

AUTODESK RECEIVES THE 2023 COMPANY OF THE YEAR AWARD

Identified as best in class in the global BIM and digital twin industry

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Autodesk excels in many of the criteria in the BIM and digital twin space.

AWARD CRITERIA	
<i>Visionary Innovation & Performance</i>	<i>Customer Impact</i>
Addressing Unmet Needs	Price/Performance Value
Visionary Scenarios Through Mega Trends	Customer Purchase Experience
Implementation of Best Practices	Customer Ownership Experience
Leadership Focus	Customer Service Experience
Financial Performance	Brand Equity

A Market Snapshot

Data in the collaborative yet fragmented architecture, engineering, and construction (AEC) industry remains locked in silos, unconnected between different projects, teams, and organizations. As a result, most of this data is lost or goes unused, increasing project risk around cost, schedule, quality, and safety. While technology deployment can be challenging, the primary barrier for most customers lies in creating a robust business framework that ensures the consistent collection, storage, and sharing of information across their organizations.

Within this context, building information modeling (BIM) forms the foundation of digital transformation in the AEC space by facilitating data exchange between various parties involved in a building project. Based on an intelligent model and enabled on a cloud platform, the BIM process integrates structured, multi-disciplinary data in real-time to create detailed digital representations of a built asset across its lifecycle, from planning and design to construction and operations. Overall, BIM revolutionizes project delivery across industries by connecting teams, workflows, and data across the entire project lifecycle to enable a more efficient, sustainable, and cost-effective way to design and build, creating smarter and more resilient built spaces.

Similarly, digital twins, the ‘living’ versions of the built asset view created by BIM processes, facilitate the comprehensive digital handovers of organized, updated, and easily accessible data. By continually evolving using real-time data once a project or asset is operational, digital twins empower building owners and operators with actionable insights for smarter decisions, enabling efficient operations, lowering maintenance costs, and maximizing return on investment (ROI).

However, the widespread implementation and adoption of BIM and digital twin technologies require significant software, hardware, and training investments, organizational changes, and stakeholder collaboration. Moreover, BIM and digital twins rely on various data sources and formats, making data integration and interoperability a significant challenge. Different software platforms, legacy systems, data standards, and emerging technologies hinder seamless data exchange and collaboration. Establishing open, industry-wide standards is crucial for consistent data exchange and interoperability.

Autodesk uniquely leverages its market-leading BIM and digital twin solutions to meet the industry’s rapidly evolving needs by supporting an open and interoperable AEC software ecosystem defined by seamless data connection. It is well-positioned to capitalize on new growth opportunities, cementing its leadership in the global market.

Autodesk: Revolutionizing the Design, Construction and Maintenance of the Built Environment

Founded in 1982 and headquartered in San Francisco, California, Autodesk is a global leader in software for designers, builders, engineers, manufacturers, 3D artists, and production teams. Its platform and solutions help innovators and creators solve today’s most challenging problems to design and make a better world. The industries Autodesk serves include AEC, product design, manufacturing, media, and entertainment. A pioneer in the BIM space, the company empowers customers with its innovative Design and Make Platform, which integrates design, manufacture, and deliver processes and provides an integrated technology ecosystem where connected data drives better insights and more sustainable outcomes. For example, Autodesk Forma, Autodesk’s AECO industry cloud, will unify workflows across teams that design, build, and operate the built environment, allowing data to flow fluidly, so the right details get to the right people. As of January 31, 2023, Autodesk serves 6.74 million subscribers with approximately 13,700 employees and offices in 15 countries across the Americas, Europe, the Middle East, and the Asia Pacific region.¹

Established during the platform transition from mainframe computers and engineering workstations to personal computers, Autodesk has led three digital transformations over its 40+ years of technology innovation (i.e., from drafting and computer-aided design [CAD] to 3D parametric modeling BIM 1.0 and cloud-connected BIM 2.0). The company continues to develop and sustain a compelling value proposition within the AEC space with its comprehensive portfolio of products and services that enable customers to foster innovation, optimize designs, save time and money, improve quality, collaborate with others, and deliver more sustainable outcomes. More specifically, Autodesk’s AEC products allow customers to design, plan, manufacture, and build any asset by visualizing, simulating, and analyzing real-world performance early in the design process.

