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BREAKING UP THE MONOLITH PART 1

The Evolution of Modern Commerce, from Monolith to Composable

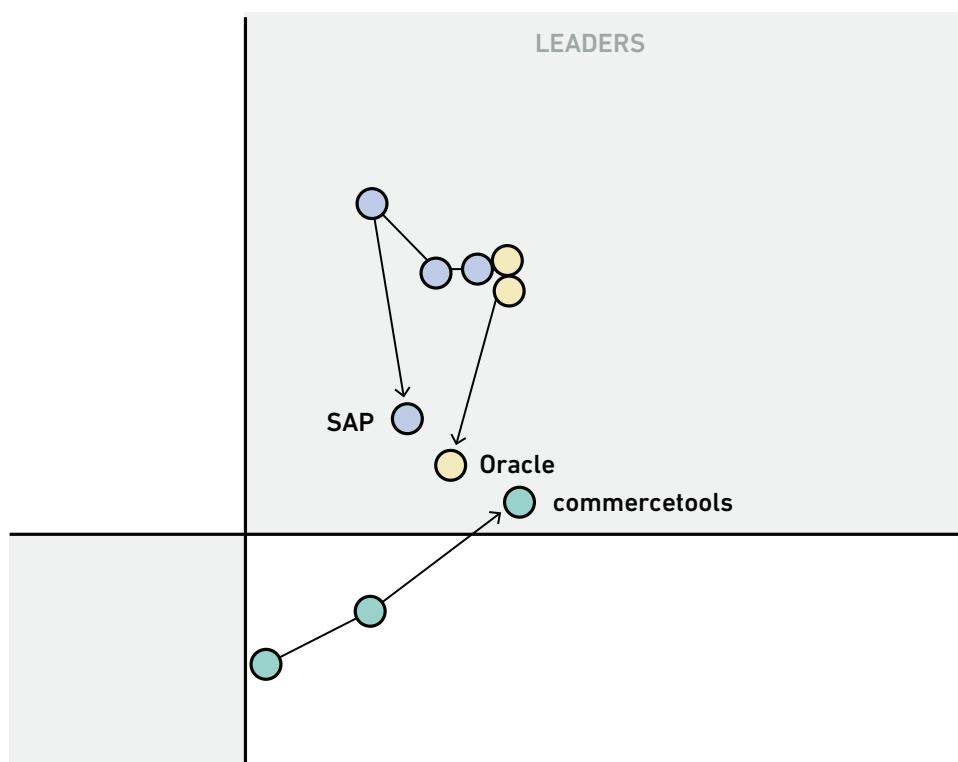
INTRODUCTION

// TECTONIC SHIFTS IN COMMERCE TECHNOLOGY

Commerce technology has arrived at a major turning point and the impacts on organizations running commerce suites are far reaching.

Ever since the dotcom boom era companies like ATG, Oracle, hybris, SAP and IBM have dominated the market with their all-in-one enterprise commerce suite solutions. There were barely any other enterprise alternatives; analysts like Gartner and Forrester confirmed the hegemonic position of the same 5 players year over year.

While those suites had a good run that lasted for over a decade, they became increasingly irrelevant to serve modern-day commerce needs that are dynamic and diverse in catering to fast-moving changes in the market, centered around creating an impactful customer experience. It had been in the making for a long time, but in just the last 3 years, the revolutionary changes that occurred were finally reflected in analyst reports.



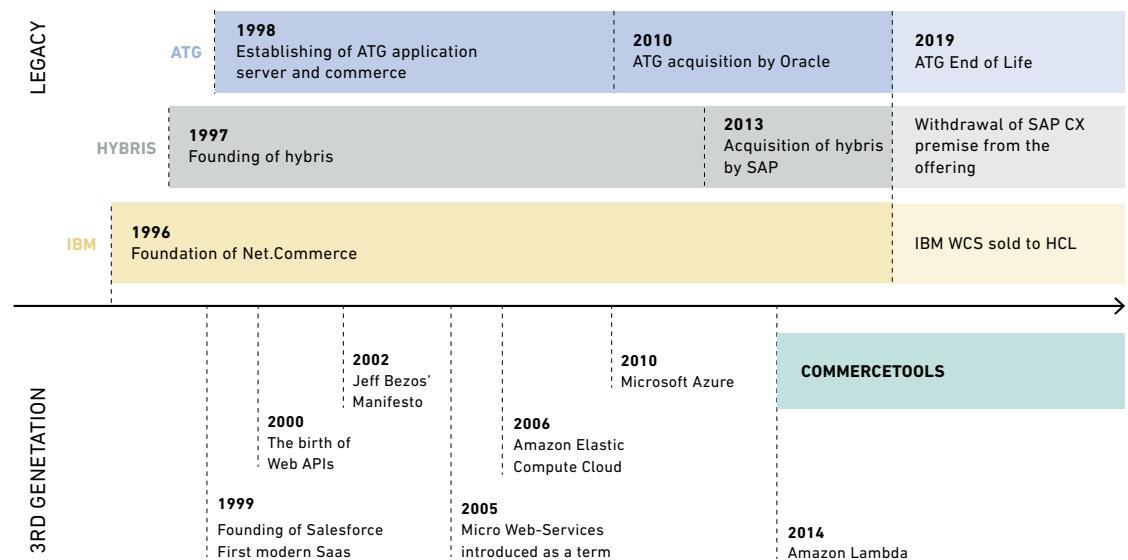
Within the same timeline Oracle, which acquired ATG back in 2010, closed its product line, IBM expelled their commerce technology to HCL and hybris still continued struggling to address changing market needs after the takeover by SAP.

