



# Headless commerce primer for growing merchants.

The what, why, and how-to  
of headless commerce.



# Table of contents

Once upon a time	3
The changing face of ecommerce	5
Ecommerce accelerates	7
Modern approaches to digital experience management	10
The benefits of headless commerce	15
Rumor control—here are the facts	18
Don't write off full-stack solutions	20
Make the move to headless	22



# Once upon a time...

When the internet was first commercialized in the early 1990s, 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. Consumer engagement was limited to desktop web browsers. And ecommerce was regarded as a novelty supplement to traditional brick-and-mortar retail.



## Fast-forward to the present.

Digital commerce is now a global phenomenon that shows no signs of slowing down. 2021 brought the first-ever \$200+ billion holiday season in the US, thanks in large part to an 8.6% growth in online spending, with 43% of online retail sales coming from smartphones. Yesterday's webstores have evolved into immersive, feature-rich shopping environments that, when powered by the right technology, follow the shopper from channel to channel, transforming casual consumers into lifelong brand advocates.

The public has transcended web browsers to engage brands directly through internet-connected touchpoints we use regularly throughout the day. 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 several options exist to help merchants grow a successful online storefront, application leaders are increasingly drawn to "headless" commerce.

Based on an electronic communication standard known as application programming interface (API), headless commerce is a unique approach to digital experience management that cleanly separates a commerce platform's front and back ends. Using this model, merchants can 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.



# 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 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 vendor's software solution to provide 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 that would 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 modifying the other concurrently. 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 ends
- 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 that 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 is more of the strong, silent type.**

Compared to the customer-facing front end, the back end is the “unseen” operational layer that drives 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 that could meet—and exceed—the capabilities of their larger desktop and laptop counterparts. New technologies such as tablets, smartwatches, and voice assistant devices soon followed, 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 with 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 tag 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. And with the fully native checkout of Instagram, consumers can purchase the products they love to browse on the spot—all without ever visiting a browser-based webstore.

## Touchpoint examples include:



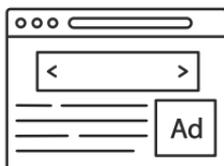
- **Social media platforms:**  
Facebook, Instagram, Snapchat, and Pinterest



- **Wearable smart devices:**  
Smartwatches, fitness trackers, and head-mounted displays



- **Voice assistant technology:**  
Apple Siri, Google Assistant, and Amazon Alexa



- **Online marketplaces:** Amazon, eBay, Etsy, and Overstock



- In-store, digital self-serve kiosks



- Vehicle-mount 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 (IoT).



# 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 that 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. APIs allow you to make purchases online, secure dinner reservations, or book hotels with just a few clicks of the mouse. They make the world of interactivity possible by providing reliable pathways to quickly and flexibly transmit data.

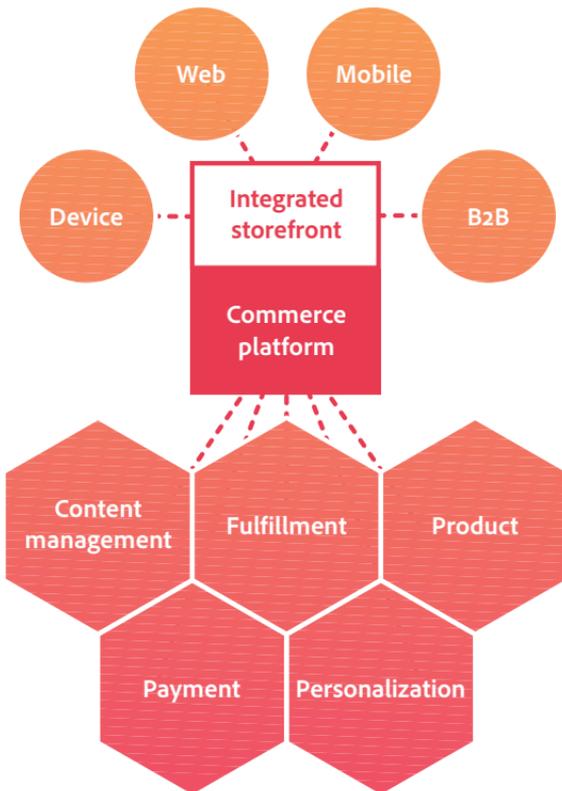
APIs act as messengers—they take your requests, tell a system what you want to do, and then return the responses. Applications, databases, and devices are all linked by APIs, creating the global web connectivity that drives our modern world. No matter the application technology or experience platform, developers can use APIs to transmit information and brand experiences across consumer touchpoints quickly and reliably. In the present, most small to midmarket businesses are utilizing one of three API-oriented approaches to digital commerce architecture.



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, and then brings the drink (response) back to you.

