

The Industry Readiness Level

	0 Traditional	1 Simple collaboration	2 Integrated functions and relationships	3 High performing enterprise	4 Interconnected industry
CUSTOMERS					
Insight <i>How do you use data to understand your customers?</i>	No customer information available to most owner functions - limited to payments, complaints and formal consultation with a small sample of customers.	Decision making accounts for defined customer preferences , but with limited personalisation . Data provides insight on customer value across multiple groups - including those who don't contact the owner. Customer-led culture developing across owner functions, but does not yet extend to partners.	Visibility of all customers across the entire data estate provides granular understanding of different customer groups , and value of the services to their lifestyles. Customer-led culture developing across all partners, including understanding what customers really want through revealed as well as stated preferences.	Digital insight enables individual customers' valuation of their services to inform owner decisions. This deep understanding of customers extends across whole enterprise and customer value sits at the centre of all investment.	Insight into customer value extends across multiple sectors and services , encompassing wider societal value and enabling offer of cross-industry digital services .
Participation <i>How do you align customers in decision making?</i>	Customers viewed as passive recipients of a service. Owners seek customer validation of their plans. Captive customers have limited choice, with little transparency or differentiation in owner's offers of services.	Owner is transparent in their use of personal data and informs customers of service availability . Plans in place to give customers more control over their services. Educated customers understand how their data is used, have insight into the bigger picture and buy into benefits of owner activities.	Digital engagement enables owner to involve customers, making it easy for them to propose solutions or challenge at any time , across all owner functions. Customers able to exert meaningful control over their personal data and how it is used. Established relationship with customers creates opportunity to influence behaviours towards better outcomes.	Customers are active participants at multiple interfaces , with greater choice to influence and control expenditure and services. Strong digital ethics underpin customer trust. Complete digital transparency and fair value exchange means customers receive clear benefits from sharing personal data.	Participation extends across company and sector boundaries to include multiple levels of impact and influence , not just direct customers, to maximise benefits for society and deliver inclusive social outcomes.
Experience <i>How do your customers' experiences shape your business?</i>	Minimal, one-way communication (eg: limited to bills and complaints). Customers have no visibility of owner operations except when something goes wrong or during formal consultation.	Digital technology delivers a reliable, easy experience. Customers have control, accessing information through their channel of choice. Experience tracked throughout customer journeys using multiple techniques.	Connected systems and data ensure customer experience consistent across all functions (owner and partners), effortless and easy. Communication personalised to individual customers . Owners build customer trust through enhanced digital engagement.	Customer experience is a primary driver of business performance , tracked in real-time for all individuals. Customer satisfaction consistent with leading firms in UK across any industry (eg: by UK Customer Satisfaction Index). Plans in place to address digital exclusion.	Customer experience seamless across multiple sectors , with increasing bundling of domestic products and services .
LEADERSHIP					
Leadership <i>How committed are your leaders to transformational change?</i>	Leaders have limited understanding of digital transformation, do not see relevance to their business .	Commitment to digital transformation at the highest level of key partners, belief it is fundamental to business success . Informal champions exist across multiple functions.	Strong digital leadership, with change agents across all levels and functions of owner and partners, empowered to drive change.	Joined-up leadership across the enterprise drives digital transformation in an integrated manner. Leaders engage and create a platform for everyone to drive change.	Leaders recognise value of greater alignment with other owners and sectors . Partnering with peers and competitors becomes core business activity.
Strategy & plans <i>How do you align your whole business around a clear vision for digital transformation?</i>	No overarching digital strategy exists, work may be under way to develop it. Disconnected digital plans may be in place for specific aspects.	Owner's digital strategy sponsored by senior leaders . Digital plans exist for different owner functions and partners.	Comprehensive digital strategy addresses all aspects of transformation, at multiple levels, closely aligned to corporate strategy . Digital planning is coherent across different functions of the owner and partners.	Digital transformation is at the very centre of corporate strategy and planning. Information is fundamental to the enterprise's services and operations.	Corporate strategy and planning account for digital interdependence across multiple sectors and impact of digital disruption on society and economy.
