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Benefits of Headless Commerce

How businesses can drive innovation and increase agility by decoupling their applications

commercetools
Next generation commerce

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Executive Summary

In digital commerce, we witness a change in customer behavior which calls for new organizational and technological strategies. Brands and retailers need to be able to grow their digital business in a time where customer journeys are increasingly fragmented and new touchpoints are emerging. In this context, the so-called “headless” commerce solutions, in which the customer-facing frontend is decoupled from the backend layer, are becoming a very interesting option. Organizations can build personalized customer experiences, gain the freedom to experiment, increase their agility and scale more efficiently using the headless paradigm. How this can look in practice is also shown in this whitepaper, with a couple of real-life examples from many areas of digital business.

Shopping Is Changing

Paul is late. He is in his car, rushing to the airport, trying to get a few things done before taking off to his business meeting in Singapore. Fortunately, the computer in his car has already found and reserved a parking spot nearby. When he arrives, the fees are automatically deducted from his credit card, and he can head off to his gate. On his way, he uses the voice assistant in his smartwatch to order a few flowers for his wife. And before entering the plane, Paul downloads a novel a friend has recommended to him by tapping a button in the social stream on his smartphone.

New touchpoints are just around the corner, waiting for mass adoption.

Of course, commerce does not always have to be so hectic and last minute. People still take their time visiting beautifully built retail stores or browsing inspiring commerce websites. Paul's example is just one of a million possible scenarios which come to mind every time people talk about modern – and even future – retail. Interactions between brands and retailers on the one side and their customers on the other come in all shapes and forms. Especially brands, with their constant desire to stay close to their fans and have access to them, need to make sure to remain available on all touchpoints Paul and the rest of their audience are using. In digital commerce, we have come a long way since the first retail websites of the mid-nineties. Only very rarely, people sit in front of their desktop computers at home, connected to the Internet via slow landlines and experience products via an 800x600 pixel monitor. In fact, since the end of 2017, the world's mobile traffic has overtaken desktop interaction[1]. A PC-based world has turned into a mobile one. Not even ten years after the iPhone was presented, mobile devices the app ecosystems of Apple and Google are dominating people's everyday lives.

But it does not stop there. New touchpoints are just around the corner, waiting for mass adoption. During the last Prime Day by Amazon, their Echo devices were by far the most popular product. It is estimated[2] that in 2018 more than 50 million smart speakers and voice devices like Alexa, Siri, and Cortana will have been shipped to consumers.

[1] http://gs.statcounter.com/platform-market-share/desktop-mobile-tablet/worldwide/
[2] https://www.canalys.com/newsroom/smart-speakers-are-fastest-growing-consumer-tech-shipments-surpass-50-million-2018

Challenges of Cross-Touchpoint Experiences

Those developments result in considerable challenges for brands and retailers. If they are not approachable through those touchpoints, they cease to exist for a customer segment which only uses a particular set of devices and channels each day. How useful are classic TV commercials if your target audience spends most of its free time on Youtube or Instagram?

But even if they meet their audience via a traditional digital touchpoint such as a webshop, organizations need to make sure to not just create run-of-the mill, templated commerce websites. Taking a monolithic legacy platform and providing carts and checkouts is no longer sufficient.

> As Gartner points out, "[c]ommerce experiences that focus on transactional efficiency are no longer differentiators. Solving customer problems and developing a trusted customer relationship are now critical for success."[3]

In other words, what businesses should strive for is a customer-centric, consistent experience across all digital touchpoints. Customers are less and less inclined to jump between different applications and find their way around the many different channels a brand or retailer might have. Instead, they are looking for a seamless, unified experience that is inspiring and convenient at the same time. Only then can businesses build lasting relationships with customers and increase customer lifetime value.

Staying in touch with the relevant audience via those touchpoints is often an organizational challenge. You need to make sure to have the right teams with the right mindset and the right skills in place to understand the context of each touchpoint and to act accordingly.

[3] Industry Vision: Commerce to You, Gartner Inc., 2018

One Application for Each New Touchpoint?

From a technological perspective, every one of those touchpoints needs to be supported by a technology stack in the background. And this is where things can get messy rather quickly.

Imagine you would like to sell an additional product and you need to make sure to have it available in your webstore, in your clienteling app and your new Alexa skill. Having a separate application for each of those touchpoints would mean having to feed the product information into all of those applications. Similarly, if you started a marketing campaign with discounted prices in your native mobile app, but those didn't show in your regular webshop, you would have a lot of explaining to do for sure.

