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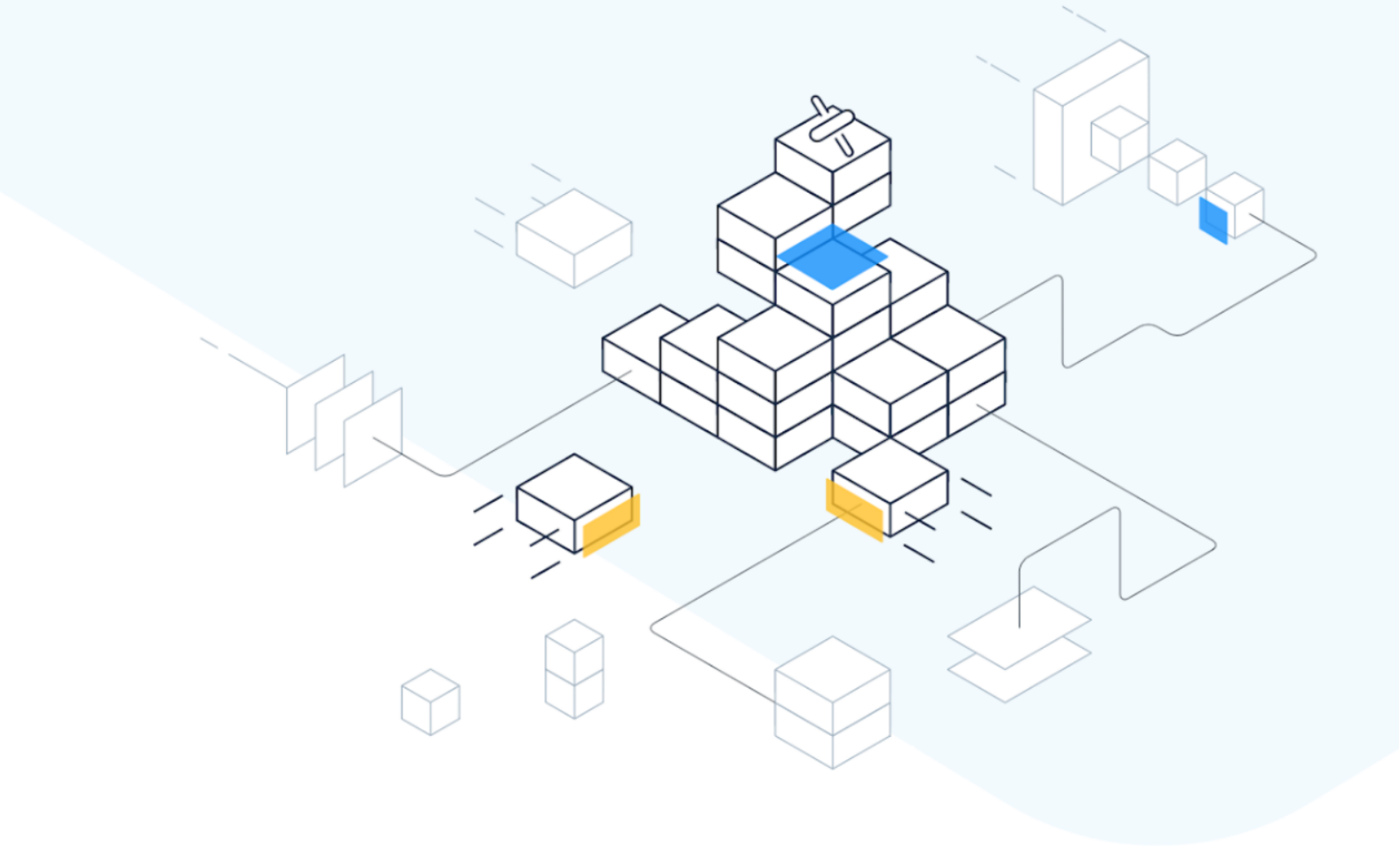

All you need to know about Composable Commerce

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Most companies thinking about replacing their outdated and hard-to-customize legacy systems plan to adopt composable architectures - leveraging the power of service-oriented architectures (SOA), API-first, and headless for a future-proof commerce. Composable Commerce is considered to be the next generation of digital commerce.

