Beyond the Assembly Line

Transforming manufacturing through ecommerce innovation

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Common Terminology

Throughout this whitepaper, the terms decoupled and headless are used to indicate the use of a modular and composable commerce solution.

Monolithic

Large, singular, interconnected systems that have traditionally been the backbone of enterprise digital strategies, with the front and backends being tightly locked.

Decoupled

The frontend experience, the interface a customer interacts with, is a separate component from the backend functionality and data.

Headless

The platform is built without a frontend experience, allowing you to add the front end system of your choice.

Composable

The ability of any component to be worked on, updated or removed without affecting the ecosystem in its entirety.

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Introduction

The manufacturing sector stands at a pivotal juncture, poised to redefine its identity in the face of changing times. Gone are the days when manufacturing was a realm of silent machines and assembly lines, churning out products as quickly and inexpensively as possible. Today, the industry is being pushed into the spotlight needing to resonate with the beat of individuality, innovation, and ethics.

The drive for this evolution is not just about technology; it's about people. Where and how manufacturing is done is now a top consideration in the buying process. Customers are seeking personalized experiences directly with the brands that make their favourite products. For many manufacturers, the path to educate, build a brand and make this all a reality is seen as onerous.

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Embracing a new consumer

Digital marketplaces have opened new channels and opportunities for manufacturers, giving them direct access to consumers and freeing them from the constraints of traditional wholesale and distribution channels. But selling direct-to-market demands an agile and responsive core belief system, which does not come naturally to manufacturers.

> "75% of B2B manufacturers will sell directly to their customers via digital commerce by 2025."
>
> — 2021 Digital Commerce State of the Union, Gartner

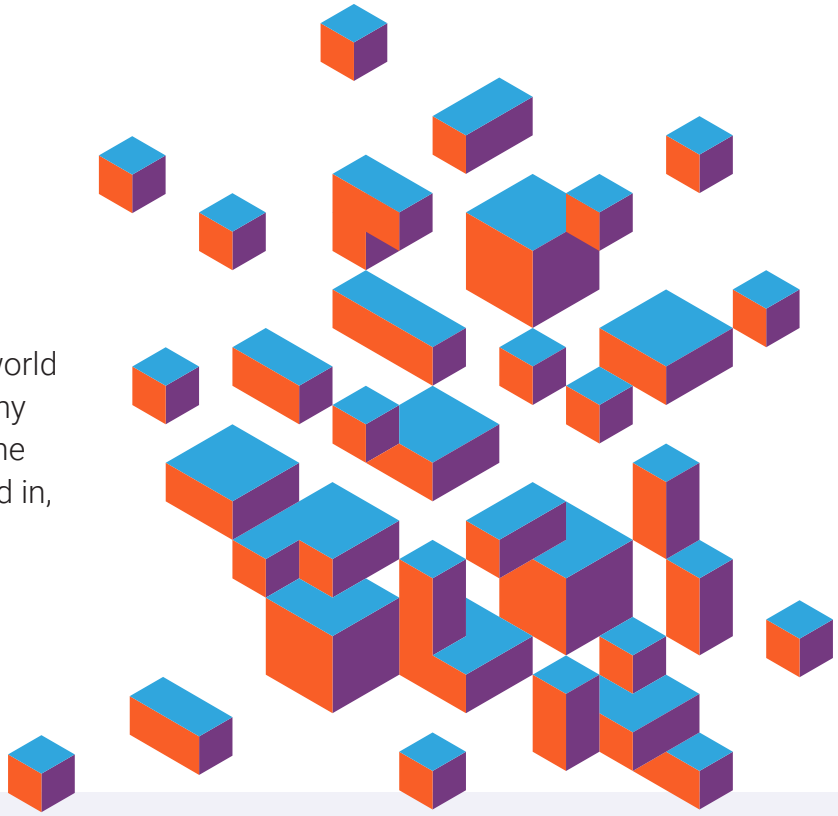
The burden of dependencies

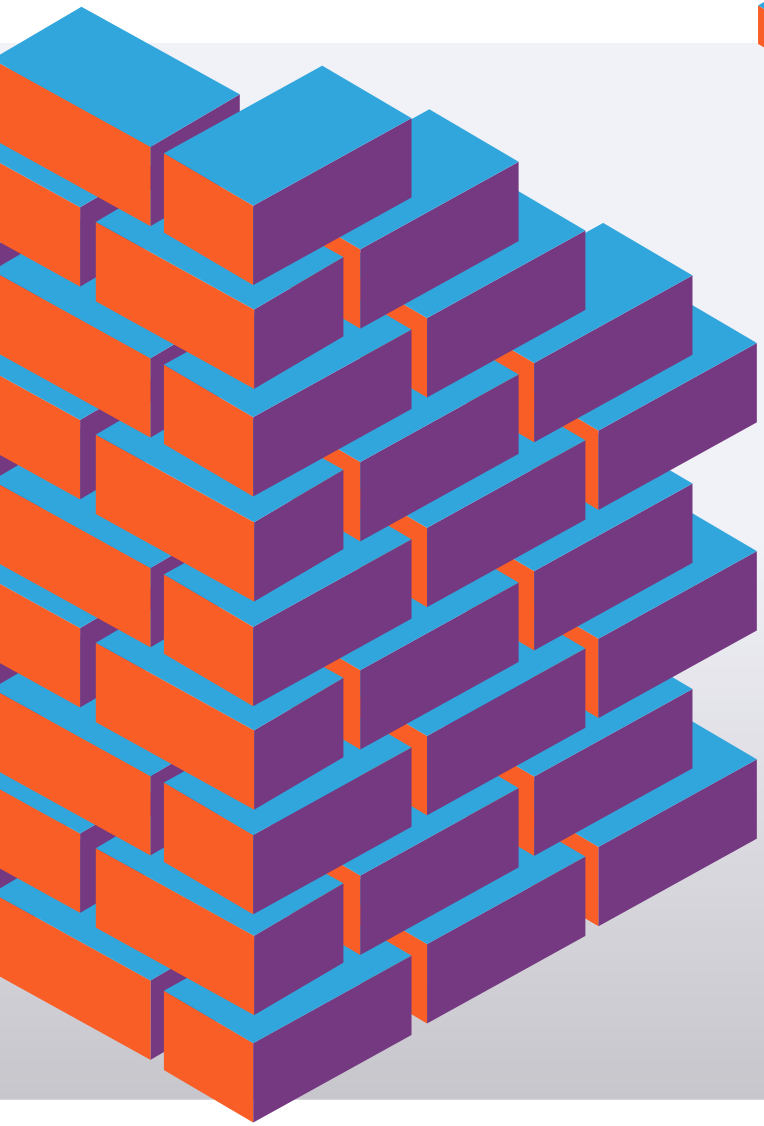
Unfortunately, the legacy systems in manufacturing, once the pillars of industrial strength, now emerge as barriers to change. Manufacturers aiming to broaden their digital footprint frequently encounter constraints imposed by these traditional technologies and legacy systems. Their rigidity and compartmentalized nature stifle the fluidity and creativity essential in the digital age.

