Deloitte.

Unlock the full potential of your e-commerce transformation
Embrace MACH® architecture and change management

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Bring your e-commerce game to the next level

Introduction

The industry has experienced explosive growth in online sales in recent years, driven by the rising popularity and ease of online shopping. This popularity and the more developed online channel led to high expectations on the customer omnichannel experience. As a result, the need to provide individual experiences for everchanging customer expectations is enormous; especially for large scale global enterprises with their heritage of using outdated IT architecture and legacy systems. This is creating tremendous pressure on costs and a transformation is needed to meet the expectations of various business stakeholders. Existing systems also lack in providing employees the proper means and tools to excel in developing the best customer experience when it comes to online retail. Notably, large organizations, like the one highlighted in the following client success story, face the challenge of developing a cutting-edge customer experience while remaining flexible, agile, and responsive to the demands of many different business stakeholders.

The commerce market is expected to continue to grow in the coming years, driven by the rise of mobile shopping, the expansion of e-commerce into new markets, and the introduction of new technologies such as artificial intelligence and augmented reality. In June 2020 global retail e-commerce traffic faced a record of 22 billion monthly visits, searching for daily demands such as groceries, clothing, and retail technology items.[1] After a slight decline of sold, closed, or halted international trading in 2020 in countries where the top 250 retailers operate, cross-border e-commerce is again a top priority for 40% of online merchants in 2022.[2] Overall, it is expected that the share of e-commerce sales to retail sales worldwide increases to 24.5% until 2025 from 13.8% in 2019.[3]

When it comes to B2B, according to a report by Forrester, e-commerce sales are estimated to exceed $2 trillion in 2023 and $3 trillion by 2027 driven in part by increased adoption of omnichannel strategies.[4] More specifically, Amazon's B2B marketplace Amazon Business now drives roughly $35 billion in annualized gross sales. More than half of those sales are from third-party sellers.[5]

Recently, the climate, raw material, and energy crises, as well as the geopolitical situation in Europe have prompted a significant transformation in the way businesses operate. In particular, there has been a shift towards e-commerce due to the reduced need for physical transportation to the stores, store warehousing as well as to aid in lower energy consumption compared to traditional brick-and-mortar stores. This is expected to continue as businesses look for more sustainable ways to operate and face the ongoing energy and resources challenge.

It is also important to mention that the industry faces challenges such as increasing competition, rising consumer expectations, and privacy and security concerns.

The subsequent pages provide an overview of the current state of the industry trends and opportunities for growth in online sales, as well as strategies for companies in this field.

Retail e-commerce Sales Worldwide, 2019-2025
trillions, % change, and % of total retail sales[3]

Year	Retail eCommerce sales	% of total retail sales
2019	$3,351	13.8%
2020	$4,231	17.8%
2021	$4,921	19.6%
2022	$5,545	21.0%
2023	$6,169	22.3%
2024	$6,773	23.4%
2025	$7,385	24.5%

Retail eCommerce sales   % of total retail sales

1. Semrush, 2020
2. Deloitte Global Powers of Retailing, 2022
3. eMarketer e-commerce Forecast, 2021
4. Harvard Business Review
5. Mirakl Marketplace Index, Digital Commerce 360, MarketPulse

Agility and composability as a response to challenges in e-commerce
Despite the great growth and potential of the online channel in various industries, businesses face challenges like adapting to new technologies and evolving consumer behaviors. As mentioned, the rise of mobile shopping, the adoption of new payment technologies, and the use of augmented and virtual reality in e-commerce are just a few examples of the rapid changes taking place in this industry. Businesses that fail to keep up with these changes risk falling behind their competitors and losing market share.

Agility is crucial to drive revenue
In this process of constant adaptation and the rapidly evolving e-commerce channel, the importance of agility is crucial, and this is how businesses can develop a cutting-edge approach to stay competitive. An agile approach enables the e-commerce channel within a business to be iterative, to respond quickly to changing market conditions and consumer needs, and to improve their products and services based on real-time feedback from customers. By gathering and analyzing customer data, businesses can identify areas for improvement and adjust their offerings. This can lead to higher levels of customer satisfaction and loyalty, and ultimately can drive revenue growth.

For global enterprises with central legacy IT applications, it is even more important to be agile. Often monolithic architectures and applications lead to rigid governance, long development cycles and time-to-market for new features.

In this whitepaper we will explain why agility and composability is crucial for businesses that want to experiment with new technologies and strategies. Especially for large scale organizations with a "two speed IT" approach these concepts, blended with a smart governance approach, can help to get ahead of the demand curve from (local) businesses.

In general, e-commerce is a fast-moving area, with new technologies and trends emerging all the time. An agile approach can help businesses to reduce costs and improve efficiency. By adopting an agile approach, e-commerce businesses are better positioned to thrive in this fast-moving and competitive industry. In addition, composability helps organizations to break up the inflexibility of monolithic e-commerce platform preventing them from implementing quick changes and responding to the constant demand in adapting and improving the customer experience.