"By 2023, organizations that have adopted a Composable Commerce approach will outpace the competition by 80% in the speed of feature implementation."

- Gartner

What is Composable Commerce?

Imagine fully modular and flexible e-commerce technology that allows you to assemble all the features and services you need for a successful and future-proof business like you do with LEGO bricks. That's what Composable Commerce is all about. It is the opposite of running old-fashioned all-in-one systems that are not made for innovation and customization.

Composable Commerce Definition

Composable Commerce is an approach to building e-commerce platforms that involve breaking down various business capabilities, services, and functions into modular components that can be easily combined or disassembled. This new composable

approach enables businesses to create more personalized and differentiated commerce experiences that meet the needs of today's consumers while also providing the flexibility and agility needed to adapt to changing market conditions and customer expectations.

For simplicity, we refer to "microservice," "service-oriented architecture" (SOA), and "modular architecture" when characterizing Composable Commerce.

What does Composable Commerce mean for businesses?

Composable Commerce is a paradigm shift in how you think, plan, and organize e-commerce technologically - moving away from rigid off-the-shelf solutions meeting a set of specific requirements today, but which may look very different tomorrow, to modular systems that let you respond quickly to change and innovate.

Instead of upgrading your current software version or moving from one monolithic all-in-one-suite to the next to keep pace with the competition, Composable Commerce provides your business with the technological modularity and scalability it needs to flexibly add and combine the most valuable capabilities available on the market that can be quickly and easily assembled via standardized application interfaces (APIs).

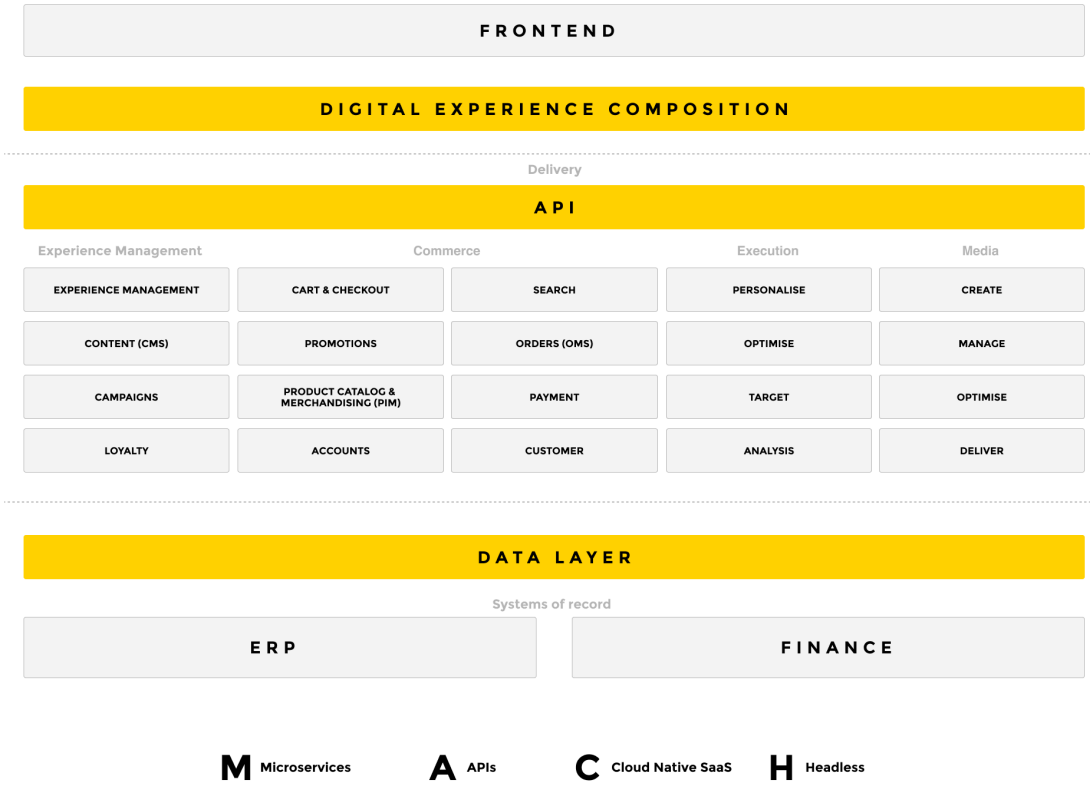
How does Composable Commerce work?

