Strix®

EBOOK

Composable Commerce - new approach to online sales

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Running a business is often a path of compromises. Balancing quality with cost optimisation, speed of execution with accuracy, profit maximisation with ethics.

The e-commerce industry is no exception, with brands having to face the technological limitations of particular solutions. Or at least it was like that, because recently the market has been dominated by an approach that will allow you to implement the best solutions in your store. It's called Composable Commerce.

From this ebook you will learn:

- What are the main principles of the Composable Commerce approach

- How the e-commerce industry has evolved over the years

- What is a monolithic approach in application development

- What microservice architecture is all about

- How the headless model works

- Who should implement the Composable Commerce approach and why

- **CASE STUDY:** How Headless has increased the loading speed of Castorama's website

- **CASE STUDY:** Implementation and optimisation of Dr. Max's online pharmacy
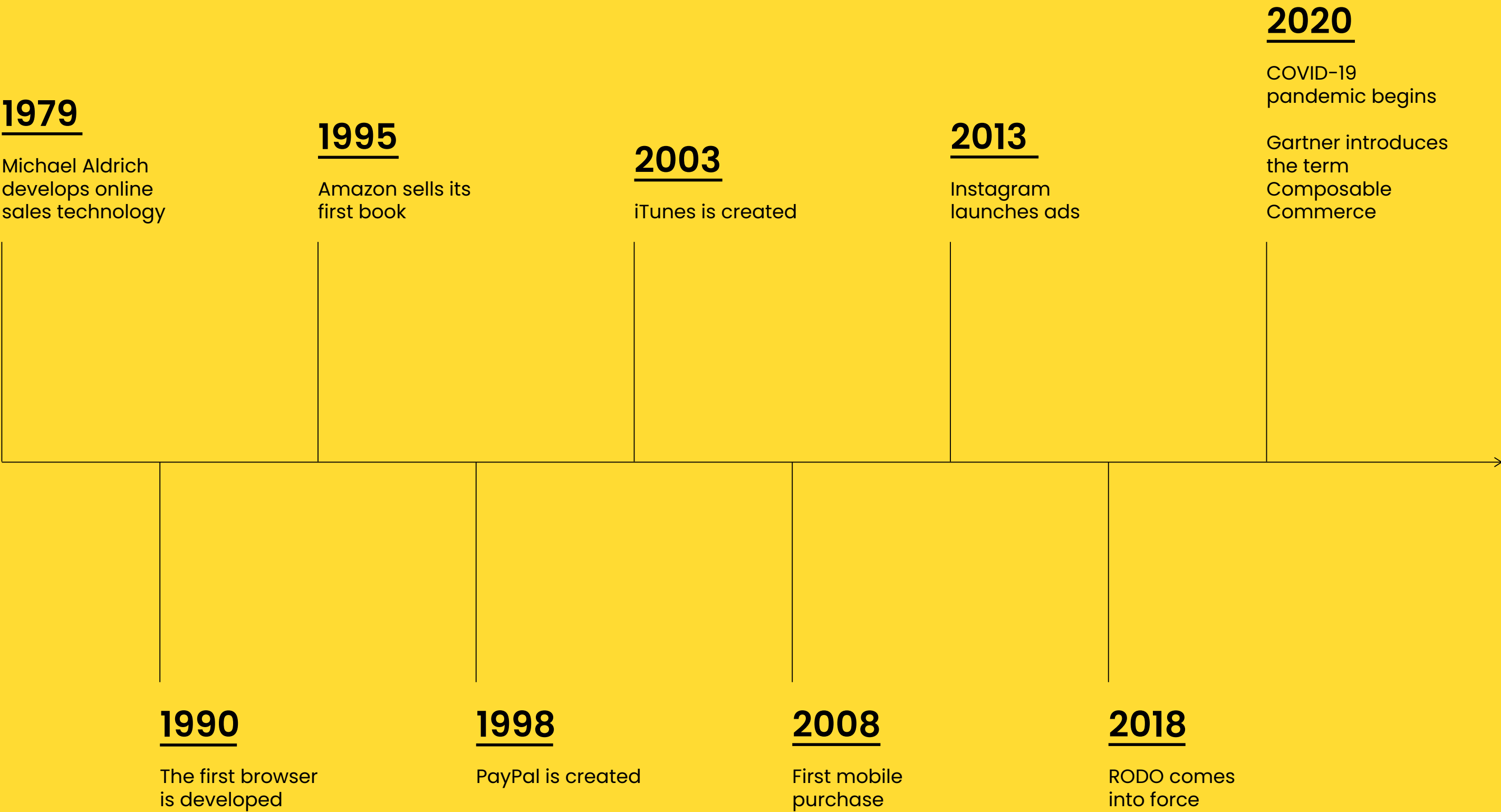
What is Composable Commerce?

Composable Commerce is an approach to building sales platforms. It involves composing custom applications from separate components or modules, rather than creating a homogeneous, monolithic system. **In this way, it is possible to select the best and most effective solutions offered by different suppliers and get rid of the limitations imposed by a single environment**.

Surely this definition is still a bit puzzling and vague to you. In order to better understand how Composable Commerce works in practice and why it has revolutionised today's online sales market, we need to outline a bit of the history of e-commerce development.

According to the encyclopaedic knowledge, e-commerce dates back to 1948-1949, when the first orders were placed in Soviet-occupied Berlin via telex, a device similar to a fax machine. However, we won't go back in history that far. **Let's start from 1990, when the first web browser, the World Wide Web, was created**.

History of e-commerce

1979
Michael Aldrich develops online sales technology

1995
Amazon sells its first book

2003
iTunes is created

2013
Instagram launches ads

2020
COVID-19 pandemic begins

Gartner introduces the term Composable Commerce

1990
The first browser is developed

1998
PayPal is created

2008
First mobile purchase

2018
RODO comes into force

It didn't take long for the new possibilities to start changing the previous standards of commerce. In 1994, Amazon was established, followed by eBay in 1995. 1998 saw another technological breakthrough as the alternative electronic payment system, PayPal, entered the market.

In the first decade of the 21st century, e-commerce started to gain momentum, becoming more advanced and widespread. In 2008, the first purchases were made via smartphone. The development of technology made the industry face another challenge - the need to adapt online shopping to the requirements of mobile devices. The popularisation of the internet and smartphones meant that more distribution channels were created at a dizzying pace. The retailer's website was no longer the only starting point for the shopping process as native ads, push notifications, social media sales, live commerce, and mobile shopping apps emerged. User requirements in terms of design have also increased - a digital product can no longer only be functional, but also visually appealing and intuitive to use.