There are numerous drivers behind those changes. Most notably the wide acceptance and benefits of the cloud, growing complexity of commerce processes, and the introduction of new channels and touchpoints that go far beyond just traditional computing and mobile devices.

Commerce suites aren't well equipped to handle new challenges of today due to their monolithic internal architecture and legacy tech stacks.

3RD GENERATION COMMERCE PLATFORMS

Meanwhile, modern solutions based on MACH principles like commercetools entered the market and are experiencing an exceptional growth in acceptance among enterprise customers. Their rise is propelled by recent technological advancements like cloud computing, API-centricity, loose coupling, facilitated integration, headless and SPA frontends. The ones that monolithic commerce suites are not able to leverage by design.



Unsurprisingly the balance of commerce market is shifting quickly towards distributed SaaS-based systems and modular architectures, recently described by analyst Gartner as “Composable Commerce”. Looking forward, enterprises running commerce suites are well advised to revisit their strategies and plan on adopting this new architectural concept that is quickly becoming a staple in modern times.



Digital commerce platforms are experiencing ongoing modularization in a cloud-native, multiexperience world. Application leaders responsible for digital commerce should prepare for a “composable” approach using packaged business capabilities to move toward future-proof digital commerce ‘experiences.’

“Composable Commerce Must Be Adopted for the Future of Applications”
Mike Lowndes, Sandy Shen, Gartner

This whitepaper helps you understand the nature of the change by explaining the new paradigm, the way it maps onto the well-known monolithic commerce suite and as such provides a base for setting up a transformation strategy. In the second part, we will focus on the process of transitioning from a monolith suite towards composable commerce.

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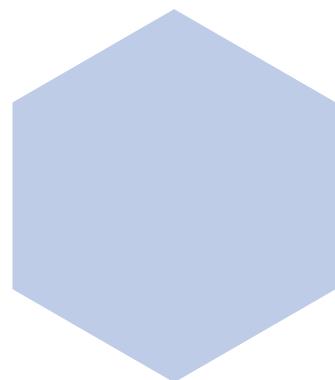
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FROM
MONOLITH



// NATURE OF THE COMMERCE MONOLITH

If you are running a monolithic commerce suite you might have already sensed the need for a new, modern approach to commerce and rethinking of the associated infrastructure. Commerce suites, once the holy grail of commerce technology, have increasingly become a hindrance in the quest for delivering the perfect customer experience.

It was tempting to start off with a commerce suite back in the Web 2.0 era, at the beginning of the commerce endeavor. But as processes and organizations grew in maturity and complexity, the monolithic character of suites became the major impediment for progress. Today, companies running suites are standing at the crossroads when it comes to further technological advancement of their platforms.

WHAT IS A MONOLITHIC COMMERCE SUITE?

The terms "commerce suites" or "commerce monolith" describe a product which offers a full breadth of commerce-related functionality packaged as a single software system. Most notable vendors are Oracle (previously ATG), IBM/HCL, SAP (previously hybris) or Intershop. Cloud commerce products by Oracle or SAP aren't very different from their original legacy counterparts - despite the marketing term and the shift to being host in the cloud, they share many underlying characteristics.