Often at the core of these systems is a monolithic or custom-built ERP, which struggles with scalability and adaptability despite its strength and reliability. Having operated in isolation for decades, these systems face challenges when integrating and synchronizing with newer, more dynamic environments. This scenario highlights the need for more agile and flexible technology solutions that can keep pace with the evolving demands of the digital marketplace.

Inundated with options

The world is overflowing with solutions to meet this new shift in buying behaviour. Choosing the wrong one has critical implications, potentially harming a manufacturer's brand and reputation in a world of little tolerance and second chances. Many who've attempted it have quickly realized the limitations of the platforms they've invested in, finding that these platforms are not able to accommodate the complexities of their business workflows and complex product offerings. And for the rest, they don't even know where to start.





A strong foundation

This whitepaper examines a low-risk, incremental approach to embracing this new world of digital transformation that will scale for years to come. Like anything in business, it all starts with a strong foundation.

Technical architecture is the foundation of digital transformation. We will explore a new architecture and a solution that encompasses it, one that can bring together commerce, enterprise resource planning (ERP), content management systems (CMS), and anything else needed in the solution.

We will explore decoupled or headless architecture in detail. Decoupling allows us to create the ideal customer experience while meeting the business's demands and overcoming the complexities of individual platform limitations and compatibility issues.

A customer experience platform for manufacturers (MCXP)

The whitepaper uncovers a solution built on this architecture, a suite of technologies — Gesso, Acumatica, BigCommerce, and Storyblok — that come together to form a MCXP, each ideally suited for manufacturing. They are more than tools: they are enablers and catalysts that help manufacturers translate their vision into reality. This ideal tech stack harmonizes content management, resource planning, and ecommerce, creating a digital ecosystem where every touchpoint is an opportunity for connection, understanding, and growth.

Journeying towards innovation

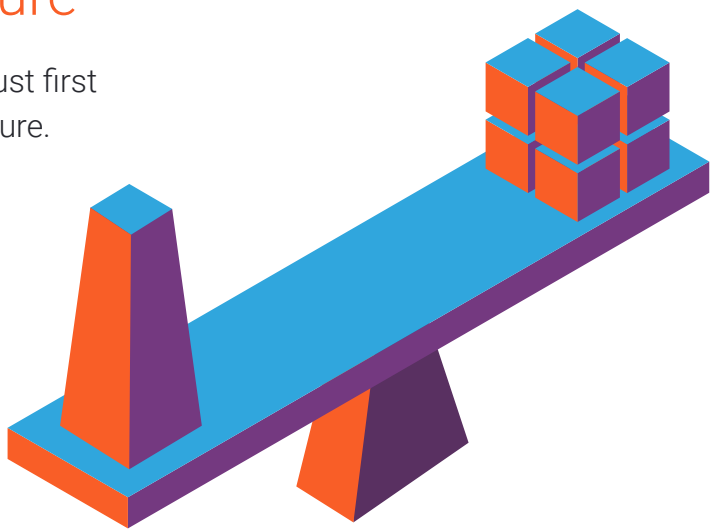
At the heart of every technological leap forward lies a fundamental human desire—to innovate, simplify, and connect more deeply with others. In the world of manufacturing, this desire is manifesting as a shift from traditional face-to-face sales processes to vibrant digital experiences.

Adopting the MCXP in this whitepaper goes beyond a technical spec and set of platforms; it's a simplified path to innovation that allows the customer to be at the heart of decisions, fulfilling their every need and desired outcome. Its unique structure has an unprecedented time-to-market advantage over similar solutions.

As we explore the tech alliance of Gesso, Storyblok, Acumatica, and BigCommerce further, we will see how these carefully chosen systems are not just platforms built for the masses but strategically designed to aid in the transformative journey. They guide the manufacturing sector towards a future where they're not just inventors but storytellers and partners in every customer's touch point with their brand.

This journey is about more than adopting new technologies; it's about embracing a new mindset. A mindset working towards a future that's efficient, profitable, more human, responsive, and more connected.

