REPORT

Now Tech: Digital Twin Service Providers, Q1 2022

Forrester's Overview Of 31 Digital Twin Service Providers

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Summary

You can use digital twin service providers to more quickly realize a return on investment, focus on business value rather than plumbing, and extract insights from both IT and operational technology (OT) data. But to realize these benefits, you'll first have to select from a diverse set of vendors that vary by size, functionality, geography, and vertical market focus. Tech execs should use this report to understand the value they can expect from a digital twin service provider and to select one based on size and functionality.

Topics

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Improve Operational Effectiveness With Digital Twin Service Providers

Forrester defines a digital twin as:

A digital representation of a physical thing's data, state, relationships, and behavior.

Forrester expects a digital twin to support six key capabilities, powering bidirectional links between physical assets (pumps, robots, trains, etc.) and their digital representations throughout the useful life of those assets.

Most digital twins have traditionally been tightly coupled to individual pieces of industrial equipment, created by the maker of a physical machine to facilitate that organization's monitoring and support of its creation. A new class of digital twin service provider has emerged more recently, which Forrester defines as:

A company that provides tools or services to create, maintain, operate, or integrate digital twins of physical assets on behalf of its customers.

By engaging with a digital twin service provider, tech execs can expect to:

- **Realize returns on their digital twin investment more quickly.** Designing and building a digital twin takes time and the tricky combination of skills and knowledge spanning physics, design, manufacturing, operations, analytics, IoT, semantic modeling, and more. Digital twin service providers have done this before: Let them do the undifferentiated heavy lifting for you.
- **Focus more on digital twin value and less on digital twin maintenance.** A digital twin continues to evolve throughout its physical twin's life: Upgrades and repairs to a physical asset must be replicated in the digital twin, and better machine learning models or new data sources should be incorporated. Standardized tools and workflows reduce the cost of twin maintenance.
- **Extract insight from both IT and operational technology (OT) data silos.** Digital twins consume data from IT and OT systems to deliver value. Digital twin service providers are often better placed to cross the IT/OT divide than internal stakeholders from either IT or OT in their customer's organization.

Select Vendors Based On Size And Functionality

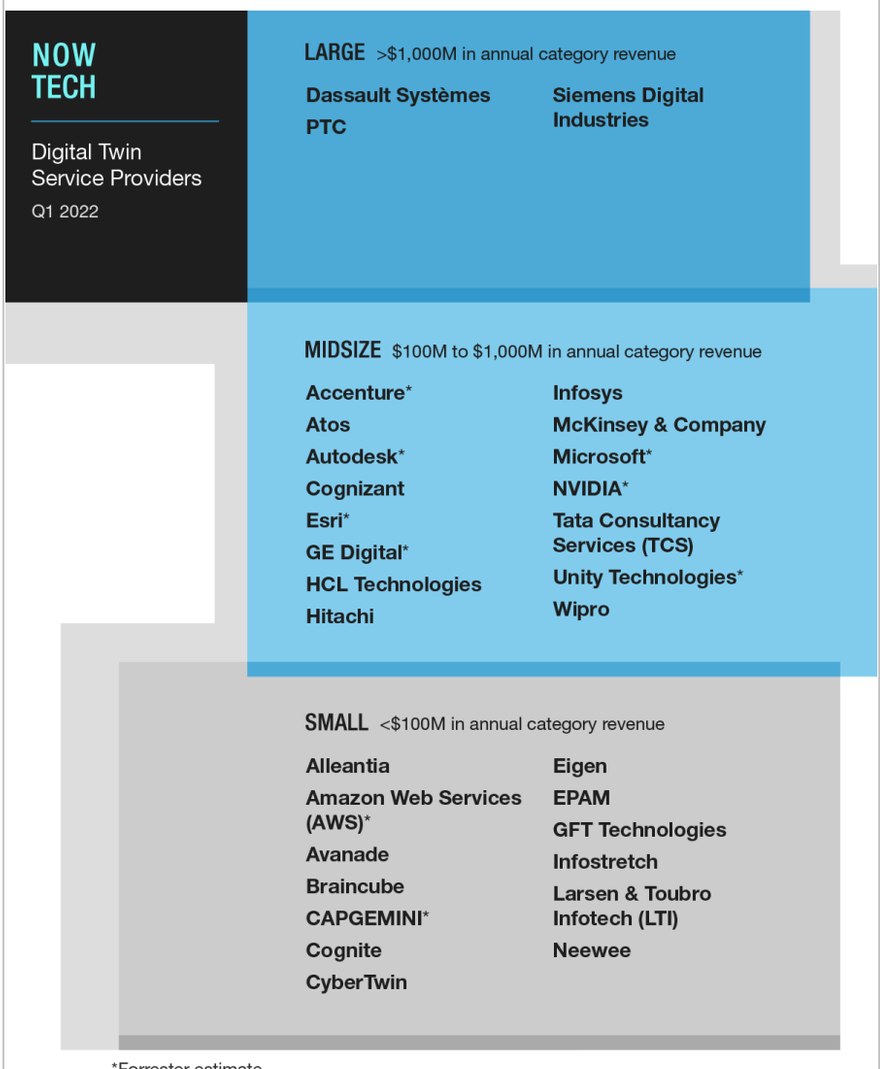
We've based our analysis of the digital twin service provider market on two factors: market presence and functionality.

