Headless Commerce Primer
for Growing Merchants

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Introduction

When the internet was first commercialized in the early 1990's, it presented the public with an all new way to shop and connect with their favorite brands. Online shopping was in its infancy, with simplistic webstores built around self-contained, all-in-one software solutions. With consumer engagement limited to desktop web browsers, eCommerce was regarded as a novelty supplement to traditional brick and mortar retail.

Fast-forward to the present. Digital commerce has become a global phenomenon, with the number of people making purchases online

expected to rise from 1.8 billion to 2.1 billion between 2018 and 2021[1]. Yesterday's webstores have evolved into immersive, feature-rich shopping environments, transforming casual consumers into lifelong brand advocates.

The public has transcended web browsers to engage brands directly through internet-connected touchpoints which permeate our daily lives. Emboldened by technology and empowered by connectivity, people now expect personalized digital experiences tailored to their specific needs.

This dramatic shift in technology and consumer behaviors has created a demand for more agile approaches to customer experience management. While a number of options exist to help merchants grow a successful online storefront, application leaders are increasingly drawn to the concept of "headless" commerce.

Based on an electronic communication standard known as application programming interface (API), headless commerce is a unique approach to digital experience management which cleanly separates a commerce platforms front and back ends. Using this model, merchants are able to accelerate content development, fast track innovations, experiment at will, and scale their businesses more efficiently.

We've put together this informative primer to provide you with an overview of how headless commerce architecture works, its business benefits, and the necessary commitments required if you're ready to put this approach to work.

1. "Number of digital buyers worldwide from 2014 to 2021" (Statista.com, 2019)
https://www.statista.com/statistics/251666/number-of-digital-buyers-worldwide/

The Changing Face of *eCommerce*

In the early days of eCommerce, the customer journey was a linear experience from cart to checkout. In fact, most webstores offered little more than a digital inventory catalog, shopping cart, and a basic checkout process. Enterprising merchants with the available resources and talent could code their own webstore from the ground up, but most businesses opted to purchase a vendors' software solution which provided the framework for building a complete webstore. Faster than coding from scratch, these self-contained "full stack" platforms were defined by top-down architecture with integrated front and back end layers.

Working within these systems, developers were prescribed a commerce experience which follow exacting processes and workflows. In turn, this created dependencies where front-end releases would have to be developed, deployed, and managed together with the back end. Ultimately, this limited creative control over what the experience should be — and could be — based on the needs of the brand.

This self-contained, top-down approach to site development made it challenging to modify one portion of a system without concurrently modifying the other. This not only hampered routine site maintenance but

also limited the development of innovations critical to evolving the customer experience.

- Limited customization of commerce functions, both front and back end

- Prolonged implementation times, reducing organizational agility

- Trouble adopting new technologies to expand on available consumer touchpoints

- Site experimentation restricted by vendor rules or platform limitations

Every webstore is composed of two halves, each responsible for specific commerce functions which all come together to form the digital customer experience.

The Front End – Loves the Spotlight

The front end is the customer-facing portion of an eCommerce site and is composed of the content presentation layer and experience management systems. Data is converted using HTML, CSS, and JavaScript, so consumers can view and interact with said data via some form of graphical user interface or GUI.

The Back End – A Strong, Silent Type

Compared to the customer facing front end, the back end is the "unseen" operational layer driving your eCommerce experience. This server-side layer runs in the shadows, managing all business logic, data processing, and commerce functions such as the checkout process, customer account management, website security, and product inventory.

eCommerce *Accelerates*

After years of desktop dominance, computing devices finally became smaller, smarter, and more affordable. Laptops flourished, putting the power of ponderous desktop models into a lightweight, portable unit. Cell phones began shrinking from embarrassing bricks into micronized wonders, with some even offering primitive internet access.

When Steve Jobs introduced the revolutionary iPhone in 2007, it transformed consumer mobile engagement almost overnight. Equipped with the Safari internet engine, anyone, anywhere, could now access a valid internet portal in the palm of their hands.

As competing manufacturers rolled out their own advanced alternatives, cell phones evolved into smartphones; powerful, handheld computing devices which could meet – and exceed – the capabilities of their larger desktop and laptop counterparts. New technologies such as tablets,

"A lot of the products we buy today – whether it's a pair of sneakers or something related to home automation – are increasingly connected to the internet. And by being connected to the internet, there's a sort of value-add service businesses are providing, whether that's a paid subscription or something freely provided by the brand."

– PETER SHELDON, SENIOR DIRECTOR OF STRATEGY AT MAGENTO

smartwatches, and voice assistant devices were soon to follow, giving merchants a range of new ways to connect with their audiences.