In Composable Commerce, business capabilities - software applications (microservices) and entire systems (ERP, CRM, PDM, Finance, etc.) - can be assembled as required. Standard application interfaces, APIs, enable seamless communications between all components. A Composable Commerce Platform provides a unified foundation on which to run and develop applications.

What does Composable Commerce Architecture look like?

Composable Commerce is by default headless, meaning that the presentation layer in the frontend and business logics in the backend are decoupled to allow both areas to be independently engineered. In addition, the frontend and backend are also 100% modular, so you can combine the best business capabilities as needed.

Here is an example of a Composable Commerce architecture[1]:



[1] https://machalliance.org/mach-technology

How is Composable Commerce related to MACH architecture?

MACH is an acronym for technologies supporting a composable architecture in which every component is pluggable, scalable, replaceable, and can be continuously improved through agile development to meet evolving business requirements.

The acronym stands for:

- **M**icroservices-based: Individual pieces of business functionality that are independently developed, deployed, and managed.
- **A**PI First: All functionality is exposed through an API.
- **C**loud Native SaaS: SaaS that leverages the cloud, beyond storage and hosting, including elastic scaling and automatically updating.
- **H**eadless: Front-end presentation is decoupled from back-end logic and channel, programming language, and is framework agnostic.

True Composable Commerce platforms support all 4 MACH principles, as only in combination do these enable businesses to select from the best ready-to-use services on the market (Best of Breed) and rapidly release critical capabilities.

Worth reading:
MACH Alliance Manifesto
Building blocks and key benefits of a MACH Architecture

How is Composable Commerce related to Headless Commerce?

Composable Commerce can be compared to LEGO®, which allows you to assemble the pieces in any configuration or pattern you need. This comparison fits, although with composable commerce the individual pieces may not come from one single vendor. Rather, you can put together the best available components from different vendors.

Headless commerce is also based on the principle of modular technologies, but focusing on the decoupling of front-end presentation and back-end logic. This allows you to work on various front-end channels and back-end services independently of one another. This significantly reduces the complexity and risk of customizations and extensions.

The key difference between Composable and Headless Commerce is the scope of composability. The former requires full composability of capabilities, while the latter could, for example, consist of a monolithic backend and a modular, composable frontend. Since Composable architectures are 100% modular, they are by default headless.

The main common feature of composable and headless commerce is that communication between Microservices or, in the case of headless architectures between the front-end presentation and back-end logic, is realized via APIs. A composable or headless commerce platform enables straightforward development and compilation of applications.

Worth reading:

[The Definitive Guide to Headless Commerce]

[Headless Commerce And The Horseless Carriage]

What role do Microservices play in Composable Commerce?

As commerce applications get more and more functionality, the underlying code base gets bigger and therefore harder to maintain and manage. Microservices is an architectural approach to breaking down a monolithic codebase into smaller pieces. For frictionless communication, microservices are connected via APIs or other applications.

Individual pieces of business functionality that are independently developed, deployed, and managed help make the overall system more flexible, more agile, more reliable, more scalable and easier to manage. Therefore, a microservice-oriented architecture is key to composable commerce.

What are the Benefits of Microservices for E-Commerce?

