Move Digital Commerce Architecture Toward a Digital Business Technology Platform

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Supporting Key Initiative is Digital Commerce Technologies

Digital commerce is a natural progression to digital business, but the commerce architecture is not always aligned to the target business model and customer experience. Application leaders for digital commerce can better support digital business initiatives by using the right architectural approach.

Overview

Key Challenges

- Application leaders often struggle with translating digital business strategies into architecture choices to support long-term growth.
- Application leaders primarily focus on keeping up with business and customer demands by optimizing digital commerce functionality, while missing the big picture of business transformation.
- Traditional digital commerce architecture that focuses on processing transactions lacks the flexibility and extensibility required for digital business.

Recommendations

Application leaders supporting digital commerce technologies should:

- Initiate conversations with business executives to understand the organization's ambitions for a digital business strategy. Identify the primary digital business model involving digital commerce that can fulfill the these ambitions.
- Define the customer experience required by the digital business model, and identify the commerce architecture style that can support such an experience.
- Define the ecosystem and the corresponding architecture style that would support the business model. Educate yourself about API management practices to prepare for opening the platform to ecosystem partners with more business model innovation.
- Continuously refine and adapt the commerce architecture to customer expectations and business evolution. Modernize the architecture in an incremental fashion using APIs and a hybrid integration platform (HIP) toward a digital business technology platform (DBTP).

Strategic Planning Assumptions

By 2020, 30% of our interactions with technology will be through "conversations" with smart machines.

By 2020, more than 50% of online sellers will either list their products on marketplaces or sell third-party products on their core commerce sites.

By 2022, 10% of organizations doing digital commerce will build that into a platform business to transform into digital businesses, and 60% of those will employ an open ecosystem to scale up the growth.

Introduction

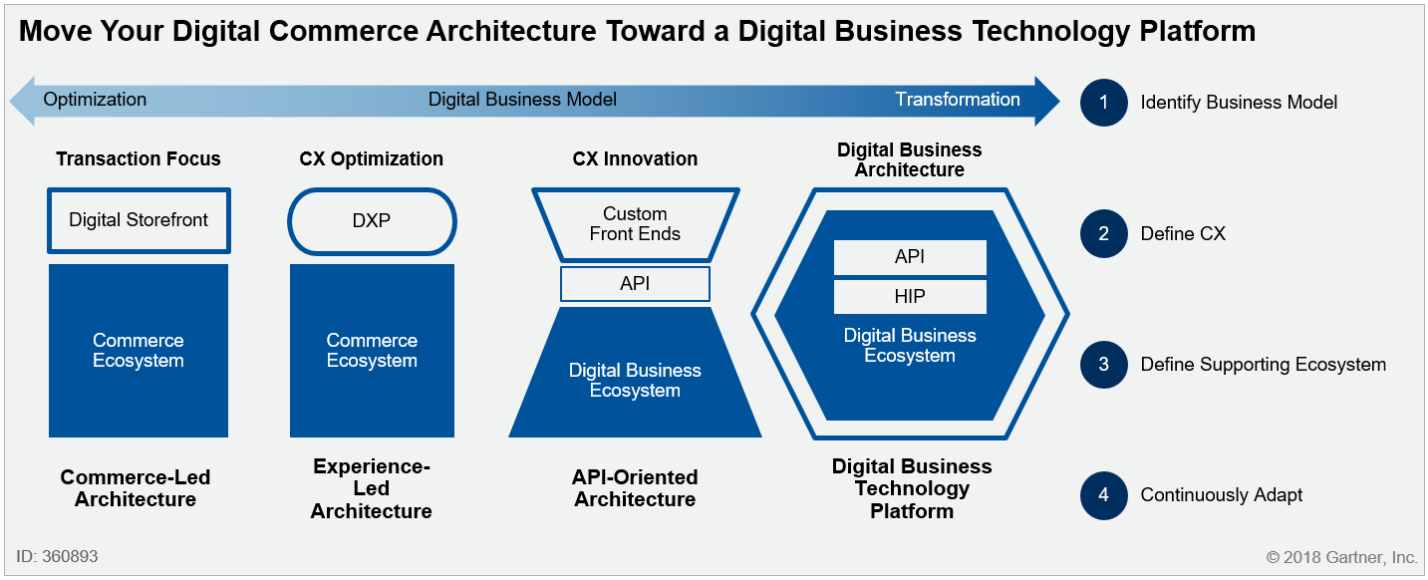
In a Gartner Digital Commerce State of the Union Survey, 63% of the respondents said they view digital commerce as critical and a natural progression to their organization's digital business strategy. Gartner identified six business models for digital commerce to support the digital business journey, ranging from optimization to transformation (see "Scaling Digital Commerce Into a Digital Platform Business" (https://www.gartner.com/document/code/341676?ref=grbody&refval=3882063)).