And what if you decided to experiment with social channels and address your audience via Facebook or Instagram? In this case, you would have to insert products into your fans' streams and allow them to purchase without too much friction. In the background, you need to make sure that the orders are recorded in a structured way so the products can be shipped efficiently.

Here, brands and retailers usually have two routes they can take:

Option 1
Rewrite existing software to connect to emerging new touchpoint
Option 2
Purchase a new piece of software to take care of the new touchpoint

Of course, both options are equally undesirable. Following the first one, extending one's current platform yet again will introduce new complexity into a piece of software which characteristically is already heavily customized. Each new requirement has to be documented and tested, so the update cycles and time-to-market get longer and longer. If they opt for the second option, organizations will invariably be faced with a software mish-mash, whose parts are isolated, with information kept in silos.

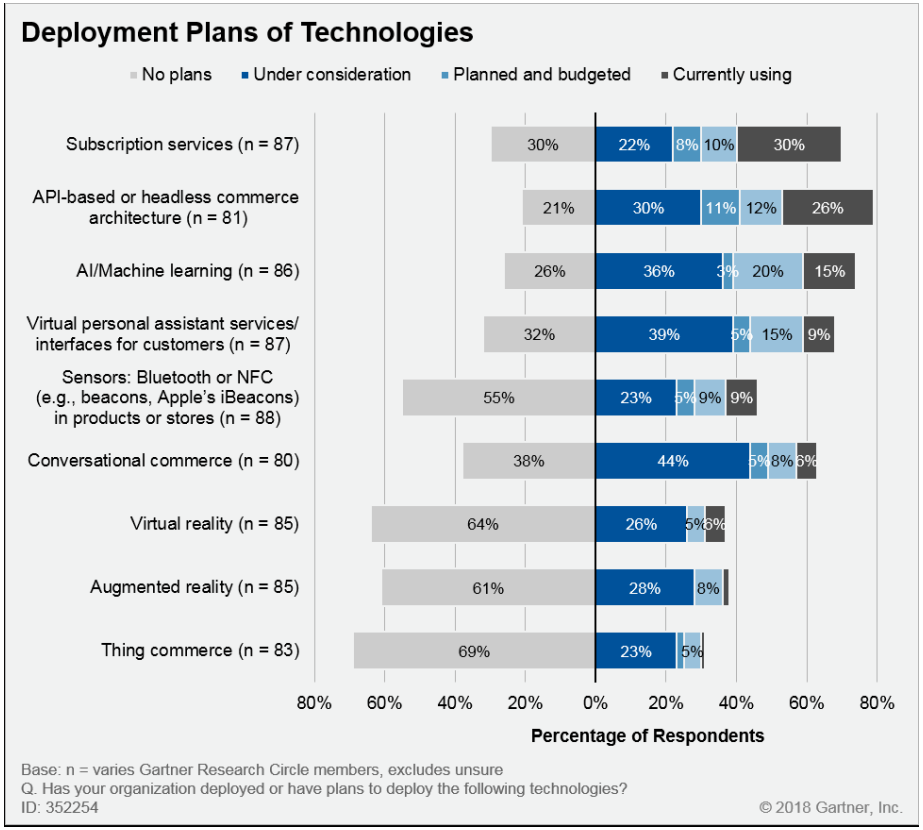
What they need instead is an approach that gives them the flexibility to be prepared even if new touchpoints are emerging, without having to purchase new software or completely overhaul their current IT landscape.
Enter "Headless".

Headless Commerce in a Nutshell

It might sound strange at first: Isn't the head usually where the brain sits? And is it really a good idea to go without it? What can possibly be so advanced about this concept?

Traditionally, eCommerce software is built as a single, integrated application. It is inherently rigid and created with a fixed set of rules, from creating a new product discount to changing the font-size in the frontend. In light of the challenges above, however, this concept is no longer up-to-date. In fact, according to the Gartner Industry Vision 2018, introducing API-based or headless architectures is one of the most important initiatives for businesses today.

Let us dive a bit deeper into what the limitations of the traditional approach are and how they are addressed by having independent, decoupled layers of functionality.