- **Ease of updating**: In monolithic legacy systems with a large code base, even a small change can lead to unexpected failures. Not so with microservices, which have only one job and are therefore easier and faster to update.
- **Increased scalability:** When demands increase, usually only some capabilities need to be scaled. Thanks to the automated and containerized nature of microservices, this can be done easily and without wasting resources.
- **Reusable among other applications:** Multiple commerce applications can share one microservice, which then only needs to be developed once, deployed where it is needed, and connected multiple times via API.

- **Higher security:** Microservices are protected from public access with state-of-the art authentication and authorization. Plus, gaining access to one microservice is an isolated event; this does not mean access is granted to the entire application.
- **Avoiding vendor lock-in:** Mixing microservices from multiple vendors is common. When a commerce service publishes its API, other vendors can build and provide their own services using the same API.
- **Cleaner software design:** A microservice is a relatively small unit that interacts with other units, only through APIs. The chances of unexpected side effects from a change in code are smaller, and easier to find and fix if they happen.
- **Separation of user interface from functionality:** Microservices handle data operations independently from the user interface, so developers can change different parts of the software without worrying about what the other teams are doing.

Worth reading:
The Complete Guide to Microservices Architecture
Benefits of Microservices

What role do APIs play in Composable Commerce?

Application programming interfaces, or APIs, have been around for decades. API refers to a set of functions and procedures that allow software applications, for example in an online shop, to access the functionality or data of an operating system, application, or other microservice.

This is done according to a clearly defined process, similar to ordering in a restaurant:

"Best API analogy I've seen: take a restaurant. The menu is the API, your order is the API call, the food from the kitchen is the response."

- Aarthi Dee[2]

An API allows one component in a commerce system to pull data from another, making them interoperable. APIs enable application, microservices, and entire systems to communicate with each other and bridge the gap between disparate components, making them a cornerstone of composable commerce.

Using APIs as an effective integration tool is almost inevitable in the modern digital age, but the real benefit lies in reshaping commerce development and deployment strategies around the use of APIs. This is where the API-first approach comes in, which is a cornerstone of MACH technology for good reason.

Worth reading:
Power Your Digital Ecosystem by an API First eCommerce Architecture
Your business might be using APIs, but is it really taking an API-first approach?

Who is the MACH Alliance?

The MACH Alliance is a vendor-neutral institution that provides resources, education and guidance through industry experts to support companies on their journey. The MACH Alliance advocates for an open and best-of-breed enterprise technology ecosystem that, as the acronym MACH indicates, is Microservices-based, API-first, Cloud-native SaaS and Headless - the foundation for Composable Commerce.

[2] https://twitter.com/AarthiD/status/413766666145644544

The MACH Alliance was founded in June 2020 and was referred to as 'The Coolest Tech in Town Club' by Forrester a year later. The MACH Alliance has over 50 vendors, system integrators and enablers, as well as individual experts as members.

Technological terms that matter in composable commerce

- **Agile development:** Iterative approach and methodology that helps project management and development teams deliver value to customers faster and smoother.
- **APIs (Application programming interfaces):** Set of functions and procedures allowing applications to access the features or data of a system, application, or other service.
- **Best of breed:** Technology strategy to find and integrate the best possible solution for each application area of enterprise software.
- **Cloud-native:** Approach to software development that leverages cloud computing to build and run scalable applications in cloud infrastructures, platforms, and environments.
- **Composable Commerce:** Architectural approach to digital commerce whereby applications are built with packaged business capabilities (PBCs).
- **GraphQL:** Open-source data query and manipulation language for APIs, and a runtime for fulfilling queries with existing data.
- **Headless architecture:** Software development concept that separates the front-end, the user interface, from the back-end, the business logic layer of the website or shop.