¹ <https://investors.autodesk.com/static-files/1dfc0d11-9c1d-40f3-9008-d981b6bdadc2>, accessed June 2023.

The company's **Autodesk Construction Cloud** is one of its key offerings for AEC customers. The construction management software brings every project team, from design to turnover, together on a unified solution, allowing them to connect workflows and collaborate securely from a single source of truth in a common data environment. The offering incorporates the following solutions:

- **Autodesk Build:** This solution empowers builders to seamlessly collaborate and deliver construction projects on time and under budget by delivering a broad, deep, and connected set of field execution, project management, and cost management tools in a single solution with easy-to-use web and mobile applications.
- **Autodesk Takeoff:** This offering enables estimators to perform more accurate two-dimensional takeoffs, generate automated quantities from 3D models, and create competitive bids faster, facilitating the project quantification phase from a single takeoff solution.
- **Autodesk BIM Collaborate:** This solution automates clash detection and connects issues across designer, trade, and construction management teams to enhance model collaboration, improve risk management transparency, and support efficient design collaboration.
- **Autodesk Docs:** A centralized Document Management solution that spans the entire project lifecycle. It allows project teams to organize, distribute, and share files on a single, connected platform, ensuring all team members have access to the information they need.

BuildingConnected: This centralized bid management solution helps owners, GCs, and subcontractors leverage a crowd-sourced network of over 1M construction professionals so teams can find the right builder for every project to reduce risk and protect margins. BuildingConnected Pro integrates with

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- Anirudh Bhaskaran
Industry Principal

Autodesk Docs for centralized document management across the project lifecycle. While BuildingConnected is not part of Autodesk Construction Cloud's unified solution, it plays an important role in the company's offering to the construction industry. Moreover, with better-connected data and an outcome-based approach, Autodesk is driving the BIM space into the next phase with the outcome-based BIM 3.0. Within this context, in May 2023, the company launched initial capabilities for its end-to-end **Autodesk Forma** (formerly Spacemaker) to enable next-generation building design in the cloud. The industry cloud targets the early-stage planning and design process with automation and artificial intelligence (AI)-powered insights to simplify design concept exploration, offload repetitive tasks, and facilitate environmental

evaluations. As a result, Autodesk Forma allows architects to work iteratively rather than sequentially between planning and detailed design phases, optimizing their work outputs. Initially offering contextual modeling, conceptual design, automation, machine learning (ML), and Revit add-on capabilities, the

company intends to continually append new features to Forma's vast connected product ecosystem (including Autodesk Construction Cloud).²

Similarly, in fiscal year (FY) 2022, the company launched **Autodesk Tandem**, its cloud-based digital twin technology platform that projects data from a building's entire lifecycle into one dynamic digital replica, providing actionable insights and increasing operational efficiency. It extends the value of BIM downstream into the owner/operator segment, simplifying the creation of data-rich digital twins. To this end, 'Twin Building' harnesses BIM and provides repeatable workflows to streamline digital replica generation. Similarly, the easily accessible, contextual, and insightful data in a digital twin supports ready-to-go operations, enabling facility performance reviews and adjustments from day one of operations.³

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Customer-led and Market-driven Innovation Strengthening Competitive Edge

Autodesk's BIM solutions address the AEC space's prevalent interoperability challenge by supporting seamless data exchange between various file formats and industry standards. This capability enables industry-wide collaboration between software platforms, allowing architects, engineers, contractors, and

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- Sama Suwal
Best Practices Research

other professionals to work together efficiently. To this end, Autodesk offers interoperability tools to ensure its solutions comply with openBIM® Industry Foundation Classes (IFC) to facilitate neutral, non-proprietary data exchange across different, often discipline-specific software. Moreover, Autodesk actively participates in industry initiatives and standards development to promote open data exchange. The company accelerates better, cross-discipline, and open workflows by collaborating with industry associations and market leaders, such as Esri, Schneider Electric, Eptura and Epic Games.⁴

Autodesk augments the competitive differentiation afforded by its leading software solutions by addressing rapidly evolving customer needs with its strong focus on market-led research and development (R&D). In FY2023, Autodesk invested 24% of its net revenue, amounting to \$1.2 billion, to drive these R&D efforts.⁵ The company prioritizes the development of new products that promote flexibility, sustainability, efficiency, and waste reduction, incorporating cutting-edge technologies like AI,

² <https://investors.autodesk.com/news-releases/news-release-details/autodesk-introduces-forma-next-generation-building-design-cloud>, accessed June 2023.