Frontend a.k.a. “The Head”

The “head” is the presentation layer of an application. In eCommerce, it is the user interface (UI) customers interact with. On a commerce website or a mobile app, users typically communicate by clicking their mouse or tapping buttons with their fingers. The UI reacts to the input, by showing information or performing tasks such as adding products to a digital shopping basket.

Although the term “frontend” implies a graphical user interface (GUI) displayed on some kind of screen, the interaction is not restricted to those alone. In the post-web world that is around us, there are many more variants regarding how man-machine communication is structured:

1. Voice devices (e.g., Amazon Echo, Google Home)
2. Chatbots (e.g., based on Facebook Messenger)
3. Augmented Reality and Virtual Reality immersive experiences
4. Automobiles (e.g., Function-on-Demand)
5. Smart Homes
6. Social Platforms/Social Commerce
7. Digital Marketplaces
8. In-store experiences (kiosks, magic mirrors, endless aisle)
9. Internet of Things (IoT) and Wearables
10. In-game/In-app transactions

These are only a few examples of the current “heads” customers interact with today. Each of these brings itself its technical prerequisites and its ecosystem.

Progressive Web Apps: Next Generation Frontends

Now, you might probably think something like: "I'm a traditional furniture retailer, why should I worry about conversational voice applications or in-app purchases? I'm focussing on getting my webshop mobile-ready, and then I'm good to go."

Well yes and no. Yes, of course, businesses need to choose their initiatives wisely and identify the relevant touchpoints. However, even in the area of standard frontends, there have been many developments which also affect traditional eCommerce models. We are talking about the so-called Progressive Web Apps (PWAs). Those are regular websites with additional, native app-like features such as push notifications or offline content storage. By using frameworks such as ReactJS, organizations can build cross-device shopping experiences without having to undergo the strain of maintaining native apps on Apple's App Store or the Google Play Store. In other words, even those established "heads" get a complete overhaul.

Advanced Head Management

Not every head has to be built from scratch. Businesses are using Content Management Systems (CMS's) or Digital Experience Platforms (DXPs) such as Bloomreach, Magnolia or Adobe Experience Manager to take care of the presentation layer. Micro-frontend solutions such as FRONTASTIC or Mobify are also used more frequently to have dedicated platforms build the frontend. Generally speaking, a headless, API-based approach lets businesses insert commerce functionality into any other system quickly and efficiently, without disrupting the entire architecture.

So far, we have talked about everything customers can see, touch, or even speak and listen to. The other side of the story is the backend layer.

> The front end is everything. It can be content, the navigation and flow of the experience. It's beneficial from a development standpoint because the software stack is completely decoupled. We can take a production-level app [like a mobile app] and connect it to commerce functionality; stitching together different versions. We can use sophisticated page programming such as Progressive Web Apps/Single Page Apps which give more power to the engineers.
>
> Brendan Gualdoni
> Head of eCommerce and Digital Engineering, EXPRESS