The ideal technical architecture

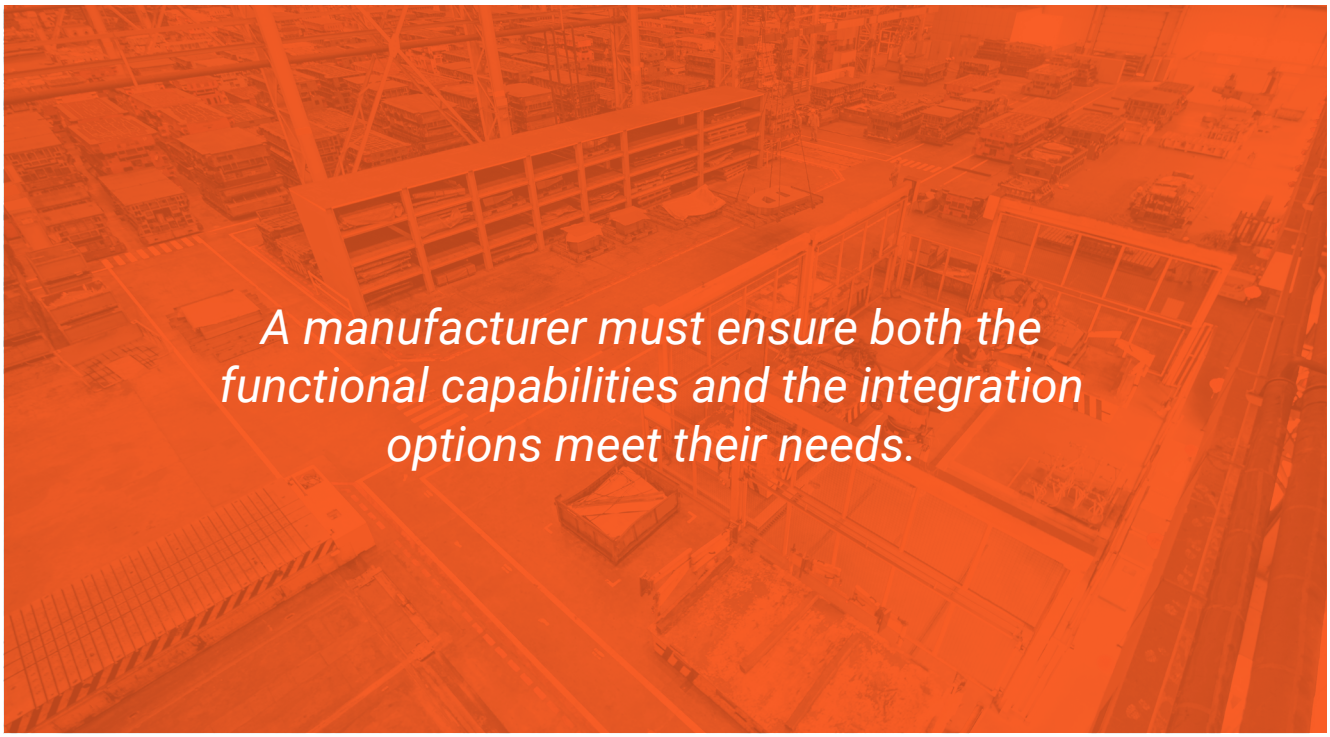


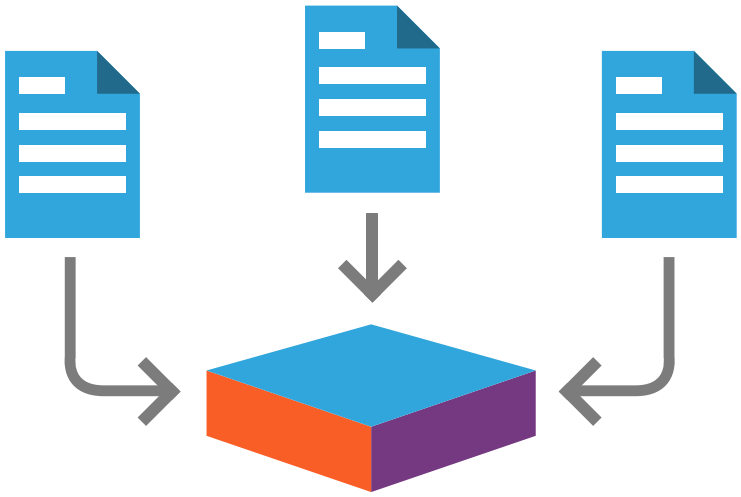
Before making platform choices, a manufacturer must first understand and choose the ideal technical architecture. From there, the choices become much easier.

There are essentially two architectures to choose from, with a third being a hybrid of both. These include **traditional** and **decoupled** (or headless). The MCXP we will focus on in this paper uses a modern decoupled architecture, but let's build an understanding of each type of setup to start.

Traditional architecture

The traditional architecture is the simplest approach for manufacturers to provide customers the ability to buy online. Manufacturers leverage an ecommerce platform that provides both the frontend user experience (the interface a customer interacts with) along with the backend ecommerce functionality.





For example, the ecommerce platform will need to be able to connect to the ERP.

Data from the ERP, such as inventory, product details, and shipping fees, will need to be automatically passed directly to the commerce platform.

In this architecture, the frontend user experience is limited to what can be provided by the ecommerce platform, such as BigCommerce. Only the shared data points provided in the native integration between the ecommerce and ERP platforms can be leveraged in the user experience. Should there be any modifications or custom setups within the ERP whereby new data or functionality is developed that will not be available in the user experience provided by the ecommerce platform.

Ecommerce platforms are becoming quite robust, and if they meet the needs, this is the easiest architecture to set up and manage because the frontend and backend are built to work together seamlessly. However, B2B and manufacturing rarely can find an ecommerce platform that checks all the boxes, especially when custom functionality and integration work are required.

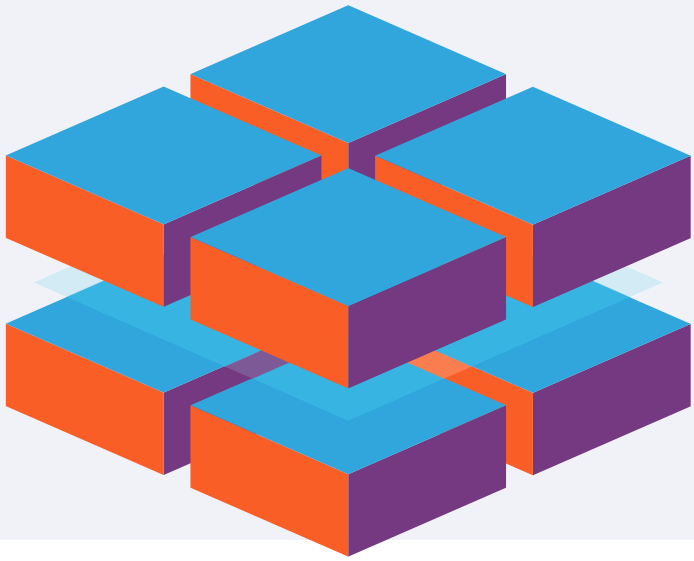
Monolithic platforms — traditional architecture

Monolithic systems are in line with traditional architecture and have many of the same issues outlined above, even though they are large, singular, interconnected systems that have traditionally been the backbone of enterprise digital strategies. Companies such as Salesforce, Adobe, or SAP are large conglomerates of integrated suites and tend to cover everything you could possibly need under one roof. However, it is not unusual to have the unique requirements of manufacturing fall outside of their capabilities. It is nearly impossible to meet every edge case that exists in B2B and manufacturing. And if they can, these conglomerates are much more costly to implement, maintain and update than the MCXP we will explore today.

Decoupled (or headless) architecture

Decoupled, also known to the masses as **headless**, is a much more robust approach. In this approach, each platform is run headlessly, meaning only its functionality is leveraged without the use of its built-in, customer-facing user interfaces. Instead, an independent front end is developed and used in its place. This new front end is called the ***head***.

This new head is the amalgamation of all the other platform heads in one, allowing a manufacturer to build an ideal user experience, pulling the data and functionality from the rest of the tech stack. The interface can pull catalog functionality from the commerce platform, real-time ERP stock information, and product images and spec sheets from a content management system (CMS).



This approach to technical architecture is becoming more mainstream because of its incredible benefits, such as the freedom to innovate with little to no restrictions. Manufacturers can choose the ideal platforms for the functionality they need and swap out what isn't working without fear of disrupting anything else in the user interface or the rest of the tech stack.

This architecture has many other benefits, which we will discuss later in this paper. These include easier updates, better performance, and the ability to personalize user experiences more effectively.