³ <https://intandem.autodesk.com/>, accessed June 2023.

⁴ <https://www.autodesk.com/industry/aec/bim/interoperability>, accessed June 2023.

⁵ <https://investors.autodesk.com/static-files/1dfc0d11-9c1d-40f3-9008-d981b6bdadc2>, accessed June 2023.

ML, and generative design to automate processes and provide valuable customer insights. Furthermore, the company strategically locates its R&D centers at various locations to tap into a diverse global talent pool, optimize costs, and leverage local market expertise.

Additionally, Autodesk expands its capabilities by acquiring products, technology, and businesses, as demonstrated by its acquisition of Innovyze, Inc. (Innovyze) in FY2022. The company combined Innovyze's hydraulic modeling, simulation, asset performance management, and operational analytics capabilities with its cloud-based design and analysis solutions to drive efficiency and sustainability for water infrastructure customers. Similarly, Autodesk invested in Eptura™ (formerly IOFFICE + SpaceIQ) to bring together BIM and facilities management to support more efficient, flexible, and responsive building operations and maintenance.⁶

These efforts enable Autodesk to strengthen its market position and offer innovative solutions that connect customer workflows and data across different projects, expanding its market opportunity.

Roadmap to Success: Customer-centric, Innovative, and Proactive

Autodesk facilitates exceptional customer experiences by regularly leveraging customer feedback to update its easy-to-use, intuitive user experience portal. Moreover, in addition to direct programs designed to address specific customer needs, the company drives customer value by providing 24/7 technical support and customer training through a multi-tiered model. Within this context, Autodesk offers second-tier support to resellers and distributors, who, in turn, assist and train customers that buy subscriptions or licenses from them. Additionally, customers can access support directly via Autodesk Knowledge Network, which guides them to answers in online support assets, forums, and webinars, or customer service representatives using different modalities such as social media, phone, email, and webchat. Likewise, Autodesk supports resellers and distributors through technical product training, sales training classes, webinars, and other knowledge-sharing programs.

Furthermore, Autodesk maintains an application programming interface (API)-based architecture for its software solutions to facilitate the third-party development of complementary products and industry-specific software solutions. This approach enables customers and third parties to customize products for a wide variety of highly specific use cases. To support this, Autodesk offers several programs that provide strategic investment funding, technological platforms, user communities, technical support, forums, and events to developers who build add-on applications for its solutions.

For instance, the Autodesk Platform Services (APS) initiative supports innovators that build solutions to facilitate the development of a single connected ecosystem to drive the future of how things are designed, made, and used. APS (formerly Forge) is a connected developer ecosystem comprised of web services, technical resources, an engaged community, and the Autodesk App Store. APS APIs and services help companies in the engineering, construction, and manufacturing industries address challenges by enabling the development of customized, scalable solutions that meet their emerging digital needs. Moreover, APS offers developer tools and resources as software-as-a-service offerings for BIM, manufacturing, CAD, and product lifecycle management.

⁶ <https://adsknews.autodesk.com/en/pressrelease/autodesk-invests-spaceiq-ioffice-digital-twins/>, accessed June 2023.

Customer Case Study: TC Intelligent Technology Co., Ltd.

TC Intelligent Technology Co., Ltd. (TCIT), the Taiwan-based APS partner, connects BIM, AI, the Internet of Things, and intelligent video surveillance to create digital platforms that help facility managers and owners optimize their built assets' operation and management. TCIT leverages the APS offering to combine the company's Model Derivative and Data Management APIs to convert BIM models into easy-to-access and lightweight files in the cloud. As a result, TCIT's BIM-powered digital twins drive desirable business outcomes with faster response times and fewer errors in the user-friendly system.⁷

"APS tools offer two advantages: they make BIM more manageable. And they make it easy to extract the data. We need both of these capabilities to extend BIM to other applications that benefit owners and operators. And that's exactly what we're doing with our BIM-powered digital twins."