2018 marked another turning point - the RODO law regulated the way data is processed to protect users from abuse. The new approach to privacy meant that shops had to redefine their attitude towards customers. Building relationships, creating positive experiences, and personalising content became crucial.
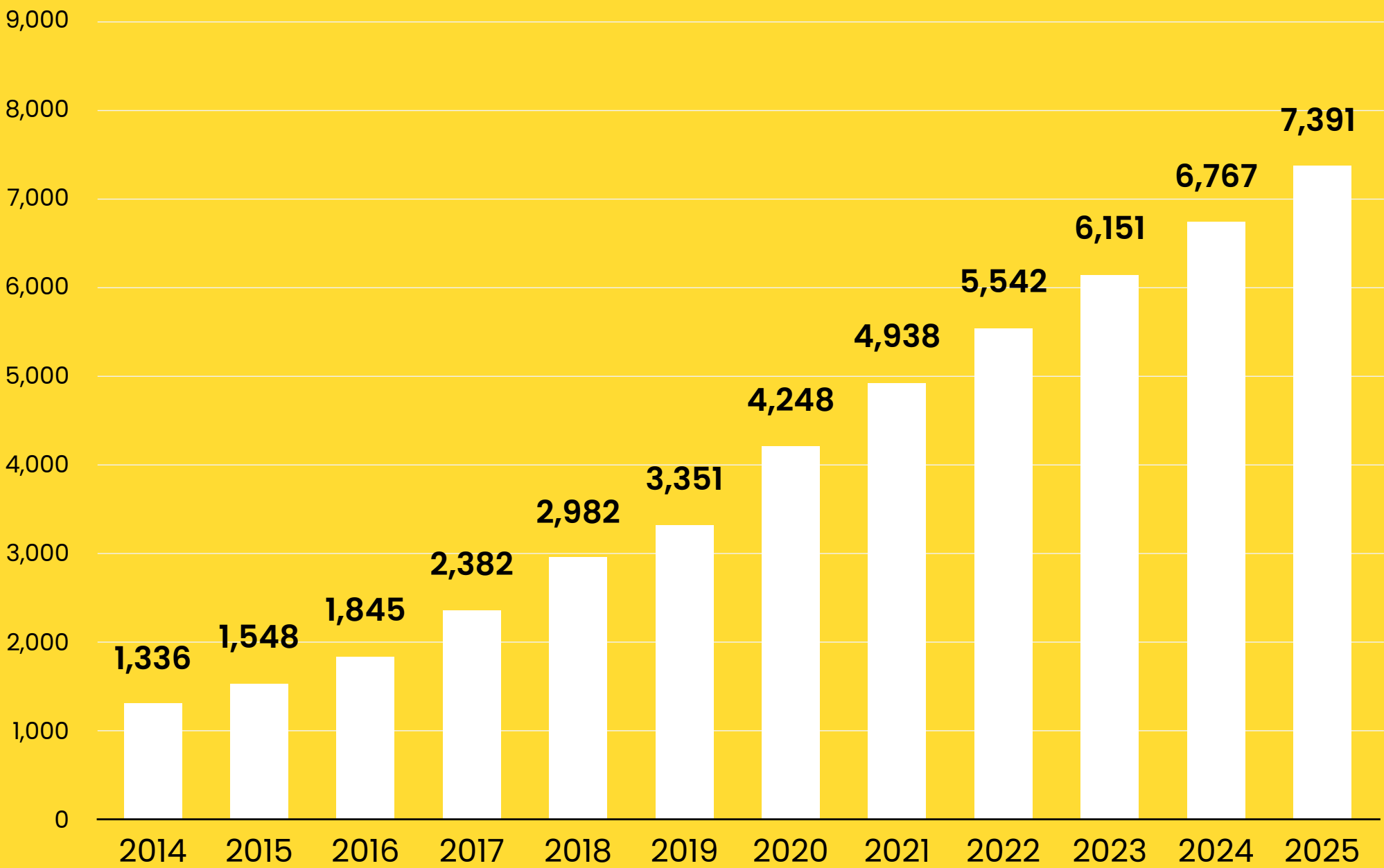
In 2020, the Covid-19 pandemic descended upon the world, and while many industries found themselves in crisis, for e-commerce this meant a wave of new customers and dizzying growth. Online shops began to outdo each other in offering more features, new payment and delivery options, advanced filtering, and richer product pages. The value of online sales also increased rapidly.

Today, online shops no longer resemble the simple applications they started as - they are now complex, multi-component systems. The rapid growth of the e-commerce sector in such a short time has opened up gigantic opportunities for the industry but has also created new technological challenges. In the age of flexible, feature-laden sales platforms, the previous model of building applications was no longer sufficient. There was a need to implement a new approach to meet the growing appetite of the market. In 2020 the analyst firm Gartner first proposed the term Composable Commerce - response to the evolution of the business model.
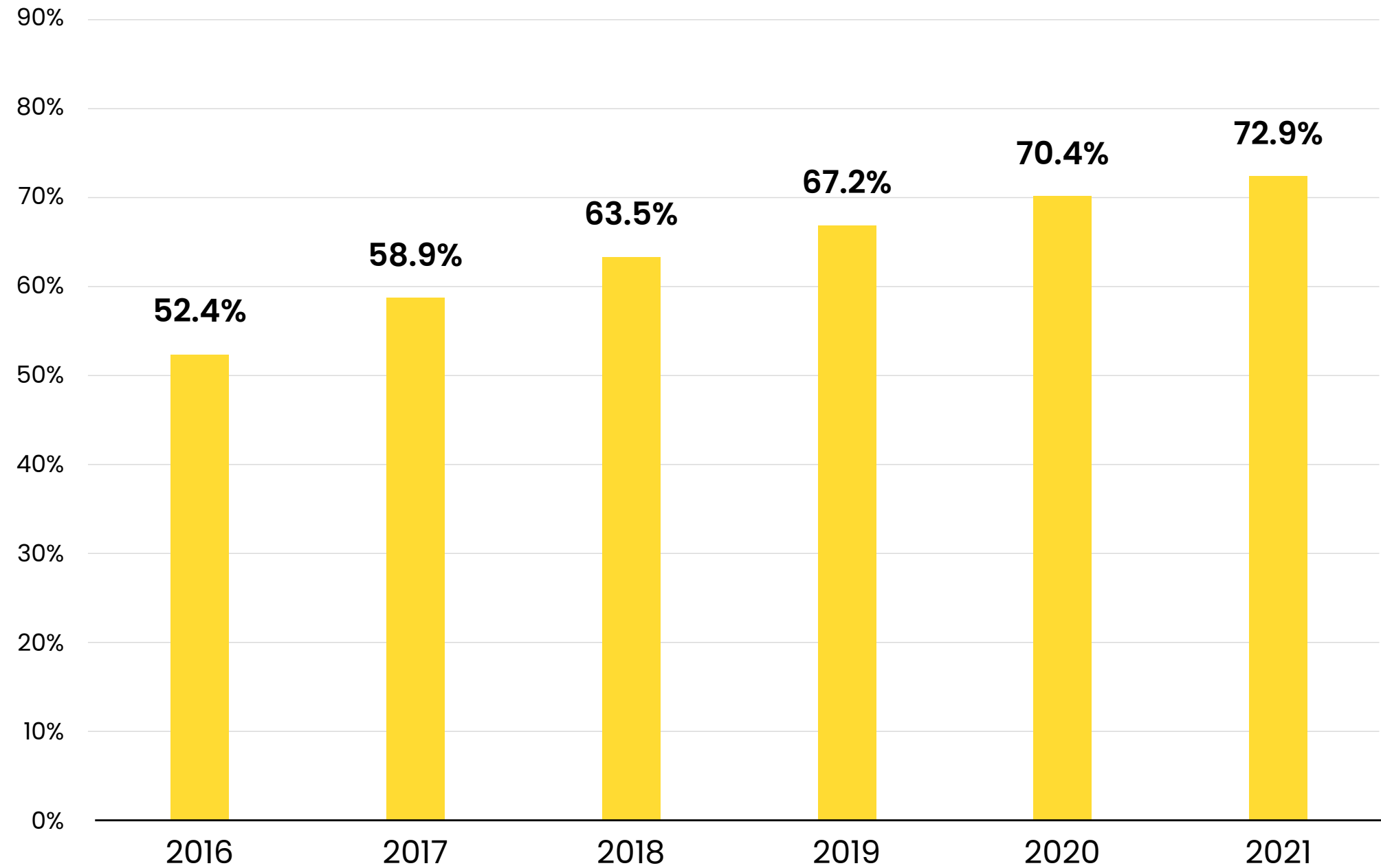
Value of the e-commerce market since 2014 with forecasts for the following years

