CALL FOR PAPERS
Digital Twins for Industry Conference

Sydney, Australia

Are you a manager, engineer or technician who works with digital twin technology? We are looking for a number present their papers at this important industry event in 2022. Initially, we would like you to propose a topic by submitting a 100-word abstract outlining an area of interest. We will then ask you to present a full technical paper at the conference in February next year.

The first practical use of digital twins began at NASA when they attempted to improve physical model simulation of spacecraft in 2010. Since then, the rapid evolution of technology has plunged the world into a digital transformation. Digital twins were developed to help engineers understand how products are performing now, and how they will perform in the future. Engineers make informed predictions using data analytics collected from connected sensors and other information sources.

What is a digital twin?

"A digital twin is a virtual representation of an object or system that spans its lifecycle, is updated from real-time data, and uses simulation, machine learning and reasoning to help decision-making."

In plain English, this just means creating a highly complex virtual model that is the exact counterpart (or twin) of a physical thing. The 'thing' could be a car, a building, a bridge, or a jet engine. Connected sensors on the physical asset collect data that can be mapped onto the virtual model. Anyone looking at the digital twin can now see crucial information about how the physical thing is doing out there in the real world.
(https://www.ibm.com)

Digital twins are the result of continual improvement in the creation of product design and engineering activities. Product drawings and engineering specifications have progressed from handmade drafting to computer-aided drafting and design to model-based systems engineering.

When engineers make changes to a design, using this technology, it results in a new version of the item's digital thread, which corresponds to the digital twin. A digital thread is an integrated view of everything about an asset or product, throughout its lifecycle, that enables improved communication and collaboration.

Benefits of digital twin technology?

The benefits of this evolving technology include improved development processes, operations, maintenance scheduling and manufacturability. Using digital twin technology means industry can design products with a shortened manufacturing cycle, reduce or eliminate production waste and defective units, and prevent unplanned downtime.

In short, Digital twins help manufacturers and engineers accomplish the following:

- Visualise a product by real users, in real-time
- Build a digital thread, connecting different systems and promoting traceability
- Refine assumptions with predictive analytics
- Troubleshoot remote equipment
- Manage complexities and connections within systems-of-systems

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Suggested Topics:

Introducing Digital Twin and Its Components	Benefits of Digital Twin to Industry
Programming language extensions to support digital twins System architectures for digital twins Physical and digital twin hybrids Cognitive Digital Twins Quality assurance techniques 3D advanced visualization – Computer aided design (CAD)	Product design enhancement (customization) Predictive Maintenance and Remote Diagnosis Product lifecycle management (PLM) Management and control Shop floor performance improvement/monitoring Warehouse design and operation performance Safety in design Smart automation Maintenance scheduling Production Line and Machines Virtual Commissioning
Integration of Digital Twin and Issues Faced	**Application of Digital Twin (Case Studies)**
Digital transformation processes Theory and modelling Verification techniques and the associated data Artificial intelligence, sensors, cloud, and edge computing Digital thread technology Internet of things–Big Data–Cloud Computing–Machine Learning Human-robot interaction and visualization Issues in integration of Digital Twin to existing infrastructure Blockchain and distributed systems Oceanic systems Virtual reality applications and interactive simulators Advanced robotics in manufacturing Security and privacy	Requesting case studies in Digital Twins **application areas**, including: - manufacturing - healthcare - smart cities - Finance - Education - Automotive - Autonomous driving and unmanned systems - Power and energy systems

All Submissions Welcome

The aim of this conference is to explore new technologies in this fast-moving area and to discuss industry applications in Australia. We would like the presentations to explore recent developments, to reflect on current digital twin projects, and to discuss how these can be applied in the real world to benefit local industry.

Engineers and technicians attending the conference need to be well-equipped with the latest information to make the best decisions when contemplating using digital twin technology in their workplaces.

IDC Technologies' Conferences are emphatically not aimed at showcasing vendor products, they are all about practical applications and solutions. (This is, after all, the best way to demonstrate products, technologies and engineering skills.)

What is required from you?

- A **100-word abstract,** which outlines the topic you would like to present. This needs to be submitted electronically as soon as possible, to secure your place.

- Once your topic is approved, your **technical paper and PowerPoint slides** will be due six weeks prior to the event.

- Speaking slots are allocated on topic suitability and on a first come first served basis, so please register your interest today by emailing emma.cameron@idc-online.com

For further information on this event or to discuss sponsorship opportunities contact:

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