Application leaders responsible for digital commerce are in a great position to lead digital business initiatives, as digital commerce already includes many of the components needed to kick-start a digital business technology platform (DBTP). The challenge they have is to translate business strategies into technology and architectural choices. The focus is often on optimizing performance and keeping up with the demand from business leaders and customers, but the architecture may not be able to support the target business model, and customer experience especially.

This research identifies four steps that application leaders should take to leverage the three styles of commerce architecture to support new business models and customer experience (see Figure 1) and develop toward a fourth model, the DBTP. However, this note doesn't elaborate on the technical details of the commerce architecture. Instead, it focuses on the three styles of commerce architecture, how they can be mapped against digital business models and customer experience, and how they can enable transition to a full DBTP.

A DBTP is a strategic "platform of platforms" that will take time to develop. It has five core technology areas: customer experience, ecosystems, integrations and Internet of Things (IoT), which are all supported by a core data and intelligence capability (see "A Digital Business Technology Platform Is Fundamental to Scaling Digital Business" (https://www.gartner.com/document/code/342253?ref=grbody&refval=3882063)). Thus, a DBTP shares many of the same characteristics as a sophisticated commerce platform, and can be developed incrementally once basic enablers are in place. This process will reorient the digital commerce architecture from a purely transaction focus to one that is based around the ecosystems required to drive new business models and revenue streams.

Figure 1. Move Digital Commerce Architecture Toward a Digital Business Technology Platform



Source: Gartner (July 2018)

The three prevalent styles of digital commerce architecture and digital business architecture have different focuses for customer experience and business model. (further details on digital commerce architecture can be found in "The Three Approaches to Digital Commerce Platform Architecture and How to Choose Among Them" (https://www.gartner.com/document/code/319165?ref=grbody&refval=3882063)):

- **Commerce-led architecture** focuses on mainstream commerce requirements: product search, processing transactions and fulfilling orders. The digital storefront tends to come from the same core commerce platform as the customer-facing layer. The commerce platform connects with multiple commerce ecosystem applications, such as a payment and order management system, to ensure transactions go through and orders are fulfilled.

- **Experience-led architecture** focuses on optimizing CX; for instance, by introducing a narrative-driven customer journey to drive purchases. A digital experience platform (DXP) can be used as the customer-facing layer, and emphasizes consistent and personalized experience across channels. The commerce platform and ecosystem sits behind the DXP to process transactions and enhance commerce-related functions.

- **API-oriented architecture** focuses on CX agility and flexibility, as well as interoperability with the wider digital business ecosystem. It exposes commerce functionality via APIs, which can integrate into any

front end, and allows external partners to connect to and transact via the platform. The commerce ecosystem becomes part of the digital business ecosystem, and API management becomes key in integrating all systems. This enables the first step toward a DBTP.

- **Digital business architecture** focuses on business model transformation with a concerted CX by ecosystem partners. API orientation now becomes central to the architecture and connects with all internal and external systems via the hybrid integration platform (HIP). The digital commerce platform becomes one component in the DBTP. This enables interoperability among industry and partner systems participating in the digital business ecosystem, and commerce is one of the many capabilities enabling the new digital business model.

In this research, we discuss how you can transition from digital commerce architecture into the digital business architecture underlying the DBTP by taking these four steps:

1. **Identify the digital business model.** Know your digital business ambition, which can range from optimization to transformation. Organizations can have multiple business models for various lines of business. Identifying the primary business model is the first step in choosing the right architecture.

2. **Define the CX.** CX is a key factor impacting the architecture choices. Traditional commerce business models are more transaction-driven whereas CX is undifferentiating. As business models get more transformational, there is an increasing focus on consistent CX across channels that requires architecture changes to support.

3. **Define the supporting ecosystem.** Business models in which organizations are the primary provider of products, and services can leverage the digital commerce ecosystem. Business models that enable organizations to become the facilitator of the platform will increasingly leverage the digital business ecosystem that goes within and beyond the industry boundaries of the facilitating organization. This sees digital commerce applications working alongside ecosystem applications, and eventually blending into the wider ecosystem.