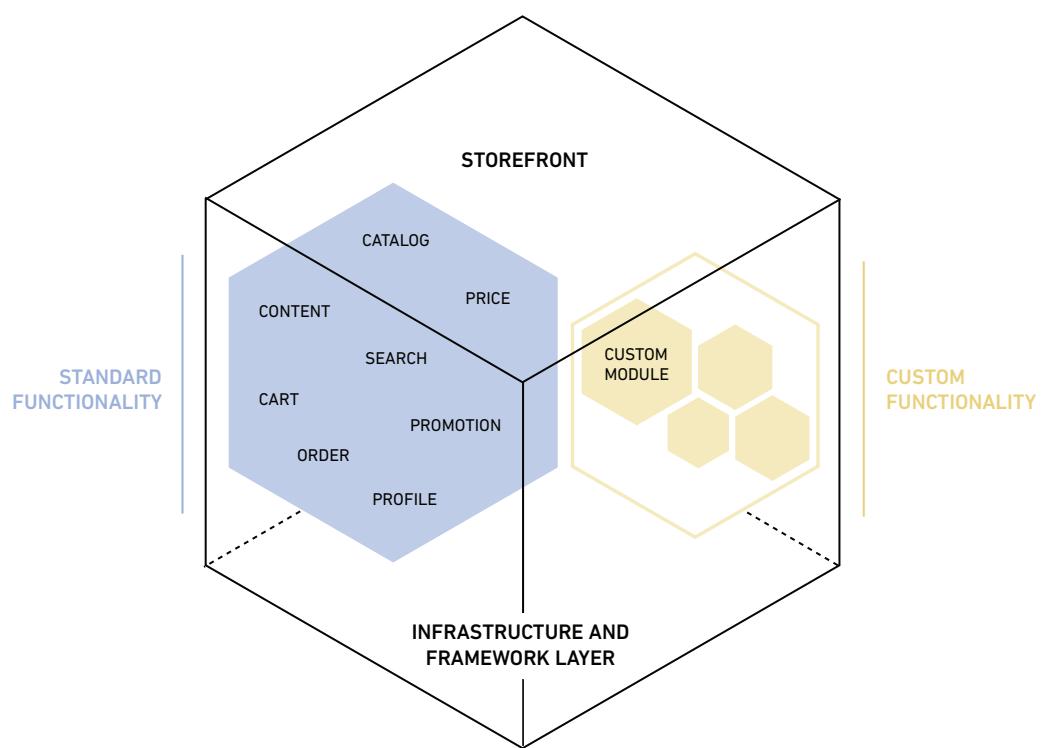
For over the last 20 years, commerce suites have dominated the market and have been omnipresent among enterprises. Often, their reach within the organization is immense and they constitute central elements of system landscape supporting or directly implementing crucial business processes around commerce in multi-language, multi-country, B2C or B2B set ups. Suites tend to be deeply integrated with other elements of enterprise infrastructure including

- | Enterprise Resource Planning (ERP)
- | Customer Relationship Management (CRM)
- | Warehouse Management (WMS)
- | Product Lifecycle Management (PLM)
- | Content Management (CMS)

And many others.

CHARACTERISTICS OF COMMERCE SUITES

The shared vision of commerce suite vendors was to deliver the complete scope of commerce functionality in one single product. Jacks of all trades but masters of none. This approach resulted in monolithic architectures characterized by deep internal dependencies and low modularity.



PROPRIETARY FRAMEWORKS

Commerce suites, as standard products, provided customers with a decent level of flexibility in creating their own unique value by offering development frameworks. Based on solid programming languages and toolkits, developers were free to implement any required customization. However, this flexibility comes at the trade-off of being bound to a very specific programming model of the particular suite. It imposes a strong vendor lock-in, since such custom functionality can't exist and run on its own, and at all times requires the suite as the host.

CUMBERSOME INTEGRATION

Commerce, content management, PIMs and CRMs may play significant roles within a business ecosystem but they still have to be connected to other systems. Due to their siloed, self-embedded nature, suites tend to run poorly when running with solutions outside of what their vendor has to offer. They are difficult to integrate, since they are technologically outdated and mainly based on files, XML, proprietary solutions and rudimentary REST APIs. Therefore, monoliths are a poor architectural fit for modern-day business ecosystems and their needs. Still, the availability of those interfaces will come in handy in the modernization process that is the transition to a modern commerce platform that is relevant for today and ready for tomorrow.

LEGACY TECH STACKS

While information technology continued to develop at an astounding pace over the past many years, it seems that time has stopped for commerce monoliths. Cloud computing, headless, API-centricity, serverless, microservices are groundbreaking inventions which changed the face of IT allowing for more efficient resource allocation, quick time-to-market and high agility. However, grounded in their old ways, commerce suites weren't able to capitalize on them or easily shift to do so, while a modern commerce platform built from the ground up around those principles are able to easily and effectively offer their advantages to businesses willing to make the shift from outdated suites.