Year	Value
2014	1,336
2015	1,548
2016	1,845
2017	2,382
2018	2,982
2019	3,351
2020	4,248
2021	4,938
2022	5,542
2023	6,151
2024	6,767
2025	7,391

Share of mobile sales in the global e-commerce market

Year	Share
2016	52.4%
2017	58.9%
2018	63.5%
2019	67.2%
2020	70.4%
2021	72.9%

Terms that may come in handy

We'll be using some technical terms in the next part of the ebook, so this short list with an explanation may be useful to ypu.

- **FRONTEND**
  The layer of the application that is visible to the target user. This is the view that appears to the customers when they enter the shop page and during their interaction with the site, i.e. the entire interface, images, animations, sliders, product pages, shopping cart, etc.

- **BACKEND**
  The technical background that allows the application to function. This is the entire structure of the website written in code and the administration panel used to manage the system. The backend processes information from the database to perform specific operations, such as adding products to the shopping cart or displaying searched items. This layer of the application is invisible to users.

- **DATABASE**
  A place where all the information needed for the shop to function, such as customer data, product information, and orders made, is stored.

- **MONOLITH**
  The classic all-in-one development model, in which the user interface, business logic, data, and all application features exist as a whole in a single code base. In other words, one monolithic application is responsible for handling all aspects of the online store.

- **MICROSERVICES**
  Otherwise known as microservices architecture, this is a development model that involves breaking down the functions of an application into smaller components. In practice, this means that instead of one monolithic application, there are many separate, interconnected applications responsible for specific tasks, such as product search or payment processing. Each microservice uses its own database and communicates with the others via an API.

- **HEADLESS**
  A model of software development that involves separating the frontend from the backend, unlike in a monolithic application, in which these layers are merged. This solution allows changes to be made to the visual layer of the application without interfering with the code and backend, resulting in greater stability and flexibility of the system.
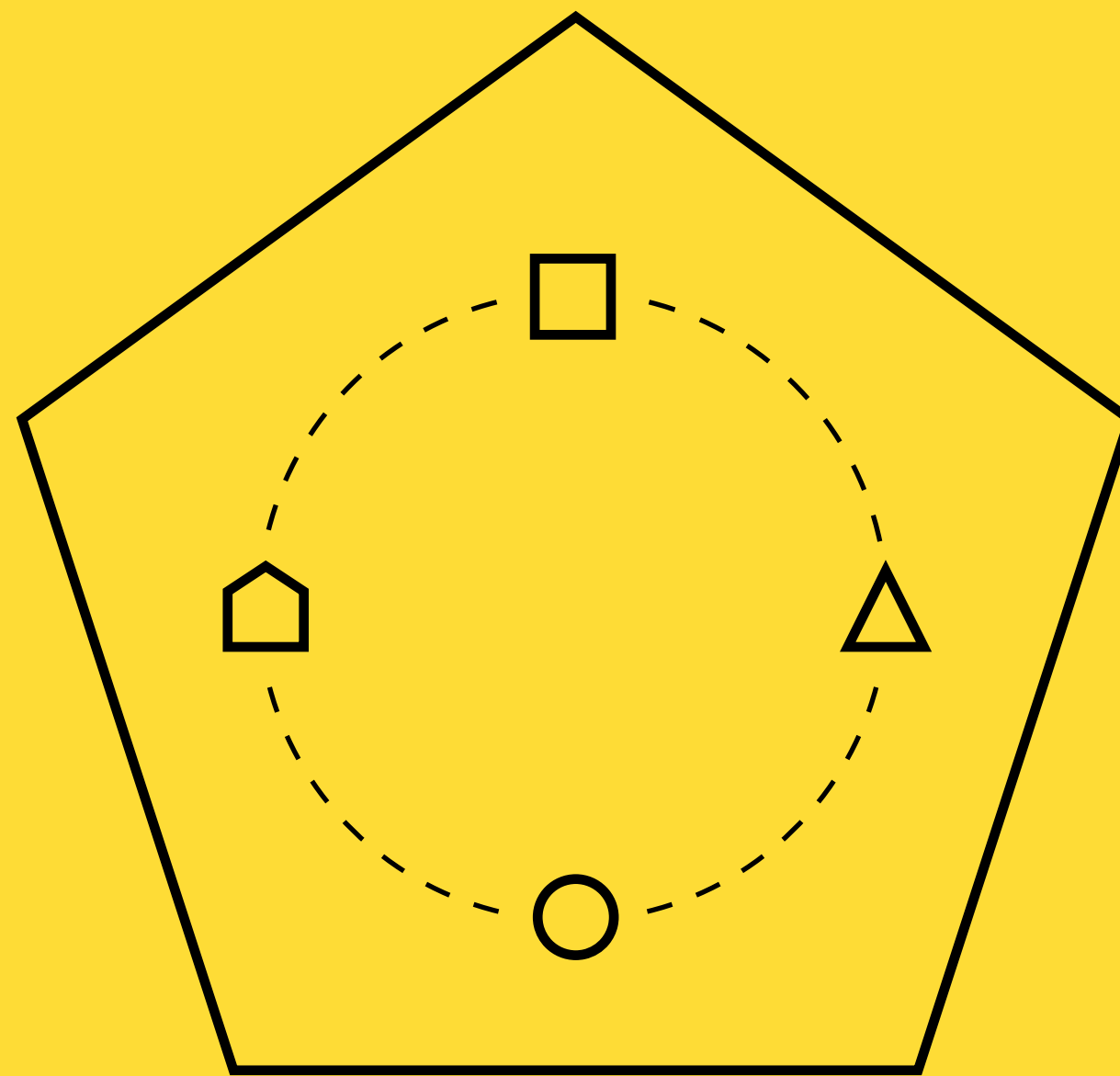
- **API**
  Technology that allows the exchange of information between several applications and services. Such a solution saves a lot of time and easily connects different types of software. Over the past decade, APIs have become a standard in many industries, including e-commerce, making it possible, for example, to make a quick payment for an order within an online shop or to select a delivery point without leaving the shopping cart panel.

