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January 2019

Digital Transformation Built on the Cloud

How a Cloud-Based Data Platform Drives Digital Transformation in Engineering

Digital transformation (DX) has reached every industry, with 89% of business leaders proclaiming DX as a strategic priority, according to IDC research. It is now moving into the next phase, where return on investment on digital transformation initiatives needs to be proven.

To demonstrate return on investment on digital transformation initiatives, enterprises need to transform the way they develop products and services to realize speed-to-market goals, compete globally in existing and new markets, and meet customer expectations for varied, customized experiences. Platform-based systems and software tools, powered by cloud and artificial intelligence technology, are enabling enterprises of all sizes across industry to achieve these goals.

Engineering organizations are taking key steps to digitally transform innovation by:

- Opening, extending, and accelerating their engineering and R&D processes and approach, leveraging digital technologies like cloud, collaboration, and artificial intelligence
- Moving to a rapid, agile, and digital approach to produce highly complex products and services through flexible, rapid processes, supply chains, and services
- Enabling technical, business, supply chain, manufacturing, and services to work in a unified platform environment to ensure quality products and processes and meet dynamic customer needs consistently

Ecosystems will play a major role in successful digital transformation initiatives, as enterprises are no longer competing against each other, but rather against another ecosystem. Co-innovation and co-creation with partners, customers, suppliers, and even competitors will be the foundation for new business models. IDC predicts that by 2021, 82% of revenues from digital transformation business models will be ecosystem enabled.

Cloud is the key enabler of digital transformation and ecosystem innovation. 90% of organizations that are best in class in digital transformation also use multiple cloud services and cloud platforms. It is not just about cost reduction or outsourcing of IT hardware and services, but about using the cloud as a foundation for digital business innovation and ecosystem collaboration. This is a new era where users are able to consume services on demand rather than investing in heavy and lengthy installations.

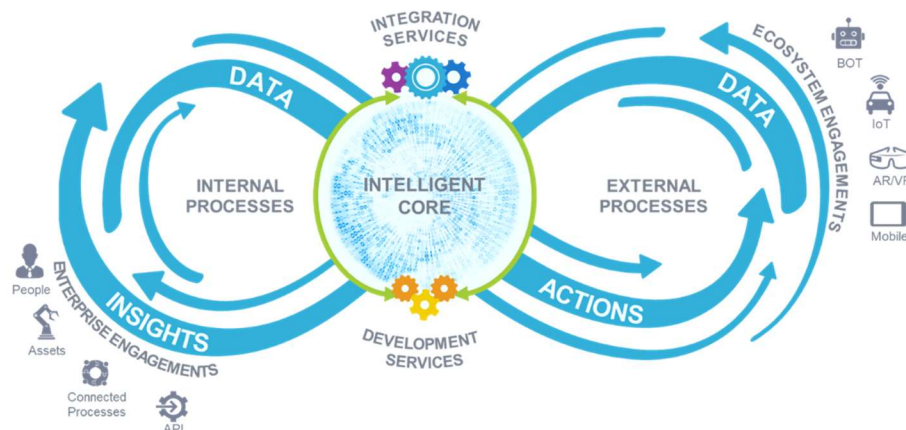
Because of its scalability and flexibility, cloud's importance as a delivery platform is rising exponentially as digital transformation momentum accelerates. In fact, public cloud services are now growing at almost seven times the rate of overall IT market growth.

To support their digital transformation efforts, organizations are building out their digital platform, which is cloud-enabled and data driven, as shown in Figure 1.

Data is collected from internal assets, people, and processes, and analyzed in the intelligent core, where it is enriched with data from the external ecosystem as well as data from IoT solutions, chatbots and bots, augmented and virtual reality solutions, and mobile solutions. The digital platform is by definition cloud native, spanning both private and public clouds, to deliver the agility, flexibility, and speed of execution necessary for fast-paced digital transformation objectives.

Online cross-company collaboration is also considered as best practice to enable greater collaboration across value creation networks internally and across ecosystems. Cloud-based platforms deliver instantly that first access to platforms in real time connecting the dots in a hyperconnected workplace to increase productivity.

Figure 1
Digital Transformation Blueprint



Source: IDC, 2019

Cloud Strategy as a Framework for Transformation

Defining the right cloud strategy is a key step to achieving digital transformation success. Organizations are now moving toward cloud-only or cloud-first and best-fit cloud strategies, depending on their digital maturity. Leading-edge cloud users are now working toward a cloud-only strategy, moving all applications that can be moved to the cloud and closing down their own datacenters to focus on their own business digitalization.

