Digital Transformation Mike Rosen July 3, 2018

Digital Transformation: Right Here, Right Now!

Welcome to the new BPTrends Column on Digital Transformation. Some readers may remember my articles on SOA from 2003-2011, or my Business Architecture articles from 2012-2014, if so, hello again, and if not, nice to meet you for the first time. After a few years as an Industry Analyst covering Strategic Architecture, I'm back and ready to cover another exciting and important topic. At a high level, this Column will help you answer:

1. What is digital transformation?
2. What strategy should your organization adopt to respond to digital transformation opportunities and threats?
3. What architecture will you need to survive in the new digital economy?
4. How should your organization invest in a sustainable foundation for continued flexibility and success?

So, let's lay out the big picture and introduce the topics that I'll be covering in the next few installments.

Digital Transformation – More Than Just Hype

There is certainly no doubt that 'Digital Transformation' has been hyped up to the max. But just because it's been the subject of hype does not mean that it isn't real. In fact, it is very real, and evolving rapidly. It is fair to say that many organizations have already changed their industry and markets with it, and that organizations that don't have it on their radar may be in peril in the not-too-distant future.

So, what is Digital Transformation? *Digital Transformation is the application of digital technologies and capabilities to improve the business, operating, and engagement models of an organization.* Organizations that engage in digital transformation typically create new products and services, expand markets, improve efficiency and operations, enhance customer value and experience, engage employees and partners, optimize assets, manage risk, and uncover new monetization opportunities*.*

New Digital Transformation Models

While we will cover these in detail in the future, I'll quickly summarize the models that digital transformation can affect.

Business Models

New business models extend/improve existing products and services as well as create completely new ones. Examples are:

- Connected products / services / assets – Create intelligent products and services. Use connected information for product improvement, predictive maintenance, and to provide users with feedback and recommendations. Examples are remote health devices such as Medtronic's Continuous Glucose Monitoring system and Caterpillar's CatConnect product line.

- Platform business model - A platform business model facilitates exchanges between two or more interdependent groups, usually consumers and producers. Platforms create value by harnessing and creating scalable networks of users and resources that can be accessed on demand. Examples are Amazon and Facebook.

- Asset-lite and the sharing economy – Built on top of the platform model, asset-lite, uses the platform to connect owners of assets to those desiring to use the assets. Prime examples are Uber and Airbnb. The sharing economy also depends on a network but intends to share the cost of assets across a pool of owners or users. An example is the Nissan Share program which sells a car to multiple owners and manages their interactions.

- Customer engagement – Provides personalized and targeted interaction with customers that makes them feel "understood, special, part of something" in a way that provides value to the customer and the organization. Examples are Under Armour's Connected Fitness program and Macy's On Call mobile shopping assistant.

- Information monetization – Collect information from multiple sources, analyze and aggregate it, anonymize it, and sell the results. Examples are Oracle's Unified Customer Data and IBM's Weather Channel Weather Data Packages.

Operating Models
Operating models focus on improving internal or partnered operations, efficiencies, and processes. Examples are:

- Digital supply chain
- Intelligent fulfillment
- Decision augmentation
- Robotic process automation
- Digital twin synthesizing

Engagement Models

Engagement models enhance the interaction and value exchange between an organization and its stakeholders. While typically focused on the customer, engagement with employees, partners, and others is also important.

- Customer engagement, as described above, focuses on improving interaction with the customer, typically to improve satisfaction, and to increase sales and loyalty with those customers.
- Employee engagement is focused on improving employee productivity, satisfaction, and retention. A major challenge that organizations have with digital transformation is attracting the skilled talent necessary. Employee engagement activities are a key aspect of becoming an 'employer of choice'.
- Partner engagement brings partners together to share in optimization of joint processes, such as supply chain, or to expand the ecosystem to enhance the network effect and the platform business model.

Sense, Compute, Act – The Essential Paradigm

All of the above models and examples rely on what I call the essential paradigm of digital transformation – "sense, compute, act". How your organization senses the environment and manages the data, how you analyze it, learn from it, and then act on it to affect outcomes. What differentiates the winners of digital transformation is how they leverage these aspects to deliver meaningful, value added actions that enhance their business, operating and engagement models.