- Jonathan Chen, President, TCIT⁸

Autodesk strengthens its competitive edge in the BIM and digital twin space with its vast, global network of distributors, resellers, third-party developers, customers, educators, educational institutions, learning partners, and students. This wide-reaching partner ecosystem allows it to tap into volume markets worldwide, ensuring a broad and deep market presence. Autodesk's comprehensive network of 1,500 distributors and resellers (accounting for 65% of its revenue) empowers customers with seamless access to its solutions, enabling quick and easy purchasing, deployment, learning, and support. Moreover, Autodesk benefits from a substantial community of registered third-party developers who continuously enhance and expand its solutions, catering to various specialized applications. This collaborative environment bolsters Autodesk's brand by fostering innovation, versatility, and customer satisfaction.

As a result of these unique capabilities, Autodesk recorded a solid financial and competitive performance in FY2023 despite an unfavorable economic climate and challenging geopolitical situations. The company delivered a record revenue of \$5.01 billion (up 14% year-on-year) owing to several factors, such as robust renewal rates, strong growth in subscriptions, and rapidly expanding digital sales. Autodesk's subscription-based business model and geographic, product, and customer diversification also contributed to its success. Furthermore, in the last three years, the company derived 98% of its revenue through a recurring revenue model via subscription plans, including term-based product subscriptions, cloud service offerings, and enterprise business agreements.⁹ Frost & Sullivan's independent research recognizes Autodesk as a clear market leader in the global BIM and digital twin market, with a 28.7% market share in 2022.

Moving forward, Autodesk strives to continue transforming the industries it serves with cloud-based solutions that promote efficiency and sustainability, capitalizing on the expanding market opportunities presented by next-generation technology and services.

⁷ <https://aps.autodesk.com/customer-stories/tcit>, accessed June 2023.

⁸ Ibid.

⁹ <https://investors.autodesk.com/static-files/1dfc0d11-9c1d-40f3-9008-d981b6bdadc2>, accessed June 2023.

Conclusion

The widespread implementation and adoption of building information modeling (BIM) and digital twin technologies require significant software, hardware, and training investments, organizational changes, and stakeholder collaboration. Moreover, BIM and digital twins rely on various data sources and formats, making data integration and interoperability a significant challenge.

Overall, Autodesk addresses these unmet needs with a strong leadership focus that incorporates customer-centric strategies and exemplifies best practice implementation. The company uniquely leverages its market-leading BIM and digital twin solutions to meet the industry's rapidly evolving needs by supporting an open and interoperable architecture, engineering, and construction software ecosystem defined by seamless data connection. Autodesk enables decisive planning, augmented design, automated construction, and autonomous operations across building projects, thereby unlocking frictionless connectivity, effortless collaboration, secure access, real-time and on-demand analytics, informed decision-making, and a rich third party-ecosystem of applications and services. With organized, standardized, and usable data, customers benefit from more efficient operations, lower maintenance costs, and optimized ROIs. As a result, the company remains a trusted partner, earning a reputation for offering the overall best in the BIM and digital twin market.

With its strong overall performance, Autodesk earns Frost & Sullivan's 2023 Global Company of the Year Award in the BIM and digital twin industry.

What You Need to Know about the Company of the Year Recognition

Frost & Sullivan's Company of the Year Award is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Award Analysis

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Visionary Innovation & Performance

Addressing Unmet Needs: Customers' unmet or under-served needs are unearthed and addressed by a robust solution development process

Visionary Scenarios Through Mega Trends:

Long-range, macro-level scenarios are incorporated into the innovation strategy through the use of Mega Trends, thereby enabling first-to-market solutions and new growth opportunities

Leadership Focus: Company focuses on building a leadership position in core markets and on creating stiff barriers to entry for new competitors

Best Practices Implementation: Best-in-class implementation is characterized by processes, tools, or activities that generate a consistent and repeatable level of success

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