Businesses that are willing to experiment and take risks can gain a competitive advantage by being the first to market new innovations.

Finally, a successful e-commerce transformation requires involving the human factor. Implementing the most advanced technology is useless if it is not embraced by the organization nor the customer. Thus, the transformation process should be approached holistically and be started within the organization. By taking your employees with you on your transformation journey, you lay a solid foundation for a successful transformation. And this will pay off, as engaged, and committed employees will help you to craft a superior customer experience. Together with your new state-of-the-art e-commerce solution, this will take your e-commerce game to the next level.

In the following chapter, we want to show you why MACH® architecture is not a buzzword, but a real game changer for your business and e-commerce channel. We want to share our experience and demonstrate why ultimately putting people at the heart of your digital transformation will be your key success driver.

The challenges of traditional e-commerce architecture

Due to challenges like slow development cycles, companies should rethink their e-commerce architecture. Legacy systems can have a major impact on one's business's ability to grow and provide a seamless experience for their customers.

Limitations of traditional e-commerce architecture

Traditional e-commerce architecture has been the basis of online shopping since the beginning of the internet. It is based on a monolithic system, which is a single, large application that provides all relevant capabilities required by an e-commerce site. This architecture made it easy to develop and deploy e-commerce sites quickly, but it also made it difficult to scale. As e-commerce sites grew in complexity and size, traditional e-commerce architecture faced several limitations. Monolithic systems can become difficult to maintain, and their complexity can make it difficult to add new features, fix bugs, or improve performance. Additionally, if a single component of the monolithic system fails, the entire system can go down.

In our experience when talking to clients, the limitations of traditional e-commerce architecture have become more apparent as the e-commerce market has exploded in recent years. The increasing demand for online shopping, especially through the COVID-19 pandemic, coupled with the need for agility and scalability, has forced companies to rethink their e-commerce channel architecture. While ensuring business continuity was paramount during the pandemic, post-COVID times demand that companies adapt to fulfill the need for rapid, convenient, and secure transactions. However, as previously mentioned, scaling e-commerce operations presents challenges, particularly for businesses reliant on traditional system architecture.

One solution to these limitations is the use of cloud-based infrastructure. It provides scalability and flexibility and allows e-commerce companies to quickly scale their resources up or down, depending on demand, and pay only for what they use. But that's not all that is needed.

To summarize, the traditional e-commerce architecture, with its reliance on monolithic systems and sluggish development cycles, confronts substantial limitations. Companies must reconsider their architectural strategies when it comes to e-commerce and embrace modern approaches such as MACH® and cloud-based infrastructure, which are better equipped to meet the dynamic demands of the market.

To get a deeper understanding of these limitations, we will detail the key difficulties that businesses face in scaling their e-commerce operations when working with traditional system architecture.

Besides agility, scalability, limited integration capabilities and security concerns, the challenges that legacy systems can have on a business's ability to grow and provide a seamless experience for their customers may result in a huge financial and organizational loss for the company.

By understanding these challenges, businesses can better prepare for the road ahead and explore solutions to overcome them:

First and foremost are **scalability challenges:** Businesses which don't have their origins in e-commerce usually rely on traditional system architecture, and more than often face scalability challenges as they grow. This is because these systems are often built for a specific size of business, usually intended for traditional sales models where online sales are not performing well and cannot handle sudden or rapid growth. As a result, businesses may experience slow website performance, online payment issues, system crashes, order processing issues, issues with customer purchase updates and an inability to handle increased traffic during peak periods.

Besides scalability, another difficulty is the **limited flexibility:** Traditional system architecture can usually be inflexible and difficult to modify, mostly built in-house and dependent on internal development, making it challenging for businesses to adapt to changing market conditions, customer preferences, or new technologies. These systems are often unable to add off-the-shelf products to enhance customer experience and help other departments in their work. This can result in businesses being unable to introduce new features or product offerings, hindering their ability to grow and expand.

The next difficulty is closely aligned with flexibility but should be viewed separately and it is **limited integration capabilities:** Traditional system architecture may not be able to integrate with newer technologies and platforms, limiting businesses' ability to leverage the latest tools and services to enhance their operations. This can result in missed opportunities for growth and efficiency gains.

In a traditional monolithic architecture, **governance issues** can arise due to the centralized and tightly coupled nature of the system. Some of the common governance challenges associated with traditional architectures are multiple teams working on different parts of the system, where coordinating development efforts and ensuring proper collaboration can be difficult. In addition, a single component failure or performance bottleneck can impact the entire system. Troubleshooting and isolating faults can be challenging due to the lack of modularization and fine-grained control over individual components.

Businesses nowadays have a very rigorous cash-flow structure, so **unnecessary expenses** need to be minimized, which is another difficulty as maintaining traditional system architecture can be expensive and time-consuming. As businesses grow and their systems become more complex, maintenance costs can quickly escalate, diverting resources away from other critical business functions.