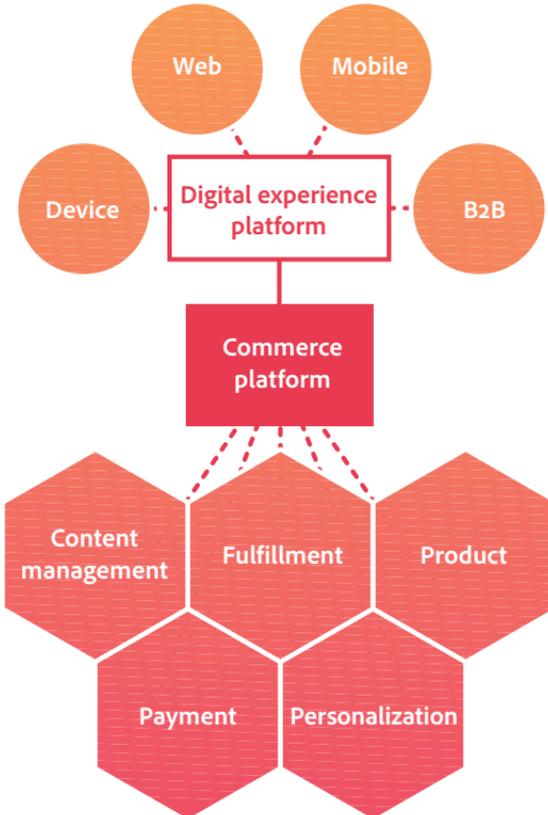
# 1. Commerce-led: the “full stack” approach.

By far the most popular approach, commerce-led architecture is focused on a primary commerce platform with an integrated storefront. Third-party extensions can be integrated to enhance functionality while partner ecosystems can offer assistance with maintenance and additional 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: the “hybrid” approach.

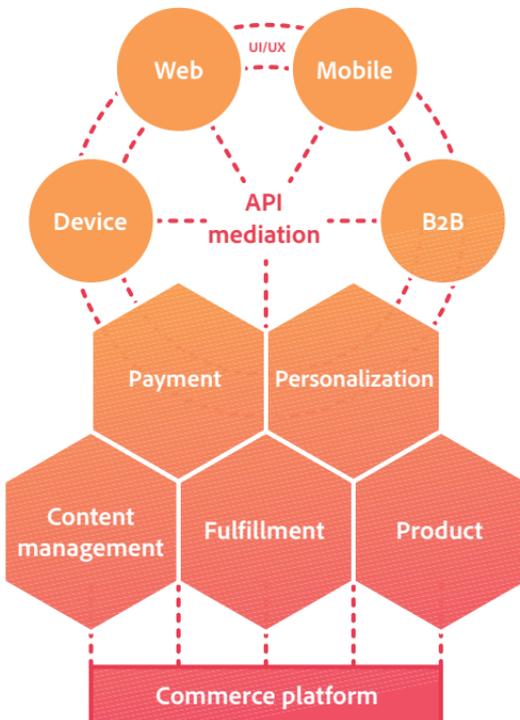
Also known as “hybrid” commerce, an experience-led approach splits experience delivery between CMS and commerce. These platforms have a commerce engine at their core with a separate digital experience or web content management platform acting as the presentation layers. The front-end commerce capabilities 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: the “headless commerce” approach.

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. With APIs delivering essential commerce services and experiences to customers quickly, both halves of an ecommerce system can function independent of one another. 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 to 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.





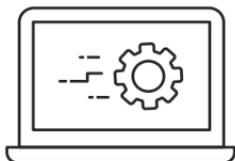
# The benefits of headless commerce.

With headless commerce, merchants can focus on fixing underperforming elements or directing resources toward the assets that are performing best. They can better power a wider range of omnichannel scenarios to make every experience shoppable.

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.

## With headless you can:

### Stay flexible with development options.



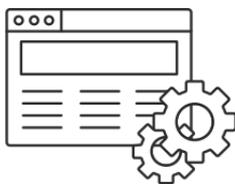
With the front and back ends running independently, merchants can update their front-end content layer while pursuing development of new, innovative site functionality on the back end—all without upsetting the overall platform infrastructure.

### Personalize like a pro.

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



### Customize without consequences.



Headless lifts creative restrictions on the front end, so you can work closely with your development team to create engaging user experiences quickly or simply experiment with 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.

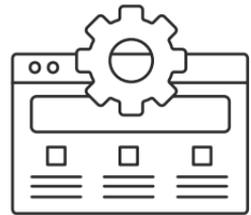


## Keep the customer experience consistent.

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 or where 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.





# Rumor control— here are the facts.

Search online for "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, it's important to 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 your back end creates two separate environments that require individual hosting and management. Given that 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.

## **Don't plan on going home early.**

Adding layers to your ecommerce environment can increase the time and skillsets 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 that the transaction must 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 that need to be monitored, patched, and upgraded continually. As a result, you will need to expand your teams' skillsets—or find a technology partner—to properly install, configure, troubleshoot, and support both the front and back ends.