Most people conceptualize eCommerce as interacting with a digital storefront or marketplace through a web browser. However, as internet-capable technology has proliferated, the public can effortlessly engage their favorite products and services through a variety of consumer touchpoints.

These internet-enabled touchpoints are the forward-facing extensions of your brand presence. They are fully capable of engaging customers and facilitating transactions, all without shoppers ever visiting your webstore. Touchpoints are accessible through an array of consumer products and devices, making them extremely valuable assets for preemptive engagement.

Instagram – A Touchpoint Titan

With Instagram, merchants can transform their accounts into mobile storefronts with the "Shop Now" function, as well as tagging their products in photos, videos, and stories. These functions turn any post into an opportunity to connect with new shoppers and reaffirm the loyalty of existing customers. With an expected rollout of the first fully native checkout experience on Instagram, consumers will transition from merely browsing the products they love to purchasing them on the spot – all without ever visiting a browser-based webstore.

Touchpoint examples include:

- Social media platforms – Facebook, Instagram, Snapchat, and Pinterest

- Wearable smart devices – smartwatches, fitness trackers, head mounted displays

- Voice assistant technology – Apple Siri, Google Assistant, Amazon Alexa

- Online marketplaces – Amazon, eBay, Etsy, Overstock

- In-store, digital self-serve kiosks

- Vehicle mounted computers

In the years ahead, new touchpoints will continue emerging such as internet-enabled appliances, augmented reality smart glasses, smart clothing, and even intelligent implant devices, all contributing to the ever expanding Internet of Things.

Modern Approaches to *Digital Experience Management*

These days, the complexities of rapidly evolving technologies and consumer expectations alike can prove challenging to merchants. In this fluid landscape, full-stack commerce systems often require custom coding or other workarounds when facing situations which lay outside their capabilities. The need for flexible, adaptable commerce architecture has prompted development of API-driven commerce approaches capable of delivering nuanced digital experience management.

## Application Programming Interfaces

A critical component of modern commerce architecture is the application programming interface. They allow us to do things like make purchases online, make dinner reservations, or book hotels with just a few clicks of the mouse. APIs make the world of interactivity around us possible by providing reliable pathways to quickly and flexibly transmit data.

APIs act as messengers which take your requests, tell a system what you want to do, then return the responses. Applications, databases, and devices are all linked by APIs, creating the global web connectivity which drives our modern world. Using any application technology or experience platform,
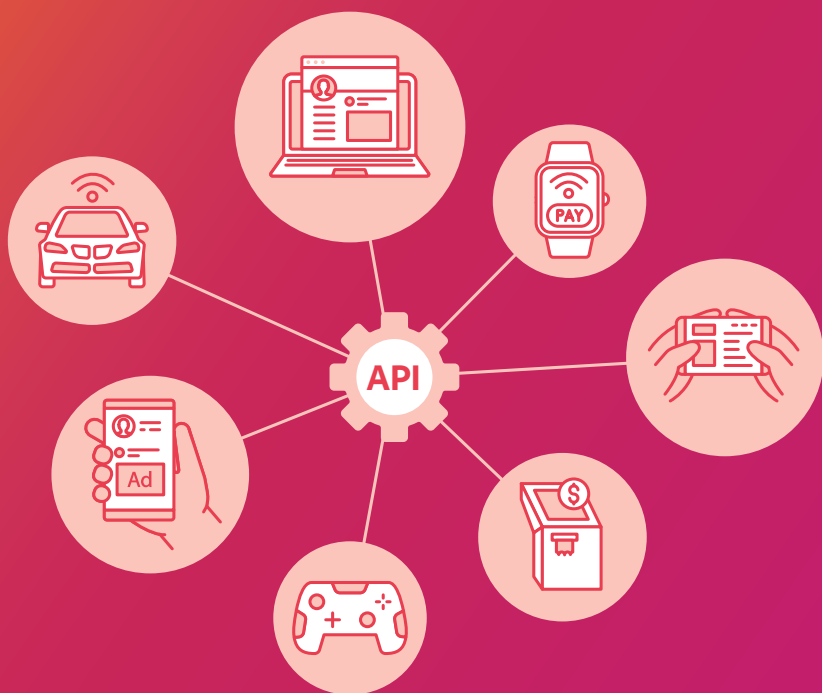
Think of an API as a server in a restaurant who takes your drink order, goes to the bar, tells the bartender (system) what you want, then brings the drink (response) back to you.