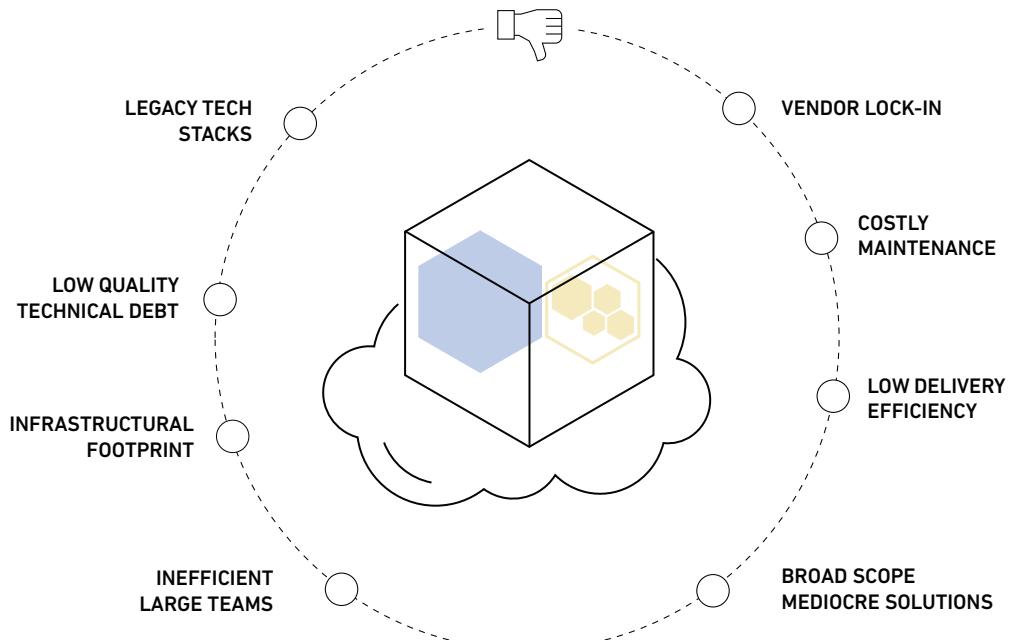
// COMMERCE MONOLITHS POSE INCREASING CHALLENGES

Practical experience with running legacy suites shows that they are not well equipped to handle the challenges of present and future commerce.

The complexity of those systems, established over years, is tremendous.

The delivery efficiency is relatively low and, consequently, changes are costly.

The technical debt has grown over time and beyond control to the point of no return. Assuring quality is a tough grind in this large monolithic structure and automated tests are often only rudimentary.



Teams are stuck with tasks that offer little to no business value like constantly fixing bugs and creating stopgap solutions to make up for scalability and performance issues, caused by the outdated infrastructure, expiring vendor support and general poor fit of old suites for today's business use cases. Resources are bound to merely maintain the platform rather than to bring it forward. Inefficient scaling leads to high operational costs and low flexibility.



CUSTOMER EXPERIENCE

Most importantly, commerce monoliths are losing their ability to support business as their outdated nature makes addressing legitimate customer needs and fulfilling modern standards cumbersome. Any advanced work on commerce experience doesn't seem to contribute to internal stringency and consistency of the overall solution.

The problems became apparent when a new concept of progressive web applications (PWA) was about to revolutionize customer experience by making the smooth, polished nature of mobile apps highly available, without installation required and regardless of mobile platform, through the web browsers that most users are familiar with. Building PWAs requires strict separation of the presentation layer from the backend logic through APIs – an objective difficult to achieve for suites since they are internally hardwired and built without API-centricity in mind. Unsurprisingly, it took vendors too much time to extend their APIs and offer JS frontends, as technically, it's nothing more than a further adaptation of a system which started 20 years ago with a completely different goal-setting.

// COMMERCE SUITES' FUTURE

There is a wide consensus regarding the future of commerce monoliths. Although legacy vendors aligned their offering with most modern buzzwords, there is barely any true value behind those.

- | Hosting a monolith software suite in a cloud doesn't make it cloud-native. Customers won't be able to fully benefit from top-notch performance, flexible scaling and efficient resource allocation.
- | Exposing an adapter API doesn't make it API-driven. Internal processes and data-level dependencies of the monolith remain unchanged making those API's crippled and unable to realize modern standards like GraphQL
- | Finally removing a storefront doesn't turn a monolith into a headless platform. Its underlying legacy philosophy and architecture will continue to bleed through the interface and will hamper integration into modern PWA frontends and further backends.

The future of commerce technology are real cloud- and microservice-based, API-centric, headless solutions – the ones that follow MACH principles.