Culture <i>How ingrained are digital behaviours in the way you operate?</i>	Perception that digital doesn't apply to individual's role, function or business - it is an IT function . Belief that digital transformation is incidental, focused on technology.	Digital is dealt with by specialist teams , with limited impact on most functions. Analytics teams rely on data for decision making.	Belief that digital transformation is fundamental, focused on information. Everyone understands how digital impacts them individually and how their performance relates to the digital strategy. Data-driven decision making becoming commonplace across all functions and partners.	Full digital change programme has been implemented across the enterprise, embedded in everything people do. Digital articulated as part of organisational values.	Digital capability of interfacing organisations of utmost importance in assessing impacts on their own organisation and society.
Innovation <i>How do you foster digital innovation in your business?</i>	Ad-hoc innovation with highly variable investment. Limited visibility of outcomes and minimal benefit to business. Risk-averse blame culture with fear of failure.	Owner's innovation strategy considers digital transformation, with investment in pilot projects demonstrating financial opportunity/risk. Primarily focused on technological innovations. Innovation culture developing in pockets within certain functions/teams.	Structured, targeted approach to digital innovation across owner and key partners, including behaviours and processes. Risk appetite understood and partners share investment and rewards. Innovations tested in safe space to fail fast without impacting service to customers. Successful innovations scaled up across all partners.	Learning culture of continuous innovation embedded across the enterprise. Everyone feels they can contribute ideas . Horizon scanning supports systematic monitoring and evaluation of emerging digital technologies. Open innovation provides opportunities for digital disruptors and start-ups, incentivising digital suppliers to join ecosystem.	Digital innovation spans multiple owners and sectors, co-creating for mutual value . Collaborative partnerships influence the course of technological innovation to meet industry needs at earlier readiness levels.
COMMERCIAL					
Value definition <i>How do you define value to incentivise the right customer outcomes?</i>	Focus on achieving minimum capital cost for defined outputs. No visibility of actual delivered performance.	Value defined as minimum whole-life cost for set levels of performance. Inconsistent application of whole-life cost across owner functions (eg: differences in lifetime, cost allocation and economic value of benefits). Visibility of performance limited to one-off pre-defined tests of 'as-delivered' performance.	Value defined in terms of maximising societal outcomes on a whole-life cost basis , influenced by customers. Clear definitions and assumptions provide consistency in assessing whole-life cost and value. Owner functions and partners have visibility of actual, as-operated through-life performance.	Definition of value ensures societal outcomes fully aligned with outcomes for whole enterprise , driving performance across the asset lifecycle. Supported by increased granularity of information, enables new business models and service offerings from owners.	Definition of value ensures societal outcomes for wider society are aligned with those for customers and partners .
Value of information <i>How do you value information in your commercial models?</i>	Information not valued , information assets poorly maintained.	Value of information in driving better decisions recognised , but not fully understood and poorly linked to business outcomes . Information hoarded by owner functions and partners to exploit competitive advantage.	Commercial framework incentivises sharing information for mutual value. Alternative business models share reward on basis of the value added to information , aligning partner incentives with best value for the customer.	Valuation models for information assets guide commercial decisions. Information assets enhance valuation of the owner. Regulation and valuation is data driven.	Valuation of information assets accounts for wider commercial opportunities in the national information economy .
Digital investment <i>How well do investments in digital infrastructure meet business needs?</i>	Digital infrastructure regularly fails to meet business needs , drives reactive investment. Proliferation of systems and owners with limited integration. Too much poor value investment (eg: in "IT solutions").	Recognition that digital investment is needed to enable transformation. Investment meets current needs but highly variable across owner functions and partners. Systems rationalised with clear plans to retire/replace/integrate. Focus on minimum value proposition with multiple manual workarounds.	Key platforms are understood and have been implemented . Investment effectively prioritised to maximise gains and linked to progress against clear digital targets. Integration of next generation digital technologies (eg: cloud, IoT platforms) across owner and partners provides connected systems and consistent performance.	Fully-integrated, agile and scalable systems in place across enterprise to support current and future digital technology needs. Ongoing investment plans driven by underlying value of information assets.	Digital infrastructure includes shared resources, with investment that accounts for other sectors' needs .