Digital Twin Service Provider Market Presence Segments

We segmented the vendors in this market into three categories, based on digital twin solutions revenue: large established players (more than $1,000 million in digital twin solutions revenue), midsize players ($100 million to $1,000 million in revenue), and smaller players (less than $100 million in revenue) (see Figure 1).

Figure 1

Now Tech Market Presence Segments: Digital Twin Service Providers, Q1 2022



*Forrester estimate

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Digital Twin Service Provider Functionality Segments

To explore functionality at a deeper level, we broke the digital twin service provider market into three broad segments, each with a different focus (see Figure 2):

- **Original equipment maker (OEM) digital twins extend the reach of their machines.** Industrial OEMs will often have built physical machines for a century and provided various digitally augmented tools to monitor, manage, or maintain those machines for a decade or more. Their domain knowledge, their understanding of real-world operating environments, and their depth of insight into operating states and failure patterns all come together in the digital twins they build: initially (and often still mostly) for their own products, but increasingly for similar classes of machine built by partners, peers, suppliers, and competitors.

- **Twin enablers provide the building blocks to create, run, and consume digital twins.** Cloud infrastructure, physics models, analytics, machine learning tools, ontologies, knowledge graphs, process maps, engineering diagrams, IoT platforms: All of these and more are required to build, maintain, and extract value from a digital twin. Twin enablers provide these building blocks and related consultancy services, enabling their customers to create and extract value from digital twins of the assets they care about. A twin enabler is most likely to be a software company.

- **Twin operators create and operate digital twins on behalf of their customers.** Twin operators exhibit many of the same capabilities as twin enablers. But while a twin enabler provides the tools with which customers mostly build and run their own digital twins, a twin operator tends to do that work with or for its customers. A twin operator is most likely to be a services company.

Figure 2

Now Tech Functionality Segments: Digital Twin Service Providers, Q1 2022

	Original equipment maker (OEM)	Twin enabler	Twin operator
Digital twin of one vendor's machine/ asset	■■■	■■■	■■■
Digital twin of any vendor's machine/ asset	■■■	■■■	■■■
Digital twins for diverse groups of machines/assets	■■■	■■■	■■■
Short time-to-value	■■■	■■■	■■■
Physics-based inputs to the twin	■■■	■■■	■■■
Observation/measurement-based inputs to the twin	■■■	■■■	■■■
Historical inputs to the twin	■■■	■■■	■■■
Synthetic data inputs to the twin	■■■	■■■	■■■
Support for industry standardization	■■■	■■■	■■■
Ability to build digital twins for the customer	■■■	■■■	■■■
Ability to operate digital twins for the customer	■■■	■■■	■■■
Ability to integrate digital twins with digital industrial platform workflows	■■■	■■■	■■■
Developer enablement	■■■	■■■	■■■

Segment functionality ■■■ None ■■■ Low ■■■ Moderate ■■■ High

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Align Individual Vendor Solutions To Your Organization's Needs

The following tables provide an overview of vendors, with details on functionality category, geography, and vertical market focus (see Figure 3, see Figure 4, and see Figure 5).

Figure 3

Now Tech Large Vendors: Digital Twin Service Providers, Q1 2022

LARGE >$1,000M in annual category revenue

	Primary functionality segments	Geographic presence (by revenue %)	Vertical market focus (by revenue)	Sample customers
Dassault Systèmes	Twin enabler	NA 38%; EMEA 38%; APAC 24%	Transportation and mobility; life sciences; industrial equipment; aerospace and defense; infrastructure	Boeing; Bouygues Construction; EDF
PTC	Twin enabler	NA 45%; LATAM 1%; EMEA 36%; APAC 18%	Industrials; electronics and high-tech; medical devices; automotive; aerospace and defense	Eaton; Howden; Volvo
Siemens Digital Industries	Original equipment maker	NA 15%; LATAM 2%; EMEA 51%; APAC 32%*	Automotive; machinery; electronics and semiconductors; food and beverage; aerospace and defense	Airborne; Nestlé; Surfloch

*The vendor did not provide information for this cell; this is Forrester's estimate.