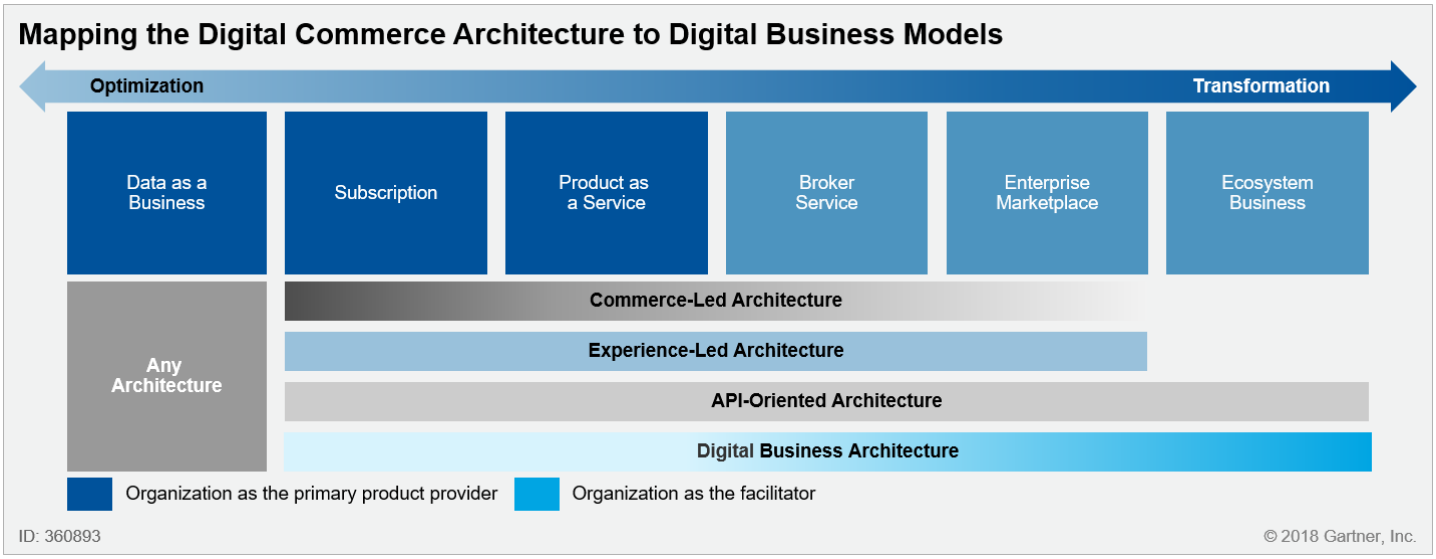
4. **Continuously adapt toward a digital business architecture.** Business needs change over time, and so does architecture. Architecture design is a continuous process rather than a one-time exercise. Digital commerce leaders need to observe the changing customer expectations along with the evolution of the business model, and adapt the architecture accordingly.

Analysis

Identify the Primary Digital Business Models for Digital Commerce

Business model agility is a key characteristic of digital business. It means that organizations actively develop business models at a pace that is ahead of external changes in the market. Even organizations that have excelled at digital commerce should actively work on business modeling as they shift toward digital business. Gartner has identified six digital business models related to commerce, which range from optimization to transformation. These business models can be supported by multiple types of commerce architecture (see Figure 2).

Figure 2. Mapping Digital Commerce Architecture to Digital Business Models



Source: Gartner (July 2018)

Organizations can have multiple business models at the same time. For example, car manufacturers could have a "product as a service" model whereby connected cars self-diagnose and order maintenance services. They could also have a "broker" model with ride sharing or parking sharing services. Alternatively, they can have an "enterprise marketplace" model whereby car owners, suppliers, distributors and repair shops trade among themselves. All these business models require digital commerce capabilities, though not necessarily as the core of the platform. The optimization and transformation business models are explained below.

- **Optimization business models** enhance existing business models via the use of digital technologies to improve revenue, customer experience and efficiency. The underlying value proposition and product offerings remain the same. Examples include the subscription model that changes one-time sales into recurring revenue, and a "product as a service" model whereby machines can automatically restock based on the inventory level.