E-commerce businesses are prime targets for cyber-attacks, and traditional system architecture may not provide adequate protection against these threats and is posed as a very high and important difficulty. **Outdated software and hardware, lack of encryption, and poor access controls** can all leave businesses vulnerable to breaches and data theft.

Finally, businesses that rely on traditional system architecture may struggle to provide a seamless and satisfying customer experience. **Slow load times, frequent crashes, and limited functionality** can all detract from the user experience and lead to lost sales and customer loyalty.

Introduction to MACH® architecture

When looking to build a modern e-commerce infrastructure, MACH® provides several important benefits.

MACH® definition and comparison to traditional architecture

MACH® architecture, which is a modular approach to cloud-native architecture, is a modern software architecture designed for cloud-native applications. It aims to provide scalability, resilience, and flexibility to applications that run in the cloud. In contrast, traditional software architecture is usually a monolithic architecture that is designed for server-based applications. It is a centralized architecture that usually consists of a single server or several servers that handle all the processing and storage of the application. As per commercetools[6] analysis, during 2023:

- 50% of new commerce capabilities will be incorporated as API-centric SaaS services

- Organizations that have adopted a composable approach will outpace competition by 80% of new feature implementation

- 30% of commerce organizations will require an API product manager role to modernize digital commerce applications and architecture

The main difference between MACH® architecture and traditional architecture is their approach to scalability and modularity. A MACH® architecture is designed to be highly modular and distributed, which makes it easier to scale and maintain applications in the cloud. On the other hand, traditional architecture is usually centralized and less flexible, which makes it harder to scale and maintain applications.

	Traditional architecture	**MACH® architecture**
Modularity & scalability	Monolithic (centralized which makes it less flexible and tightly coupled to all components); scalability is often limited by the capacity of the server(s)	Modular (applications are broken down into smaller, independent modules that can be easily maintained and updated)
API-first	All modules usually communicate through direct function calls, although APIs are sometimes present depending on the maturity level of the company	API-first approach (all modules communicate with each other through APIs. This makes it easier to integrate different modules and third-party services)
Cloud-native	Server-based application (on-premises; typically, not optimized for cloud)	Specifically designed for cloud-native solutions (which makes it a more reliable architecture)
Headless	Coupled between frontend and backend (harder to maintain and develop each separately)	Separates frontend and backend applications (easier to develop and maintain), creating a unique brand experience

Overall, MACH® architecture is a more modern, flexible, and scalable approach to architecture. On the other hand, traditional architecture is a more rigid and centralized approach that is, besides cloud native applications, often better suited for on-premises applications, even though it's less flexible and harder to scale.

6. commercetools, 2022

"The future of e-commerce lies in the power of MACH® as agile microservices drive unparalleled efficiency, APIs fuel the integration revolution, and headless architecture sets the stage for unparalleled customer experiences."

Tim Hagemann
Deloitte – Lead Partner,
Advertising, Marketing & Commerce

MACH® architecture enables greater flexibility, faster development cycles, and easier scaling

Traditional monolithic systems have been the norm for many years, mostly in-house developed or other systems have been adjusted to serve the companies e-commerce needs. In contrast to them, MACH® architecture offers a modern approach to e-commerce that enables businesses to overcome these challenges. In today's rapidly evolving digital landscape, organizations strive to stay ahead by delivering innovative software solutions quickly and efficiently. **How has your e-commerce development run into prologued deployment or even halted development?**

Steps and challenges of implementing MACH® architecture

MACH® architecture is based on four key principles - Microservices, API-first, Cloud-native, and Headless. In the following lines we provide insights into each of these principals, but at the same time with caution, as MACH® is not intended for any company. There are certain prerequisites that need to be met to have a successful MACH® adaptation. In addition, we will delve into the core principles of agile software development and illustrate how MACH® architecture empowers agile practices such as continuous integration and deployment, iterative development, and rapid experimentation.

Microservices & continuous integration/deployment:

Probably the most important part and the primary step in the process of implementing MACH® architecture is the adaptation of microservices approach. To simplify, this means breaking down the e-commerce platform into smaller, but at the same time independent and more manageable parts/services that can be:

• Developed on their own by using different frameworks, languages, and tech stack, thus creating the possibility for the business to choose the best tools needed for each microservice

• Deployed independently, as the concept goes in line with the agile principle where the overall platform growth isn't dependent on waterfall methodology where one service needs to wait on another to be deployed

• Scaled in their own path, meaning that each individual service can be scaled according to business needs, rather than scaling entire platform

By breaking down the platform into smaller parts this approach makes it easier to replace or upgrade individual services without affecting the entire system. It also enables teams to independently develop, test, and deploy individual components, facilitating continuous integration and deployment (CI/CD). Agile teams can work in parallel, integrating their microservices frequently, and rapidly delivering updates without disrupting the entire system. This accelerates development cycles, reduces dependencies, and allows for faster response to changing requirements.