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Figure 4

Now Tech Midsize Vendors: Digital Twin Service Providers, Q1 2022

MIDSIZE $100M to $1,000M in annual category revenue

	Primary functionality segments	Geographic presence (by revenue %)	Vertical market focus (by revenue)	Sample customers
Accenture	Twin operator	NA 35%; EMEA 40%; APAC 25%	Consumer packaged goods; industrial; energy and utilities; automotive; electronics and high-tech	Mars
Atos	Twin operator	NA 5%; EMEA 75%; APAC 20%	Heavy industry; automotive; built environment; energy and utilities	BMW; EDF; Renom
Autodesk	Twin enabler	NA 50%; LATAM 5%; EMEA 30%; APAC 15%*	Architecture, engineering and construction (AEC)	Alcara; Hosokawa Micron; Visoconsult
Cognizant	Twin operator	NA 85%; LATAM 2%; EMEA 10%; APAC 3%	Transportation and logistics; heavy industries; built environment; healthcare and life sciences; energy and utilities	Vendor did not disclose
Esri	Twin enabler	NA 70%; LATAM 5%; EMEA 15%; APAC 10%	Electric and gas; architecture, engineering and construction (AEC); transportation; state and local government; telecoms and water utilities	Boston Planning & Development Agency; Florida Utility; Gwinnett County
GE Digital	Original equipment maker	NA 70%; LATAM 3%; EMEA 16%; APAC 11%*	Power generation; oil and gas; electricity transmission and distribution; renewable energy generation; metals and mining	Aboitiz; SPE; Total
HCL Technologies	Twin operator	NA 60%; LATAM 5%; EMEA 25%; APAC 10%	Construction; renewable energy; industrial products; aerospace and defense; medical devices	Vendor did not disclose
Hitachi	Original equipment maker; twin enabler	NA 25%; LATAM 6%; EMEA 27%; APAC 42%	Manufacturing; utilities; transportation and logistics	Bengalla Mining Company; Logan Aluminum; Meat & Livestock Australia
Infosys	Twin operator	NA 57%; LATAM 2%; EMEA 26%; APAC 15%	Energy and utilities; heavy industries; retail and consumer packaged goods; healthcare, pharma and life sciences; electronics and high-tech	RXR Realty
McKinsey & Company	Twin operator	NA 38%; LATAM 9%; EMEA 35%; APAC 18%	Architecture, engineering and construction (AEC); oil and gas; metals and mining; manufacturing; paper and packaging	Emirates Team New Zealand; Freeport; Teck
Microsoft	Twin enabler	NA 50%; LATAM 5%; EMEA 30%; APAC 15%*	Manufacturing; oil and gas; retail and consumer packaged goods; power and utilities; real estate	AB InBev; BP; Grupo Bimbo
NVIDIA	Twin enabler	NA 50%; LATAM 2%; EMEA 33%; APAC 15%*	Manufacturing; architecture, engineering and construction (AEC); retail and services; communications service providers; transportation	BMW Group; Ericsson; Lockheed Martin
Tata Consultancy Services (TCS)	Twin operator	NA 40%; LATAM 5%; EMEA 30%; APAC 25%*	Manufacturing; energy and utilities; communications and media; banking; healthcare and life sciences	Postnord; SAIPEM; Vodafone Ziggo
Unity Technologies	Twin enabler	NA 30%; LATAM 2%; EMEA 53%; APAC 15%*	Buildings and facilities; civil infrastructure; manufacturing and natural resources; energy and utilities; automotive and transportation	BNP Paribas Real Estate; Vancouver International Airport; Volvo Cars
Wipro	Twin operator	NA 25%; LATAM 5%; EMEA 52%; APAC 18%	Energy and utilities; retail and consumer packaged goods; infrastructure and facilities; heavy industry; healthcare and life sciences	JCB

*The vendor did not provide information for this cell; this is Forrester's estimate.