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CAPABILITY					
Skills <i>How well do you understand and manage the digital skills needed for your business?</i>	Digital skills generally not considered in training or HR strategies. Ad-hoc recruitment on a job-by-job basis. Work may be underway to understand digital skill gaps.	Owner and partners have clear understandings of their digital skills , gaps in capability and priorities to address them. Recruitment considers transferrable digital skills as well as sector-specific experience. Centralised digital teams may exist to create critical-mass capability.	Core digital capabilities in place across all owner functions and partners. Digital agility a core attribute with staff expected to learn, unlearn and relearn skills and behaviours throughout career. Training programs redesigned to develop digital skills needed by owner and partners. All role definitions updated to reflect digital requirements, some skills retired.	Prioritise digital fluency in recruitment - skills transferrable across sectors. Digital skills are central to professional development, performance reviews and career progression.	Digital skills strategy spans multiple owners and sectors to deliver a self-sustaining pipeline of talent that meets digital needs of infrastructure industry.
Suppliers <i>How do suppliers meet your needs for digital technologies and services?</i>	Digital technology suppliers limited to transactional supply of specified hardware/software.	Frameworks in place for suppliers of digital services and technologies. Digital suppliers perceived as a threat by traditional partners, creating competition.	Collaboration between digital and traditional partners develops understanding of respective capabilities and requirements. Owner understands its own needs, not dictated by vendor-led decisions, and matches approach to capability of partners.	Owner supported by ecosystem of digital partners , including agile start-ups as well as established players. Effective integration across the enterprise, drawing on strengths and domain knowledge of all partners.	Owner sources and shares supplier ecosystem with other sectors.
Information security <i>How do you assure information security and compliance?</i>	Staff not aware of how information security relates to their role and activities. Perception that security compliance "gets in the way" of business. Legacy IT systems may present vulnerabilities and compliance risk.	Security culture developing - staff aware of core principles but implementation variable across owner functions and partners. Governance focuses on controlling access to information, organisational security compliance tested. Technology risks understood and existing vulnerabilities resolved.	Security risks managed consistently across owner and partners through combination of physical, technical and cultural controls, accredited to ISO27001 . Governance procedures in place to deal with any incidents, and robust technology prevents unauthorised access. Owner actively engages and informs all stakeholders with influence over security - including customers. Board-level ownership for data security and compliance.	Robust systems manage known and emerging threats from terrorism, malicious activity and cybercrime as part of wider corporate resilience. Provisions of PAS 1192-5 are followed, including separation of sensitive data to prevent aggregation by others. Strong information security culture across the enterprise: staff understand their personal responsibilities. Enterprise has knowledge and capability to maximise opportunities and manage risks.	Contributing to National Cyber Security Strategy through collaborative action against cyber threats. Risks from interconnected systems managed through effective coordination across sectors.
ASSET DELIVERY					
Digital integration <i>How do you integrate engineering, operational and information technologies?</i>	New assets generally specified as either purely physical or digital . Complete lack of integration between engineering, operational and information technologies.	Physical assets are specified, with digital technologies 'tagged on' afterwards. Delivered by different suppliers with limited interface and coordination.	Leading investments delivered as integrated physical-digital systems . Digital upgrades enhance value of existing assets.	All investments maximise value from integrated physical-digital systems. Delivery of new information assets considered as important as corresponding physical assets.	Investments maximise shared value across multiple owners and sectors through integrated physical-digital systems.
Data availability <i>How do you capture and provide the data necessary for delivering new assets?</i>	Existing asset information generally missing or unreliable. Site data provides limited samples of information (eg. trial holes). Typically collected by manual surveys with relatively high marginal cost.	Reality capture technologies provide one-off data snapshots (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.	Reality capture and sensors provide regular monitoring (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.	Continuous monitoring using owner's smart infrastructure assets and project-specific data sources provides real-time information, including condition and performance.	Continuous monitoring draws on data feeds from third party assets
Information management <i>How do you manage information about new assets?</i>	Designs produced in 2D CAD with no coordination between different drawings or assets. No integration of additional data.	2D/3D content managed with a collaboration tool that provides a common data environment . Engages key partners, but does not extend to all suppliers. Limited integration with production and commercial data using proprietary interfaces or bespoke middleware.	Common data environment specified by owner with well-defined information requirements, used by all partners . 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.	Open data exchange supported by appropriate standards. Full integration with smart infrastructure systems , 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.	Enables value to be measured through wider societal outcomes as part of a 'national digital twin' for infrastructure, with direct impact on national productivity.