But at the same time, implementing microservices can be challenging, as businesses need to ensure that each microservice communicates effectively with the others and that there is a clear separation of concerns. Before engaging in this transformation, the essential requirement is careful planning, design, and testing.

API-first and iterative development:

The second step in implementing MACH® architecture is to adopt an API-first approach - APIs allow different services to communicate with each other without requiring direct access to each other's databases or code.

This kind of architecture offers several benefits:

- Iterative development and faster deployment: Business can develop and deploy new services quicker, as they can be built independently of the rest of the platform

- Integration: it is easier to integrate with any kind of third-party services and/or application

- Reach: Businesses can open their services to external developers, enabling them to build custom integrations or applications

APIs provide clear boundaries and well-defined contracts between services, enabling teams to iterate and evolve each service independently. Agile teams can develop, test, and refine services incrementally, ensuring that functionality is added iteratively while maintaining compatibility with existing components. This iterative development approach aligns with the agile principle of delivering working software in short cycles, promoting adaptability and customer collaboration.

Same as with microservices, an implementation of an API-first approach requires careful planning and design, as well as high quality documentation of APIs which includes appropriate security measures to protect sensitive data.

Cloud-native and rapid experimentation:

The third step in implementing MACH® architecture is the adaptation of a cloud-native approach - deploying the e-commerce platform on cloud infrastructure, such as Amazon Web Services, Microsoft Azure, or Google Cloud Platform.

Cloud-native architecture offers several benefits:

- Cloud infrastructure can automatically scale resources up or down depending on the changes in demand, thus ensuring the platform has no downtime when traffic peaks

- Cloud infrastructure also offers built-in redundancy and disaster recovery capabilities, reducing the risk of data loss or system failure

MACH® architecture's cloud-native nature leverages the resilience, and elasticity of cloud platforms. Agile teams can quickly provision, and scale resources based on demand, enabling rapid experimentation and validation of new features or ideas. Cloud-native infrastructure also facilitates A/B testing, allowing teams to deploy multiple versions of a service simultaneously and collect real-time user feedback. This data-driven approach empowers teams to make data-backed decisions, optimize software performance, and deliver enhanced user experiences.

However, implementing a cloud-native approach requires a thorough understanding of cloud infrastructure and its associated services, as well as appropriate security measures to protect sensitive data.

Headless

Finally, when implementing MACH® architecture, it's vital to adopt a headless approach. This means separating the front-end layer from the actual back-end e-commerce platform.

In a headless architecture, the front-end can be built using any technology/language that can consume e-commerce data and functionality through APIs. This type of architecture offers several benefits, but the most important one is flexibility and agility. This means that businesses can easily change the front-end design of their website and store without affecting the back-end functionality, but at the same time they can integrate with multiple front-end applications or channels, such as mobile apps, voice assistants, or social media platforms.

Nevertheless, implementing a headless approach requires a significant shift in development mindset, as well as careful design and testing of APIs to ensure that the front-end can effectively consume e-commerce data and functionality.

MACH® is a powerful architectural approach, but its suitability for a company depends on factors such as technical expertise, development resources, integration requirements, organizational readiness, cost considerations, and the nature of the use case or application.

At the same time, while MACH® offers numerous benefits, it may not be a suitable solution for all companies due to several reasons.

- **Careful development planning and integration readiness:**
Development effort for MACH® is a very different and is a totally opposite the legacy systems or third-party applications used to keep the system running. As stated, implementing MACH® architecture requires significant technical expertise and understanding of distributed systems, microservices, APIs, and cloud technologies, thus it must be planned out carefully. Not only that, but as MACH® involves breaking down applications into smaller decoupled microservices that communicate via APIs, this approach requires additional development effort to design, develop, and maintain these microservices. In some cases, traditional systems may not offer suitable APIs or may require significant modifications to integrate with the MACH® architecture. This is why companies with limited development resources and/or expertise, as well as tight deadlines, may find it challenging or may struggle to adopt and maintain a MACH®-based solution. Implementing a MACH® architecture requires knowledge of containerization platforms, orchestration tools, and infrastructure management in the cloud. Setting up monitoring, logging, and security measures for distributed systems can also be complex.

- **Organizational readiness:**
Adopting a MACH® architecture often requires a cultural shift within an organization. It necessitates a change in mindset, development practices, and operational processes. Some companies may face resistance or have difficulty adapting to the new ways of working, especially if they have existing monolithic systems or a traditional IT structure. For example, developers often find MACH® implementations beneficial due to increased flexibility and agility. They can work on smaller, independent services, allowing for faster development cycles and furthermore, MACH® architectures promote code reusability and easier maintenance. On the other hand, they may need to adapt to new technologies and frameworks associated with MACH®. Implementing microservices requires a shift in mindset and understanding of distributed systems. Developers may also need to invest time in learning API integration and management.

