



Five key recommendations

1. Adopt and Adapt global best practice, then innovate locally.

Whilst standards are essential to test deliverables they have to be appropriate to the specific industry or project they are being applied to.

Some appropriate standards for Infrastructure you may wish to recommend:-

- **Infrastructure – BS1192**

BS 1192 establishes the methodology for managing the production, distribution and quality of construction information, including that generated by CAD systems, using a disciplined process for collaboration and a specified naming policy. BS 1192 is applicable to all parties involved in the preparation and use of information throughout the design, construction, operation and deconstruction throughout the project lifecycle and the supply chain.

The principles for information sharing and common modelling are equally applicable to building and civil projects.

<http://shop.bsigroup.com/forms/PASs/BS-1192-2007/>

- **Infrastructure design build - PAS 1192 part 2 2013**

The requirements within PAS 1192-2 build on the existing code of practice for the collaborative production of architectural, engineering and construction information, defined within BS 1192:2007.

PAS 1192-2 focuses specifically on project delivery, where the majority of graphical data, non-graphical data and documents, known collectively as the project information model (PIM), are accumulated from design and construction activities.

The intended audience for this PAS includes organizations and individuals responsible for the procurement, design, construction, delivery, operation and maintenance of buildings and infrastructure assets. Where possible, generic language has been used, but where necessary, specific definitions are included.

Declaration of interest. Bentley Systems were involved in the development of this specification as members of the Steering Group

<http://shop.bsigroup.com/ProductDetail/?pid=00000000030281435>

- **Operations & Maintenance PAS 1192 part 3 / ISO 5500x / RCM2**

Specification for information management for the operational phase of assets using building information modelling

PAS 1192-3 is a partner to PAS 1192-2. PAS 1192-3 focuses on the operational phase of assets irrespective of whether these were commissioned through direct capital works, acquired through transfer of ownership or already existed in an asset portfolio. However, like PAS 1192-2, PAS 1192-3 applies to both building and infrastructure assets. It is envisaged that cost savings of 33% can be achieved across the CAPEX and OPEX phases through implementation of the processes outlined in PAS 1192-2 and PAS 1192-3. PAS 1192-3 has been developed in recognition of the fact that the cost of operating and maintaining infrastructure can represent up to 85% of the whole-life cost, and savings can pay back any upfront premium in construction expenses in a few years.

PAS 1192-3 focusses on the information management requirements during the operational phase of assets and is based on the existing code of practice for the collaborative production of architectural, engineering and construction information, defined within BS 1192:2007.

PAS 1192-3 provides guidance to Asset Managers on how to integrate the management of information across the longer term activity of asset management with the shorter term activity of asset construction for a portfolio of assets.

Real savings come about in a variety of ways, including:

- Reducing costs as a result of the automated transfer of accurate, complete and unambiguous information at asset handover and during transfer of operation from one service provider to another
- Better awareness of the operational and maintenance needs of assets
- Better decisions regarding operation and maintenance expenditure based on actual asset performance and status
- Better organisational and strategic planning from more complete and accurate asset information, for example in the development of the health and safety file required by the Construction (Design and Management) Regulations
- Reducing management process costs arising from incomplete data.

But whatever you do we would recommend you direct that projects are created in a Common Modelling environment and feed into a Common Data Environment so that you can efficiently deliver value into O&M.

2. Create an outcome focused “*Asset Lifecycle Innovation Scorecard*” – by Asset Type / Discipline (Road, Rail, Bridge, Building, Utilities...)

Accelerated Benefits realisation from the application of BIM is only achievable if the primary responsibility and clear direction is given by the Infrastructure Owners, whether Federal, State or Local. Direction should be specific with the expected outcomes measurable without being administratively burdensome.

- **Construction Industry Institute (CII)**

Development of the Project Definition Rating Index (PDRI) for Infrastructure Projects

Front End Planning (FEP) is a critical process for uncovering project unknowns, while developing adequate scope definition following a structured approach for the project execution process. FEP for infrastructure projects assists in identifying and mitigating issues such as right-of-way concerns, utility adjustments, environmental hazards, logistic problems, and permitting requirements. This research report describes a novel and effective risk management tool that has been developed by the Construction Industry Institute (CII) called the Project Definition Rating Index (PDRI) for infrastructure projects. The PDRI score indicates the current level of scope definition and corresponds to project performance. Infrastructure projects with low PDRI scores, (well defined); outperform projects with high PDRI scores.

https://www.construction-institute.org/scriptcontent/more/rr268_11_more.cfm

This could be adapted for the Australian Market by a cross industry panel with large project practical experience. To include Owners Project delivery and O&M / EPC's / Constructors/ Vendors etc...

3. Facilitate Industry / Stakeholder **education** to raise competitiveness

Bentley Systems and Crossrail established the world's first BIM Academy in 2012 – where Crossrail advise their supply chain on why BIM is being applied on the project and Bentley as the Smart ICT Vendor educate the supply chain on how to apply SMART ICT to achieve the end objectives.

We would be happy to facilitate, at your cost, a Study Tour to the Crossrail BIM Academy situated in London where this approach has resulted in Europe's largest Civil Construction project is running under budget and on time. Compared to traditional rail projects running on average at 140% of Budget.

4. Invest in Increased **simulation and optioneering** in the planning phase to reduce overall project costs.

Examples: Trade off analysis, Water and Power usage, layout options, construction options, operability simulation. This is where smart ICT is able to add huge and ongoing value

Simulate and optimise Project performance and Asset performance....simulate and optimise and predict the Asset Performance.

5. **Open Standards** - diverse sets of information must be trusted and managed with absolute control

If you are going to mandate, select appropriate standards for each Infrastructure type and insist on common or Neutral File formats for information longevity beyond design and construct into O&M. Insist that applications used are both forwards and backwards compatible and can be stored in a common data environment without the need for manual intervention.

Submission:
Smart ICT for Design and Planning.

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