Backend to The Frontend

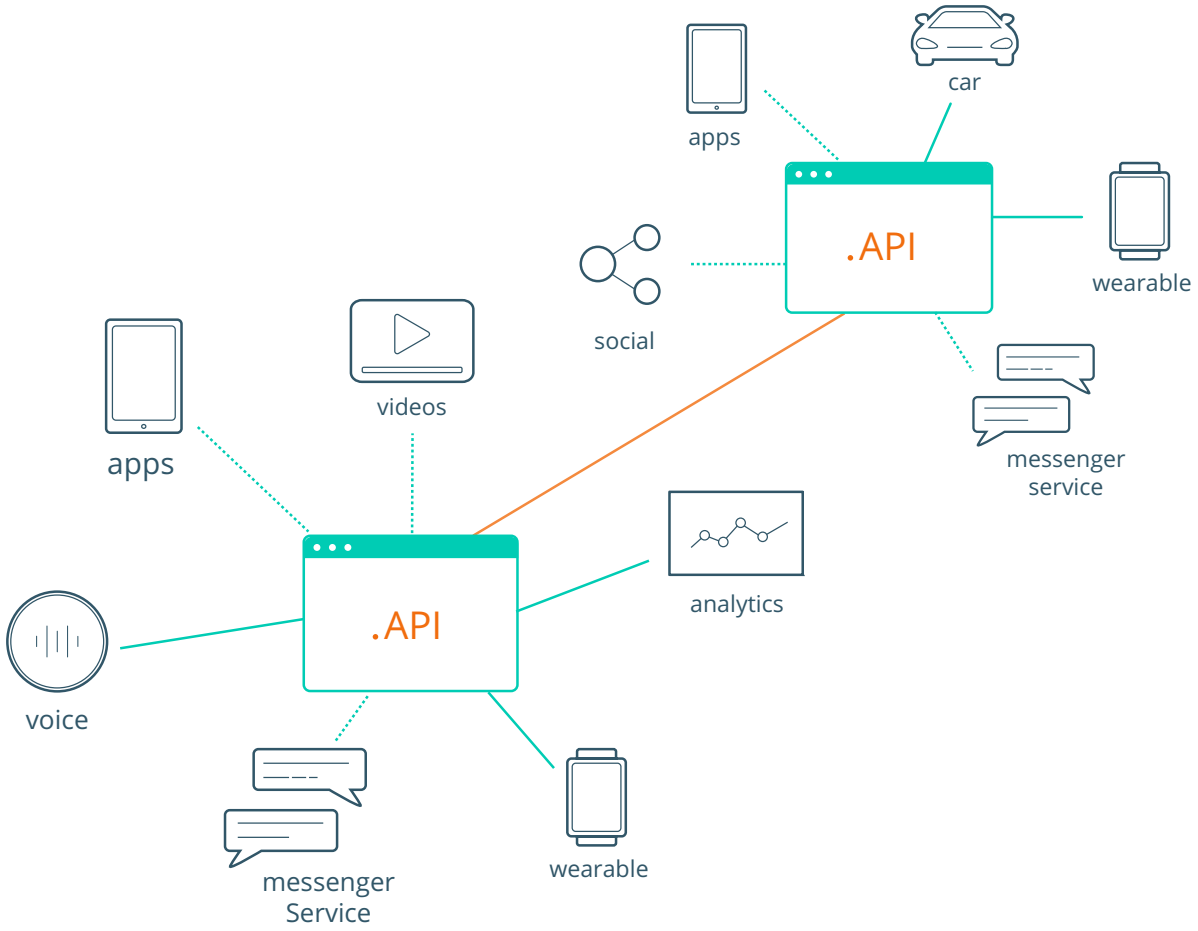
Backend is the operational layer containing all the business logic.
It runs invisibly in the background and is responsible for all the heavy lifting and the data crunching. Some of the functions in digital retail are:

1. Infrastructure (Cloud-based vs. on-premise)
2. Security
3. Catalog data and product search
4. Inventory
5. Pricing and taxation
6. Customer information, customer groups
7. Discount logic
8. Checkout
9. Cart calculation
10. Order and return processes
11. Rights management
12. Management console/business user interface

As you might have guessed already, these functions are entirely separate from the respective frontend interaction. If an order originated in an online game, a VR app or a traditional webshop - the backend is (almost) blind to all of this and does what it can do best: store and process data.

API Bridging the Frontend and Backend

Of course, something is missing in this picture. We need a fast, reliable and flexible way to pass data from the frontend to the backend and vice versa. At the same time, we need to make sure to have a clear separation between the two. And this is where an API (Application Programming Interface) comes in. This is a layer which works as the glue between frontend and backend and through which all information travels. It is like a Swiss army knife for applications, making sure that all applications get all the data they need.



Business Benefits of Headless Commerce

Let's now dive deeper into why this tripartite structure becomes very relevant for your business and leaves the realm of the too-technical.

1 Customization

Using a headless solution, you are independent of a monolithic software prescribing how a frontend should be structured. You do not have to stick to a specific templating system, train your employees to follow the exact rules the software vendor laid out. Instead, you can build exactly the right type of user interface from scratch. You have full control of what happens in the frontend, and you can follow your UX design principles and shape your brand's identity without having to adhere to a templated layout that makes your sites and apps look like anybody else's.

What you gain:

- **Brand recognition**
- **Higher customer conversions and increased lifetime value**

2 Freedom to experiment

Regarding user interaction, you can experiment without the risk of jeopardizing the whole ecosystem. For example, if you would like to A/B test specific parts of your commerce websites, try and build an Alexa skill or a fast and shiny Progressive Web App (PWA), you can create some errors in the process without affecting the backend operations. In contrast, with traditional commerce solutions, you often have to modify frontend and backend code simultaneously, sometimes needing to shut down the entire application for maintenance.