developers can use APIs to quickly and reliably transmit information and brand experiences across a wide range of consumer touchpoints. In the present, most small to midmarket businesses are utilizing one of three API-oriented approaches to digital commerce architecture.
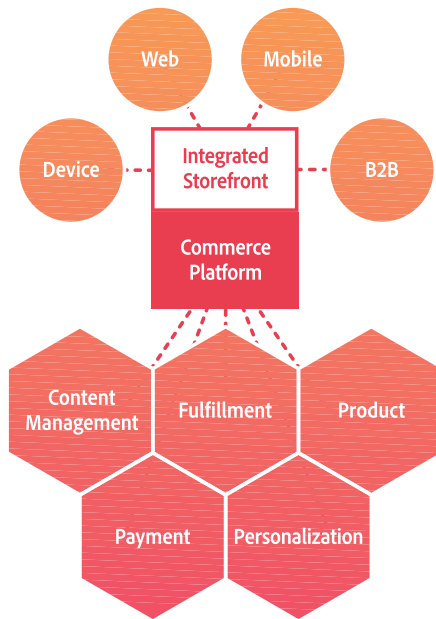
1. Commerce Led – "Full Stack"

By far the most popular approach, commerce led architecture is focused around a primary commerce platform with an integrated storefront. Third party extensions can be integrated to enhance their functionality while partner ecosystems can offer assistance with maintenance and additional development to help with maintenance and development. APIs are usually available to extend commercial reach to touchpoints such as native mobile apps. Although flexible in their capabilities, these plug-and-play platforms frequently lack more advanced digital experience management features such as deep personalization, content testing, and analytics.
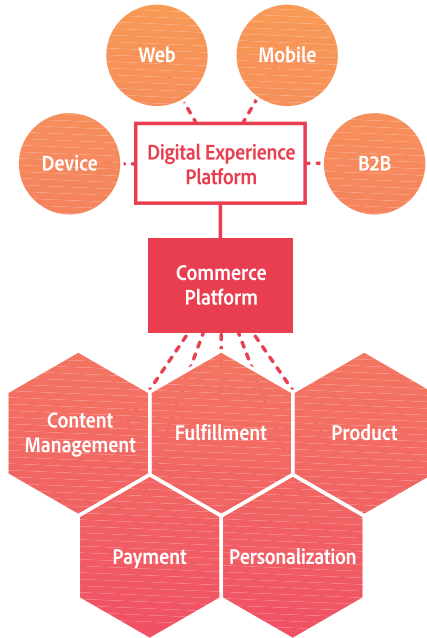
2. Experience Led – "Hybrid"

Also known as "hybrid" commerce, an experience-led approach splits experience delivery between CMS and commerce. These platforms will have a commerce engine at their core with a separate digital experience or web content management platform acting as the presentation layer(s). The front end commerce capabilities are provided by a commerce API or more direct integrations depending on the platform vendor. A drawback of this approach is a commerce API on its own isn't enough to drive front end functionality and control usage, requiring the addition of an API mediation or management layer.
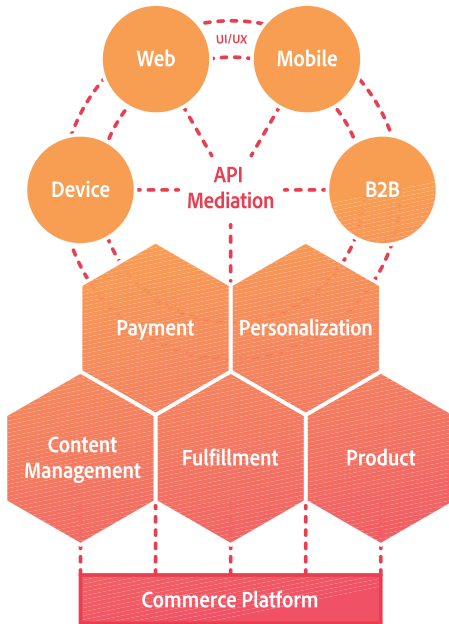
3. API-based – "Headless Commerce"

Headless commerce is a clean separation of the public-facing front end of your webstore from the commerce functions and logistics on the back end. This allows both halves of an eCommerce system to function independently of one another, using APIs to quickly deliver essential commerce services and experiences to customers. Using APIs in this manner improves flexibility to power a wide range of omnichannel scenarios, to commerce-enable any system, application or IoT device, and seamlessly integrate with any content management system.

Headless also releases any dependencies new front-end releases or customizations may have with the back end, meaning the two don't need to be developed, deployed, and managed simultaneously. With this approach, your front-end development team can achieve complete creative control over the customer experience.