M	A	C	H
MICROSERVICE Individual pieces of business functionality that are independently developed, deployed, and managed	API FIRST All functionality is exposed through an API	CLOUD NATIVE SaaS that leverages the cloud, beyond storage and hosting, including elastic scaling and automatical updating	HEADLESS Frontend presentation is decoupled from backend logic and channel, programming language and frontend is framework-agnostic

Source: MACHalliance.org



While Gartner hasn't written off some legacy vendors like SAP yet, their position results from market presence and broad product offering rather than from technology. It's clear that introduction of new cloud-native products is inevitable, should those vendors wish to retain their position. There is no way to retrofit a monolith and legacy vendors are now forced to build new cloud solutions. It's the end of the monoliths' era.

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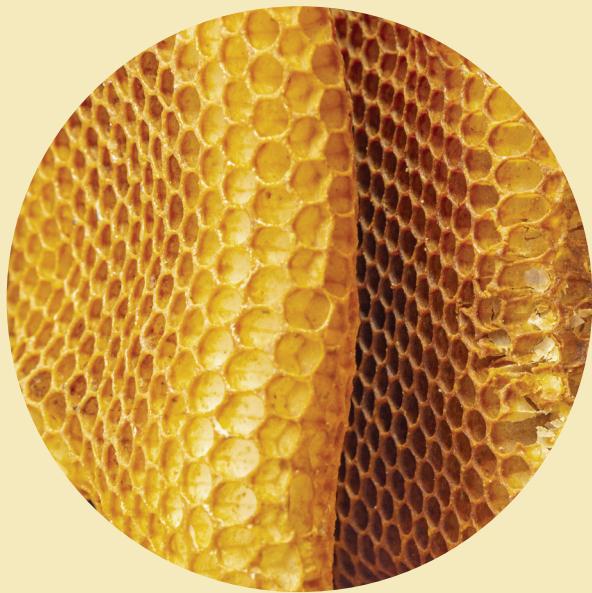
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TO COMPOSABLE
COMMERCE

// ADVENT OF COMPOSABLE COMMERCE

There is no point in waiting for legacy vendors to catch up, though.

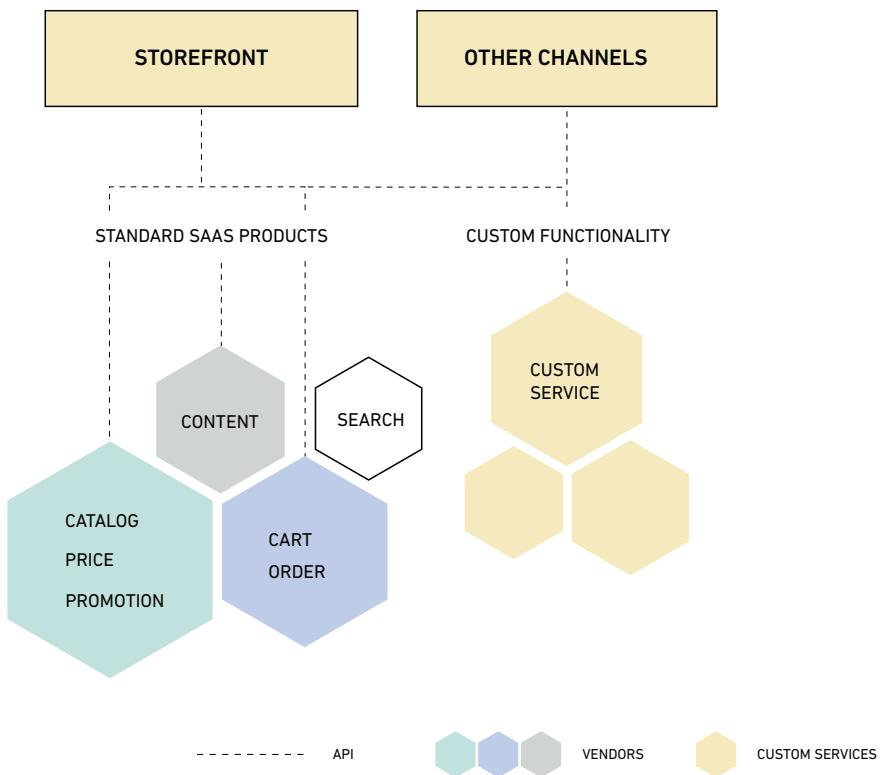
Composable commerce is available here and today, proven in enterprise projects and ready to use.

WHAT IS COMPOSABLE COMMERCE?

While monolith relied on a single vendor to provide a standard solution for any problem, composable commerce goes in the opposite direction.

In this approach a commerce system is composed of independent software components, each providing a particular business capability.

Gartner calls those elements packaged business capabilities (PBC), others refer to them as microservices. Most often components are ready-to-use SaaS applications but organizations also create custom services to augment the platform with their own unique value.



