Programmers
Beyond IT

Using Microservices to Streamline Your Applications Development

Programmers
Beyond IT

Programmers
Beyond IT

Introduction

The need for speed has changed every industry, which creates new and constantly shifting challenges within most companies. However, many organizations still struggle with legacy systems and lack the flexibility to adapt to these challenges.

What modern developers need today is the ability to create discrete services that can be built, deployed and scaled independently from each other. We call that Microservices.

Microservices is an independent development process that allows applications to be built in different programming languages, using different hardware & software, and different databases that are right for specific applications -- and does not force developers to settle for a single language and identical tools. Microservices results in increased speed to market, lower development costs, and better functioning applications.

Most importantly, using Microservices will allow you to keep pace with your customers changing needs and demands -- and the demands placed on your business by competition.

In this e-book, we will help you to become more familiar with Microservices and how they can speed your journey from legacy systems and monolithic architecture to a modern method of application development.

What is a Modern Microservice Architecture?

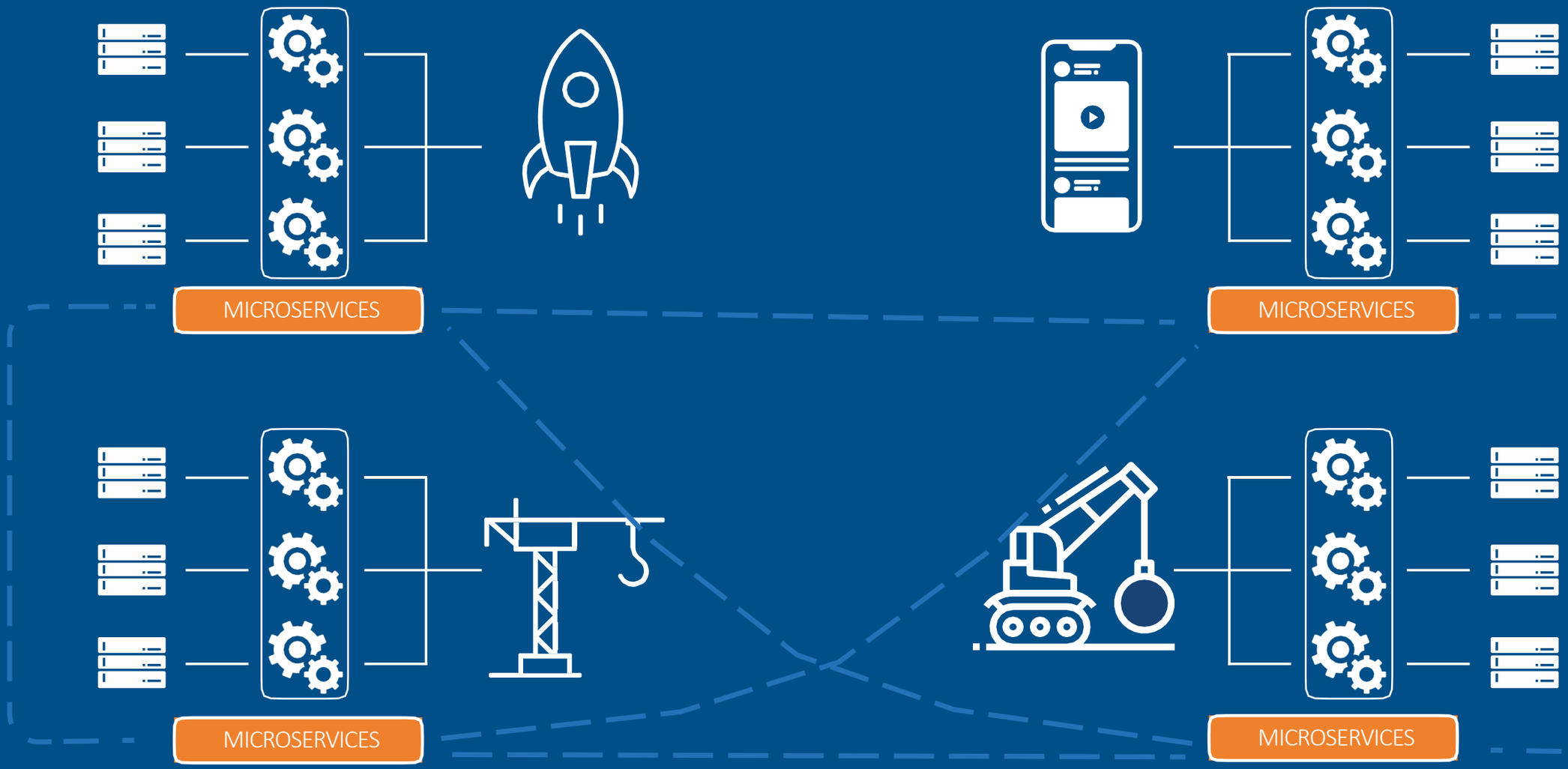
In general, when we talk about microservice architectures, we are talking about small pieces of a larger application, which perform specific tasks within that application. Microservices development is done through independent and decentralized implementation.