- **Sense** - continuously collect data from multiple sources in real time.
- **Compute** – aggregate and discover, analyze, learn, to gain insight and knowledge. This is where AI technologies and machine learning play a big role.
- **Act** – to create a comprehensive awareness of the state of your business and the events surrounding it, to augment human decision making, and to automate internal and external, business and operational processes.

A key enabler of sense, compute, act and of digital transformation is the Internet of Things (IoT). Over the next 7 years, by 2025, the number of 'smart' devices' on the internet will quadruple to reach 80 billion devices. At the same time, the amount of data, much of it from IoT, will increase by an order of magnitude, to 180 Zbytes (10^{21}). Understanding this, being prepared for it, and capitalizing on it will be key characteristics of digital transformation success. And, one of the key enablers will be the architecture (both business and IT) required to support the new scale, scope, and speed of the digital economy.

Architecture for Digital Transformation

Architecture is a critical component of sustainable transformation and the scalability, flexibility, and speed needed to compete in the digital economy. But, like everything else, it must also change to keep pace with the new requirements. A new architecture approach and platform is needed to support the new realities and strategic priorities such as experiential engagement, process optimization, IoT, and information monetization.

Digital Business Platform

The "digital business platform" is the new conceptual framework for the architecture that addresses the needs for scale, scope, speed, and security for the new paradigm of sense, compute, act. Fundamentally, it:

- supports interaction and communication internally and across the ecosystem
- has subsystems for collection and storage of large amounts of a wide variety of data in real time
- provides cognitive capabilities for AI, machine and deep learning, analysis, modeling, visualization
- enables predictive and prescriptive actions including augmentation, automation, reporting
- integrates with existing enterprise systems
- is secure
- is scalable, flexible, manageable

Intelligent Data Architecture

The core of the digital business platform is the intelligent data architecture. This is where your organization takes data and turns it into information, knowledge, insight, and most importantly, value. The intelligent data architecture supports:

- Real time data acquisition
- Data storage, management, quality and governance
- Data discovery, modeling, simulation and visualization
- Machine learning
- Analytics processing
- Automation and control
- Reporting and publishing

Business and Information Architecture

Of course, success with digital transformation does not depend on technology alone. Equally important is to have a well-developed strategy, a clearly articulated business and operating model, an understanding of your business capabilities and information, a prioritized and consistent roadmap of execution, and the ability to make intelligent,

fact-based decisions quickly. In other words, to have business and information architecture that guides your organization and describes the use of technology for digital transformation.

Application and Technology Architecture

In support of the digital business platform and intelligent data architecture are the underlying application and technology architectures. The aspects of these architectures have changed dramatically in the last 3-5 years. New concepts such as containers, microservices, and APIs support the creation of Functions-as-a-Service (FaaS) and Data-as-a-Service (DaaS). Platform-as-a-Service (PaaS) provides the building blocks to assemble these, while DevOps provides techniques for development and deployment. All of this relies on cloud technologies including IaaS, and hybrid solutions. Making sense of it all to create a digital business platform that supports the business and information models and architecture is the challenge of the application and technology architectures.

Security Architecture

No modern platform would be complete without a security architecture. Not only has the environment, threats and vulnerabilities become greater and more complex, but the context that organizations must operate in also brings new requirements. Security architecture addresses three main components, which combine together to create a new way to think about security - what IDC calls 'Digital Trust'.

- **Risk** - is addressed by applying controls across the traditional security practices that manage identity, trust, vulnerability, and threat. With the realization that it is essentially impossible to protect against all threats, and understanding the weakness of most organizations to identify and act on breaches in a timely fashion, the old model of 'protect and defend' is outdated and replaced with the newer model of 'contain and control'.
- **Reputation** - the external perception of how trustworthy a business is requires managing the organization's digital brand, its internal and external business and security processes, and the appropriateness of its actions.
- **Privacy** – managing the protection, control, and reporting of information, such as in accordance with new GDPR requirements.

Security is not just a technology concern. While this has always been true, it is now more important than ever. Business, operating, and engagement models must take security into account from the beginning if an organization is to be digitally trustworthy.

As you can see, we have a lot to talk about. This has been a quick fly over of some of the topics I plan to cover over the next year or so. Of course, since this is BPTrends, I'll make sure to tie in that perspective all along the way. I'd love to hear your feedback on what topics are of most interest and what I may have neglected.

Author

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