Organizations following closely behind are implementing a cloud-first strategy, and even a SaaS (software-as-a-service) first strategy, where SaaS solutions are the preferred option. Best-fit is an approach for organizations that want to have a mix of on-premise and cloud-based IT and that want to place their workloads based on performance characteristics, regulatory and compliance requirements, and security

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posture. Choosing the right cloud strategy depends on the overall cloud maturity of an organization.

Cloud is now mainstream, and the next wave of cloud adoption is about moving core enterprise workloads like CAD and PLM to the cloud. The transition from on-premise installations of CAD and PLM software to a cloud-based platform makes it available not only for large enterprises but also for smaller teams, smaller organizations, and start-ups.

A cloud-based platform enables collaboration in the ecosystem, involving not only the employees from different departments, but also suppliers and partners. Through a secure cloud platform, data can be shared within the ecosystem, which is essential for ecosystem-based innovation.

Challenges of Running Software On-Premise

PLM and CAD software has traditionally been installed and operated on-premise or in a hosted IT environment. But this is changing. Organizations are now trying to move to a SaaS-first cloud strategy to overcome the well-known challenges that stem from the traditional way of running software on-premise:

- Extensive customizations make it hard to upgrade. Customers are staying on outdated versions of the software for too long, and cannot take advantage of new functionality that enables better collaboration and data sharing, as well as better security and regulatory compliance.
- Data is locked into older data formats and cannot be shared easily.
- Customers need to purchase, deploy, operate, and upgrade their own IT infrastructure to run the software.
- Significant investments are necessary to upgrade to the newest version.
- A closed system for internal usage only does not support ecosystem innovation.

Benefits of Moving to a Cloud Platform

Moving to a cloud platform is a key enabler of digital transformation success. Organizations are now pursuing cloud strategies to remove IT constraints and embrace a unified experience based platform.

The benefits of moving to a cloud platform include the following:

- Instant access to the cloud service enables faster time to market, thus accelerating competitiveness.
- Immediate consumption of cloud resources and access to an always-on digital platform leads to faster time to value for organizations.
- It provides a seamless and frictionless platform experience which is highly secured and efficient.

- All users are always up to date on the latest version of the software and can benefit from the updated features immediately. Even students at university are up to speed on the latest version and can be productive immediately when hired.
- Users can enrich their data with metadata that can be used from multiple stakeholders in the organization, such as engineering, HR, sales, marketing, and production.
- Data can be made available to ecosystem partners for increased collaboration and co-innovation, sharing know-how and expertise, and even revealing new talents.
- A marketplace for cloud services enables customers and partners to create new revenue-generating services on the cloud platform based on their own IP.
- Flexibility to adjust the project scope along the implementation journey. With a cloud platform, adding users on demand or expanding the functional scope is easy and possible without delaying the implementation.

Using multiple cloud services is also not without challenges that need to be overcome with the right architecture:

- Using many different cloud services typically leads to data fragmentation.
- Driving security and governance policies across a variety of cloud services is complex.
- Network latency is a common problem when large data sets are transferred to and from the cloud. The architecture of the platform plays a key role in mitigating network latency challenges.

Dassault Systèmes has Embraced Digital Transformation and the Cloud

The software industry is currently undergoing a massive change, where software companies are transforming into software-as-a-service companies. They are changing their development paradigm from on-premise deployments to cloud-based software as a service as the primary platform. This is a major multiyear transformation for software vendors, but a necessary one, as customers demand as-a-service software delivery models. According to IDC's semiannual software tracker, 32% of enterprise applications will be delivered as a service in 2019, and that percentage is set to grow over the next four years.

Dassault Systèmes believes in the power of digital transformation and has moved its entire software portfolio (12 software brands) to a single cloud platform, called 3DEXPERIENCE, which shares a common data model and a common security model.

Dassault Systèmes has launched the 3DEXPERIENCE platform-as-a-business experience platform. It provides software solutions for every department — from marketing to sales to engineering — that support the value creation process and

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enables organizations to create differentiating consumer experiences. It offers cloud services for 3D design, analysis, simulation, and intelligence software in a collaborative, interactive environment. It is available on the cloud.