- **COMPOSABLE COMMERCE**
  An approach to building e-commerce platforms that involves 'composing' applications from independent modules. Technologies such as microservices, headless, and APIs form the basis of this approach.

- **UX**
  It stands for the entirety of a user's experience and impression when interacting with a product or service. In the case of e-commerce, it consists of many elements: an intuitive interface, attractive design, descriptive product pages, and a simple purchase path.

Monolithic application

Until now, the standard in sales platform architecture has been the monolithic model. **A monolithic application is a self-sufficient all-in-one system in which the user interface, data handling, business logic, and applications function as a whole in a single code base**. The design philosophy is to create a self-contained and independent application that not only handles individual tasks but also each subsequent step needed to perform a function.

It might seem that the monolithic model is the perfect solution, and it was functioning for years as the dominant trend in e-commerce architecture. As the industry has grown, however, it has become apparent that giant systems designed to handle a lot of interconnected data are no longer efficient. With each additional functionality involving further expansion, the system becomes more complex and requires more computing power, making it heavier and more difficult to operate. In addition, even a minor change in one area of the application affects the operation of the whole, making it easier for errors to occur.

Scalability has also become an obstacle, as monoliths are only limited to the capabilities of their environment. In addition, monolithic applications are more time-consuming to implement and develop, making the shop slower to react to the latest industry trends because the team needs more time to rebuild the system.

⊕ **PROS:**

• Independence and self-sufficiency of the system.

• Full control over all operations.

• High performance (for simpler systems).

⊖ **CONS:**

• Little scope for scaling.

• Complicated and more difficult to use system structure.

• Low efficiency (for complex systems).

• Long implementation and expansion times.

• Minor changes affect the code as a whole, as elements are interrelated.
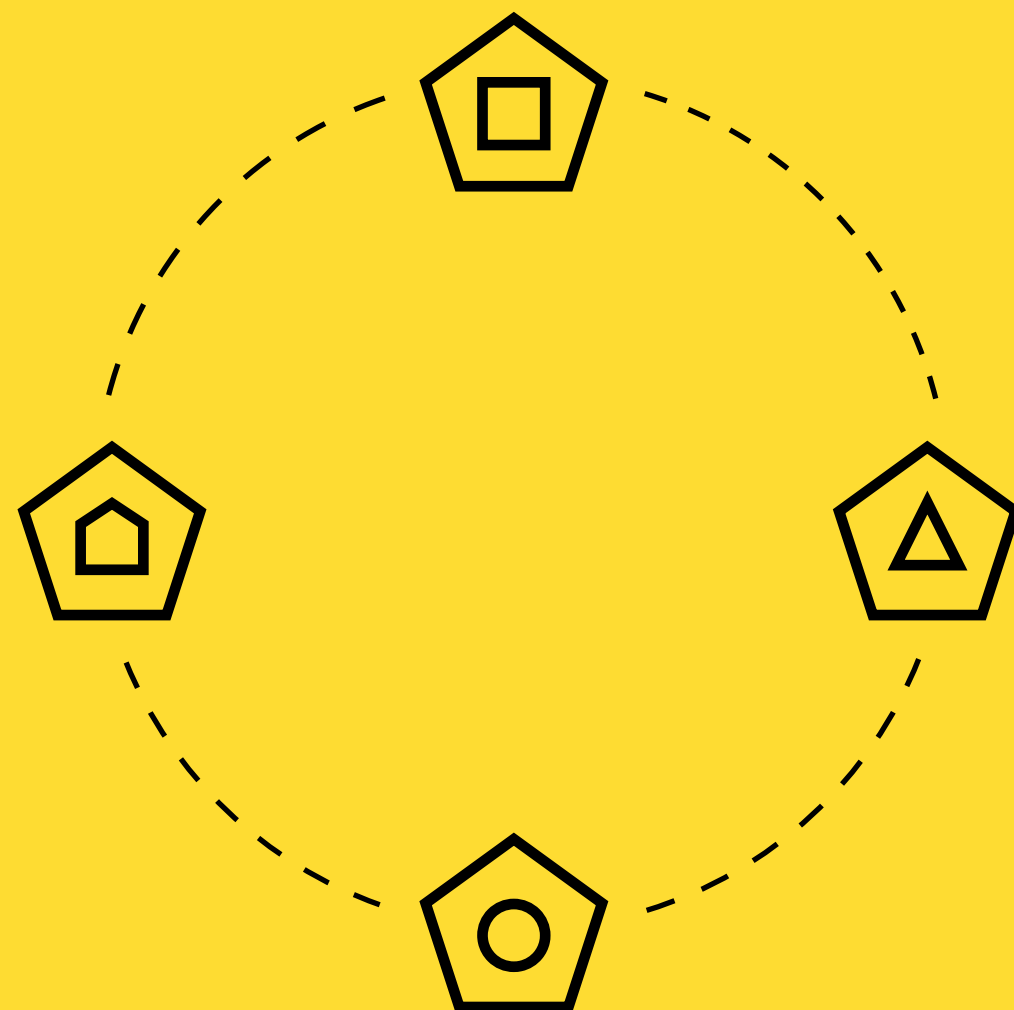
MONOLITH

Who will make use of the monolithic model?

The monolithic model is sufficient for smaller businesses and shops offering basic features.

If your e-commerce is a small online boutique where you offer dozens of products, and standard payment methods and do not need fancy functionalities - monolith will not only be simpler to implement but also cheaper. Companies that do not prioritise further application development and multiple integrations will also find this solution perfectly suitable. However, if you are running a huge marketplace or B2B platform, or working in a highly competitive industry such as fashion or interior design, the capabilities of a monolithic application will quickly prove insufficient.

Microservice architecture

Microservices are a technology used in modern systems, consisting of a combination of internal and external services connected via APIs. Unlike the monolithic model, where we were dealing with one big structure, **in the case of a microservice architecture, each service is self-sufficient and works on a specific business purpose, communicating with the others only when needed**. This solution results in **greater system efficiency and flexibility**, as the individual microservices work on a smaller pool of operations, data and specific tasks. This technology also makes it easier to expand and maintain the system, because instead of working on the entire monolithic backend, developers can focus on individual microservices.

Let us analyse this with an example. Every e-commerce application consists of many elements, such as a search engine, shopping cart, payment, product pages, or checkout. In a monolithic application, all operations are performed by one common backend using one large database. The more complex the shop is, the more products, media, and functions it contains, and in the end the system becomes inefficient.