The Benefits of *Headless Commerce*

Using headless commerce, merchants can focus on fixing underperforming elements or directing resources towards assets which are performing best. This improves flexibility to power a wide range of omnichannel scenarios to make every experience shoppable, seamlessly integrate with content management systems, and commerce-enable any touchpoint or application.

For creative teams responsible for forward-facing elements such as websites and apps, headless frees them up to work at a dynamically different pace, and vice versa for server-side teams. Marketers can expand into new channels and consumer touchpoints much faster, eliminating artificial constraints or guardrails on what they can and can't do.

Headless advantages include:

Flexible Development Options
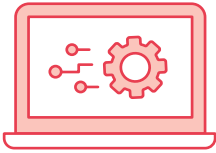
With the front and back ends running independently, merchants can update their front end content layer while pursuing development of new, innovative site functionality on the back end, all without upsetting the overall platform infrastructure

Personalize Like a Pro

Customer data is freely available across every touchpoint, allowing creation of relevant promotions and offers, resulting in a more personalized, meaningful shopping experience for individual shoppers

Customize Without Consequences
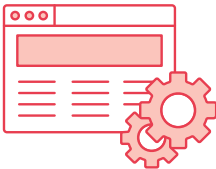
Headless lifts creative restrictions on the front end, meaning you can work closely with your development team to create engaging user experiences quickly, or simply experiment with implementing new features and functionality

Empower Your Marketing Team

Headless enables you to accelerate front end updates in support of marketing campaigns and promotions, clearing your marketing team to create and launch new customer experiences without IT restrictions holding them back

Keep the Customer Experience Consistent

Headless architecture is structured to allow control over your touchpoint network from a centralized platform, ensuring customers have a consistent shopping experience regardless of how they are engaging with your brand

Scale Smarter, Not Harder

Free of traditional operating constraints, front end developers can function with greater efficiency, accelerating site updates and implementation of new user experience capabilities, all with fewer resources
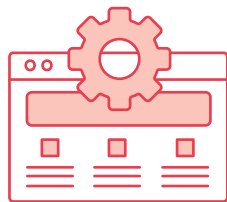
"Headless is about opening up and giving the front-end customer experience designers freedom to think outside the box and build experiences which aren't constrained in any way."

– PETER SHELDON, SENIOR DIRECTOR OF STRATEGY AT MAGENTO

This is Rumor Control...
Here are the Facts

Google "headless commerce" and you'll find no shortage of blogs and web articles actively pushing its benefits. While headless provides a range of incredible business benefits, stop and consider whether you have the organizational maturity, budget, and IT talent to adopt this approach – all of which can vary by scenario and business objectives.

Here's what a commitment to headless will involve:

Break Out the Credit Card

The result of decoupling your front-end from the back-end creates two separate environments requiring individual hosting and management. Given you'll need more infrastructure to support the same level of traffic for each one, related costs can also increase. In addition to the month-to-month infrastructure costs, there is also an upfront investment required to redesign your commerce application and the front-end.

You're Not Going Home Early

Adding layers to your eCommerce environment can increase the time and skill sets required to identify the root cause of an issue and troubleshoot it. If you are getting the wrong response or bad data somewhere, you now

have additional layers, tools, and technologies involved which the transaction has to be traced through, not to mention the necessary debugging and log analysis.

Meet Your New Management Challenge

A whole new set of technologies comes with its own bugs and security vulnerabilities which need to be monitored, patched, and upgraded continually. As a result, you will need to expand your teams' skill sets – or find a technology partner – in order to properly install, configure, troubleshoot, and support both the front and back end.

Queue Up the Development Resources

With more independent development projects taking place simultaneously, more resources will be needed to handle the additional workload. Separate development teams for the back end and the front end must be created and managed. Testing efforts also need to be split up with separate test cases, and in some incidents, separate QA teams.

Don't Write-off
Full-Stack Solutions

It would be unfair for us to say full-stack, systems are incapable of meeting the demands of today's digital landscape. In fact, for mid-market and SMB companies – as well as enterprises with limited technical teams and budgets – they remain the most logical approach to establishing a competitive eCommerce foundation.

- Users with minimal IT resources or experience can benefit from their relative ease of use, such templated site design systems, simplified dashboards, and overall plug-and-play usability

- Although rigid in some regards, full-stack solutions can still be customized to support emerging touchpoints and unique business processes

- Low-operating costs make them attractive options for smaller operations who have not yet achieved the business maturity which qualifies them for more advanced solutions

- Experience-led hybrid technologies such as progressive web applications provide API-based functionality without requiring a full-commitment to a headless approach

Embracing Headless with Magento Commerce

[Magento Commerce](#) offers a highly flexible infrastructure where merchants of all sizes can deploy new features to production many times a day and quickly react to changing customer needs at speed and scale. Magento can provide whatever a growing merchant needs to initiate a gradual transition to headless, such as customizing areas which make the most sense to your business infrastructure.