The use case journey is different for each industry and Dassault Systèmes offers industry-specific applications delivered on the 3DEXPERIENCE platform, including Design & Engineering, Manufacturing & Production, Simulation, Governance & Lifecycle, 3D Design Experience for Professionals, as well as a broad catalog of services.

Benefits of Moving to Dassault Systèmes' Cloud Platform

Moving to the cloud-based software portfolio is not just a technology change, but an enabler for digital transformation at a larger scale. Using a cloud-based solution enables greater agility, creates a different work experience, and enables ecosystem collaboration.

Moving to the Dassault Systèmes cloud platform has significant advantages for customers:

- Access to all applications from a common intuitive interface creates a unified user experience available anytime, anywhere, whether from the PC, tablet, or mobile phone.
- It offers one dashboard across all applications, customized for different user groups, engineering, sales, and marketing to leverage collective intelligence.
- All users globally are on the same standardized version of the software, which helps drive standardized processes globally.
- It offers subscription-based business models (opex) instead of capex investment.
- It provides a different dynamic in the customer relationship, where customers can influence product development through direct access to the software development team.
- It offers access to the latest version of new, innovative applications such as 3D Printing, Function Driven Generative Design, and xDesign (web CAD application).
- It provides always-on access to the applications as well as to the online support and knowledge base in case of questions.

Challenges for Dassault Systèmes

Embracing digital transformation and moving from an on-premise software delivery model to a cloud-based delivery model also poses some challenges for Dassault Systèmes that need to be overcome to make the cloud solution a success:

- **Education, mindset, and awareness.** Customers need to understand the value proposition and the greater benefits of moving to a cloud-based

platform, how it supports their digital transformation, and how they can drive cultural change with the new cloud platform.

- **Migration.** Existing customers need to migrate their current on-premise installations and associated data to the cloud platform.
- **Ecosystem evolution.** Partners need to upskill their personnel from installation services to engineering services and embrace this transition. Swift installation is no longer a unique differentiator because access from the cloud is instant. Now implementation partners need to understand the customer strategy and project in detail and be part of the cloud value engagement and framework to be able to assist.

How to Progress on Your DX and Cloud Journey

Digital business transformation is happening in all industries, ranging from architecture, engineering, and construction to transportation and mobility. Cloud is the key enabler of digital transformation and provides the agility, flexibility, and immediate access to innovation resources required for DX success.

Cloud strategies are evolving, and customers prefer an as-a-service model, global standardization, and better collaboration, and want to stop managing IT infrastructure.

Implementing a DX and cloud strategy is not just a technology decision but requires organizational transformation, as well as new ways of collaborating, new KPIs to measure DX and cloud success, new organizational structures, and new ways of sharing data as a basis for innovation.

To take advantage of the digitalization and cloud trends, IDC recommends the following actions:

- **Take your employees on a transformational journey.** Many DX and cloud projects fail because they are seen as a purely technical project and neglect the human component. New organizational structures can be put in place to enhance collaboration, and new ways of working like agile working or DevOps processes can be implemented to drive digital transformation success. Cloud underpins these new initiatives as a platform for collaboration and data sharing.
- **Measure your DX success.** Now is the time to show return on investment (ROI) on DX initiatives. New KPIs like net promoter score, number of users of new applications, and user satisfaction with innovative solutions are being introduced to capture the value of DX investments.
- **Embrace new technologies and especially cloud solutions.** Evaluate cloud solutions for all applications as well as data-intensive applications like CAD and PLM systems. Drive a common set of security and governance rules for all SaaS services to build trust in the cloud platform and ensure regulatory compliance.
- **Democratize data.** Using a cloud platform has an organizational impact, as it flattens the organization. Everybody with the right level of access

Implementing a DX and cloud strategy is not just a technology decision but requires organizational transformation.

rights can access data and knowledge, which makes data and information available to a broader set of stakeholders inside the organization but also across the broader ecosystem. This enables organizations to break silos and foster better collaboration and innovation.

- **Socialize your data.** Using a single cloud platform ensures digital continuity and creates a single source of truth. Employees can stop wasting time looking for data, as they automatically have access to the right data. They can also form social communities around the relevant data, for example in engineering, HR, marketing, and other departments. They are accessing the same data, but from a different angle and in a different context.
- **Choose a strong ecosystem as the foundation for your innovation.** In the era of multiplied innovation, competition is no longer between single companies but between ecosystems of companies.

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