However, this architecture tends to come with more complexity, expense, support, and maintenance than a simple all-in-one traditional setup.

Hybrid architecture

Hybrid solutions mix traditional ecommerce systems' integrated nature with headless systems' flexibility. This could involve a headless approach where some elements remain tightly linked while others take advantage of being completely decoupled.

It is suitable for companies that need robust backend systems, like an ERP integration, coupled with dynamic frontend experiences without committing to a full headless architecture.

It's a great way to test the waters and upgrade parts of the ecommerce systems incrementally, such as adding a new mobile application interface or integrating advanced analytics without overhauling the entire system.

The following diagram shows these three architectures compared to one another:

Monolithic

Limited to the platform's data & functionality only.

Monolithic + back end integration

Data can move between back ends, but no new functionality is available on the front end.

For example: Acumatica has logic for *individualized stock* but BigCommerce does not, so it cannot be displayed on the front end.

Decoupled + headless back ends

This setup unlocks vast options for front end functionality, that is otherwise unavailable using a monolithic setup.

Individualized stock is not a problem in this setup.

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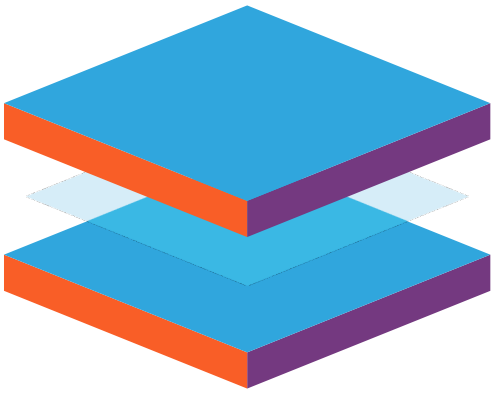
The MCXP — optimal architecture & platforms for manufacturing

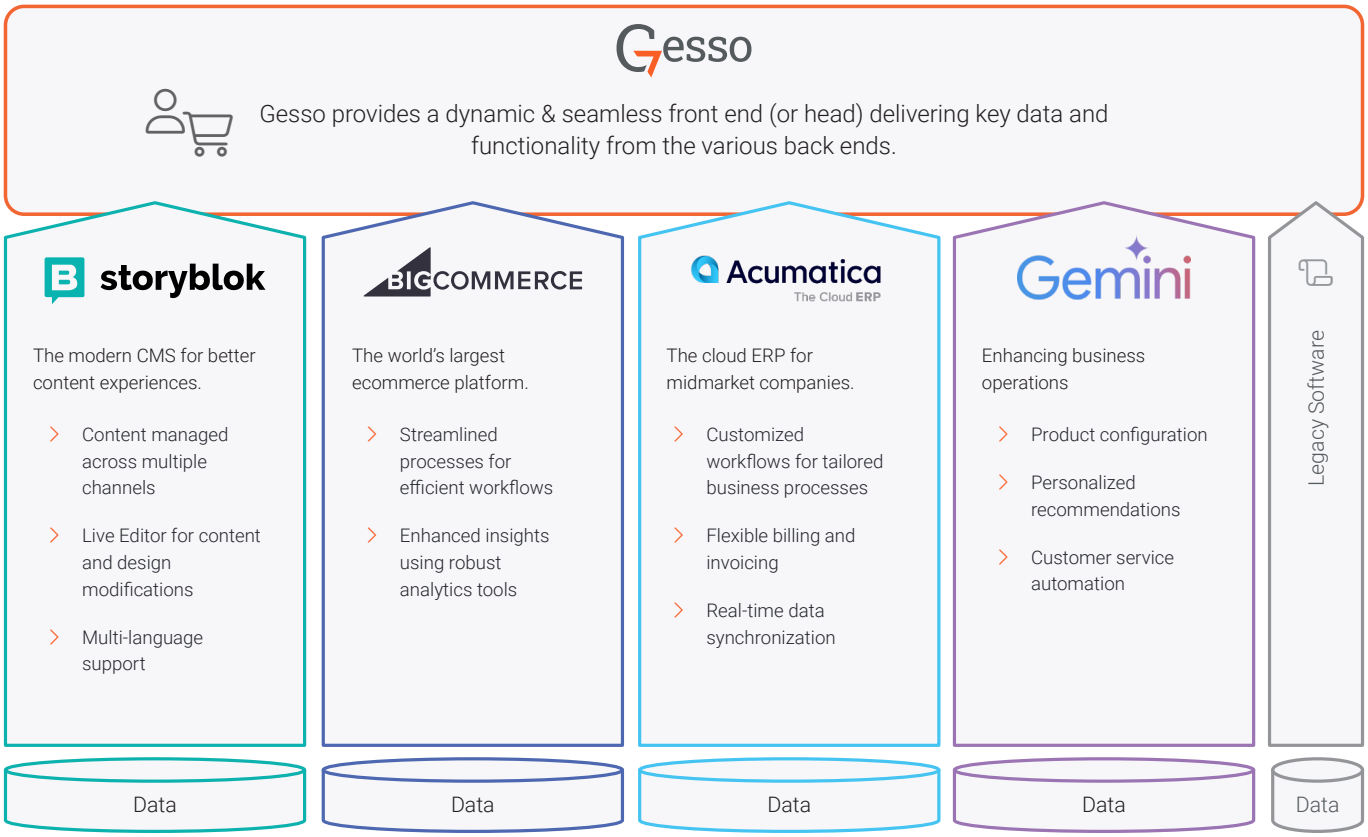
	Monolithic	Decoupled
Take an order Basic ability to take a request for products from a client.	✓	✓
Pay with credit card Take a credit card and processes it via a gateway. This is your standard B2C style transaction.	✓	✓
Set up/pay with a PO Set up and pay with a PO, including payment terms. BigCommerce uses a 3rd party app.	⚠	✓
Customers Individual logins, usually tied to a specific email.	✓	✓
Accounts An overarching account links many customers, usually an account is a specific company & the customers are employees of that company.	⚠	✓
Invoices Similar but not the same as Orders, they are often bundled & sent monthly & usually have a payment term with them.	✗	✓
Tiered & custom pricing Also often called Account Pricing, logged in customers get specific pricing based on their account, often organized into different groups.	✓	✓
Volume pricing Different unit pricing based on the quantity of items ordered.	✓	✓
Request a quote Usually similar to a "Draft" order, but it doesn't change stock or take payment and usually has an expiry date.	✗	✓
Stock Non-specific stock, item AB12 has 12 stock in warehouse X.	✓	✓
Individualized stock Specific stock, item AB12 includes these serial numbers.	✗	✓
Content Management System (CMS) Ability to add/edit/remove non-product pages.	✗	✓
Configure, Price & Quote (CPQ) Used to help sales people build and sell complex products.	✗	✓
Real-time updates Syncs data as events happen, not at a scheduled time.	⚠	✓
Order history View previous orders & contents. Often there is a difference between the orders in the ERP & in the commerce platform.	⚠	✓

The decoupled revelation



Decoupled architecture, with its deliberate separation of backend processes and frontend experiences, introduces an avenue for flexibility. It allows manufacturers to cautiously and strategically evolve to their market's changing needs, adding and/or replacing the technologies and capabilities as needed.