Customizable Front End

Magento Commerce integrates with the industry-leading Adobe Experience Manager to run a headless or hybrid approach. It can also combine with other content management systems including Drupal, Acquia, Wordpress, and Joomla!. Additionally, Magento Commerce offers two sets of APIs out of the box, REST and GraphQL. Both technologies allow merchants to quickly extend and adopt APIs for different touchpoints and integration scenarios.

Progressive Web App Studio

Progressive Web Apps (PWAs) represent the next evolution in mobile-driven commerce by delivering immersive, app-like experiences via mobile browsers. Magento Commerce offers the PWA Studio for creating and managing rich PWAs as well as a sample PWA store to help merchants accelerate time to market. This way, developers can focus on building engaging customer experiences without cross-specializing in back end processes and applications.

Additional benefits unique to Magento Commerce include:

- Proven APIs augmented by flexible microservices

- Continued commitment to open standards and open platform

- Availability of a global developer and partner ecosystem
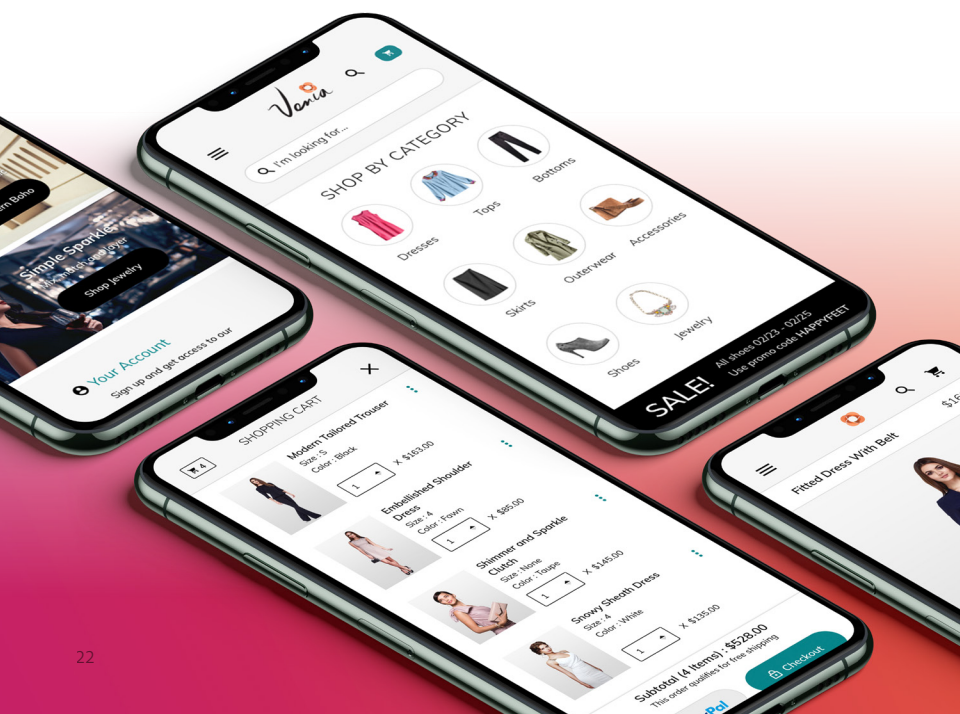
Conclusion

The advancement of consumer behavior and technologies requires businesses to adapt themselves accordingly or risk obscurity. As new consumer touchpoints continue emerging, the customer journey is further complicated, driving a need for smarter, faster approaches to experience management. With their flexible API-based architecture, headless solutions answer this need by driving the next generation of personalized, customer-first eCommerce environments. For any business looking to unify their brand experience and secure a competitive lead through innovation, look no further.

About Magento

Magento, an Adobe company, is a leading provider of commerce innovations to brands across B2B, B2C and B2E use cases. In addition to its ecommerce platform, Magento boasts a strong portfolio of omnichannel solutions that empower merchants to deliver on their experience-driven commerce vision.

Magento was positioned as a Leader in the Gartner Magic Quadrant for Digital Commerce Platform for a third consecutive year. In addition, it is the #1 provider to the Internet Retailer Top 1000, the B2B 300 and the Top 500 Guides for Europe and Latin America.

Magento is supported by a burgeoning ecosystem of developers, technology partners, system integrators, and the Magento Marketplace - the largest eCommerce marketplace for downloadable extensions.

For more information, visit: **www.magento.com**