- **Transformation business models** create new value and sources of revenue with the use of digital technologies, and reach within or beyond industry boundaries to engage ecosystem players. Digital technologies are essential to such business models, which otherwise wouldn't be possible. Examples include broker services, such as ride sharing that matches drivers and passengers, and enterprise marketplaces that facilitate transactions between customers, suppliers, distributors and third-party providers.

Optimization business models are often supported by a commerce-led or experience-led architecture, while the transformation of business models tends to require an API-oriented or digital business architecture. The compatibility between the business model and the architecture depends on the organization's CX requirements (see the Define Customer Experience Requirements Based on the Digital Business Model section) and how much pain application leaders are willing to endure. For example, the enterprise

marketplace model can be more easily implemented using experience-led and API-led architecture than commerce-led, as the latter may require significant custom coding and integration.

When organizations have multiple business models, they need to decide which to focus on for at least the next two to five years. The digital business and technology platforms required to enable it take a long time to develop. Once potential business models have been identified, organizations then need to look at their CX requirements to narrow down the options.

Define Customer Experience Requirements Based on the Digital Business Model

The same type of business model can have different CX requirements. Let's look at the example of the subscription model. For example, a printer cartridge subscription service requires customers to select the package based on the number of pages they print each month. There is limited requirement to personalize product pages or search results, and there is no need to present lots of product images. So this is a straightforward transaction-driven process, which can be well-handled by the commerce-led architecture. However, if that subscription were consumption-based and automated via the printer, which has embedded sensors, the commerce platform would require robust APIs and IoT platform integration as a minimum.

In contrast, consider a beauty product subscription service that allows customers to choose five items from three predefined categories each month. Customers can browse through hundreds of items in each category, and each product page contains multiple images, lifestyle descriptions, compatible accessories, color schemes and even video. The service also needs to personalize product pages, search results, banners and product recommendations. Marketing needs to design and schedule campaigns on various occasions. These requirements need to be synchronized across the website and multiple mobile apps to present a consistent and continuous experience. So this is a content- and marketing-rich customer experience, and is better served using an experience-led architecture.

Organizations committed to offering innovative CX, such as Disney's MagicBand, which allows customers to interact with connected objects in the physical environment, should consider deploying an API-oriented architecture. The architecture decouples presentation tiers and channels from the commerce transaction engine, allowing changes to be made to either layer without affecting the other. So, it can support custom front ends that include not only digital channels, but also physical channels such as IoT devices, retail stores, restaurants, hotel rooms, kiosks and vending machines. It can also support emerging UI technologies such as chatbots and conversational and visual interfaces, as well as integrate biometrics recognition and be ready for future UI technologies. Multiple touchpoints can integrate into the back-end commerce platform without compromising CX or transaction integrity. This brings great agility and flexibility to the platform.

Organizations embracing the wider digital business ecosystem will see CX being delivered by ecosystem partners, but in a concerted manner. Each partner is responsible for designing and delivering its own services, and the sponsoring organization provides APIs for partners to access the main platform. It can offer enabling technologies, such as marketplaces, mobile SDKs, reference designs or IoT kits, that help partners deliver services and also impact the CX. CX implementation is distributed but coordinated. Figure 3 shows the CX attributes supported by each architecture.

Figure 3. Key CX Attributes of Different Architecture Styles

Key CX Attributes of Different Architecture Styles

	Commerce-Led	Experience-Led	API-Oriented	Digital Business
	Transaction Focus	CX Focus	CX Innovation	Concerted CX
Focus	Transaction	Content and marketing	Agility and flexibility	Distributed and coordinated
Front End	Commerce platform	DXP	Custom	Multiple
Channels	Mostly digital	Digital and some physical	Pervasive digital and physical	Pervasive digital, IoT and physical
Personalization	Limited	Rich	Rich	Rich
CX	Template-based, standard	Content-rich, optimized	Custom design, compelling	Contextual, aligned
Support of New UI technologies	Low	Medium	High	High

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Source: Gartner (July 2018)

Application leaders should work with the business strategy, marketing and merchandising teams to define the CX for the target business model. Select the architecture to support the defined CX.

