# AS 7739.2 Digital engineering for fixed rail infrastructure Part 2: Technical requirements

## Frequently Asked Questions

This FAQ provides guidance to RISSB members to assist with understanding the requirements and application of AS 7739.2.

### 1. How does AS 7739.2 relate to BIM?

Building Information Modelling (BIM) has its roots in 3D computer aided design (CAD) and was a term originally used to describe data-rich 3D modelling. Over the past 20+ years, the concept of BIM has gradually evolved, and has now become a more general term used to describe information management practices on building and infrastructure projects.

While the definitions have changed, the BIM process is still centred on the use of 3D CAD as the primary vehicle for collating and managing project and asset information. All activities relating to project data (e.g. production, sharing, association, analysis etc) are to be managed through the 3D model.

This approach is potentially limiting, as it may impact how parties query, access and automate processes using valuable project/asset metadata. It is also worth noting this CAD centred approach to information management is fundamentally different to how every other business sector manages and utilises business critical data.

The AS 7739 Standards takes an alternative approach to BIM, and is based on cross sector best practice, such as the DAMA Data Management Body of Knowledge (DMBoK). Digital Engineering (DE) in accordance with AS 7739 is defined as "a collaborative way of working, using semantic data management, to enable more productive methods of project delivery and asset management" – and provides a common data model and data dictionary for adoption by asset owners in the rail infrastructure sector.

These key elements use consistent data architecture with semantic interoperability to ensure all datasets are machine readable, and may be managed, exchanged, federated, and re-used in an ecosystem of linked databases. DE enables data integration across all stakeholders, creating a digital thread, supporting process automation, and allowing data to be managed more effectively as an asset.

AS 7739.2 presents a fundamental shift in how project and asset data is managed, using a centralised database that is secure and accessible to all relevant parties – but without the need for specialist BIM applications. In this arrangement, BIM is still a major component on a project, but it is no longer the core.

### 2. Why is it limited to specific rail infrastructure scope items?

The AS 7739 Standards were developed under the leadership of RISSB in response to recommendations from its members throughout the Australian and New Zealand rail industry. It had been observed that BIM is now commonly applied on major rail infrastructure projects, however its benefits were typically short lived due to the lack of interoperable data and generally low digital maturity throughout the sector.

RISSB commissioned the development of AS 7739 in 2021, with an aim to define best-practice DE, and to improve procurement, management, exchange and handover of project information deliverables on rail infrastructure projects. Furthermore, these standards would improve digital collaboration between asset owners and their supply chains and promote further digital transformation of the Australian and New Zealand rail industry.

In time, it is expected that other infrastructure sectors may also follow a similar direction to RISSB, however this is currently outside the scope of the AS 7739 series.

## 3. Why does it not include the full lifecycle?

A full lifecycle typically comprises of stages such as plan, design, build, handover, operate, maintain, etc. This initial release of the AS7739 series is currently focused on improving capital expenditure (CAPEX) stages (i.e. plan, design, build and handover) of the asset lifecycle only. This has been done intentionally to address significant gaps in data management processes and to assist rapid uptake on major rail infrastructure projects.

The operations and maintenance (O&M) phase of the asset lifecycle is intentionally excluded in this first release. This is due to significant technical complexities associated with transforming current practices, and commercial challenges with varying long-term contracts with legacy enterprise asset management systems.

In time, further work may be undertaken to simplify mapping processes between the AS7739 data dictionary and O&M systems, that may address this current exclusion.

## 4. How will this help the rail industry?

DE in accordance with the AS 7739 Standards present significant opportunities for the Australian and New Zealand rail infrastructure sector to improve data management and promote sector wide digital transformation.

By adopting this Standard, all parties throughout the value chain will be able to communicate reliably using a common digital language, based on the AS 7739 common data model and data dictionary.

This will drive significant efficiencies by avoiding data loss, automating manual processes, and minimising the need for information to be re-assured or recreated repeatedly over each lifecycle stage.

At project completion, this approach will also ensure seamless data handover into operations and maintenance, enabling a step change in productivity over the full asset lifecycle.

## 5. How do I use the Common Data Dictionary?

AS 7739 describes a range of concepts, principles and technical solutions that are necessary for successful implementation of DE. For many organisations in the rail infrastructure sector however, the material in AS 7739 may seem relatively new and unfamiliar when compared with traditional ways of working.

Adoption of the common data model and data dictionary will require asset owners to integrate new data management systems and processes into their organisation – and should therefore be considered as part of a broader program of business improvement and digital transformation.

It is recommended that any organisation seeking to use these Standards should first:

- Undertake business planning
- Prepare a roadmap
- Allocate resources necessary to build and/or procure a database aligned with AS 7739.

For more detail, please refer to the sections in the Standard that provide advice on how to assess business maturity and manage and program of digital transformation.