ARCHITECTURE OF COMPOSABLE COMMERCE

Clearly, the architecture of composable commerce differs strongly from the monolith. While commerce suites lived from a tight integration of all functionality within one stringent product, composable architecture builds upon proper selection of components and their integration.

- | All data and functionality is embedded in services and exposed by well-defined APIs
- | Services can only communicate via APIs
- | Technology used to build services is irrelevant as long as APIs are exposed
- | Services are deployed separately and can be scaled independently
- | Services do not share a common data store
- | Storefront is separate from any other module, services are headless

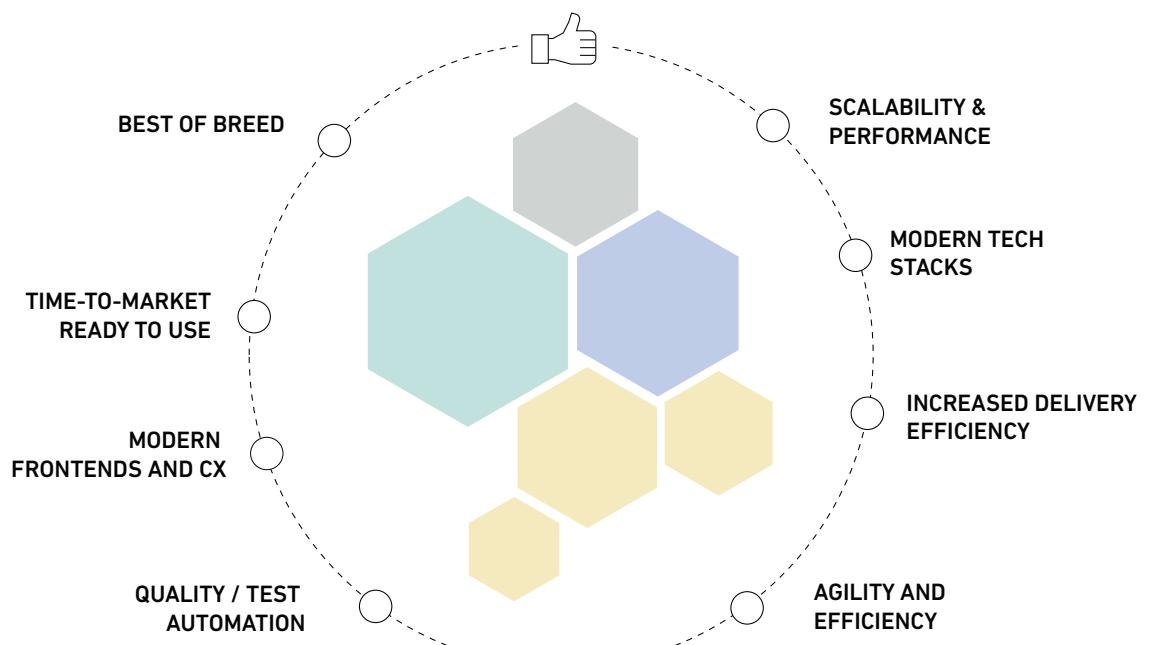
Jeff Bezos' announced his architectural manifesto back in 2002, which included most of these rules, back in 2002. It became the foundation of Amazon's technological success.

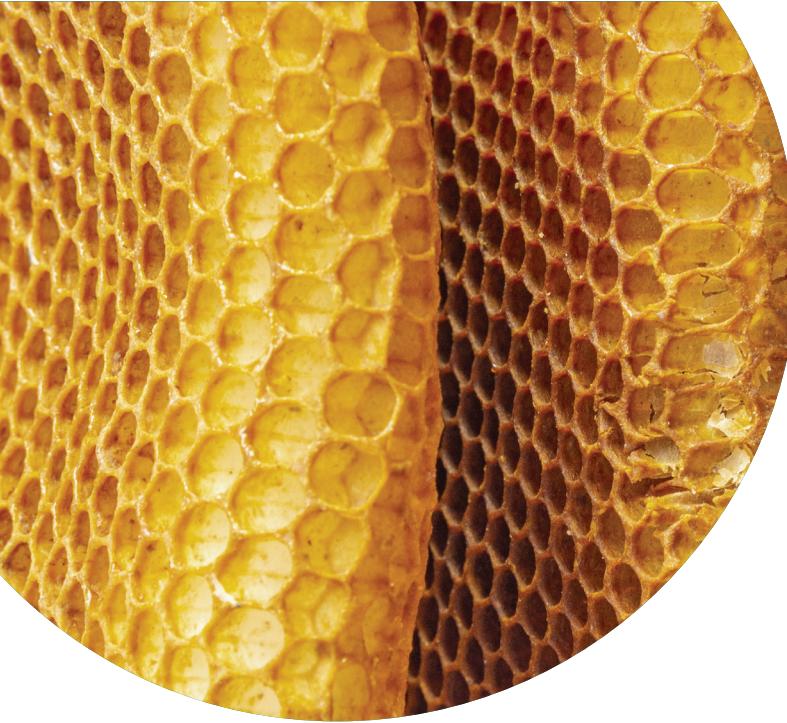
Today, modern SaaS vendors apply MACH principles in their products which makes them a perfect fit for composable commerce. These principles allow for the commerce experience to be developed using the latest practices and technology so that they become modular, easily deployable, scalable and maintainable - overall, more suited towards current and future business needs.