In a microservice structure, the application is divided into specialised units, handling specific operations. One smaller system with its own database is responsible for search, another for the shopping cart, and the next one for payment. The systems communicate with each other via an API, but only when needed. For example, when a customer completes their address details, the microservice handling the search is not involved in the process. Unless, of course, the customer decides at the last minute to add some more products to the shopping cart, in which case the search engine comes into play again. This solution results in a faster and more efficient shop operation.
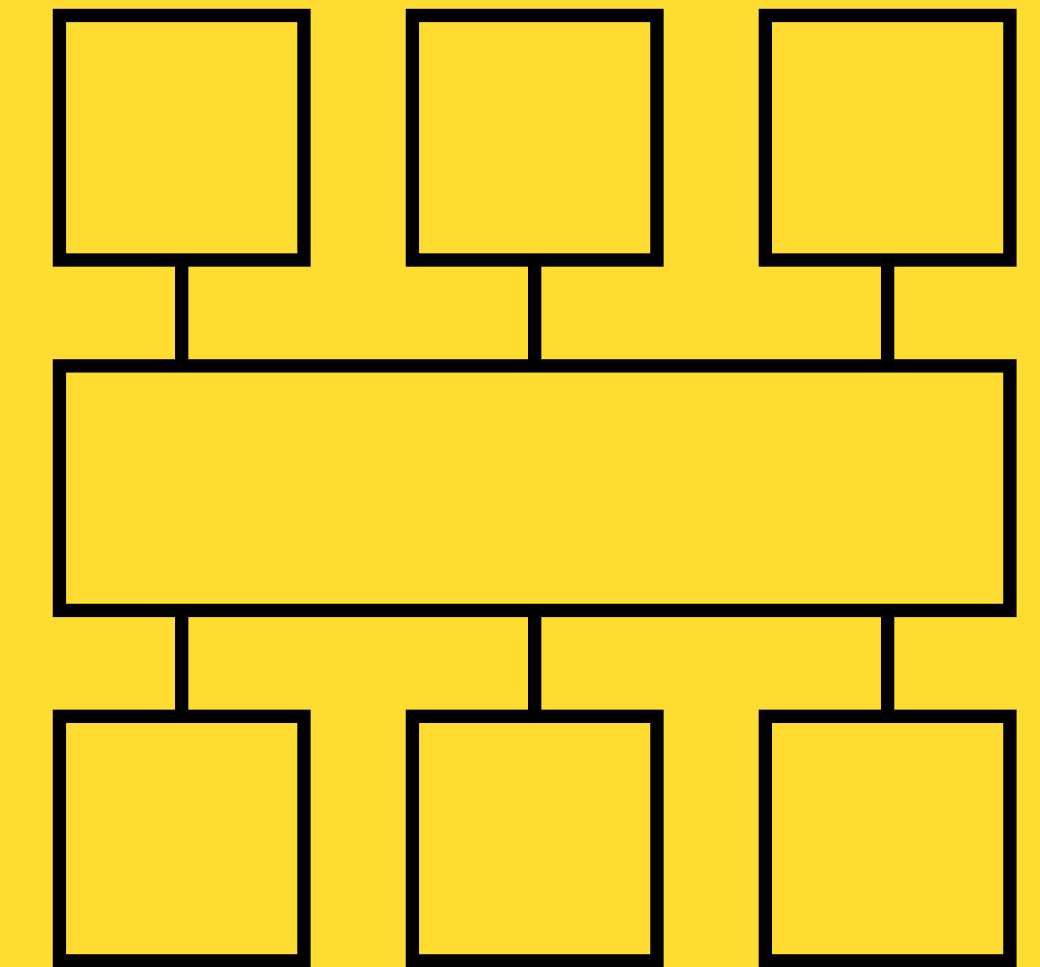
MICROSERVICES

Headless commerce

Headless is a technology that makes it possible to separate the backend (i.e. the entire technical background responsible for the operation of the application) from the frontend (i.e. what the viewer sees). Such a solution gives greater flexibility and better optimisation of the site, as different frontend versions can be tested without interfering with the backend. This is particularly important in the age of modern e-commerce, where the sales platform is not just a place to present an assortment, but above all a space where users can build relations with the brand. The quality of the customer's experience on the site determines whether they will want to see the offer, finalise the purchase, recommend the shop to friends, and come back for more. The loading time of the website, its layout, and design, intuitive navigation, attractive product pages - everything matters.

Mobile sales account for more than 73% of the global e-commerce market (Statista, 2022). Focusing on the quality of the mobile shopping experience is the basis of a successful business today.

And yet, users browse shop websites on a variety of devices and, in today's world, it is not enough for a website to be merely responsive. Smartphone, laptop, tablet, smartwatch - each of these accessories has a different user experience and requires a digital agency to design a separate purchase path. And headless offers great opportunities in this regard, becoming the basis for an omnichannel approach. What's more, technology is evolving rapidly and today's standards may already be outdated in a few years. Separating the backend from the frontend allows you to work independently on both layers and react faster to changes like the requirements of new smartphone models or UX standards.

By 2023, up to 50% of new commerce solutions will be offered as API-centric SaaS services (Gartner, 2020).
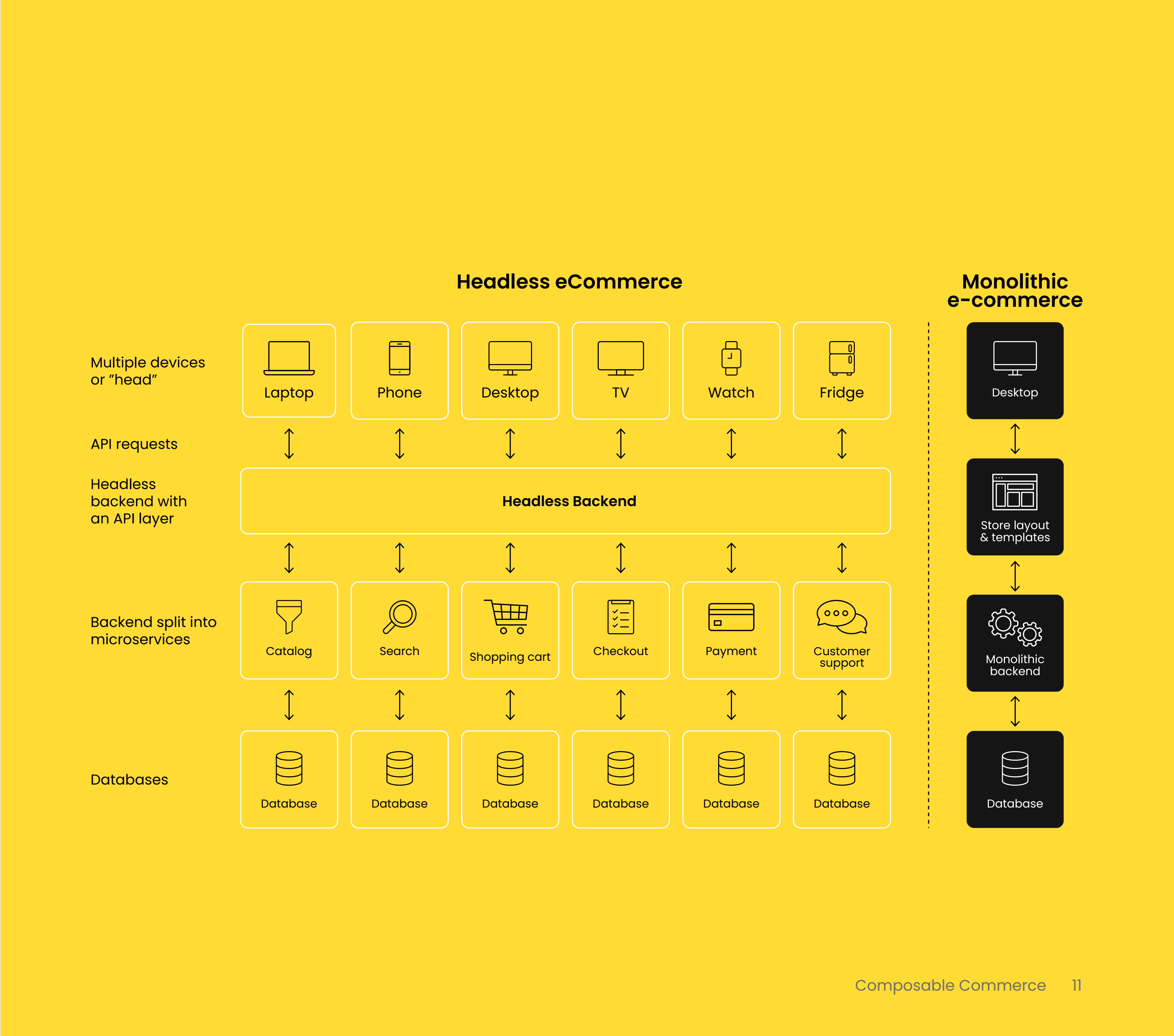
HEADLESS