- **Legacy system:** Old, mostly monolithic software that is still in use but should be replaced because its adaptability and scalability is limited, costly and risky.
- **MACH:** Acronym for technologies supporting a composable enterprise in which every component is pluggable, scalable, replaceable, and can be continuously improved.
- **Microservices:** Architectural and organizational approach to software development where software consists of small independent services that communicate via well-defined APIs.
- **Modular Commerce:** Architectural concept in which functions are built from interconnected components instead of using a prefabricated monolithic system.
- **Monolith:** Monolithic software architectures combine all functional elements into a single, inseparable and homogeneous entity, which tends to become rigid and inflexible with age.
- **PBCs (Packaged business capabilities):** Applications or services developed around a business function, consisting of a data schema, services, APIs, and event channels.
- **Platform:** Also called layer or level - refers to a uniform underlying basis on which software applications can be executed and developed.
- **Suite:** Collection of computer programs of related functionality, sharing a similar user interface and the ability to exchange data in one mostly monolithic system.
- **Strangler pattern:** Method of incrementally migrating a legacy system by incrementally replacing certain portions of functionality with new applications.

Key benefits and objectives of Composable Commerce

Overcome barriers to technological change and adaptation, facilitate innovation

Turnkey all-in-one e-commerce systems are not designed for change and adaptation to new business requirements. Therefore, they tend to slow down or even block necessary technology advancements. In contrast, composable commerce architectures are built to enable businesses to respond quickly to change and achieve targeted innovation.

Respond faster to new requirements, deliver results quickly, shorten time to MVP

Composable commerce that follows the MACH principles - Microservices-oriented, API-first, Cloud-native and Headless - can be adapted to new requirements faster, with less effort and risk than any monolithic system, especially if it has become rigid and unstable due to countless adaptations. The same applies to releasing new technical capabilities.

Drive experimentation, decentralized decision-making and agile development

Through the modularization of e-commerce, business applications are fragmented into small, clearly defined entities. The smaller a component is, the lower the risk of deployment or customization compared to large monolithic systems. This encourages

experimentation to drive innovation, while responsibilities and decision-making can be organized decentrally.

Always benefit from best-of-breed technology, avoid vendor and technology lock-in

Microservice-oriented architectures allow individual components that no longer meet the requirements to be replaced quickly and at low risk with higher-quality solutions applying the best-of-breed principles. In this way, companies can also free themselves from dependencies on vendors (vendor lock-in) at any time.

Be prepared for major technology paradigm shifts that occur every 6-10 years

Besides new market requirements triggered by customer expectations and competitors constantly enhancing their e-commerce, it is above all technology trends and disruptive changes that require businesses to react quickly and flexibly to technological paradigm shifts. Monolithic systems do not offer this level of flexibility, and must then be replaced.

Avoid technical debts caused by delaying or avoiding necessary adaptations

Composable Commerce, based on MACH principles, makes it extremely easy for companies to keep their technologies up to date. Unlike with many legacy monolithic systems, technical debt can't accumulate due to outdated structures that deliver little business value because the cost of maintaining them eats into profits.

Implement major changes in small actionable pieces, avoid risky mega-projects

Like any other strategic project, the launch or migration of Composable Commerce is a complex undertaking. However, this should not stop companies from laying the foundation for their future-proof e-commerce. Composable Commerce supports step-by-step planning and deployment according to agile principles.

Composable Commerce is Cloud-Native

Many companies are shutting down their own server infrastructures in favor of public cloud services. IT managers are right to ask why maintain and renew servers and software at significant cost and risk when they can get it as a fully managed service.

Using cloud services, companies can focus on their core business and reduce the effort that comes with owning IT infrastructure. Cloud services offer not only scalability but also high availability, which makes many digital commerce managers sleep better at night.

The same applies to SaaS, software as a service in the form of microservices that can be flexibly integrated and orchestrated via API as needed, providing a perfect foundation for MACH architectures supporting Composable Commerce.

Worth reading:
Cloud eats the world. On-premise isn't dead, but must adapt to Composable Commerce

The modularity of Composable Commerce

Composable Commerce takes the best-of-breed principle, whereby businesses adopt the best available solutions to achieve their business goals and outperform competition, to the next level - making it easier and faster than ever to benefit from innovation.