What you gain:

- **Learn faster**
- **Save on development costs**

3 Speed and Agility

Having the freedom to experiment, you can implement new user interfaces more quickly instead of installing and then maintaining a full stack software. Development becomes much more efficient because teams can work in parallel. Due to its decoupled nature, changes can be made to the UI without having to test all the core logic in the backend.

What you gain:

- **Reduced time to market**
- **Development efficiency**

4 Scaling

Typically, frontend and backend can be individually scaled. Even if the frontend receives a lot of traffic, this does not affect the backend because they are only loosely coupled.

What you gain:

- **Reduce operational cost**
- **Stabilize availability**

5 Easily add new touchpoints

In a headless scenario, multiple frontends connect to one API and one underlying system. In other words, if you want to add new touchpoints, you do not have to worry about maintaining a software "mish-mash."

What you gain:

- **Reduce operational cost**
- **Stabilize availability**

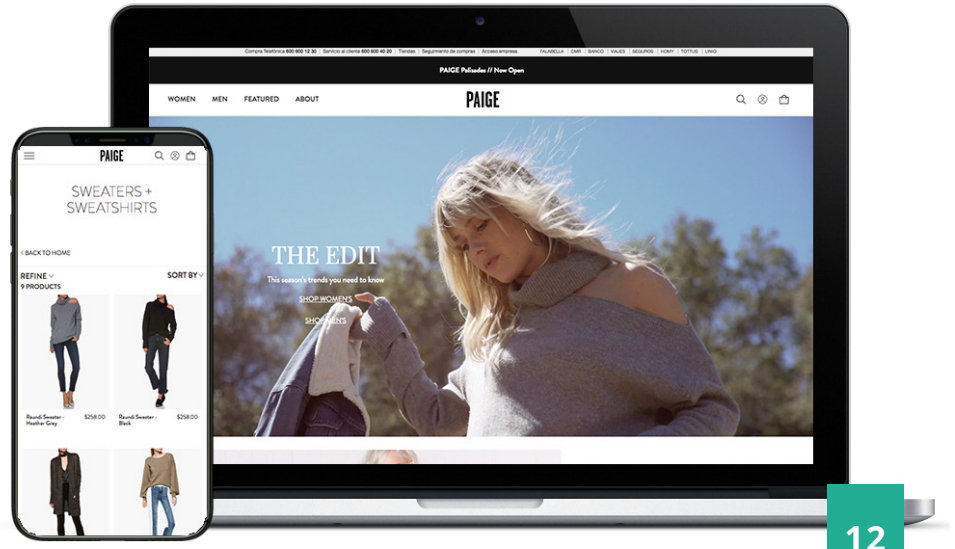
Top 5 Benefits of Headless Commerce

All theory aside – how do businesses go about implementing a headless solution? In this chapter, we will take a closer look at a few different cases across several industries.

1 Fashion Retailers Connect with Their Customers

Paige - the high-end Los Angeles-based fashion brand known for its premium denim - has built its brand on chic designs and masterful storytelling since its launch in 2005 by founder and creative director Paige Adams-Geller. As Paige's fashions became the obsession of consumers, celebrities and prominent fashion editors, the company began to outgrow their original commerce solution. Their vision of seamless, personalized shopping combined with great storytelling could not be realized with their last-generation technology.
In designing its brand and commerce experience for today's modern shoppers, Paige needed a future-proof technology solution that could integrate easily with dozens of other back-end systems and allow its marketing department to roll out and test new ideas in days or weeks, rather than the half-year required by its original platform.

Paige went headless; selecting the API-based solution that included commercetools and BloomReach Experience manager to connect with their shoppers, continue to tell engaging brand stories and to react quickly to the needs and trends shaping high-end fashion.



2 Optical Retailing with a View to the Digital Future

GrandVision knows the importance of having a clear vision of what's ahead. A global leader in optical retailing, their established brands such as Vision Express, Pearle, Eye Wish, Apollo-Optik, Synoptik and GrandOptical, help millions of customers see more clearly every day.

While GrandVision may be best known for their 7,000+ brick-and-mortar stores, it's easy to see that digital experience will be an increasingly large part of their success – both in terms of online commerce and also digital influencing physical store sales (e.g. omni-channel effect). GrandVision conducted deep research into their customer journey to determine the customer pain points and unmet needs. They identified what was needed from a central digital commerce platform to enable a unique and creative customer experience for each of their brands using a single underlying tech stack and solve those needs and pain points.