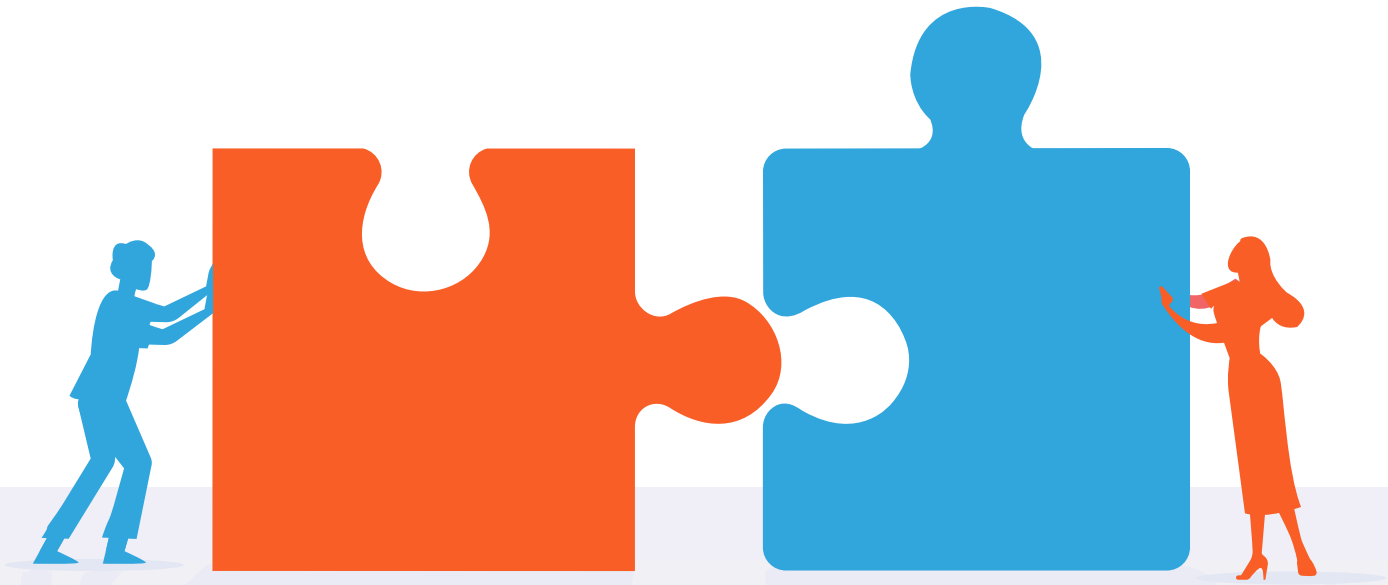
With some guidance, a manufacturer can begin crafting their own digital experiences. At first, that may just be wanting to meet the lowest level of expectations (to be able to offer parts to buy online) and be expanded into a full, rich journey that resonates and delights every customer, turning them into brand loyalists.



This MCXP is an integrated suite of technologies using a decoupled architecture that leverages the combined strengths of platforms built for B2B and manufacturing. It includes Gesso for the front end, Acumatica for the ERP, BigCommerce for ecommerce, Google Gemini for infusing AI capabilities, and Storyblok for content management.

With the foundational understanding of decoupled architecture offered by this MCXP, the next section will provide a comparative analysis of the traditional monolithic architecture versus our integrated MCXP approach. This analysis will highlight the scalability, customization capabilities, and operational efficiencies enabled by the MCXP.

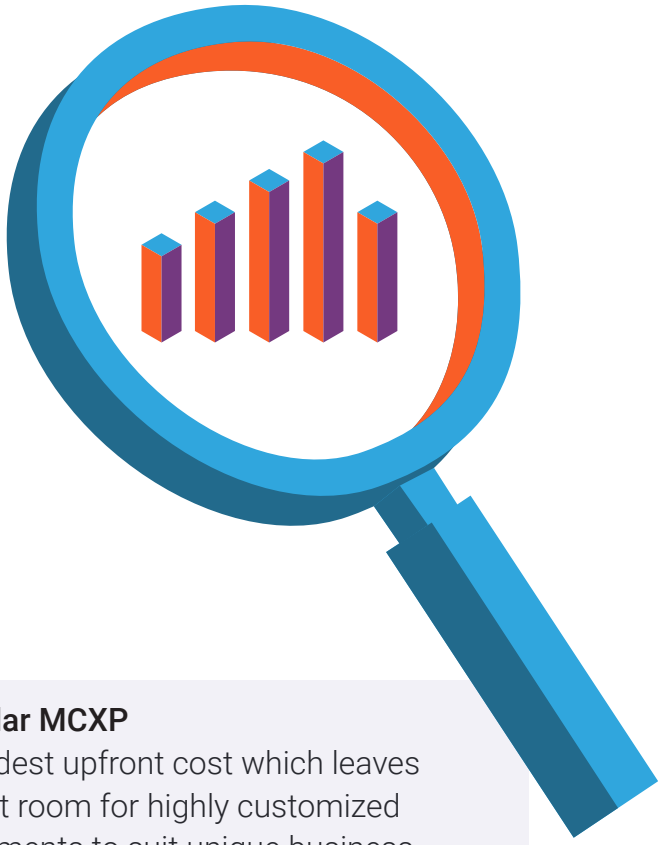
In addition to the advantages of a modern decoupled architecture, we will also showcase how the advantages of monolithic systems are neutralized with this particular MCXP because of the native, seamless data flows between platforms. **And the best part is that it comes without the enterprise price tag.**



Comparative analysis

Traditional monolithic platforms vs. the modern decoupled approach

The digital landscape for mid-market manufacturers is rapidly evolving, necessitating a shift from traditional monolithic platforms to more flexible, scalable, and cost-effective solutions. Next, you will see the power of the MCXP.



Key comparison metrics

Cost efficiency

Monolithic platforms
Often involve high initial costs and significant ongoing expenses due to customization, upgrades, and maintenance. Their tightly coupled architecture means that changes in one area can necessitate expensive reworks across the platform.

