

What is infrastructure asset management?

Infrastructure asset management, not to be confused with financial asset management, is the practice of acquiring, operating, and caring for physical assets. Infrastructure assets are found across transportation, energy and communications networks and are in forms as diverse as railways, bridges, power plants, superfast broadband, etc. The principles of asset management as a practice are described in the ISO 55000 standards, as well as in the Institute of Asset Management's [An anatomy of asset management](#) (version 3 or AMA3).

The asset management community have invested in producing numerous documents that describe the discipline of infrastructure asset management and the associated theory. It would be redundant to duplicate these documents with a concept-by-concept description of the discipline. Instead, this section seeks to provide an overview of the discipline in a manner approachable and meaningful to surveyors, APC students and other practitioners. It provides a more editorial view of how infrastructure asset management fits within the industry and is likely to develop in the future.

Development of the discipline

A number of factors have contributed to the emergence of asset management including:

- The increasing complexity of infrastructure organisations, particularly as it became more common to split construction, operation and finance functions between organisations or between different departments within organisations.
- Government divestment of infrastructure assets through large-scale privatisation of previously publicly-owned assets leading to increased private sector involvement in the management of infrastructure assets. (See isurv Infrastructure funding.)
- Further private sector involvement in the financing of infrastructure investment through novel contracts such as PPP (Public Private Partnership), PFI (Private Finance Initiatives), TIF (Tax Increment Financing), DBFO (Design Build Finance Operate), MAC (Managing Agent Contractor) and many other forms. Also, the devolution of responsibility away from central government to state, regional, and local authorities. Some of these contract forms are on the way out, others will be with us for a while, and new ones will inevitably arise, but all are unified in trying to identify novel ways for asset owners and service providers to share asset management, operations, and maintenance responsibility in an effective manner.
- The increasing maintenance requirements of aging asset bases in many developed countries, including large portfolios of similar assets such as the Victorian railway and sewage networks in the UK, and post-War highway and housing projects in the US and elsewhere.
- Technological progress both in terms of materials science and information technology. This allows for better performance, monitoring and control of assets by an increasingly professionalised work force.
- The need for better ways of prioritising the allocating increasingly scarce funding and other resources, based on risk and demand/performance requirements.

The result of these emerging trends was an industry faced with unprecedented investment and maintenance challenges, one increasingly focused on realising profit and protecting corporate reputations, where the organisations charged with managing assets had substantial exposure (?skin in the game?) to the performance of the assets under their management. This is the crucible in which infrastructure asset management has emerged over the last 30 years.

Legislation or standards?

The field of asset management is largely concerned with improving the performance and cost-effectiveness of assets. It is rarely a prescriptive field with specific legal liabilities, but rather a school of thought intended to help organisations realise best practice. The leading asset management standard, [ISO 55000](#), assumes that the organisation knows that it cannot break the law or contravene its licence to operate. As such, there is relatively little directly related legislation.

Similarly, it would be impossible to exhaustively list the legislation that asset managers must be mindful of as this depends in part on their field of practice.

Nonetheless, here are a few general sources of requirements:

- Asset Management standards: ISO 55000 and PAS 55.
- RICS Professional Standards;
- the [Health and Safety at Work etc. Act 1974](#) ? origin of ?As low as reasonably practicable? measures, which have important implications on reliability centred maintenance (covered below).
- UK [Bribery Act 2010](#).
- UK government mandate for BIM Level 2.

Objectives

The practice of infrastructure asset management focuses on maximising the value of infrastructure assets over their life cycle for asset owners, stakeholders and users. In this context, value is typically defined as covering a number of different metrics, including:

- **Lifespan**: the period of time for which the asset provides a value to users. Assets can have several lifespans ? think about Brunel?s tunnel under the Thames ? he didn?t envisage the London Overground running through it when he designed it.
- **Availability**: the extent to which assets are available for use when required by users.
- **Life cycle cost**: the investment required to design, construct, operate and maintain and then dispose of an asset.
- **Risk**: the extent to which asset owners are exposed to negative uncertainty and/or positive opportunities.
- **Safety**: the hazard posed to users of assets, as well as staff working on the assets.
- **Quality**: often synonymous with availability, the extent to which assets meet measures of performance.

Different organisations will assign different levels of importance to each of these metrics. Indeed, different parties in an organisation often focus on one metric to the detriment of others (think of the archetypal accountant focused on cost, or the archetypal engineer focused on quality, or operations manager focused on performance).

The objective of the asset manager is to understand the relative importance of each metric at a holistic level, across all stakeholders concerned with an asset. The asset manager can then set out the practice required to deliver against each metric, allowing the organisation to share a common strategy for asset management. This practice is, by its nature, inter-disciplinary,

requiring input and buy-in from parties across the asset lifecycle including design, construction, maintenance, finance, and disposal. It is also a practice of compromise, weighing the concerns of different parties against the limited resources available for a given organisation or project.