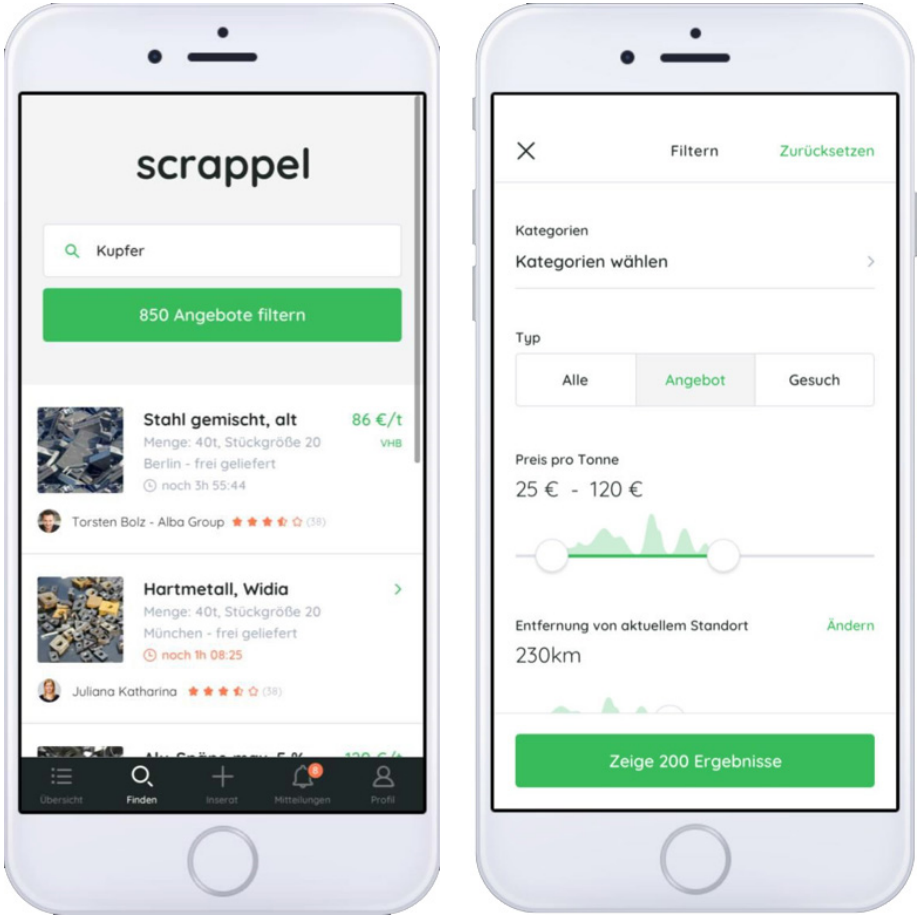
One significant criteria stood out, the need for for a front-end customer experience layer that is de-coupled from the business logic layer in order to give their 30+ brands across 44+ countries the freedom to create their own identity while keeping the back-end consistent for easy maintenance and scaling. With these critical criteria in mind, GrandVision chose a combination of Bloomreach's Digital Experience Platform, Bloomreach Experience (BRX), and the commercetools "headless commerce" platform as the central engine of their digital channels.

GrandVision knows the importance of having a clear vision of what's ahead.

3 Recycling Industry Reimagined as a Marketplace App

The ALBA Group is one of the largest companies in the recycling industry in Germany. As the result of an internal innovation workshop, they started their new marketplace ‘scrappel’. Here, experts from a variety of fields defined the goals and functions of an application with the aim of creating more efficiency, transparency, and trust in the scrap material trade. Today, scrappel is a digital B2B marketplace for recyclable materials which manages the entire process end-to-end: negotiations take place directly in the app and participants pay through a payment system complete with an escrow function. That way merchandisers can buy and sell securely and risk-free. There are additional services, such as factoring or the option for arranging transportation through integrated transport companies.

Technically, ‘scrappel’ is available as native apps for both iOS and Android instead of going for a Desktop version first. But the innovation did not stop there. Unlike traditional commerce apps, scrappel is built in a unique way and resembles the chat functionality of Whatsapp or Facebook messenger. Scrap merchandisers mostly complete their business using these sorts of services anyway, so it was a deliberate decision to use this established way of communication for the new app. In the backend, the commercetools headless commerce platform is responsible for hosting all product and customer data as well as all steps of the business transaction.