Standardisation & automation <i>How do you use standard products and advanced manufacturing in asset delivery?</i>	Delivery is non-standardised, 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.	Standardisation/design for manufacture & assembly (DFMA) using proprietary components and standard products for simple assets. Products do not yet integrate engineering, operational and information technologies. Product information focused on delivery phases, with some additional data (eg. BIM, cost models, carbon footprint, data sheets) but availability varies, and is product specific.	Extensive catalogue of standard 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.	Complete 'productionisation' of delivery process , 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).	Standardisation across infrastructure industry enables further efficiencies in integrating systems across sectors
ASSET MANAGEMENT					
Data availability <i>How well does data meet all your business needs?</i>	Limited data available for most assets from historic records . Low quality of most data types with many omissions and inconsistencies. No visibility of data controlled by other functions, or partners.	Asset registers are largely complete , although multiple may exist with some duplication and inconsistencies. Asset performance defined, with some through-life performance and condition data available for high value/risk assets. Limited visibility across different owner functions and partners of non-personal data (ie system, organisational and asset data), with some limited use of third party/open data.	Data visibility spans owner and partners to meet functional needs (including customer, network, organisational, asset and environmental data). Master asset register exists, with performance and condition data available for all assets, but generally of limited granularity. Recognition that data variety more important than quantity reflected in decisions over what unstructured data to collect for future use. Extensive use of third party/open data, with plans in place to share more owner data.	Data available by default to meet enterprise needs , with required granularity, timeliness and completeness for all functions. Non-personal data (including network, asset and organisational data) shared wherever possible, accounting for security, privacy and legal considerations, to help stimulate innovation. Digital twin adequately reflects the physical world - including operational activities.	Information compliant with National Framework for Data on Infrastructure and integrated into a national digital twin that covers multiple owners and infrastructure sectors.
Information management <i>How do you ensure that information is fit for its intended purpose and can be shared and reused?</i>	Real information not recognised as a business risk . Few requirements exist and most information is non-compliant. Information exists in silos, often duplicated on different systems.	Owner knows what types of information it holds and which processes generate it. Risks of existing uncontrolled information assets are understood. Metrics developed for information quality, quantity and usability. Data housekeeping includes processes for reporting errors/discrepancies and improving compliance.	Information created in different applications for different uses can be shared and reused across owner functions and partners. Robust governance of quality, including provenance, provides assurance. Information requirements with identified owners provide clear direction with well-structured, prioritised use cases for new information.	Requirements are shaped and influenced by all partners in enterprise and deliver effective through-life information management. A culture of personal responsibility for information, comparable to construction's health and safety culture, exists throughout the enterprise.	Full interoperability between information management systems, both internal and external
Sense making <i>How do you use and combine information to inform decisions?</i>	Focus on reporting for compliance. Static dashboards with limited functionality developed by individual owner functions. Complaints of information overload, struggle to extract real value, much data never analysed nor stored.	Integration of data streams in analysis of historic trends reveals insights from previously unused data sets and new combinations spanning owner functions. New analytics developed and tested in exploration environment, before release to 'business as usual' systems.	Predictive analytics forecast future states from available data (eg: impact of operations on customer outcomes; predictive maintenance scheduling). Real-time analytics available where required. Widespread use of machine learning unlocks value of existing and legacy data.	Analytic capability fully meets enterprise needs , informing decisions across all functions to help optimise value. Algorithms are valued for their ability to help improve outcomes.	Analytics incorporate diverse impacts of other sectors and interdependency of system-of-systems.
Decision making <i>How are decisions supported by data-driven insight?</i>	Decisions made according to prescribed standards/procedures , or on basis of experience, instinct and judgement - often not informed by evidence. High proportion of reactive decisions.	Decision support tools available to inform some high value/risk decisions, generally require manual analysis/assessment and input. Decisions based upon historic predictive models for performance, not actual operational performance.	Decision support systems inform all critical decisions with timely, dynamic output . Interference mapping starting to be considered. Insight available on demand, irrespective of physical location. Decisions based upon actual performance and foresight. Significant automation to optimise routine processes across all functions.	Decision support systems integrated across all owner functions and timeframes from real-time operation to long-term investment planning. All routine processes automated to optimise value, anticipating where human judgement is required, particularly for strategic decisions.	Decision making and optimisation accounts for interdependency of system-of-systems across multiple owners and sectors.