FACT SHEET

DIGITAL TWINS

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DIGITAL TWINS

VIRTUAL CLONING

The Essence: A digital representation of a system, working environment or living entity.

Characteristics: A Digital twin may represent *processes*, *people*, *places*, *systems* and/or *devices* over a wide range of applications. Two main characteristics is commonly associated with digital twins: 1) a *connection* between the *real system* and *the virtual model*, and 2) this connection is created through *sensors and real-time data*. There is an *integration* of *several technologies* in digital twins: IoT, AI (ML), machine learning, analytics, spatial network graphs, etc. The resulting digital simulation models *change and amend* as the real systems change, with *continuously learning* from multiple source data. Such data sources can be the digital twin itself, humans, similar systems, its operating environment and historical data.

Business value: Digital twins may optimize the operation and maintenance of real systems and processes through virtual testing prior to actual changes. They assist in predicting and preventing outcomes, building better products faster and scaling them, improving processes, tightening gaps between design and execution, and improving performance.

Concerns: There is a real risk of misrepresenting the system which is to be replicated. Most systems and processes are less complex, whereas customer relationship management, prospect marketing, acquisitions, service delivery, etc. may represent challenges in accurate implementations. Additionally, the actual simulation of reality is dependent on high accuracy of sensory data, processing and feedback. For SMEs, digital twins represents an up-front investing challenge which presently is out of reach for many.

Successful implementations: Digital twins have increased productivity, cut costs, saved time and improved quality in manufacturing lines, predictive maintenance, design, robot training, offshore installation lifetime planning, and a widening range of applications.

Hot tip: Digital twins do not return immediate value! They do require a certain up-front investment, high quality sensory data, technical skills, good digital infrastructure, and sound change- and project management. However, if you get it right and are a bit patient the investment will generate real and sustained value and put you ahead of competitors.

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