On the other hand, a monolithic architecture combines many functions on a single platform -- often with huge and unnecessarily complex code bases. Using a microservice architecture, smaller applications are developed and deployed independently, using whatever programming language makes most sense for that particular application. When these parts come together, you get the whole application.

Microservices have been used to create software that is increasingly attractive to companies and customers, as it allows for the creation of modern solutions with lower maintenance costs and greater reliability.

Microservices Architecture

Programmers
Beyond IT



Programmers
Beyond IT

From the Monolithic Model to Microservices: Digital Transformation in your Business

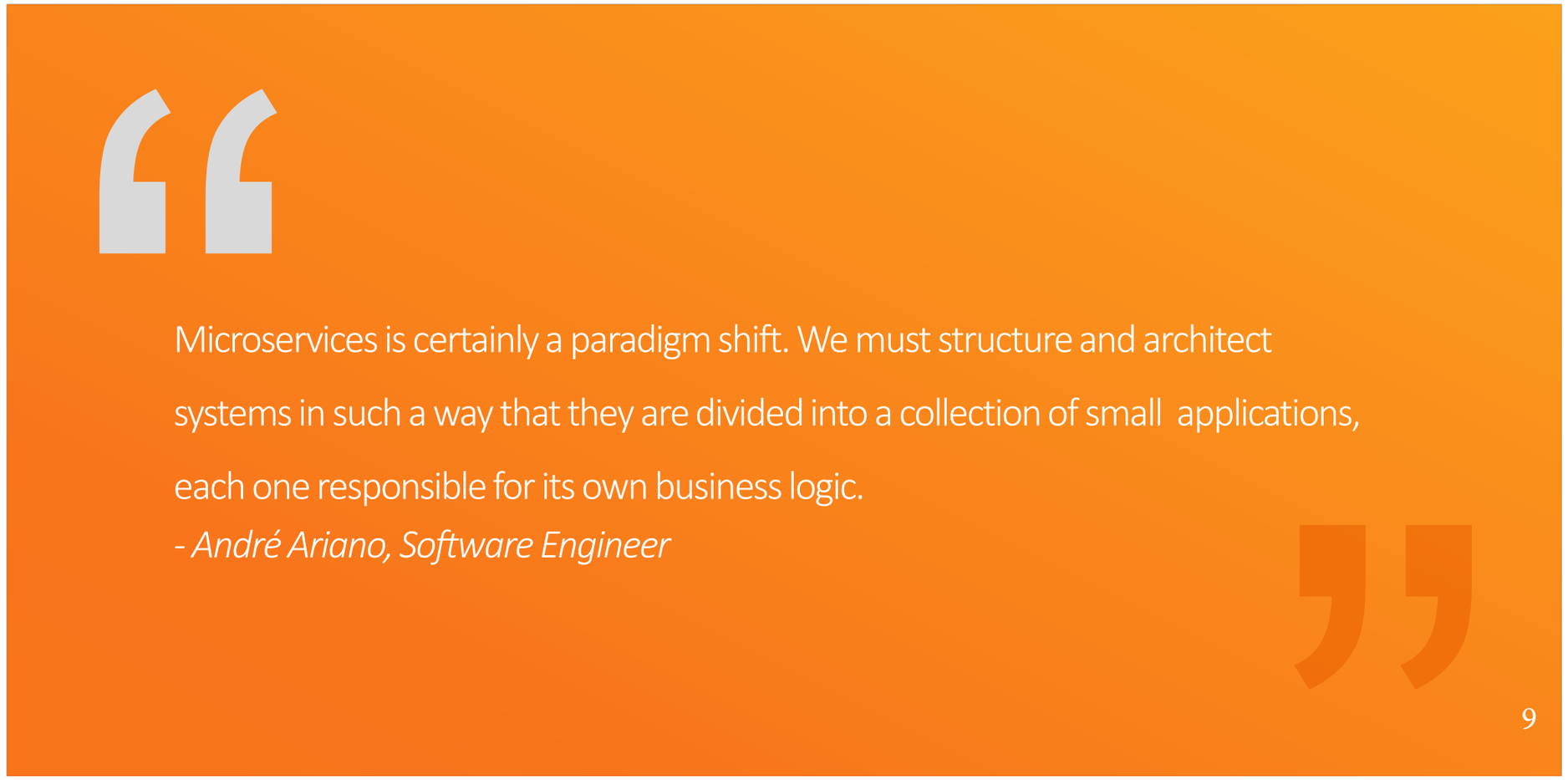
In order to keep pace with their industry's evolution, companies need to keep up with the modernization of application development with a focus on digital acceleration and agility.