Let's take a look at the chart on the right, which illustrates how microservices and headless differ from a monolithic approach.

On the first level, we have the frontend. The elements of the frontend are created independently for different devices. This way, if a business has multiple touch points and communication channels, the shop can have multiple views plugged into one backend.

On the second level, we have a headless backend with an API layer that allows the frontend layer to communicate with the backend and vice versa.

On the third level, we have the backend divided into microservices, which are independent components made up of code fragments. Each of them works with its own database. There can be individual microservices for different elements of the shop: product catalogue, search, shopping cart, payment, CMS, or customer service.

At the bottom, we have databases that shop and organise information about the webshop. The backend provides information from the database to the frontend layer (i.e. the first level, or ,head') via various API formats such as JSON, GraphQL, etc.

Headless eCommerce

Monolithic e-commerce

Multiple devices or "head": Laptop, Phone, Desktop, TV, Watch, Fridge

API requests

Headless backend with an API layer: Headless Backend

Backend split into microservices: Catalog, Search, Shopping cart, Checkout, Payment, Customer support

Databases: Database, Database, Database, Database, Database, Database

Monolithic e-commerce: Desktop, Store layout & templates, Monolithic backend, Database

What does the Headless Commerce model offer?

Multiple views of the shop
With Headless, your shop will display perfectly on any device. And all this with just one backend, which connects to the different views in the frontend layer via an API.

Performance
A separate frontend allows the number of queries sent to the database to be reduced and updates to be made without involving the backend. This results in a faster website, and this means more satisfied customers and higher conversion.

Scalability
The shop must keep up with the changing market, customer expectations, and the growth of your brand. The headless model allows you to scale, expand and update your system much faster than with a classic monolith.

Customisation
Every brand has different needs based on its business model, the specifics of the industry and the needs of its target audience. The headless model will work well for those who do not like the limitations imposed by off-the-shelf solutions and value a flexible approach.

Security
The separation of frontend and backend allows for increased security of the service operation by reducing errors and system vulnerabilities. Also, it's easier to locate potential problems more quickly, in contrast to large monolithic applications.

The efficiency and stability of the headless model are invaluable during sales peaks, such as Black Friday when huge numbers of orders need to be handled without overloading the system.
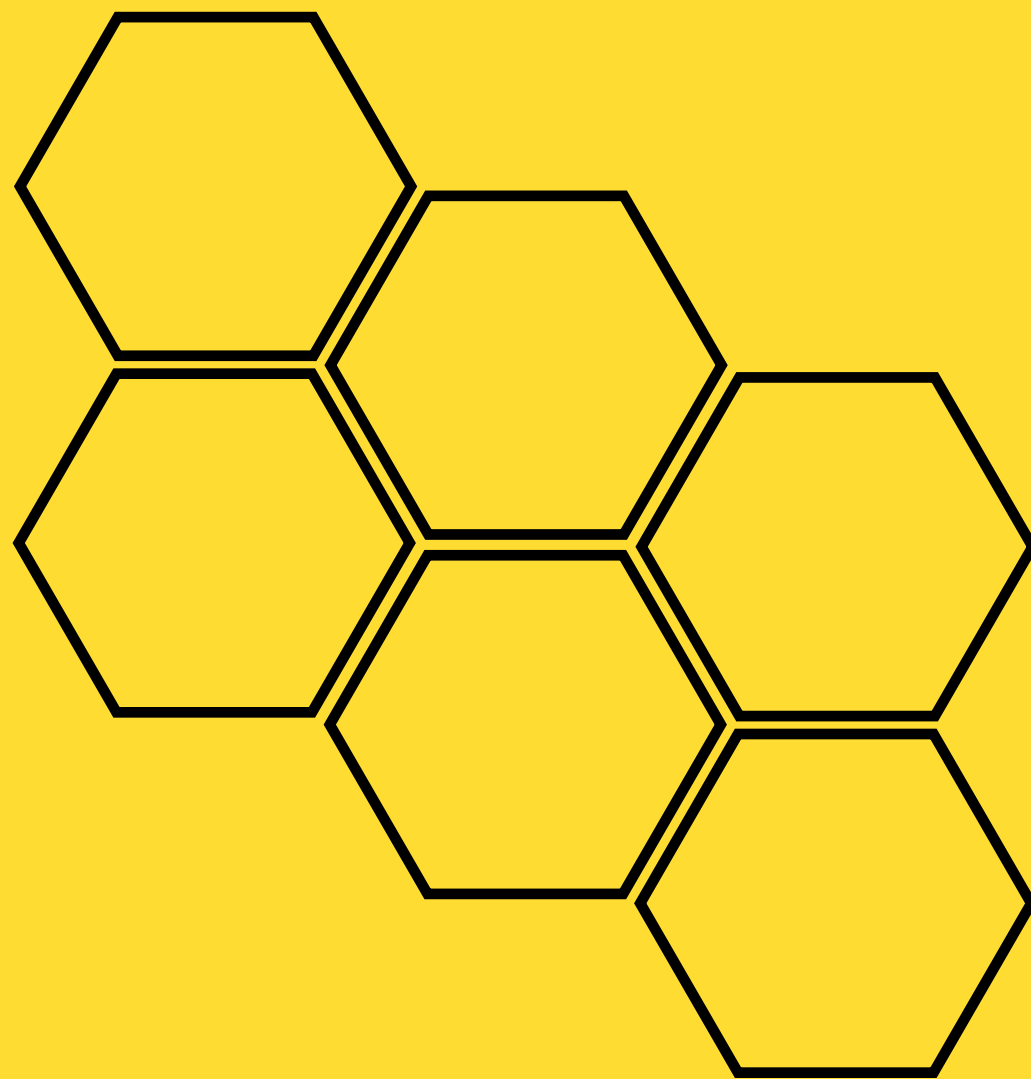
The Composable Commerce approach

Microservices, headless, APIs - we've covered a lot of terms so far, and yet the ebook was supposed to be about Composable Commerce! The thing is, all these names come together as integral parts of Composable Commerce.