However, Best of Breed in Composable Commerce refers less to the compilation of entire systems - ERP, CRM, CMS, PDM, etc. - as was common in the past, but rather to the orchestration of Microservices to achieve the best possible (modular) solutions.

In addition, Best of Breed in Composable Commerce means choosing the best platform that enables enterprises to assemble the best available packaged business capabilities via APIs at any time today and in the future, without restrictions or vendor lock-ins.

How to get started with Composable Commerce?

If you compare Composable Commerce with LEGO®, it is best to start with essential components, which primarily include the right platform that ensures full functional composability and scalability in the long run.

Having chosen the right platform, the journey into composable commerce can begin in a lean development process - starting with migrating the components that add the most value to your business and can be implemented quickly and at low risk.

No matter if a composable architecture is to be built from scratch (greenfield) or an existing system is to be replatformed, the agile development process always aims to release an MVP or new capabilities fast and then improve step by step.

MACH principles support the agile development of composable commerce architectures, which contrast with all-at-once setup of monolithic software suites. Composable Commerce is not a one-time project but an ongoing journey.

How to migrate from Monolithic Legacy Systems to Composable Commerce?

Replatforming from a legacy commerce suite to a composable architecture is a complex process that should be implemented using an organized and agile software development method. Clearly defining and communicating goals, expectations and requirements from the start is essential.

Project owners need to establish a clear vision of the timeline and the most value-adding components to be implemented first. A keen awareness of stakeholder roles including partners is essential, as they all need to be aligned to make the process run as smoothly as possible.

Instead of rebuilding the entire monolithic system from scratch, in many cases it makes sense to transform existing infrastructure layer by layer, capability by capability, into a composable architecture using the strangler pattern method.

Gradually, from the outside in, individual functions are removed from the monolith and replaced by services that take over these functions. In this way, each large transformation is divided into small low-risk pieces during operation without having to shut down the entire system.

Worth reading:

Say Goodbye to Monoliths – Replatform your Retail Business to Composable Commerce

Composable Commerce - The Complete Buyer's Guide

Composable Commerce - the last time that B2B companies will need to replatform

Why composable commerce should top every application leader's agenda

Why Should D2C Brands Replatform to Composable Commerce

How Emporix enables Composable Commerce

Emporix offers a Composable Commerce Platform that is MACH Alliance certified. It is designed to easily manage advanced commerce in B2B and B2C, and allows enterprises to make insights actionable thanks to an innovative Commerce Execution Platform. Our vast network of partners is knowledgeable on composable commerce and MACH architecture and can help support you with project consulting, implementation and maintenance. If you would like to learn more about Emporix, fill out the form below and we will be in touch shortly.

About Emporix

Emporix provides the leading cloud-native Digital Commerce Platform for B2B and sophisticated B2C in one solution.

The Emporix Digital Commerce Platform (DCP) offers leading features for B2B, B2C and D2C business models with a state-of-the-art MACH architecture (Microservices-based, API-first, Cloud-native and Headless).

The Emporix Commerce Execution Platform (CXP) dynamically orchestrates business processes and enables companies to optimize commerce interactions on the fly based on real-time end-to-end process intelligence.

Wholesalers, distributors, manufacturers, retailers and brands can utilise insights from their core business processes, customers and suppliers to deliver better outcomes for the business and its customers.

Emporix helps to optimize profitability along the entire value chain, from supply to sales and ultimately the customers.

Companies can implement their unique business processes by consuming existing core commerce services à la carte and focus their own resources on what makes them special.

They can serve any kind of touchpoints in a consistent way, integrate best-of-breed capabilities, and enable agile development. They benefit from automatic scaling with online demands, zero downtime, predictable cost and unparalleled security.

Emporix provides this through a cloud-native Software-as-a-Service based on headless microservices and an API-first approach. Its multi-tenancy and multi-site concept is extensible on all levels and continuously delivers new features.

Schedule a free consultation with our commerce experts →