Monolithic System

3 Main Parts:

Monolithic applications solve business needs with less dynamic functionality, which tend to have less complexity and dependency between components and interconnected applications. As new platforms and integrations come into play, this architecture does not respond satisfactorily.

Organizations encounter major problems with monolithic systems, built as a single unit, as they are not easily scaled and maintained when intricate applications and connections multiply. The microservice architecture can solve this problem. Complex tasks are broken into small processes that operate independently, allowing its functionality to be split into components.



Microservices is certainly a paradigm shift. We must structure and architect systems in such a way that they are divided into a collection of small applications, each one responsible for its own business logic.

- André Ariano, Software Engineer

HOW CAN KUBERNETES MAKE PROCESSES EASIER?

Kubernetes is a tool that can be used to build applications with microservices. It allows developers to automate deployment, management and scaling of their applications.

As modern applications are increasingly built using containers, Kubernetes lets developers manage these containers at scale. It helps them fully implement and rely on a container-based infrastructure in production environments.

In order to guarantee a system's functionality, Docker solves the problem of installing large versions of software through containerization. After packing these versions, Kubernetes can install them, according to setup files, ensuring stability in the application's interface.

Programmers
Beyond IT

Microservices Revolutionizing Major Digital Players

Microservice architectures have been growing at a brisk pace and have helped some of the biggest companies build their businesses quickly and reliably.

For example, Netflix needed microservices as it transitioned from DVDs to streaming and they underwent a major transformation of their platform.

As they were migrating, a disaster occurred in Netflix's database, paralyzing the entire DVD shipping service (the precursor to today's Netflix streaming business) for three days. Netflix made the important decision to move to a public cloud, rebuilding all the technology into AWS (Amazon Web Services).

This crucial migration took time to implement, but improved their content's scalability and availability, and brought more resource availability to their heavily-trafficked service. What Netflix does today would likely not have been possible without the use of microservices.

OTHER MAJOR CORPORATIONS THAT USE MICROSERVICES INCLUDE:

What are the Benefits of Microservices?

1. Higher quality and resilience

As microservices operate in a decentralized manner, they have greater resilience and quality than applications in a monolithic system. This results in significantly reduced impact on an organization's business in the event of malfunctions, whereas the monolithic architecture might see its entire service affected.

2. Scalability

If the system is overloaded by simultaneous users, it is possible for the microservice to establish multiple instances of the same module running in parallel, to allow for greater processing. This feature is much more responsive than taking an entire system and scheduling its use, as it allows the company to focus on the functionality that they need the most.