Composable Commerce is an approach to building sales platforms that is underpinned by flexibility, agility, openness to exploration, improved experience, and the best possible quality. Composable Commerce for e-commerce is a bit like an agile methodology for development - it's a set of certain guidelines, assumptions, and recommended solutions to achieve the best possible results. The idea behind this approach is to compose an online shop from separate modules, hence its name.

At the core of Composable Commerce is the headless model, i.e. a flexible, easily modifiable frontend connected via an API to a backend built from microservices. This solution allows you to create a system in which each individual ‚block' of the backend is responsible for specific groups of operations in which it's specialised. It enables you to get the best performance and speed out of your application. The separated frontend offers a great deal of customisation for the requirements of specific devices and can be updated independently of the backend, giving the system stability, and flexibility and providing users with a better experience. Communication between modules is via APIs, so you can expand your shop as you need without worrying about the limitations of one environment.

COMPOSABLE COMMERCE

How does Composable Commerce help to achieve the highest quality of service?

Think of it as running a business. If you own a clothing shop, you work with many partners. The production of the goods is handled by a weaving company, delivery by a qualified courier service, marketing by an advertising agency, and the maintenance of the platform by an e-commerce agency. If only one company were responsible for all of these tasks, it would not only be a block to the growth of your business due to staffing constraints but also a serious question mark in terms of quality, because how can a company that takes care of everything be a real expert in anything?

Every business is built from separate components in some way and it is the same with Composable Commerce. Instead of limiting your shop to ready-made solutions and one monolithic application, you can take the best from different suppliers. One application is responsible for product information management, another for CRM, a third for data analytics, a fourth for payment processing, and a fifth for chatbot or voice assistant. Each is the best in its field and communicates with the others in a modular structure, **All you need is a trusted e-commerce agency to put all the building blocks together and turn your aspirations into a functional digital product.**

Benefits of Composable Commerce

Speed of response

The market is changing dynamically - today's standards may soon be obsolete, and solutions that were just the latest innovation will become a necessity for staying afloat in a sea of competition. Composable Commerce allows you to update your system and add new functionality quickly, without having to rebuild your entire application.

Best of the best services

With Composable Commerce, you're not limited to the capabilities of a closed environment – you can implement the best available services offered by different providers specialised in their field.

Flexibility

When building monolithic applications, you have to think ahead about your business goals and anticipate the reactions of your audience. The Composable Commerce approach gives you much more flexibility because you can test different solutions, implement them as needed, and withdraw them if they don't work. In this way, you can develop a system that works in practice, rather than relying on theoretical premises.

Improved consumer experience

Customers today are used to a maximally simplified shopping path and the feeling that the online shop practically reads their minds. Personalised recommendations, auto-complete address data, editing the order from the shopping basket, presentation of products in video form, PWA, payments from the website, and so on. If someone has shopped a few times in innovative e-commerce, it will be difficult for them to come down from such a high-hanging bar, which is why Composable Commerce is crucial in building an ever-improving consumer experience.

Innovation

No one will talk about a shop that does the same thing as all the other shops. The media, customers, and business partners are interested in brands that can pioneer new directions and know how to stand out. And Composable Commerce opens up a wide path for innovation.

The market in the age of Composable Commerce

The term Composable Commerce was proposed by analyst firm Gartner in a 2020 report. Although it is a very fresh term, the approach it reflects has been maturing in the e-commerce industry for some time due to the growing need to expand online shops while maintaining their business agility. Composable Commerce is therefore an innovation that has finally lived up to its name in the market. However, innovation always raises some caution - no one wants to be the first, everyone needs evidence of effectiveness from the example of others who have succeeded. On the other hand, the period from when a solution is a novelty to when it begins to dominate the market as a valid standard is very short and those who miss their time are automatically left behind.

So is it worth developing your business in the spirit of Composable Commerce? Definitely yes. Especially as the approach has been adopted by some of the biggest players, such as Amazon, Allegro, eBay, Zalando, Castorama, OLX, Uber, and Etsy. Besides, **Gartner predicts that by 2023, organisations that have implemented composable commerce will outpace their competitors by 80% in the speed of implementation of new functionality**.

How to adopt the Composable Commerce approach?

STEP 1:

DO THE RESEARCH

The first step with the changes taking place in the market is to do your research and build an awareness of what is happening, what it entails, and what it means for your business. We hope you will find this ebook a valuable dose of knowledge in this area. Another resource worth your attention is the **MACH Alliance** - a non-profit software development community that helps businesses navigate in the world of modern technology. **The term MACH is an acronym for Microservices-based, API-first, Cloud-native SaaS, and Headless**, so the organisation is one of the more important supporters of the Composable Commerce approach.

STEP 2:

IDENTIFY OBJECTIVES AND CURRENT STATUS

Before you start developing your shop in the spirit of Composable Commerce, determine its current state and the main directions for further development. The information you'll need is what technologies you use, how many products and categories you have, how much traffic your shop receives, when sales peaks occur, what distribution channels you use and who is your target audience. Then consider what your goals are for the future and what results from the business you expect. Don't worry if these assumptions aren't very concrete yet - a good business partner will certainly help you find the best solutions tailored to your business. And here we come to the next point.

STEP 3:

FIND A BUSINESS PARTNER

To assemble an efficient application from individual modules, you need a trusted business partner. Choose an e-commerce agency that has experience in implementing headless solutions and microservices architecture and can confirm this with its portfolio. Pay attention to whether the company you choose also offers consulting and auditing services - this way they'll be able to assess the current state of your platform and suggest the best solutions to meet your business goals. Although Composable Commerce is intended to be easy and intuitive to use on a day-to-day basis, expanding and maintaining it requires the support of an experienced team. Make sure the partner you choose not only takes care of the implementation but also accompanies you at every stage of the digital transformation of your business.

Who is Composable Commerce for?

Composable Commerce is an approach that any online shop can adopt, especially as its popularity in the industry will only grow. On the other hand, it is worth considering whether this is the most optimal route for every business.

For smaller stores with a limited number of products, moderate traffic, and a basic set of functionalities, so much scalability and performance optimisation may simply not be needed. Especially as headless and microservices technologies are likely to prove more expensive in this case. So who will benefit most from the implementation of Composable Commerce?

Large sales platforms
For large e-commerce platforms, application performance is crucial. Tens of thousands of products, more than a dozen filtering options, a huge database, and lots of page views and orders. Not to mention sales peaks, when the shop has to run at full capacity. The efficiency and independence of application elements that the Composable Commerce approach offers is the best option for large sales platforms.

Companies in competitive industries

In competitive sectors such as fashion, home décor, electronics, or cosmetics, companies are constantly fighting for customers' attention. The key to remaining an industry leader is to seek out new distribution and communication channels and introduce modern solutions as quickly as possible. Looking at the market, it is clear that the shops in the hottest sectors tend to be the technological leaders and pioneers of innovation. Composable Commerce approach allows for instant system updates and speed of response to changing trends.

B2B sector

B2B platforms tend to be large and complex, composed of many advanced tools such as PIM, CRM, or ERP. Moreover, a characteristic of such businesses is the advanced personalisation of the offer, depending on the size and frequency of orders and the nature of the business customer. The Composable Commerce approach enables even the most complex B2B platforms to be handled efficiently.

