

## Resource type: Project 13

### Digital Transformation maturity matrix: asset delivery

Asset Delivery	Traditional	Simple collaboration	Integrated functions and relationships	High performing enterprise	Interconnected industry
<p><b>Digital integration</b> How do you integrate engineering, operational and information technologies?</p>	<p>New assets generally specified as either <b>purely physical or digital</b>. <b>Complete lack of integration</b> between engineering, operational and information technologies.</p>	<p>Physical assets are specified, with <b>digital technologies 'tagged on' afterwards</b>. Delivered by different suppliers with limited interface and coordination.</p>	<p>Leading investments delivered as <b>integrated physical-digital systems</b>. Digital upgrades enhance value of existing assets.</p>	<p><b>All investments</b> maximise value from integrated physical-digital systems. Delivery of new information assets considered as important as corresponding physical assets.</p>	<p>Investments <b>maximise shared value across multiple Owners</b> and sectors through integrated physical-digital systems.</p>
<p><b>Data availability</b> How do you provide data necessary for delivering new assets?</p>	<p>Existing <b>asset information generally missing</b> or unreliable. Site data provides limited samples of information (eg trial holes). Typically collected by manual surveys with relatively high marginal cost.</p>	<p>Reality capture technologies provide <b>one-off data snapshots</b> (eg scan-to-BIM of existing assets), appropriately processed to integrate with common data environment. Limited to critical and high-value assets/interfaces. Sensors may be installed for condition monitoring of high risk assets.</p>	<p>Reality capture and sensors <b>provide regular monitoring</b> (eg performance, condition) throughout delivery process. Information from Owner's master asset register and assured open/third party information reduces need for project-specific data capture on existing sites.</p>	<p><b>Continuous monitoring using Owner's smart infrastructure</b> assets and project-specific data sources provides real-time information, including condition and performance.</p>	<p>Continuous monitoring draws on <b>data feeds from third party assets</b>.</p>
<p><b>Information management</b> How do you manage information about new assets (ie BIM/DE/GIS)?</p>	<p>Designs produced in <b>2D CAD with no coordination</b> between different drawings or assets. No integration of additional data.</p>	<p><b>2D/3D content</b> managed with a collaboration tool that provides a <b>common data environment</b>. Engages key partners, but does not extend to all suppliers. Limited integration with production and commercial data using proprietary interfaces or bespoke middleware.</p>	<p>Common data environment specified by Owner with <b>well-defined information requirements, used by all partners</b>. Fully open process and data enabled by industry standards. Includes production and commercial data across delivery process. Creates an as-built information model that meets operational needs for whole-life asset management.</p>	<p><b>Open data exchange</b> supported by appropriate standards. <b>Full integration with smart infrastructure systems</b>, using and providing data from internet of things and telemetry systems. Enables real-time asset performance reporting and a 'digital twin' that fully reflects the physical world.</p>	<p>Enables <b>value to be measured through wider societal outcomes</b> as part of a 'national digital twin' for infrastructure, with direct impact on national productivity.</p>
<p><b>Standardisation &amp; automation</b> How do you use</p>	<p>Delivery is non-standardised,</p>	<p><b>Standardisation/Design for Manufacture &amp; Assembly (DfMA)</b> using</p>	<p><b>Extensive catalogue of standard</b></p>	<p><b>Complete "productionisation" of delivery process,</b></p>	<p>Standardisation across infrastructure</p>

standard products and advanced manufacturing in asset delivery?

**every project is treated as a one-off.** Traditional labour-intensive construction sites with high number of specialist trades. Limited use of off-site manufactured components.

proprietary components and standard products for simple assets. Products do not yet integrate engineering, operational and information technologies. Product information focused on delivery phase, with some additional data (eg BIM, cost models, carbon footprint, data sheets) but availability varies and is product-specific.

**products** used by Owner and partners, developing compliance with emerging industry standards. Products fully integrate engineering, operational and information technologies and meet asset information requirements. Increasing automation, particularly in design and advanced manufacturing.

delivering bespoke solutions from interchangeable quality-assured components. Enables circular economy approach and increasingly agile infrastructure. Extensive automation across all stages of delivery, capitalising on emerging technologies (eg additive manufacturing, advanced materials)

industry enables further efficiencies in **integrating systems across sectors.**