At the same time the decoupled nature of MACH® facilitates flexibility in adapting to changing business needs and market trends in a faster way then before but coordinating multiple sales teams to understand this and ensuring proper governance across the company can be challenging. Business owners need to align their strategies with the architectural changes to fully leverage the benefits.

- **Use-case suitability and cost considerations:**
Not all use cases or applications benefit equally from a MACH® architecture. Certain applications may have simple requirements, limited scalability needs, or minimal integration demands, making a more traditional architecture more cost-effective and efficient. Also, MACH® is not intended as a "one shoe fits all", and certain requirements have to be met to make an arguable use-case. And while MACH® offers benefits such as scalability and agility, it also requires investments in infrastructure, cloud services, and development resources. Smaller companies with limited budgets or cost-sensitive environments may find it challenging to justify the expenses associated with adopting and maintaining a MACH® architecture.

In today's highly competitive business landscape, providing an incomparable customer experience has become crucial for companies to succeed. To achieve this goal, companies are increasingly turning to MACH® architecture and agile principles to improve their customer experience.

There are several ways in which the customer experience can be improved by using MACH® architecture and agile principles:

Time-to-market	MACH® architecture and agile principles enable faster development and deployment of new features. Also, by the ability to test different options on different markets before rolling out globally. This means that companies can respond more quickly to customer needs and preferences, resulting in a better customer experience at a faster rate.
Flexibility	As frontend and backend are decoupled in MACH® architecture, this allows greater flexibility and customization, resulting in a more personalized and engaging customer experience.
Scalability & reliability	The cloud-native approach of MACH® allows a greater scalability and reliability, resulting in a more consistent and seamless customer experience.
Collaboration & communication	Agile principles emphasize collaboration and communication between different teams and stakeholders with minimal investment. Through regular feedback and iteration using those principles, this helps adapting to changing needs and expectations at a faster rate.

In conclusion, MACH® is a powerful architectural approach, but its suitability for a company depends on factors such as technical expertise, development resources, integration requirements, organizational readiness, cost considerations, and the nature of the use case or application. It is essential to carefully evaluate these factors before deciding to adopt a MACH®-based solution. MACH® architecture's Microservices, API-first, Cloud-native, and Headless principles align closely with the core values of agile software development. By adopting MACH® architecture, organizations can achieve greater flexibility, faster development cycles, and easier scaling, as well as a clear governance. The microservices approach enables continuous integration and deployment, the API-first approach supports iterative development, and the cloud-native infrastructure facilitates rapid experimentation. Embracing MACH® architecture empowers agile teams to deliver faster and in a crystal clear manner.

Change management in e-commerce transformations

How to successfully navigate your digital transformation by putting the people at the heart of everything

The future of e-commerce lies in MACH® and composable solutions, and the technology will certainly further evolve over time. But it is very important to understand that the success of an e-commerce implementation stands and falls with the human factor – *because after all, what is the point of the most state-of-the-art technology if it is not used either within the organization nor by the customer?* Therefore, addressing the people and the organizational side of a transformation is a key success driver.

First things first: Recognize that digital e-commerce transformations come along with a unique characteristic. It's not only about launching a new webshop solution, but a multi-dimensional change that takes place both within the company and directly towards the customer. Various stakeholders play a role in this and need to be actively informed, involved and engaged throughout the whole transformation journey such as within sales, marketing, supply chain, customer service, IT, and other areas of the organization – just to name a few amongst others. Besides, it is also highly strategic, as e-commerce transformations often involve integrating online and offline sales channels and creating a seamless customer experience across multiple touchpoints.

A holistic change management approach can help navigating through those changes within the company and preparing the organization to offer a superior customer experience in a newly created digital environment. Because ultimately, customer experience builds on employee experience. Bringing your employees and the whole organization along your transformation journey fosters acceptance and a smooth employee experience within. And in the end, engaged employees will create a better customer experience to the outside world.

But where to start? There is no one-size-fits-all solution for change management as each project and organization has its unique characteristics, culture, and context. In the following, you will have three key activities which can help you to set the scene within your organization for your upcoming e-commerce implementation from the very beginning.

- Create a compelling story around the digital transformation

- Engage your organization and employees

- Identify the change impacts and take action

"eCommerce transformations are ultimately all about people – when we bring people together and empower them on group and individual level, organizations become adaptable to make the most of evolving technologies and market dynamics."

Dr. Alexandra Illek
Deloitte – Director,
Organization Transformation

Create a compelling story around the digital transformation

Storytelling is an essential part of being human. Stories allow us to pass on information in a way that creates an **emotional connection** and will help us to understand the world around us.

A compelling story around your digital transformation will do the same - it will help your employees understand the reasons for the change, its impact on their role and the organization, and the overarching purpose and vision behind it. It will make the change more tangible, understandable, and meaningful.

For this, always start with the **"why"**. The "why" sets the scene by providing the context and reasons for the change. *What is the purpose of the digital transformation? What is our shared vision and goal? How will this benefit our customers, the organization, and our employees?* When your employees understand the **purpose** and **positive impacts** of the **upcoming change**, they are more likely to be motivated and supportive – and thus, you will foster the change from within.