// ADVANTAGES OF COMPOSABLE ARCHITECTURE

Composable commerce draws from the vast experience with monolithic platforms that organizations gathered over the years. The new design addresses problems faced by monoliths, most notably achieving:

- | Cutting-edge functionality due to the best-of-breed selection
- | Outstanding time-to-market due to ready-to-use components
- | Ability to use modern frontends and support other channels
- | Higher quality and test automation due to smaller components and clear APIs
- | Flexible scalability and thus improved performance and cost allocation
- | Freedom of choice between technology stacks
- | Higher delivery efficiency and agility in large teams
- | Continuous delivery within reach
- | Lower maintenance cost since there are no upgrade projects





// MAPPING THE MONOLITH TO COMPOSABLE COMMERCE

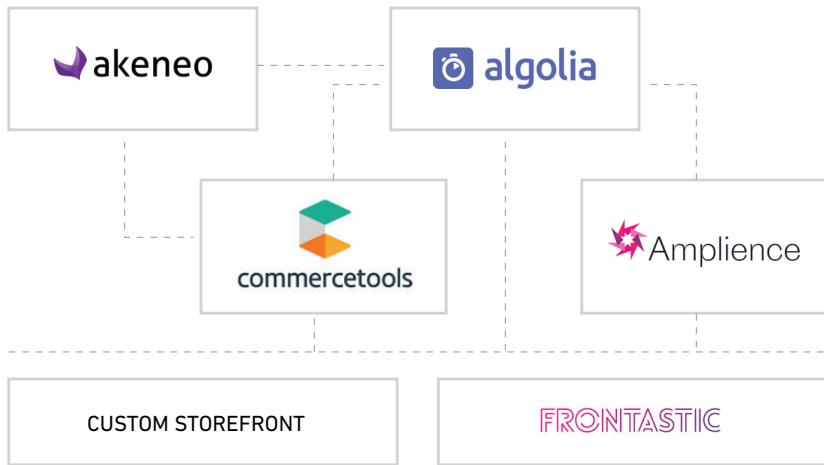
The new composable commerce platform, which replaces a monolith, opens up new potential for organizations but it also covers all the functionality of the former system. Key capabilities of the system have to be identified and a plan must be put in place to cover them by SaaS products or custom services.

Fortunately, many years after the introduction of SaaS, one can now choose from wide selection of cloud services which provide the best fit for a given business case. Only rarely is there a need to create new custom modules from scratch, although often the existing products would be augmented to a particular use case.

VENDOR SELECTION

Out of many SaaS products available on the market today several deserve particular recognition for their true commitment to MACH principles. These cloud-native, headless and API-driven applications guarantee to support your long-term composable commerce strategy by ensuring flexibility, agility and stability.

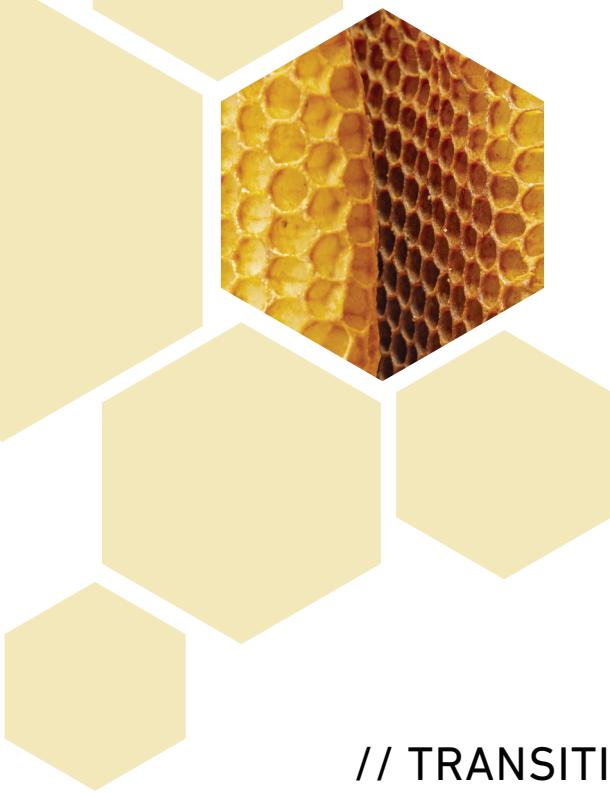
The concept of composable commerce is gaining traction heavily though so further vendors are expected to join soon, expanding the range of available best-choice products. Regardless, it is already perfectly possible today to build a clean, consistent and future-proof platform on SaaS foundation.



