

The Results

- Performance increase Increased mean time between failures and improved asset availability.
- 7x times improvement in safety for all stakeholders.
- Lean organization A completely transparent information driven organization with ground up mobile data entry and automatic data driven reporting removing the need costly back-office staff.
- Maintenance compliance to standards from 60-90% to 99.8%.
- The AMIS project has been referenced globally by organizations across many industry sectors.
- The project was internationally benchmarked: Metro Maximo as the best EAM solution globally (CoMET and NOVA Groups).
- The CoE model was between London Underground and Arcadis, assisted with the management of a complex project that touched all parts of the organization.

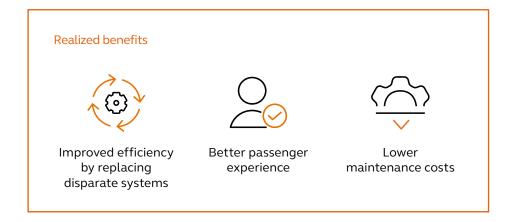






Dublin Airport Authority Ireland

DAA is a global airport and travel retail group with businesses in 15 countries around the world. DAA's principal activities include operating and managing Dublin and Cork Airports, global airport retailing through our subsidiary Aer Rianta International, and international aviation consultancy through DAA International. The company is state-owned and headquartered at Dublin Airport.





The challenge

With millions of passengers passing through the airport every year, Ireland's Dublin Airport has become one of the fastest growing airports in Europe and one of the most important connecting airports to North America. But to soar to even greater heights, the airport needed to tackle the challenge of data and asset management. It needed a next generation solution – one that would allow DAA to realize their bold vision for enhancing safety, maintaining compliance, creating efficiencies and pioneering a future-ready digital and data capability.

DAA handles massive quantities of data every single day, so it need a topnotch enterprise asset management solution to meet growing passenger demands, address the challenge of climate change and worsening weather event, and keep pace with the evolving aviation industry. Specifically, they needed to futureproof its asset management capability and help achieve its long-term strategic plans to deliver outstanding airport experience and growth.

The solution

Partnering with Arcadis, the Dublin Airport Authority implemented our Enterprise Asset Management (EAM) solution to help address the challenges and achieve its goals. However, this collaborative and innovative partnership did not stop at software implementation alone; Arcadis also helped the Dublin Airport Authority develop comprehensive, tailor-fit strategies around EAM's capabilities that would cover the asset lifecycle and health and safety management. The airport's improved digital and information strategy optimized existing systems and integrated current processes to generate far better results than ever before. The idea was not to scrap everything and start from scratch, but to elevate current structures, make changes only where necessary, and focus on eliminating present inefficiencies. It placed IBM Maximo at the heart of the strategy, integrating with GIS and SCADA systems to create a unique enterprise asset management perspective that enabled fast, reliable and agile decision-making exactly as the Dublin Airport Authority needed.

The result

With the old and the new working hand-in-hand, DAA was able to better understand the masses of data available to it and make smarter decisions for improved asset reliability, lower maintenance costs and create better passenger experiences.

Arcadis EAM provided a single, consolidated solution that integrated disparate systems and generated greater efficiencies. With all relevant information now stored in one, accessible place, overall control of maintenance workflow improved significantly, and workflow orders became even easier to create. General reporting processes grew simpler and more effective, boosting customer satisfaction and increasing met targets. Spare parts inventory decreased with better management and usage tracking. And planned maintenance activities eventually grew in proportion to reactive asset maintenance, generating positive operational and financial impacts.





About Arcadis

Arcadis is the world's leading company delivering intelligence-driven sustainable design, engineering, and consultancy solutions for natural and built assets. Now bringing together the digital capabilities, products and solutions of Arcadis IBI Group and Arcadis Gen under a single Arcadis umbrella, we are on a mission to empower our clients worldwide with the data-driven insights they need to navigate today's challenges and address tomorrow's uncertainties with confidence and agility. Collectively, we bring an enhanced commitment to supporting digital transformation across every industry in which we operate.

As Arcadis, we stand together as more than 36,000 architects, data analysts, designers, engineers, project planners, water management and sustainability experts, all driven by our passion for improving quality of life.

www.arcadis.com

Arcadis. Improving quality of life

To find out more about how EAM can help your business and to see the solution in action, contact us at eam@arcadis.com