Modular MCXP
A modest upfront cost which leaves budget room for highly customized investments to suit unique business requirements. Avoid the all-in-one enterprise fees, only pay for the platforms and functionality that you need, starting small and upgrading only when necessary functionalities are required.

Time-to-market

Monolithic platforms
The integration and deployment phases are lengthy due to the complex nature of the systems. Customization to fit specific business processes can delay deployment further.

Modular MCXP
Because the frontend is separate from the backend, Gesso allows both sides to be developed and updated independently and simultaneously. The pre-built integrations and included design system accelerate the development of the user interface, reducing time-to-market.

Customization & scalability

Monolithic platforms
While robust, they offer limited flexibility for customization without significant investments. Scaling often requires extensive resource allocation and can lead to downtime or performance issues because the whole system is interconnected.

Modular MCXP
Provides high levels of customization with easier scalability. Businesses can choose which components to scale up or modify based on evolving needs without impacting the entire system architecture.

Adaptability to technological advancements

Monolithic platforms
Typically slower to integrate new technologies due to its rigid and interconnected structure. Advancements are completely dependent on their roadmap and timeline.

Modular MCXP
Designed for agility and quick adaptation to new technologies. Companies can integrate innovative technologies like AI, IoT, or blockchain more seamlessly, ensuring they stay ahead in competitive markets.

In the next parts of the whitepaper, we will delve into the company profiles contributing to the MCXP, starting with Acro Commerce and its role in harnessing Gesso, its accelerator.

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Gesso, by Acro Commerce

The Front End for Ideal Customer Experiences

Introduction to Acro Commerce

Acro Commerce is the creator of Gesso. With over a quarter-century of industry experience, Acro Commerce has specialized in the evolving digital needs of B2B businesses, with a particular focus on the manufacturing sector, which has the most demanding product requirements and a diverse range of operational workflows.

Gesso - the website frontend

Gesso is the front end of the MCXP architecture. It facilitates the customer journey, pulling and pushing the data it needs from the rest of the tech stack. The Gesso architecture is tech-agnostic and allows any platform or service, including legacy or homebrew systems, to be added or removed without impacting the rest of the solution. However, the incredible time-to-market advantages in part come from the native integrations with Acumatica, BigCommerce, Storyblok, and Google.

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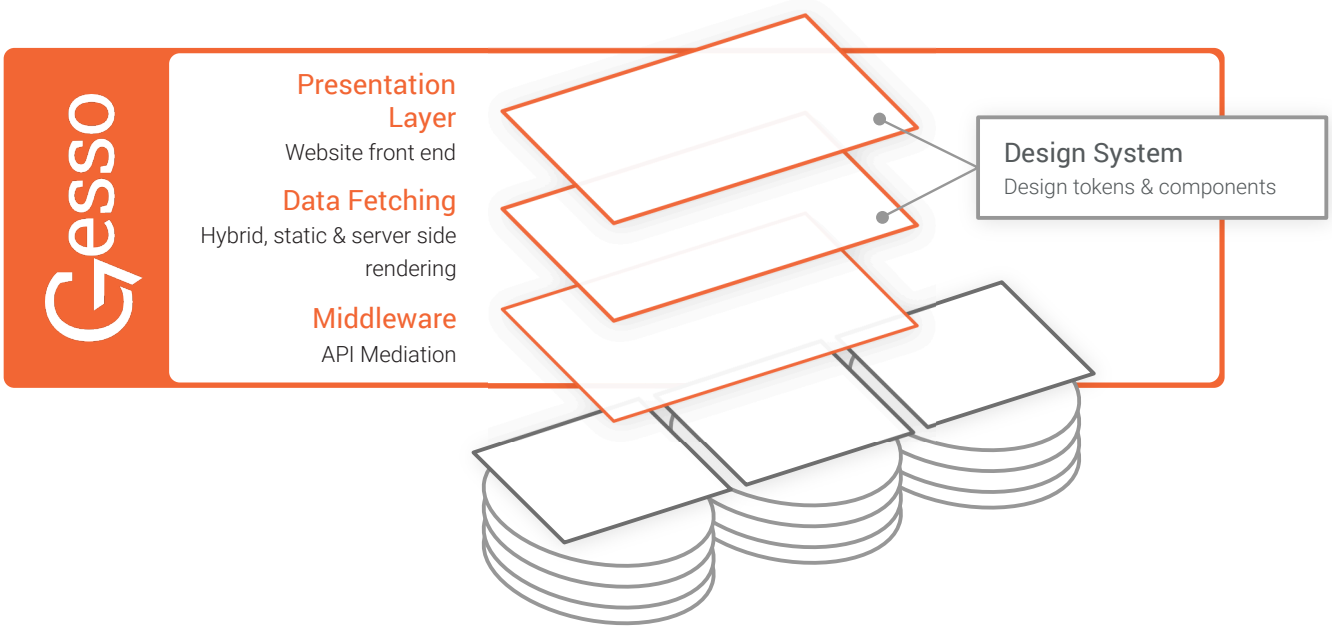
How it works

Gesso is primarily comprised of four systems:



The presentation layer

This is what the user sees, the interface that facilitates the customer journey.

The data-fetching layer

This is the functionality that fetches the data and allows us to render content in different ways, depending on the application's use case.