A change story combines clear facts with emotions in words and images. It is important to take time at the beginning of any transformation project to jointly create such a narrative with important stakeholders across different functions. With this co-creative approach, you create a **sense of ownership** and **commitment** for the change and communicate the right key messages early in the process.

No matter what the change story will look like, understand your audience, and build an emotional connection with them. With this emotional bond conveyed through continuous and consistent communication, you will create a solid foundation to take your organization along on your joint journey.

Engage your organization and employees

Did you know that when it comes to digital transformations, the **biggest roadblock** is often the people, not the technology?[7] To be even more specific: The most common reasons for failure of such transformations are "management behavior not supporting change" and "employee resistance to change". This showcases, how much engaging your organization and employees during an e-commerce implementation is crucial for success.

Statements that certainly all of us have made ourselves or have heard at some time or other, can reflect concerns, uncertainties, or resistance: *Why do we need to change our technology? What will happen with my role? How will our customers react to the new e-commerce solution?* It is important that companies address these questions and concerns openly and transparently to reduce resistance and to promote employee acceptance as well as commitment for the digital transformation.

To achieve this, start by analyzing your **stakeholder landscape** and understand their levels of participation, interest, and influence in the project – this will help you to understand how to best engage with them. It may be that some stakeholders only need to be informed, while other stakeholder groups should be actively involved. It all depends on your specific digital transformation initiative, your organization, and your goals. Even though you might think that it is perfectly clear to you, remember to ask *"What are their specific needs?"* and *"what's in it for them?"*. Consider different roles within your organization and create core **personas** which will help you to put yourself into the shoes of others.

Having a thorough understanding of your stakeholders and specific personas, you can shape your **engagement activities** accordingly. You might consider the follow-ing measures: Implement communication formats like regular community calls to keep important stakeholders up to date on the project. Make your new e-commerce solution tangible and share recent development activities and releases in more technical-oriented demonstration sessions. Encourage best practice sharing and open exchange in dedicated Q&A sessions. Or create engaging newsletters and visual material to provide to your audience.

Whatever format works for your set-up, involve the whole project team in the responsibility to address the concerns of your organization. And don't forget about the **technical team**, such as for instance the product owner, who can be a strong advocate for your digital transformation with all his knowledge and his expertise. The only important thing is to convey the key messages in a language that is not too technical and can be clearly understood by everyone.

And sometimes people just want to be heard: As most digital transformations are being performed in an agile methodology, collect **feedback** from important stakeholders and include them in the future developments to create a strong commitment and ownership along the journey.

By engaging your organization and employees, you will bring the transformation to life, making it real, evident, and transparent to everyone – and with this, you will ultimately drive your change to success.

7. Digital Transformation Are people still our greatest asset? Human Capital Consulting | Deloitte Leadership UK, 2020

Identify the change impacts and take action

To ensure a smooth implementation and an effective usage of the new e-commerce solution, it is essential to ask the right questions from the very beginning and to understand the impact of the transformation on your organization across different dimensions. These could be questions such as: *Which specific business processes will be impacted by the new e-commerce solution? How will the roles and responsibilities of employees look like in the future? Do we need to upskill our employees to use the new e-commerce solution?* A proven approach to get a big picture is through a so-called **Change Impact Assessment.**

The purpose of this assessment is to determine the changes resulting from a transformation and to identify the right measures to successfully navigate through those. It will help you to understand which **change, communication, and training activities** are needed and to shape your change roadmap. The core of such an assessment may vary depending on the nature of the transformation and the organization itself. However, the following dimensions are typically considered: **business processes, people and organization, data flow and technology.**

Firstly, it is crucial to understand the changes in **business processes (1)**, specifically how work will be carried out in the future state within the organization. Having this big picture, you can dive in to understand how the changes will actually affect the **people and organization (2)**, such as the roles and skills that will be required in the future. Additionally, it is important to examine how **data flows (3)** will be altered, including aspects of e.g., how and by whom the data is maintained. Lastly, it is worth to have a look at the **technology (4)** dimension to identify all the technologies which will play a role during or after the e-commerce implementation and therefore need to be considered.

You might be surprised by the simplicity of this assessment and the variety of insights it can unveil by elaborating the gap between the current state and the desired future state – the "new world". The derived change impacts will help to shape the path forward, ultimately enabling an elevated employee and customer experience.

Why the people factor will matter even more in the future

Despite technology being a key enabler of digital transformations, the human factor remains essential to success. Companies that recognize the importance of this factor, are more likely to deliver successful digital transformations. In the context of this whitepaper, we have focused on the internal view to get started. And it is crucial to consider not only the people within the organization but also the customers who will interact with the e-commerce solution. Taking customers into account from the very beginning and throughout the entire transformation journey is essential for success. This involves e.g., identifying pilot customers, actively collecting, and incorporating their feedback, and ensuring the development of a solution that aligns with your customer's needs and propels your goals of customer-centricity.