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Figure 5

Now Tech Small Vendors: Digital Twin Service Providers, Q1 2022

SMALL <$100M in annual category revenue

	Primary functionality segments	Geographic presence (by revenue %)	Vertical market focus (by revenue)	Sample customers
Alleantia	Twin enabler	LATAM 5%; EMEA 90%; APAC 5%	Manufacturing; food; transportation; energy	Ansaldo Energia; Brembo; Vodafone
Amazon Web Services (AWS)	Twin enabler	NA 40%; LATAM 10%; EMEA 35%; APAC 15%*	Manufacturing; energy; power and utilities; real estate	Coca-Cola Icecek; Innovyze; INVISTA
Avanade	Twin operator	NA 1%; EMEA 76%; APAC 23%	Manufacturing; utilities; retail; building management; data analytics and forecasting	Accenture; SSE Renewables; TBI
Braincube	Twin enabler; twin operator	NA 25%; LATAM 8%; EMEA 61%; APAC 6%	Paper; chemical, food and pharmaceuticals; building materials and glass; automotive and consumer packaged goods; elastomer, plastic, mines, and metal	Kimberly Clark; Nestle; Owens Corning
CAPGEMINI	Twin operator	NA 30%; LATAM 5%; EMEA 50%; APAC 15%*	Architecture and design; transportation; construction; industrial equipment	Vendor did not disclose
Cognite	Twin enabler; twin operator	NA 9%; LATAM 1%; EMEA 90%	Oil and gas; manufacturing; power and utilities	Aarbakke; Aker BP; OMV
CyberTwin	Twin enabler	NA 50%; EMEA 50%	Life sciences; culture and tourism; renewable energy and marine engineering	Irish Mainport Holdings; Pfizer; Takeda Pharmaceutical
Eigen	Twin enabler; twin operator	EMEA 100%	Oil and gas	Lundin Energy; Vår Energy; Wintershall Dea
EPAM	Twin operator	NA 60%; EMEA 40%	Oil and gas; manufacturing; healthcare; consumer electronics; supply chain and logistics	Vendor did not disclose
GFT Technologies	Twin operator	EMEA 100%	Manufacturing; automotive; energy and utilities; infrastructure; facilities management	Berliner Verkehrs Gesellschaft; Daimler; ZF
Infostretch	Twin enabler	NA 90%; EMEA 10%	Lifestyle wearable devices; medical devices	Intel; LifeScan; Proteus Digital
Larsen & Toubro Infotech (LTI)	Twin operator	NA 60%; EMEA 30%; APAC 10%	Heavy industries; automotive; healthcare and life sciences; built environment; energy and utilities	Vendor did not disclose
Neewee	Twin operator	NA 10%; EMEA 40%; APAC 50%	Chemicals and specialty chemicals; pharmaceuticals; metals; aerospace; food and beverage	IG Petrochemicals

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Focus On Business Challenges And Not Cool Technology

A digital twin is the latest cool capability that every self-respecting executive in the asset-intensive industries wants to see on their management dashboard. But a digital twin is much more than that pretty 3D visualization: Indeed, a useful digital twin doesn't need to include any graphical representation at all. While it's easy to get excited about these new technologies, leaders looking to invest time and money in digital twins should pay far more attention to the business challenges their digital twin is meant to tackle. You should:

- **Focus on the use cases.** What are you trying to do? "Build a digital twin" is the wrong answer. Focus instead on business requirements, such as reducing the time-to-market for a new product, calculating your golden run, optimizing the cost of your field service operation, understanding the repercussions of decreasing the level of safety stock in your supply chain, or exploring different price points and offers for an X-as-a-service business model. Only then look at whether (or not) a digital twin might be a useful part of the solution.
- **Decide how involved your firm needs to be.** Vendors in our three market presence segments offer capable, compelling, and cost-competitive solutions, any of which will be the right choice for someone. Do you have a deep and long-term relationship with the OEM that built most of the machines you operate and that offers a digital twin solution optimized to your requirements? Do you have a mixed fleet of assets and a team of developers (or partners) with the skill, time, and inclination to build and maintain something from enablers' best-of-breed components? Or do you only care about the outcome and feel comfortable outsourcing the non-differentiating detail to an operator?

- **Understand the role of digital twin in your broader industrial software strategy.** No digital twin is an island. Digital twins consume data from a broad (and growing) set of IT and OT systems. Digital twins feed insight and action back to IT and OT systems and to operators on the front line. As your organization modernizes its digital operations platform, implements its industrial IoT software platform, and begins to sketch out its long-term roadmap for a digital industrial platform, don't lose sight of the ways in which all of these will influence — and be influenced by — the work you do around building digital twins.

Supplemental Material

Market Presence Methodology

We defined market presence in Figure 1 based on the revenues that vendors derive from the sale of digital twin solutions and services.

To complete our review, Forrester requested information from vendors. If vendors didn't share this information with us, we made estimates based on available secondary information. We've marked companies with an asterisk (*) if we estimated revenues or information related to geography or industries. Forrester fact-checked this report with vendors before publishing.

Companies We Researched For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

Accenture

Alleantia

Amazon Web Services (AWS)

Atos

Autodesk

Avanade

Braincube

CAPGEMINI

Cognite

Cognizant

CyberTwin

Dassault Systèmes

Eigen

EPAM

Esri

GE Digital

GFT Technologies

HCL Technologies

Hitachi

Infostretch

Infosys

Larsen & Toubro Infotech (LTI)

McKinsey & Company

Microsoft

Neewee

NVIDIA

PTC

Siemens Digital Industries

Tata Consultancy Services (TCS)

Unity Technologies

Wipro