Define the Supporting Ecosystem

When digital commerce plays a major role in the business model, organizations will usually connect to the digital commerce ecosystem. The core digital commerce platform comes with functionality to kick-start a digital commerce business, but those functions can often be rudimentary. When organizations need more advanced and sophisticated features (for example, personalized product recommendation or 3D product visualization), they have to resort to point applications in the digital commerce ecosystem. Digital commerce ecosystem applications include:

- **Customer-facing applications** such as a DXP, search, product recommendation, product visualization, chatbot/VCA, and reviews and ratings.
- **Back-end management applications** such as web content management (WCM), product information management (PIM), master data management (MDM), digital asset management (DAM), customer analytics, and AB/multivariant testing.
- **Operational applications** such as payment, distributed order management (DOM), warehouse management system (WMS), consumption monitoring, clienteling and web analytics.

For details on the digital commerce ecosystem, see "Leverage the Gartner Digital Commerce Technology Ecosystem to Optimize IT Decisions." (https://www.gartner.com/document/code/329089?ref=grbody&refval=3882063)

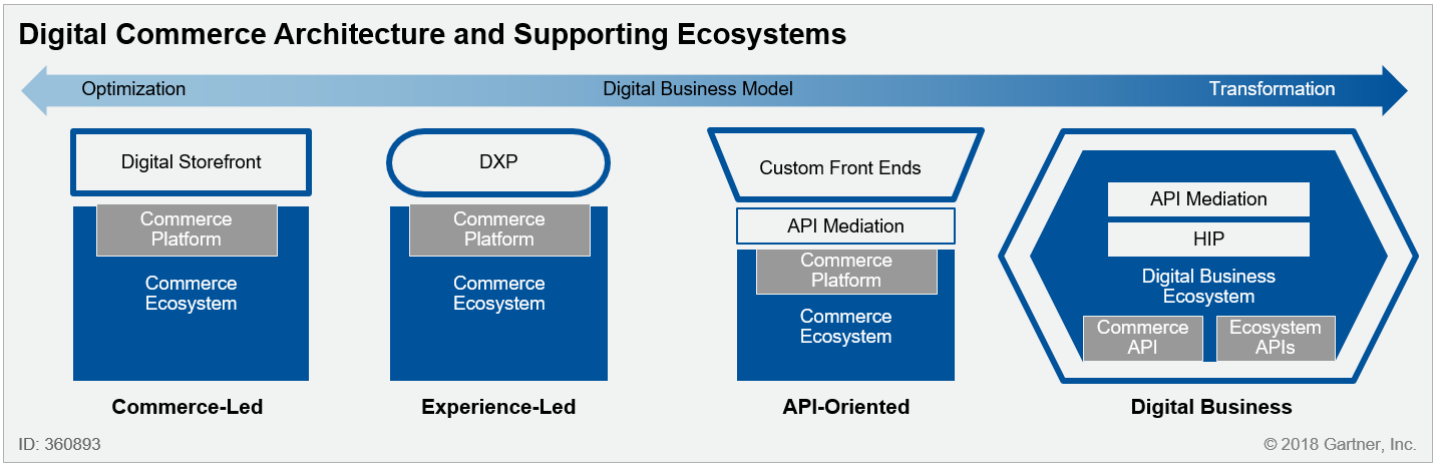
Business models that extend beyond digital commerce toward digital business need to integrate with a wider digital business ecosystem that includes industry-specific and partner systems. For example, booking systems for airlines and hotels, ticketing systems for public transportation, retail POS, policy issuance and claim systems for insurance, account systems in banking, IoT monitoring, control and replenishment

systems, and online learning platforms in education. Leading organizations have launched new business models to connect these systems and partners. Examples include:

- Volkswagen launched RIO (https://rio.cloud/en/get-to-know-rio.html) for the logistics industry to allow shipping companies to plan, track and manage their fleet in a transparent and efficient way. The platform allows shipping companies to store data in the cloud, get predictive maintenance services, and order additional services from the marketplace that hosts offerings from third-party technology and service providers.
- DNV GL, the leading accredited registrar and classification organization, launched Veracity (https://www.veracity.com/) , a marketplace for customers to order digital services from DNV GL and third parties. It also enables secure data storage and sharing between customers and third parties.
- BBVA launched API_Market (https://www.bbvaapimarket.com/home) to enable developers to tap into the bank's data to offer richer services to its customers. This ensures compliance with PSD2, which requires banks in the EU to open up their account and payment data to third parties. BBVA's API offerings have gone far beyond the regulatory requirements, and formed an ecosystem that includes startups, tech firms, enterprises and individuals.