And MACH® architecture is only the beginning of what awaits us: e-commerce is experiencing significant technological developments and has great potential for growth and innovation. Artificial intelligence, augmented reality, and linked omnichannel commerce strategies will reshape the way e-commerce operates, unlocking its full potential for growth and innovation. As these transformative technologies take center stage, significant changes lie ahead for us humans as well.

That is why it is important to now lay the foundation for the upcoming changes and to understand that ultimately, with all the new technologies and the new trading strategies, we will take care of the customer needs of the future - that is, the human beings like us.

Dimensions of a Change Impact Assessment (Illustrative)
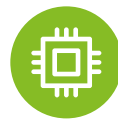

Process
...the process changes needed

People
...the roles and skills required

Data
...the data flows needed

Technology
...the interfaces to be considered

Client success story in chemicals industry

Discover how we guided one of the leading chemical companies to take its e-commerce game to the next level.

Are you curious of how companies are currently embracing MACH® architecture and change management within their digital transformation projects? To revolutionize and create new digital shopping and customer experiences, Deloitte has partnered up with different clients across various industries to jointly drive their e-commerce transformations. Thereby, each implementation is unique and needs to be tailored to specific aspects such as company objectives, organizational structures, and technology landscape, amongst others. With our experience, we have already helped several clients to bring their e-commerce game to the next level, such as one of Germany's leading multinational chemical companies. Learn more about it in the following and find out how they jumped on the train of composable commerce and MACH®, accompanied by an engaging change management approach.

The situation
So far, the client operated a non-harmonized e-commerce landscape including a variety of business-specific, isolated webshop solutions with a huge loss of synergies between the businesses. These webshop solutions have been characterized by a traditional, monolithic architecture resulting in limited customization, flexibility, and scalability as well as increased "vulnerability" based on system errors. To grow their e-commerce business, become more efficient and improve their customer experience, the client decided to embark on a digital transformation journey with us.

The solution
With the client's vision to deliver an industry-leading shopping experience in the Chemicals Industry, the project was kicked off in 2021 to design, develop and launch an e-commerce platform which is characterized by a modern, modular MACH® architecture. In parallel, a dedicated change management, communication, and training workstream was needed to ultimately drive the project to success from a people perspective.

Jointly with the client, we have defined and built the new e-commerce solution from the scratch, combining both the technical dimension as well as the people factor. In the following we want to share selected highlights that made the project a success for the client and for us.

- **Agile ways of working:** The mindset shift to agile delivery was one of the first building blocks of the project we tackled with the client. Based on the needs, we have jointly built the project structure and empowered the teams to incorporate agile methodologies in their daily work. And not only within the teams: we have also established co-creation formats with the different businesses and enabled a direct feedback loop from the client's to the developer teams.

"Thanks to our newly introduced MACH®-architecture we are able to support very individual customer journeys in the various industries we supply in a fast manner. We have built a robust and resilient platform being able to be rolled out or even to be scaled up for new business and revenue streams in a speedy manner while lowering our total cost of operation at the same time. Getting ahead the demand curve of our businesses!"

Product Manager Digital Stores Client

- **New digital e-commerce platform based on MACH®:** We supported the client on the development and implementation of a new MACH®-based e-commerce platform with commercetools®, the world's leading commerce solution built on modern MACH® principles; with this, we have created a game changer for our client's businesses by providing them high level of control and agility to meet the needs of their customers with fast rollouts.

- **Value-adding services:** We analyzed what is needed and joined forces in our development teams to create value-adding and state-of-the-art e-commerce services for the client's various businesses which have not been available before or which have been significantly improved, such as the track and trace functionality and easy-checkout process for the customers.

- **Industrialized business rollouts:** We guided each individual business rollout from the specific divisions towards successful implementations based on their needs from both the technology and people perspective. For this, we defined a standardized roll-out journey driven by a roll-out "cookbook" (steps for a successful rollout). We easily applied the methodology to create new digital commerce solutions or enhance existing web shops with centrally provided services. This allowed various businesses within the group to "plug and play" with their own e-commerce solution. We ensured seamless integration and widespread adoption across all branches through a successful operating model and governance structure. The central support team provided continuous assistance for smooth operations. The provision of central services streamlined processes, and a user-friendly system allowed local businesses to request additional features and customize the model, fostering local adoption and empowering business improvements. Finally, we managed to create a learning environment by providing training and resources to enable teams to adapt to the new set-up & improving the "cookbook" for each rollout.

- **Collaboration & co-creation:** Along the entire transformation journey, we put people first and ensured consistent collaboration and co-creation; with dedicated formats to inform, involve and engage various stakeholders, we created a strong visibility and acceptance for the project across the organization and enabled sustainable success.