Shops with a "UX first" approach

With Composable Commerce, you don't have to compromise on the quality of your customer experience. Thanks to the modular structure of the application, you can easily expand your shop with the best available features, becoming a source of exceptional experiences for your customers.

Fast growing businesses

Every company has its own business model - one will find the best fit in the SME segment, while another will do everything to position itself as an industry leader. For the latter, Composable Commerce provides unprecedented opportunities to scale and expand the application to meet the needs of a rapidly growing brand.

Companies operating on an omnichannel model

Based on a headless model, Composable Commerce's approach provides opportunities to create multiple shop views tailored to different devices and sales channels. This is particularly important for companies implementing an omnichannel strategy that reaches their customers through IoT accessories, social media, mobile apps, and PWAs.

Case Study
Castorama

How the Composable Commerce approach has helped to improve the efficiency and speed of the platform.

Castorama is one of the largest online shops in Poland, handling more than 7 million sessions per month and offering more than 200,000 products. Such a large sales platform needed a solution that, despite the huge load, would maintain page speed and meet the expectations of today's consumers. In response to these needs, we suggested the client adopt a Composable Commerce approach. The Headless project we completed for Castorama is the first implementation of this solution in the DIY industry in Poland.

97 points
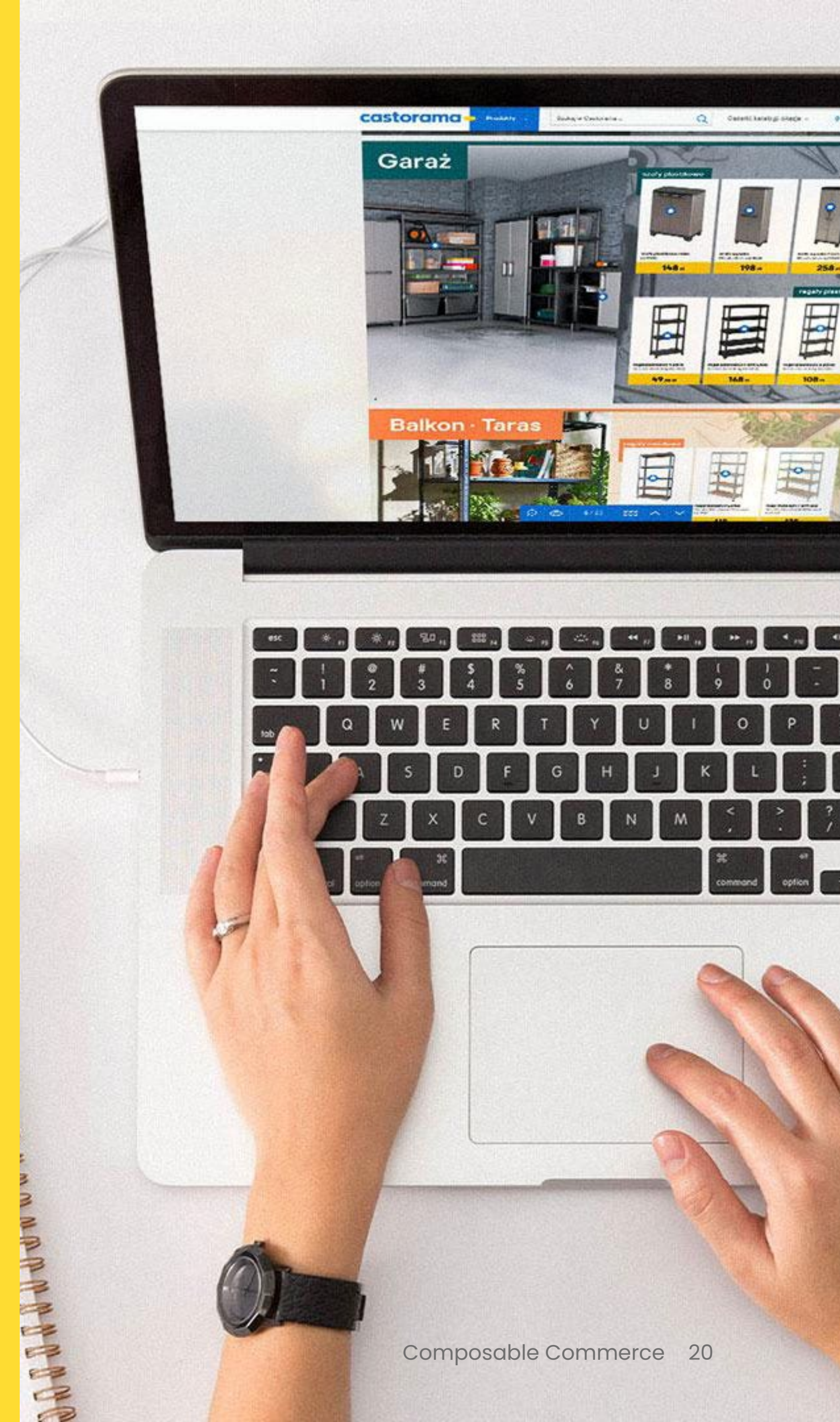Castorama's website scored 97 out of 100 according to Google PageSpeed Insights

>200k
This is how many products are supported by the PIM system implemented at Castorama

>7 mln
Each month, Castorama's e-commerce site efficiently handles more than 7 million sessions

Case Study
Dr. Max

Implementation and optimisation of an online pharmacy in a Composable Commerce approach.

Dr.Max Polska is part of an international holding company – a leader in the pharmaceutical market in the Czech Republic and Slovakia, with more than 2,000 pharmacies in 8 European countries.

The company also provides its customers with access to an extensive online offering that includes medicines, dermocosmetics, medical devices, private label products, and much more. The story of our relationship with the client began with a comprehensive e-commerce audit we conducted. The recommendations we identified to improve the performance of the platform became the basis for subsequent projects carried out together.

System migration to a new platform

Unification of system components and common module versions.

The priority of the project was to migrate the system to the new solution and standardise all its elements. We created shared versions of modules for shops in all countries. Thanks to this the changes made within a shop in one region could be easily implemented in others. The new system was built on the latest version of Magento. As part of the project, we also implemented the online pharmacy in Poland as a separate site and adapted it to the requirements of our market, for example by optimising the SEO modules to the requirements of the search engines. Thanks to the modular system, the client can easily manage shops in all markets from one administration panel.

Headless approach

Greater flexibility thanks to separate front- and back-end layers

The main goals of the project, according to the recommendations after the audit, were to increase the performance of the platform, reduce server response times, and increase the stability and flexibility of the app. The basis for achieving the client's goals was the headless technology. With a separate frontend, we were able to create different shop views for each country and individual devices, communicating with a single backend via API (GraphQL). The frontend of the project was created on Vue.js using Nuxt.js. Headless also allowed us to increase the stability of the platform in case of changes on the frontend side and plugging in new modules.

Read the full Case Study on the Strix website.

Contact

Do you want to implement the Composable Commerce approach in your shop? Do you need a business partner experienced in Headless and Microservices?

Write to us!
We'll prepare a strategy tailored to your business needs.

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