API-oriented architecture is recommended to kick-start these cases, and to manage the complexity of connections with various industry systems and partners. Remember, such business models often need to support custom front ends across pervasive touchpoints. Therefore, an API mediation layer becomes essential in enabling such business models and customer experience. As business sophistication grows, the platform will alter in focus toward wider integration needs and modes of value transfer. Commerce is no longer the core of this, but a function of the digital business architecture. Figure 4 lists the architecture and the supporting ecosystem.

Figure 4. Digital Commerce/Business Architecture and Supporting Ecosystems



Source: Gartner (July 2018)

Organizations implementing API-oriented architecture or investigating digital business architectures need to set up API governance that defines functionalities open to partners and policies relating to access, usage

and security. This is an important aspect of the transition toward digital business, and facilitates partner self-service and access to the platform.

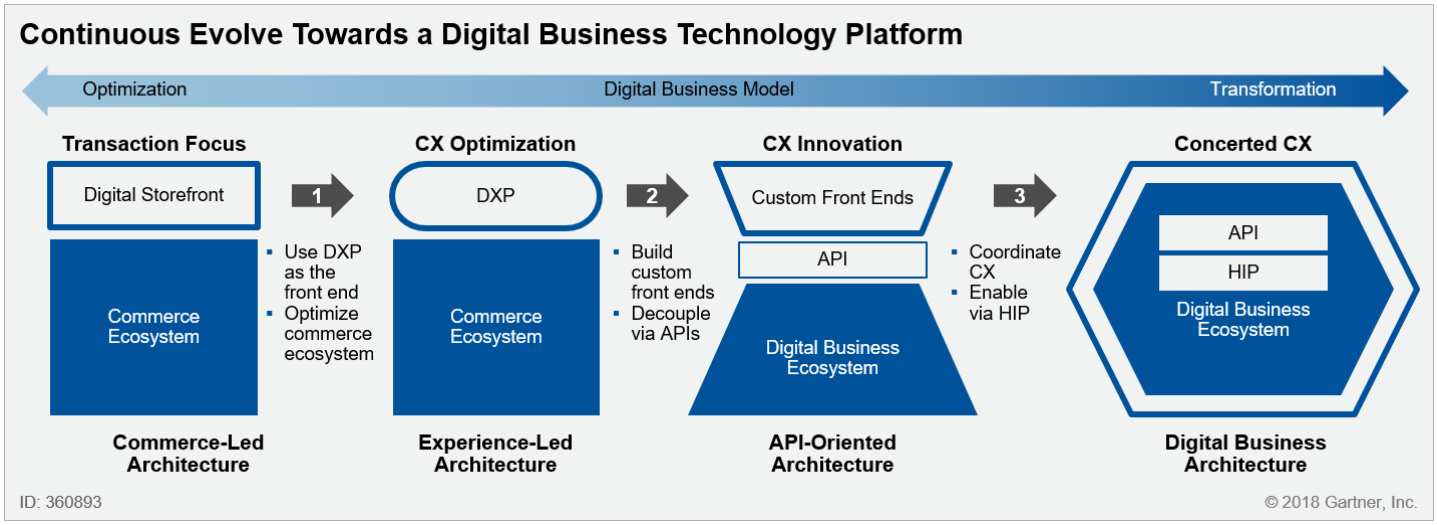
Modern commerce platforms that are built "API-first" often use a microservices architecture, which enables integration with legacy systems, custom front ends and novel digital business applications. However, this can be challenging for businesses running legacy or monolithic applications that were not built in this way. Organizations will need to develop or integrate an API mediation layer, which can involve substantial development work. Introducing API platform and life cycle management is another significant but critical task (see "Top 10 Things CIOs Need to Know About APIs and the API Economy" (https://www.gartner.com/document/code/318859?ref=grbody&refval=3882063)). This is the starting point for the architecture shift toward a DBTP.

Continuously Adapt the Commerce Architecture Toward the DBTP

The DBTP is an idealized end-state for digital business: No organization can move there all at once. Neither is this move purely about technology; people and processes are impacted too (see "Digital Business Requires a New Mindset, Not Just New Technology" (https://www.gartner.com/document/code/341398?ref=grbody&refval=3882063)). Organizations may have been using a commerce-led architecture to comfortably support business growth for the last decade. Or, they may have moved to an experience-led architecture by customizing legacy platforms. Going into the future, however, they will find that their business needs and customer expectations have outgrown the capability of these architectures. This will make organizations less responsive to market changes, as the platform becomes slow to develop and costly to maintain.

