

Digital Twin Technology

IMDA Launches Singapore's First Digital Twin Playbook for Enterprises

On 20 July 2026, the Infocomm Media Development Authority (IMDA) launched Singapore's first [practical field guide on Digital Twin technology](#), titled "Digital Twin: Unlocking Business Value with Data and Artificial Intelligence – Playbook for Enterprises" (**Playbook**), to guide businesses in adopting Digital Twin technology through identifying the right use cases, assessing data readiness, establishing safeguards, and implementing projects that deliver business value.

As explained in IMDA's [fact sheet](#), Digital Twin is a live, data-driven digital replica of a physical asset, system, or process that stays in sync with real-world operations. By bringing together data into a single, dynamic view, Digital Twin technology enables enterprises to monitor operations and anticipate what could go wrong when integrated with artificial intelligence (AI), and to safely test changes before implementing them. This can help improve efficiency, reduce costs, and support smarter, more informed decision-making.

The Playbook was developed through engagements with early adopter enterprises, solution providers, and technology leaders. It is grounded in local business context and draws on real-world deployment experiences, particularly in the manufacturing, built environment, and logistics and supply chain sectors, where the cost of unplanned downtime, defects, or supply chain disruptions can be significant.

Playbook at a Glance

- Singapore's first Digital Twin playbook, developed to help non-information and communications technology (ICT) enterprises adopt Digital Twin technology.
- Organised into four key sections to take enterprises from understanding the technology to implementing it in a structured, low-risk way: (a) Digital Twin and its Business Case; (b) Solution Components, Architecture and Capabilities; (c) Adoption and Implementation; and (d) Applications and Impact.
- Lists five key areas to consider when adopting Digital Twin technology: leadership, technology and data, operations, employees, and new market opportunities.
- Sets out a four-step implementation approach: defining the right use case, assessing data readiness and selecting a build approach, establishing governance and cybersecurity safeguards, and executing a disciplined two-stage rollout.
- Includes an Implementation Readiness Checklist to help enterprises evaluate their readiness at each step of their Digital Twin journey.
- Features four case studies drawn from local enterprises across different sectors.

We highlight below the key features of the Playbook, primarily as described in IMDA's [fact sheet](#).

The Playbook's Four Key Sections

The Playbook is organised into four key sections to take enterprises from understanding the technology to implementing it in a structured, low-risk way:

- (a) **Digital Twin and its Business Case:** This section illustrates what a Digital Twin is, the different forms it can take (asset, system, or process twin), and the types of business problems it is best suited to solve across two primary applications: (i) Design and Prototyping, where teams can simulate and validate ideas in a virtual environment before committing to costly physical builds; and (ii) Process Optimisation, where integrating data from machines, workflows, and business systems into a single real-time view enables faster, more confident operational decisions. It also guides businesses to assess whether Digital Twin is the right fit for them, evaluating factors such as business impact, the nature of their operations, and data readiness.
- (b) **Solution Components, Architecture and Capabilities:** This section describes the building blocks of a Digital Twin, including hardware (such as sensors and Internet of Things (IoT) devices), middleware (Application Programming Interfaces (APIs) and communications protocol), and software (analytics, AI, visualisation platform). It also outlines sample technical blueprints tailored to the two primary applications.
- (c) **Adoption and Implementation:** This section outlines five key considerations for organisation readiness (discussed further below), articulates a four-step implementation approach, and sets out an Implementation Readiness Checklist.
- (d) **Applications and Impact:** This section features four case studies drawn from local enterprises across different sectors, illustrating how Digital Twin technology has delivered tangible business results in practice.

Adoption and Implementation

Within the "Adoption and Implementation" context, the Playbook lists the following five key areas to consider when adopting Digital Twin technology:

- (a) **Leadership:** Set a clear vision, ownership and success measures;
- (b) **Technology and data:** Confirm feasibility and platform direction to ensure scalability in future;
- (c) **Operations:** Embed the twin into daily decision-making and scale across sites;
- (d) **Employees:** Build skills, trust and sustained adoption; and
- (e) **New market opportunities:** Translate insights into measurable returns on investment and growth.