## **Queue up your development resources.**

With more independent development projects taking place simultaneously, more resources will be required for the additional workload. Separate development teams for the back end and 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 that full-stack systems are incapable of meeting the demands of today's digital landscape. In fact, for midmarket and SMB companies—as well as enterprises with limited technical teams and budgets—they remain the most logical approach for establishing a competitive ecommerce foundation.

- Users with minimal IT resources or experience can benefit from their relative ease of use, such as 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 that have not yet achieved the business maturity needed to qualify them for more advanced solutions.
- Experience-led hybrid technologies such as progressive web applications (PWAs) provide API-based functionality without requiring a full commitment to a headless approach.

## **Embracing headless with Adobe Commerce.**

Adobe Commerce offers a highly flexible infrastructure that allows merchants of all sizes to deploy new features to production many times a day and quickly react to changing customer needs at speed and scale. Adobe Commerce can provide everything a growing merchant needs to initiate a gradual transition to headless, such as customizing areas that make the most sense to your business infrastructure.

## **Customizable front end**

Adobe 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, Adobe Commerce offers two sets of APIs out of the box, REST and GraphQL. Both technologies allow merchants to extend quickly and adopt APIs for different touchpoints and integration scenarios.

## **PWA studio**

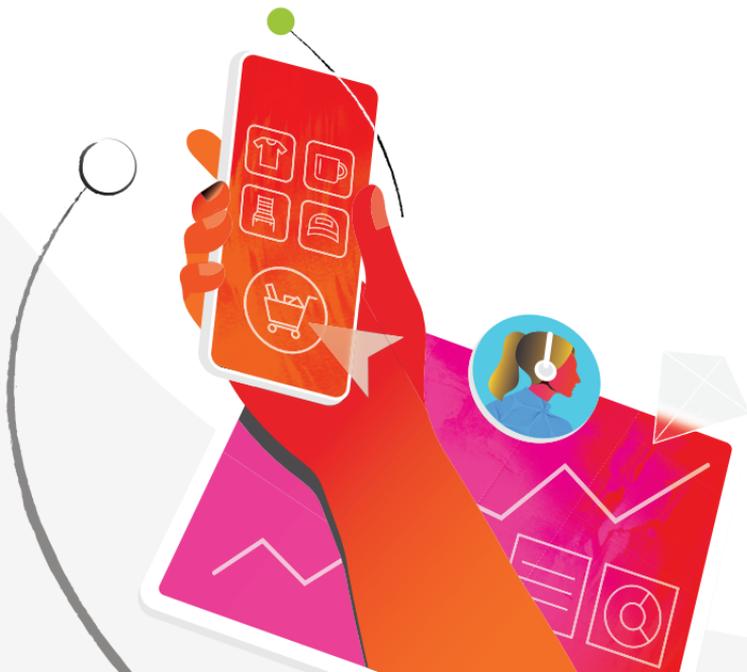
PWAs represent the next evolution in mobile-driven commerce by delivering immersive, app-like experiences via mobile browsers. Adobe Commerce offers PWA Studio for creating and managing rich PWAs, as well as a sample PWA store to help merchants accelerate time to market. This way, developers can focus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

## **Additional benefits unique to Adobe Commerce include:**

- Proven APIs augmented by flexible microservices
- Continuing commitment to open standards and open platform
- Availability of a global developer and partner ecosystem

# Make the move to headless.

The advancement of consumer behavior and technologies requires businesses to adapt accordingly or risk obscurity. New consumer touchpoints keep materializing, and the customer journey becomes more complicated, driving a need for smarter, faster approaches to experience management. With their flexible API-based architecture, headless solutions answer this need by powering 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 Adobe Commerce.

Adobe Commerce is the world's leading digital commerce solution for merchants and brands. With Adobe Commerce, you can build engaging shopping experiences for every type of customer—from B2B and B2C to B2B2C. It's built for enterprise on a scalable, open-source platform with unparalleled security, premium performance, and a low total cost of ownership. Businesses of all sizes can use it to reach customers wherever they are, across devices and marketplaces. It's more than a flexible shopping cart system. It's the building block for business growth.

Adobe was named a Leader in the Gartner Magic Quadrant for Digital Commerce Platform for a fifth consecutive year. In addition, Adobe Commerce is the #1 provider to the Digital Commerce 360 Top 1000 online retailers for the 10th consecutive year and the Top 500 Guides for Europe and Latin America.

Adobe Commerce is supported by a burgeoning ecosystem of developers, technology partners, system integrators, and the Magento Marketplace—the largest ecommerce marketplace for downloadable extensions.

[Get details](#)

# Sources

Adobe Digital Insights, "[Unboxing 2021 Holiday Shopping Results](#)," Adobe, January 2022.



Adobe, the Adobe logo, Adobe Commerce, and Experience Cloud are either registered trademarks or trademarks of Adobe Inc. in the United States and/or other countries.

Copyright © 2021 Adobe. All rights reserved.