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4 Automotive Future: Connected Cars with Function-On-Demand

People spend a lot of time in the car: on their way to work, shopping, or vacation. Being connected to the Internet through powerful mobile connections, they are becoming the ultimate mobile touchpoint. While being on the road and in the comfort of their "mobile living room," drivers can get a lot of things done. With the help of language assistants built into the vehicle, they can organize the weekly shopping trip or the next family celebration right from the car, using voice activation. What's more, the car's computer might even support the driver proactively, by reserving a parking space, making car repair appointments and also paying for those services autonomously.

Another exciting development we are witnessing in the automotive sector is the so-called "Function-on-Demand". Like the name already implies, drivers can choose to book additional features on the fly, such as higher quality lights or more horsepower. The transaction is issued by the car's computer and processed in a headless, cloud-based backend system. For car manufacturers, this means they can build entirely new business models and attract new audiences by adding on-demand services. In other words, they develop from manufacturers into platform and service providers.

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5 Grocers Provide Multiple Touchpoints and a Single Shopping Cart

The REWE Group is one of Europe's largest grocery retailers. For the past couple of years, they have invested heavily in becoming the most relevant party in the online grocery business. Customers who wish to order their food and everyday items from REWE have multiple ways of finding products, adding them to a shopping cart and ordering them. REWE offers a commerce website, as well as mobile apps for iOS and Android. They feature apps for the Apple Watch and the Apple TV, they are experimenting with voice activation via the Google Home assistant and, with hundreds of retail stores all across Europe, they offer Click & Collect delivery.

Regardless of which touchpoints customers are using, all relevant data is shared internally across all devices. For example, it does not make a difference if customers check prices on their mobile App or in their Apple TV, or if they add products to the basket via an app or the website. Having a headless platform in the background, the cart exists on API-level in the backend, and can be rendered into any frontend there is. There are no separate solutions for each touchpoint nor are there any information silos.

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Summary and Outlook

One solution, many faces: We have seen how decoupling of the frontend and the backend layers help brands and retailers create more customized experiences for their customers, at the same time being able to experiment fast and execute swiftly. Unlike with traditional, integrated eCommerce suites with their tightly connected frontend logic, headless solutions with a universal API allow for more flexibility regarding which touchpoints can be connected.

Marketers can create campaigns across all channels, taking into consideration the fragmented customer journeys we see today. Developers, on the other hand, can create user experiences from scratch which align with the core business needs.

At the end of the day, what it comes down to is the customer experience – because this is where the business opportunity is. Think about the successful players in the commerce industry, such as Amazon or Zalando. They are continually improving the way in which they connect with their customers, build new apps, enable new devices. You might also say: they are inventing new heads all the time and make the older ones look more beautiful. It is the combination of a reliable and flexible backend and the ability to integrate with the latest frontend technologies that enable innovation - something that all commerce companies need today to stay afloat.

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Dr. Roman Zenner

Since 2002, Dr. Roman Zenner works as an author, consultant, and speaker in e-commerce. He has written several books on web shop software and regularly publishes articles in professional magazines and blogs. Dr. Zenner runs shoptechblog.de as well as the podcast ShopTechTalks. Furthermore, he speaks at conferences, teaches university classes and moderates expert panels.

In his work, Roman focuses on next generation commerce technologies and explores what retail will look like in a post-web world. Since 2015, he is a full-time employee of commercetools GmbH (REWE Group), working as an Industry Analyst.

About Bloomreach

BloomReach is a smart, API-based DXP. It combines advanced search and merchandising capabilities with a super CMS, giving marketing, merchandising and IT teams the tools to create engaging, personalized experiences for each visitor across all channels. BloomReach is a Strong Performer in The Forrester Wave for WCM 2018 and Visionary in the Gartner Magic Quadrant for Digital Experience Platforms.

About Commercetools

Commercetools is a next-generation software technology company that offers a true cloud commerce platform, providing the building blocks for the new digital commerce age. Our leading-edge API approach helps retailers create brand value by empowering commerce teams to design unique and engaging digital commerce experiences everywhere – today and in the future. Our agile, componentized architecture improves profitability by significantly reducing development time and resources required to migrate to modern commerce technology and meet new customer demands. It is the perfect starting point for customized microservices.

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