Businesses wishing to adopt Digital Twin technology may avail themselves of the following four-step implementation approach:

- (a) **Define the right use case:** Define the right use case anchored in a real business problem, by setting out a shared digital vision and a clear first use case, mapping key operational pain points to targeted use cases, and defining key performance indicators (**KPIs**) for success.
- (b) **Assess data readiness and build approach:** Assess data readiness and select a build approach. This involves deciding which platform to use, how data will be connected, and whether a configurable platform or a bespoke build is required, validating data readiness before starting the pilot, and using pre-built connectors and templates where possible.
- (c) **Establish governance and security:** Establish governance and security so that the Digital Twin is reliable, secure, and fit for operational use, with clear rules for ownership, access, and change management.
- (d) **Two-stage rollout:** Execute a disciplined two-stage rollout which, as set out in the Playbook, comprises: (i) stage 1: monitor and establish baseline, which connects core signals and creates a reliable, shared view of what is happening and establishes baseline KPIs; and (ii) stage 2: predict and simulate, which adds prediction and simulation to anticipate what will happen and test options before changing anything in the real world.

The Playbook notes that “governance and security” cover three areas:

- (a) **Data governance:** To ensure data is traceable, reliable and accessed appropriately;
- (b) **AI governance:** To ensure AI outputs are safe to use, explainable enough for operations, and monitored over time; and
- (c) **Security:** Covering the cybersecurity and privacy measures that should be implemented.

For AI governance and security, the Playbook highlights a number of reference frameworks and tools, including: (a) IMDA’s Model AI Governance Framework for Generative AI; (b) IMDA’s Model Governance Framework for Agentic AI; (c) the AI Verify Foundation’s AI Verify testing toolkit; (d) the Guidelines on Securing AI Systems and the Companion Guide on Securing AI Systems, both issued by the Cyber Security Agency of Singapore (**CSA**); and (e) the CSA Cyber Essentials Mark.

Notably, within the “security” context, the Playbook cautions, as a privacy measure, that personal data should be identified and given PDPA-aligned handling.

Applications and Impact

The Playbook features four case studies drawn from local enterprises across different sectors, illustrating how Digital Twin technology has delivered tangible business results in practice.

One such case study highlighted by IMDA in its fact sheet concerns Exceltec Property Management, which manages over 100 sites across Singapore. Under IMDA's Digital Leaders Programme (**DLP**), Exceltec implemented a Digital Twin that brought together data from IoT sensors, building systems, and maintenance logs into a single, unified platform, giving the team real-time visibility across its managed building sites for the first time. AI models monitored critical equipment like pumps in real time, detecting and flagging early signs of faults before breakdowns occur. This eliminated the need for manual pump inspections, saving approximately 45 minutes of technician time daily.

Continuing IMDA Support

The Playbook states that IMDA supports enterprises in starting and sustaining their Digital Twin journey, including through the DLP and the Digital Leaders Accelerator Bootcamp (DLAB).

As noted in the fact sheet, the DLP was developed to *"guide digitally ambitious and progressive local non-ICT enterprises to propel their digital transformation, build digital capabilities and capture new business opportunities, both locally and abroad"*.

IMDA's [press release](#) issued in conjunction with the opening of the inaugural Singapore Data Festival highlights that, complementing the Playbook, IMDA will conduct Tech Discovery Workshops and work with technology partners to help enterprises understand the Digital Twin technology, identify impactful use cases, and see implementation through. It will also, as the technology continues to evolve, work with industry to support enterprise adoption.

If you would like information and/or assistance on the above or any other area of law, you may wish to contact the Partner at WongPartnership whom you normally work with or any of the following Partners:



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