3. Availability

Achieving higher availability without impacting other services is one of the greatest benefits of microservices. Since each service is a separate component, it is possible to expand a single function without scaling and stopping the entire application.

4. Cost Savings Over Time

With microservices, it is possible for a company to achieve long-term cost reduction due to the interdependence of each functionality -- and that they uses only the resources they need, without overloading.

5. Multiple Development Fronts

Once you have migrated your software to microservices, it is possible to have autonomous teams with expertise in specific areas, each working independently, but simultaneously, without many dependencies.

6. Continuous and Automated Delivery

By having independent teams focused on a microservice, it is possible to carry out daily deliveries, maintenance, and deployment without interfering in a company's productivity.

7. Time to Market

There is no need to rewrite your entire code base to add or modify a system feature.
Microservices are smaller in scope and size, which lessens development time and increases speed-to-market.

8. Cloud

Currently, on cloud platforms such as AWS, Azure and Google Cloud, microservices can be created in a very easy way, with self-managed services. It is possible to deploy an "AKS *" cluster and choose how many "VMs **" the microservice will have, or even create a "PaaS ***" platform and apply an "API ****".

* AKS: Azure Kubernete Service | ** VM's: Virtual Machines | *** PaaS: Platform as a Service **** API: Application Programming Interface

Programmers
Beyond IT

Microservices at Programmers

1. Average Turnaround of 3 Weeks

Programmers' works with an average 3-week turnaround time to deliver a microservice. That speed can really makes a difference for a business with intense competitive, customer, or internal demands.

2. Communication Between Teams (Scrum)

Communication and alignment between teams is carried out with a daily Scrum event at Programmers, minimizing the need for ad-hoc meetings, but still ensuring good communication. These daily stand-ups also bring greater integration between development teams and strengthens the culture.

3. Infra-application

Programmers' has a stage called “Infrastructure as Code," in which the development teams prepare the infrastructure code to initiate cloud portability, creating an environment to upload applications more quickly.

Programmers
Beyond IT

Accelerating the Time to Value of Digital Applications

Having software architecture that allows an organization to react to the market quickly is essential. When we talk about organizations in which technology is a competitively differentiating factor, the important of speed increases.

Through Programmers' Agile approach, we develop software solutions in rapid cycles, continuously delivering business value. And that's where microservices come in: the architecture that modernizes digital applications to bring speed and flexibility.

This is Programmers' differentating factor: we deliver personalized solutions, developed quickly, with a laser focus on customer needs.

Rapid development of big ideas reflects Programmers' intention and ability to help companies innovate.

Programmers
Beyond IT

How to Implement Microservices in your Business?

Most companies are still stuck in the era of monolithic application development, when centralized architectures were used to create entire applications with a single code base. That method worked for some businesses, however, with the current rise of cloud and back-end data that must be responsively available, the monolithic era seems more and more prehistoric.

Programmers
Beyond IT

Value-delivery with microservices can be very beneficial for some companies, however, it is not for everyone. Although it is a promising architecture, not all companies are able to capitalize on or manage it.

Defining which software architecture should be used depends a lot on a company's business model, its culture and the needs of each company's customers. Eventually, companies that need to evolve and innovate will gradually recognize the need for microservices.

Want to find out if your business is ready to implement microservices? Programmers can help.

Programmers
Beyond IT

About
Programmers

Programmers is a company that develops business solutions, values innovation, and employs specialized technology in data development. Over the past 30 years, we have helped major brands in their digital transformation, accumulating expertise in agile development through advanced technologies, such as Big Data, Machine Learning, Artificial Intelligence, Analytics, Cloud Computing and others. Committed to delivering quality work and innovation that adds value, we maintain partnerships with customers across the globe, working on digital innovation with companies in the U.S., Brazil, Japan, Portugal and Italy.

Chicago

20 W Kinzie St, 17th floor, Chicago, IL 60654

Philadelphia

1801 Market St, 17th Floor, Philadelphia, PA 19103

Contact:

info@Programmerscom

Programmers
Beyond IT