The design system

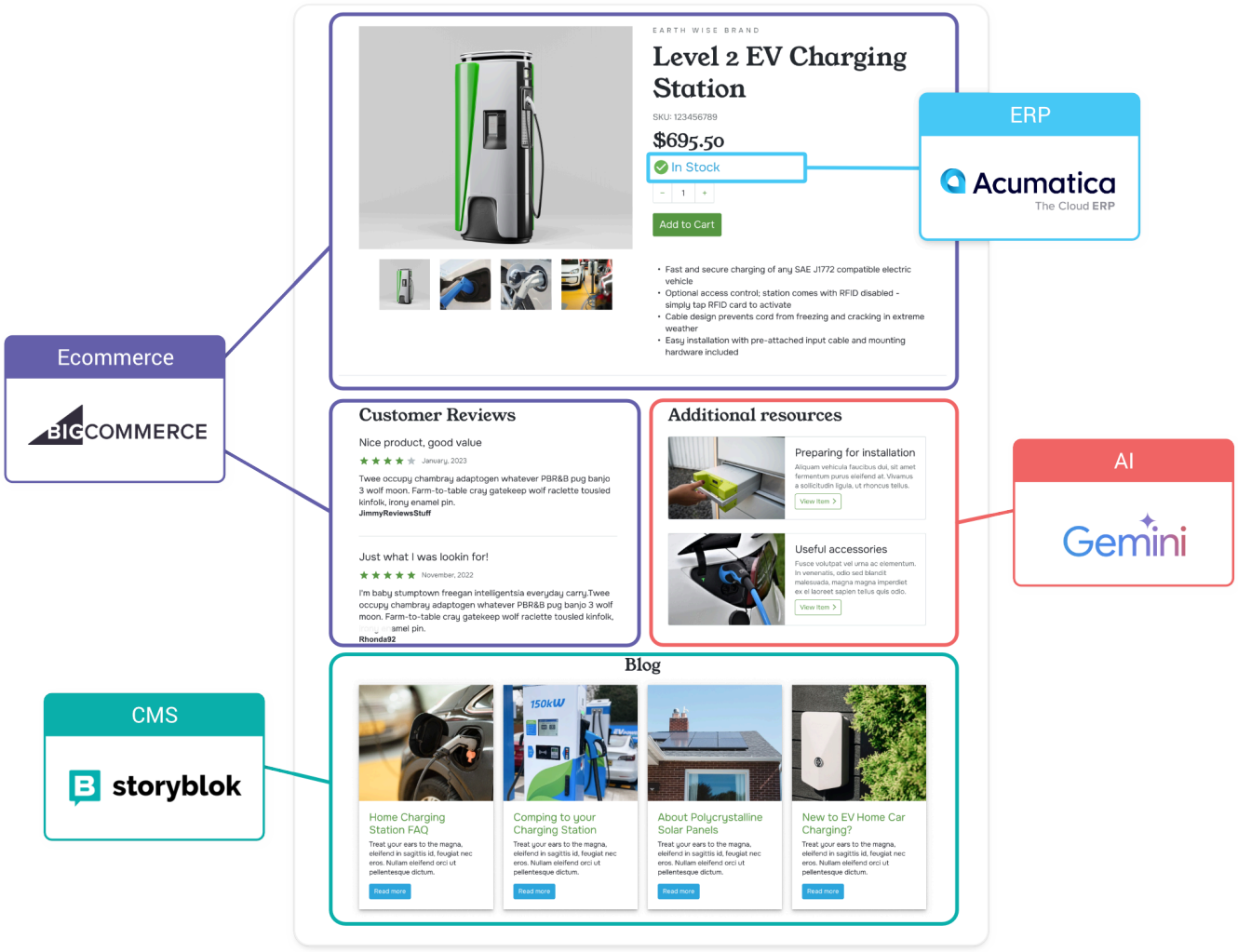
The presentation and data fetching layers leverage our design system, which consists of a toolbox of pre-built components and design tokens, enabling quick assembly and deployment of a customized interface.

- Rarely offered in the industry and dramatically speeds up the time-to-market; typically, it is done from scratch.
- Enables elaborate prototypes using code instead of creating throwaway artifacts such as a Photoshop file.

The middleware

This is where all the mediation happens between the frontend presentation layer and the amazing platforms you've chosen for your tech stack. The data is pulled from the platforms into the components to carry out the desired functionality.

Combining data & platforms for the ideal experience



Gesso can combine the data and functionality from each of the platforms in the tech stack to give the customer the data they need, which would never be available from any of them on their own:

- The specifications on a product page may come from the commerce platform, while real-time inventory may come from the ERP.
- PO workflows are usually a combination of configuration/customization in the ERP along with commerce functionality.
- Rich content experiences are built with content and data stored in the CMS combined with commerce functionality such as the add-to-cart functionality (it's no longer necessary to have a separate store site to link to).

Having a decoupled front end allows Gesso to be customized to support the intricacies of manufacturing. Even new functionality, such as a product configurator, can be developed in Gesso and made part of the experience.

This setup directly addresses the gaps in traditional commerce solutions and allows manufacturers to finally deliver unique business workflows within this unified MCXP.

Gesso versus the competition

There are many accelerators available on the market today; however, at the time of this writing, Gesso offers the quickest time-to-market for a fully decoupled commerce architecture built for the B2B and manufacturing industries.

Here are a few more affirmations that make it the most competitive solution in the industry:

Quick to market

Gesso and its native integrations can be spun up in under 2 minutes.

Site performance

Separates the front end from the data (back end) dramatically improving page speed.

Development speed

Front and back end work can be carried out in parallel significantly reducing time to market. Perfect for iterative/agile development.

Reduced technical support

Changes to the front end can be made without corresponding changes to the back end by technical expertise.

Accelerated integrations

Gesso minimizes the complexity of the architecture, reducing integration time of any platform that allows access.

One system, multiple experiences

Single source of design elements (tokens) and components provide a robust, reusable library for all sites/apps.

Acumatica ERP

The heart of manufacturing

Introduction to Acumatica

Acumatica has positioned itself as a leader in cloud-based ERP platforms, starkly contrasting the traditional, monolithic on-premise systems. Its cloud-centric approach brings scalability, accessibility, and a significant reduction in total cost of ownership, marking a new era in ERP technology.

Beyond its cloud capabilities, Acumatica's true strength lies in its open nature and exceptional customization abilities. Manufacturers can tailor the system to their specific needs, benefiting from a platform that adapts to their unique operational processes and growth trajectories.

Enhancing operational efficiency & data management

Acumatica's design is inherently synergistic with decoupled architectures, serving as the backbone that ensures seamless data flow and consistency. It acts as the single source of truth for critical data, from product information to order management. Acumatica enables

manufacturers to provide their teams and customers with the information they need to make informed, data-driven decisions.

In the MCXP architecture, Acumatica serves as the core system for back-end operations, integrating seamlessly with front-end solutions like Gesso and ecommerce platforms such as BigCommerce. This integration ensures that all transactional data and business processes are aligned and synchronized across the digital experience, providing a unified and efficient operational framework.

As the operational backbone, Acumatica not only streamlines processes like supply chain and customer relationship management but also integrates these processes into a unified workflow, eliminating data silos and allowing all departments to work cohesively.

Enhancing operational efficiency & data management

Acumatica covers all essential business functions, providing tools for financial management, customer relationship management (CRM), and supply chain management. Its capabilities are pivotal in streamlining operations and improving data management practices within the MCXP. Real-time data exchanges between the ERP functions and the other MCXP components facilitate data consistency across the MCXP.

Operational efficiencies

- It automates routine tasks such as accounting entries, inventory updates, and customer follow-ups, reducing manual labour and minimizing errors.
- Supports business growth with a scalable architecture that adapts to increasing data volumes and complex business scenarios without compromising performance.