Our impact

With our technology and people-focused team, we successfully supported the client in their digital transformation to create a new, composable solution based on MACH® architecture and to deliver an improved customer experience to their customers with user-friendly services and webshop functionalities. After successful pilot markets, more and more businesses jumped on the bandwagon of our new jointly developed solution which enables the possibility for business growth & efficiency and is ensuring an improved customer experience in line with their specific business objectives.

Due to the composable architecture and the rapid adoption of the central commerce services of the platform, embedded in a well-structured roll-out concept and governance, the time to market is very short and the roll-out speed and capacity is very high compared to traditional rollouts.

The time of "two speed" IT departments seems to be over – MACH® implemented in a people-centric and well-structured approach enabled supersonic fast solutions.

E-commerce transformation outlook with Deloitte

MACH® represents the future of e-commerce transformation, but without people enablement and a successful digital strategy its full potential remains unused.

In conclusion, MACH® architecture has emerged as a transformative approach to building scalable and flexible digital ecosystems. Its modular and decoupled nature allows businesses to rapidly adapt and innovate in the ever-evolving landscape of e-commerce. It's proven to be a game-changer for e-commerce, enabling businesses to seamlessly integrate and orchestrate multiple applications and services while maintaining independence and scalability for each component. The flexibility of MACH® allows organizations to leverage best-of-breed solutions, replacing or upgrading individual components without disrupting the entire ecosystem. This promotes innovation, fosters collaboration, and empowers businesses to respond quickly to market demands and changing customer expectations.

Furthermore, people enablement and change management play a critical role in successfully implementing MACH® architecture in e-commerce organizations. Transitioning to MACH® requires a shift in mindset, processes, and skill sets, which can be challenging for teams accustomed to traditional monolithic architectures. It is essential to ensure that the people involved are empowered, equipped with the necessary knowledge and skills, and supported throughout the transition. Change management strategies should be focused on creating awareness about the benefits

of MACH®, fostering a culture of collaboration and learning, and providing training and resources to enable teams to adapt to the new architecture. Clear communication about the goals, objectives, and expected outcomes of the transition is vital to gain buy-in from stakeholders and alleviate any concerns or resistance.

Looking to the future, e-commerce involving MACH® is poised for significant growth and advancement. As technology continues to evolve, new opportunities will emerge to leverage MACH®'s modular architecture in innovative ways. The rise of emerging technologies such as artificial intelligence (AI), as well as use of machine learning (ML) and augmented reality (AR) will further enhance the e-commerce experience within the MACH® framework.

Additionally, MACH® paves the way for a more personalized and omnichannel approach to e-commerce. By decoupling the front-end presentation layer from the back-end commerce logic, MACH® enables businesses to deliver consistent and personalized experiences across various touchpoints, including websites, mobile apps, voice assistants, social media, and more. This omnichannel capability will be crucial in meeting the evolving expectations of consumers who demand seamless interactions and tailored experiences throughout their buying journey.

Embracing e-commerce and digital transformation is crucial in today's competitive business landscape, and Deloitte is here to guide organizations through this transformative journey. We believe that successful transformation requires more than just implementing new technologies—it necessitates a fundamental shift in the way businesses operate.

At Deloitte we specialize in driving e-commerce and digital transformation for our clients, enabling them to thrive in today's rapidly evolving business landscape. We understand that simply adopting new technologies is not enough; a comprehensive digital transformation requires a holistic approach. That's why we work closely with our clients to help them establish innovative business models that align with their goals and leverage the power of digital channels. Our team can assess the existing infrastructure, identify areas of improvement, develop a tailored roadmap, and provide hands-on support in implementing the necessary changes.

We assist in identifying and implementing the right tools and technologies, ensuring seamless operations and enhanced customer experiences. Whether it's developing a custom platform according to MACH® principles or utilizing existing solutions, we provide tailored recommendations that suit each client's unique requirements. In addition, by employing data-driven insights, market trends, and customer behavior analysis, we create compelling digital strategies that yield tangible results.

Furthermore, we go beyond technical aspects and understand the significance of effective digital sales strategies. Deloitte can support organizations in change management efforts and assist in developing training programs, conducting workshops, and facilitating knowledge transfer sessions to ensure that teams are well-prepared and equipped to work effectively within an agile framework. This will ensure in establishment of proper governance processes and frameworks to ensure ongoing success and continuous improvement.

By partnering with Deloitte Digital organizations strive to maximize their company digital transformation potential, overcome challenges, mitigate risks, and empower their teams to embrace and thrive in the new era of e-commerce facilitated by MACH®. This partnership represents the future of e-commerce architecture and people enablement, offering businesses the flexibility, agility, and scalability needed to thrive in a rapidly evolving digital landscape. As technology advances and consumer expectations evolve, organizations that embrace the MACH® approach will be well-positioned to deliver exceptional e-commerce experiences, drive innovation, and stay ahead of the competition.

"MACH® architecture can really reduce time to market and help clients build state of the art customer experiences – but a platform is only a tool. Organizations need to adopt, and humans need to be keen to use the tool."

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