Just to cover the key areas:

- | Transactional commerce: at the heart of the system **commercetools** is your best bet as the true cloud-native, scalable and enterprise-proven, flexible solution
- | Search & Navigation: **Algolia** has a mature cloud product
- | DXP and content management: there is a broad selection of products including **Amplience**, Contentful, Contentstack
- | Product information and digital asset management (PIM & DAM): these systems can be considered independent units and not always core parts of a composable architecture. Modern lightweight PIMs providing enough interfaces for batch processing and APIs, like **Akeneo**, are a hassle-free choice.
- | Storefront: shop frontends are becoming key assets in the era of PWA and multitude of channels. Most organizations will work with their own frontends, possibly based on a solid framework, or go with a modern Frontend-as-a-Service solution like **Frontastic**

With composable commerce, the components of your business ecosystem are placed as dedicated modules that work together. This is unlike monoliths where all the parts are built into one product. The existence of components as independent, serviceable parts assures lasting value for the organization.



// TRANSITIONING TOWARDS THE COMPOSABLE

The principles of composable commerce cannot be simply applied to the monolith. There is no real “retrofit” option since the changes touch the fundamentals of the systems - its basic architecture. Instead, a new platform must emerge in a transformation process which takes into account the enormous unique business value built into the monolith over years. Only few companies are in the position to attempt a re-platforming from a monolith at one stroke.

The more realistic approach is a gradual yet progressive evolution towards the new paradigm.

These both scenarios - we call them Re-composition and Decomposition - will be discussed in every detail in the second part of our whitepaper series. Since you now understand the nature of the change and the way the new paradigm maps onto the well-known monolithic commerce suite, the base for setting up a transformation strategy is provided.

Before we move on to the next part of this whitepaper series, consider how your business ecosystem is structured and how its different elements come together in terms of functionality and priority. This will help smoothen the transition from your monolith e-commerce suite towards the adoption of a modern commerce platform and migration of day-to-day functions.

// ABOUT THE AUTHORS



Michał Bartmanski is the founder of ENGINIETY and a seasoned commerce tech professional with more than 20 years of experience in architecting enterprise IT solutions. Since 2009 he's been focusing on commerce technology strategy and delivery. He had the privilege of advising major European brands on their digital transformations.

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Miroslaw Bartnik is the CTO of ENGINIETY and a hands-on expert in commerce delivery, acting as a leader for major accounts. On top of that, he is responsible for innovative technologies and architectures which include composable commerce. Mirek's current main area of interest is the practical transformation of legacy commerce platforms into the modern paradigm.

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// ABOUT ENGINIETY

**ENGINIETY makes sure that commerce technology is leveraged
for the best advantage of your business**

Driven by strong engineering values and building upon unique team expertise, ENGINIETY delivers commerce technology for European market leaders. ENGINIETY is your trusted partner in designing, building and maintaining complex commerce platforms with the clear goal of advancing your business.

Today, it requires increasingly sophisticated strategies and strong ability to execute to delight your customers, regardless of the branch and whether it's B2C or B2B. While you focus on business complexity, ENGINIETY's role is to have your back on the tech side. We provide support to evaluate, choose and implement commerce, PIM, DXP, CMS and DAM solutions which eventually build up a consistent, flexible and future-proof system architecture.

Since 2009 notable brands like TUI, NIKON or VISION EXPRESS have chosen ENGINIETY to advance their digital transformation.



// ABOUT COMMERCETOOLS

commercetools is the world's leading platform for next-generation B2C and B2B commerce.

To break the market out of being restrained by legacy suites, commercetools invented a headless, API-first, multitenant SaaS commerce platform that is cloud – native and uses flexible microservices. This enables customers to deliver the best commerce experiences across all touchpoints.

Founded in Germany in 2006, commercetools has worldwide offices spanning the US, Europe and Asia Pacific with a customer base of Fortune Global with 500 companies across industries.

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