Organizations need to make architecture design and choices a continuous effort based on the evolution of customer expectations and business needs. They can (and are often constrained to) modernize the application architecture in an incremental manner rather than in a rip-and-replace fashion (see "Use Continuous Modernization to Build Digital Platforms From Legacy Applications" (https://www.gartner.com/document/code/344837?ref=grbody&refval=3882063)). Figure 5 gives an example of how to move from commerce architectures toward a DBTP.

Figure 5. Continuously Adapt the Commerce Architecture Toward a Digital Business Technology Platform



Source: Gartner (July 2018)

- **Step 1: Modernize the CX and optimize the commerce ecosystem.** Use a DXP as the front end to support rich content, and personalize content, marketing and communication. Optimize commerce functionality by using point solutions. For example, add a search enhancement application to increase accuracy and relevancy, and to support conversational or visual search. Focus your development efforts on close integration between the DXP and the commerce platform. The CX could be redesigned at this stage, and can involve a wide range of digital and physical channels and endpoints.

- **Step 2: Innovate the CX and develop API mediation.** Identify the UI technologies and endpoints to support, and connect those with custom front ends. Further optimize the commerce ecosystem, and get ready to open the platform to a digital business ecosystem. Embark on API mediation and integration development efforts to ease the integration between front ends, back ends and business partner systems. In the early stage of opening up, partners may be given permission on a case-by-case basis to integrate with the organization's platform.

- **Step 3: Offer CX guidance and enabling technologies, and develop the HIP.** The center of gravity shifts away from commerce to the digital business platform that enables point-to-point interactions between ecosystem partners. Offer CX guidance for UI design, and provide enabling technologies such as SDKs and toolkits to help partners implement a consistent CX. Develop a HIP to enable interoperability between internal, remote and partner systems (see "How to Implement a Truly Hybrid Integration Platform" (https://www.gartner.com/document/code/350671?ref=grbody&refval=3882063)). Further develop API governance as it becomes essential in ensuring proper API usage and security of the application data. This is not a quick step and will be multiphase.

Organizations that are ready to go full steam in achieving a digital business can move straight from legacy commerce platforms to API-based commerce, then onto the DBTP journey. This is a more disruptive way to modernize the architecture, and can imply a rip-and-replace approach rather than incremental changes over time.

Evidence

Gartner Digital Commerce State of the Union Survey — This research was conducted via an online survey from 24 October to 7 November 2017 among Gartner Research Circle members — a Gartner-managed panel composed of IT or IT-business professionals. In total, 88 members from organizations currently using a digital commerce platform completed the survey. Qualified participants included business end users with IT, IT-business or business focus as a primary role. The survey was developed collaboratively by a team of Gartner analysts, and was reviewed, tested and administered by Gartner's Research Data Analytics team.

Recommended by the Authors

Scaling Digital Commerce Into a Digital Platform Business (https://www.gartner.com/document/code/341676?ref=ggrec&refval=3882063)

The Three Approaches to Digital Commerce Platform Architecture and How to Choose Among Them (https://www.gartner.com/document/code/319165?ref=ggrec&refval=3882063)

Innovation Insight for API-Based Digital Commerce (https://www.gartner.com/document/code/340186?ref=ggrec&refval=3882063)

Four Definitions Make a Digital Business Strategy Process More Effective (https://www.gartner.com/document/code/352705?ref=ggrec&refval=3882063)

Top 10 Things CIOs Need to Know About APIs and the API Economy (https://www.gartner.com/document/code/318859?ref=ggrec&refval=3882063)

Mediated APIs: An Essential Application Architecture for Digital Business (https://www.gartner.com/document/code/351557?ref=ggrec&refval=3882063)

Use Continuous Modernization to Build Digital Platforms From Legacy Applications (https://www.gartner.com/document/code/344837?ref=ggrec&refval=3882063)

Recommended For You

Industry Vision: Commerce to You (https://www.gartner.com/document/3874598?ref=ddrec&refval=3882063)

Innovation Insight for API-Based Digital Commerce (https://www.gartner.com/document/3855704?ref=ddrec&refval=3882063)

How to Manage Digital Commerce Metrics (https://www.gartner.com/document/3640217?ref=ddrec&refval=3882063)