Data-driven decision making

- Provides a centralized data repository that helps in generating comprehensive business insights supporting strategic decisions across the organization.
- Offers robust analytics tools that help businesses track performance, forecast trends, and make informed decisions quickly and accurately.

"Acumatica is powerful. It is subscription-based with upfront costs but nowhere near the order of something like SAP, yet it comes with all the functionality."

- Tammy Raub, CFO, Mozaic.

BigCommerce

The B2B ecommerce powerhouse

Introduction to BigCommerce

BigCommerce is a leading SaaS ecommerce platform renowned for its flexibility and enterprise-grade features, and is a powerful engine for B2B manufacturers. Designed to handle complex business models and high-volume transactions, it empowers manufacturers to create immersive online experiences, streamline operations, and accelerate growth.

BigCommerce's role in the MCXP

BigCommerce seamlessly integrates with the existing technology stack, including the frontend presentation layer and any backend ERP or inventory management systems. It serves as the central hub for online sales, managing product catalogs, pricing, orders, and customer data. Its open APIs facilitate smooth data exchange and communication with other systems, ensuring a unified and efficient B2B ecommerce ecosystem.

Enhancing business operations

Streamlined Sales Processes: BigCommerce simplifies complex B2B sales processes with features like bulk ordering, customer-specific pricing, and advanced promotions. It integrates with existing backend systems to ensure accurate product information, real-time inventory updates, and efficient order processing.

Omnichannel expansion

- Expand sales channels beyond the storefront, allowing manufacturers to reach a wider audience and increase sales.
- Integrates with popular marketplaces like Amazon and eBay, as well as social media platforms.

Flexible catalog management

- BigCommerce provides tools for creating and managing complex product catalogs, including product variants, customizable options, and pricing rules tailored for B2B customers.

Data-driven insights

- Robust analytics and reporting tools, providing valuable insights into customer behavior, sales trends, and marketing performance.
- This data helps manufacturers make informed decisions about pricing, promotions, and product offerings.

> BigCommerce, working in harmony with the existing MCXP infrastructure, provides a powerful and flexible solution for B2B manufacturers. It delivers the robust ecommerce capabilities needed to streamline sales processes, enhance the customer experience, and drive growth in the digital landscape.

Storyblok

Headless content management

Introduction to Storyblok

Storyblok is an innovative content management system (CMS) designed for the modern web. Its unique selling point is its headless architecture, allowing greater flexibility and scalability in content management across multiple platforms like this MCXP.

Storyblok's role in the MCXP

Within the MCXP, Storyblok acts as the content management backbone, providing tools and services that enable businesses to manage and deliver content efficiently across all of their digital channels. Its integration into the MCXP enhances the ability to maintain a consistent and engaging user experience, which is crucial for building the brand and increasing customer engagement.

Storyblok uses a block-based approach to content management. This allows the manufacturer's content creators to assemble pages using the predefined components from

Gesso's design system, making content updates faster, more flexible, and without fear of breaking functionality.

As a headless CMS, Storyblok delivers content through APIs, enabling seamless integration with the other MCXP components for rich content and commerce experiences that both educate and optimize online transactions.

Enhancing digital marketing & customer engagement

Storyblok's capabilities support dynamic digital marketing strategies and improve overall customer engagement.

Marketing agility

- Marketers can update content in real-time without developer support, which is crucial for timely marketing campaigns and content relevancy.
- Easily distribute consistent content across all digital touchpoints, ensuring a unified brand message and customer experience.

Customer experience improvements

- Storyblok facilitates personalized content delivery based on user preferences and behaviours, enhancing user engagement and satisfaction.
- The ability to quickly test and modify content based on user feedback and analytics helps optimize marketing strategies and improve conversion rates.

> "Storyblok has transformed how we manage content. Its flexibility and ease of use allow our marketing team to be more independent and responsive to market dynamics."

Google Gemini

The AI powerhouse

Introduction to Google Gemini

Google Gemini is an innovative AI model developed by Google AI, renowned for its versatility and advanced capabilities, and is a powerful engine for enhancing the MCXP. Gemini empowers manufacturers to create intelligent, personalized experiences, optimize operations, and accelerate growth.

Gemini's role in the MCXP

Gemini seamlessly integrates with the existing technology stack, including the frontend presentation layer and any backend ERP or inventory management systems. It serves as the central hub for infusing AI capabilities, such as advanced search, product recommendations, and customer service automation. Its open APIs facilitate smooth data exchange and communication with other systems, ensuring a unified and intelligent MCXP ecosystem.

Enhancing business operations

Product configuration

Gemini's AI capabilities can be utilized to create product configurators that draw data from across the MCXP. This empowers customers to build complex products tailored to their specific needs, while Gemini ensures that configurations are feasible and compatible based on rules and constraints defined within the system. This enhances the customer experience by providing interactive and personalized product customization options.

Personalized recommendations

Gemini analyzes customer behavior, purchase history, and preferences to deliver personalized product recommendations. This helps manufacturers increase sales by suggesting relevant products to customers at the right time, both online and marketing with shipping and fulfillment.

Customer service automation

Gemini can automate routine customer service tasks, such as answering frequently asked questions and providing order status updates. This frees up customer service representatives to focus on more complex inquiries, improving efficiency and customer satisfaction.

Data-driven insights

Gemini can analyze large volumes of data to uncover hidden patterns and trends. This information can be used to optimize pricing, promotions, and product offerings, as well as identify new business opportunities.

Gemini, working in harmony with the existing MCXP infrastructure, provides a powerful and intelligent solution for manufacturers. It delivers the robust AI capabilities needed to enhance the customer experience, optimize operations, and drive growth in the digital landscape.

Conclusion

Embracing the future with decoupled MCXPs

The move towards decoupled architecture represents a paradigm shift in how manufacturers approach their digital strategy. The flexibility, cost efficiency, and rapid deployment capabilities of this MCXP provides these businesses with the tools needed to adapt quickly to changing market demands and technological advancements.

Unleashing potential

- This MCXP offers operational advantages and empower businesses to innovate freely, enhance customer engagement, and ultimately drive growth.
- The integration of specialized components like Gesso, BigCommerce's ecommerce solutions, Storyblok's content management, Acumatica's ERP, and Google's AI Gemini creates a robust digital ecosystem that is both powerful and flexible without the enterprise price tags and being vendor-locked to a monolith.

Transform your digital landscape with our advanced MCXP solutions. Embrace the agility and innovation that a modular platform can bring.

Schedule a demo today and see the future of digital transformation in action.

solutions@acrocommerce.com