EPAM MICROSERVICES:

HOW AGILE ARCHITECTURE ENABLES DIGITAL TRANSFORMATION

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MICROSERVICES: A DEPARTURE FROM SERVICE-ORIENTED ARCHITECTURE

WITH OVER 20 YEARS OF SOFTWARE ENGINEERING EXPERIENCE, EPAM HAS BEEN A PART OF THE TECHNOLOGY MOVEMENT THAT CHANGED THE WORLD. BUT IN THE MIDST OF ALL THE TECHNOLOGICAL ADVANCEMENTS, ONE THING REMAINS THE SAME: THE NEED FOR SOLID ARCHITECTURE AS A FOUNDATION, WHICH INCLUDES STRATEGY, BUSINESS-TECHNOLOGY ALIGNMENT, STRUCTURE ASSEMBLY, AND GOVERNANCE.

Today, there's an important discourse going on in the software community about which type of architecture is best for integrating, testing, and deploying new application features and functionality. Is it the larger, service-oriented architecture (SOA) and application program interface (API) that operates at a monolithic enterprise level, or the more granular, function-level microservices architecture with an API for each feature?

MICRO

KEY PRINCIPLES

- Microservices-first mentality
- Requires mature reference architecture
- Change management is contained within each microservice
- Modeled around micro-specific business capabilities
- Comprised of granular, decentralized components
- Isolated defects
- Deployed independently
- Widespread infrastructure automation
- Scalable and modular by nature

USE CASES

- Small deployments
- Implementing a single new feature through a standalone API
- Creating a feature that acts as one component of a service offering

SOA

KEY PRINCIPLES

- Monolith-first mentality
- Fits into mature monolithic architecture
- High level of change management throughout entire system
- Modeled around entire business service offerings
- Comprised of connected components
- Defects affect larger portions of enterprise architecture
- Deployed in accordance to present architecture situation
- Less automation within infrastructure
- Less scalable; modularity in bundles

USE CASES

- Large deployments
- Combining multiple new features within a single API
- Creating a set of features to fulfill an entire service offering

MICROSERVICES: A DEPARTURE FROM SERVICE-ORIENTED ARCHITECTURE

In the bi-modal IT world, there is no single answer. Instead, end-to-end architectures and universal APIs are better suited for systems of record, while microservices are the most effective approach to implement systems of differentiation.

The need for businesses to integrate, test, and deploy new features one by one without reinventing the entire system architecture has resulted in rapidly emerging demand for microservices architecture, as well as a clearer understanding of its benefits and use cases. While microservices create new business opportunities, many companies lack in-house expertise and require a trusted partner to exploit those opportunities. At EPAM, we employ and grow internal talent of hundreds of solution architects with capabilities in both service-oriented and microservices architecture, so we can maintain the agility and flexibility necessary to create the best solution for any situation.

MICROSERVICES HELP COMBAT MAJOR IT CHALLENGES

Adding new features, introducing new business processes, and performing version upgrades represent a real challenge within traditional monolith application architectures. There are often so many dependencies within the application, one major upgrade can mean days, weeks, or even months of work to test and integrate the changes. With this approach, it becomes very costly to make the improvement users expect – or even demand – from an application.

Instead of going with the all-in-one approach, develop with microservices in mind so that plug-in APIs can be added to offer new features, upgrade old ones, and avoid the trouble of updating an entire application just to add a new service. This approach helps to combat many major development challenges, such as:

INEFFICIENT RESOURCE UTILIZATION:
When updating a single deployment unit, even the smallest change disrupts operations and forces a large number of human resources to build, test, and deploy the entire unit.

UNSCALABLE RESOURCES:
Instead of scaling a single portion of an application, you have to scale the entire application due to the structure of the architecture.

UNMANAGEABLE SOLUTION COMPLEXITY:
The size and complexity of the codebase makes it difficult to onboard and train new developers.

LENGTHY & COSTLY RELEASE PROCEDURES:
Code dependencies complicate the process of independently releasing system parts.

LOWER PRODUCTIVITY:
When you get stuck with a single technology due to cost or complexity of change and can't use the best tool for the job.

MICROSERVICES GIVE BUSINESSES A COMPETITIVE ADVANTAGE

BEYOND ITS TREMENDOUS VALUE FOR IT, THE BUSINESS VALUE OF MICROSERVICES CANNOT BE UNDERSTATED. WITH RAPIDLY CHANGING TECHNOLOGIES TRANSFORMING SERVICES AND HOW THEY ARE OFFERED, IT'S CRITICAL TO STAY AGILE TO ENABLE FLUID BUSINESS-TECHNOLOGY ALIGNMENT. IN MANY CASES, THE EASIEST WAY TO ACCOMPLISH THIS FLUIDITY IS CREATING AND MAINTAINING SOFTWARE ARCHITECTURE THAT SUPPORTS MICROSERVICES.

Many businesses feel that they are constrained by the existing technology within their organization, driving them to explore new technologies only to find out implementation is too costly or time-consuming. That's why when one aspect of your business changes, the connection to what technologies are affected needs to be clear and easy to follow so that you can reflect that change in IT. Microservices present a clear path to making this possible, allowing you to get more business value out of your IT investment.

GENERAL BUSINESS BENEFITS OF MICROSERVICES ARCHITECTURE ORIENTATION

- **LOWER IT COSTS TO PRODUCE, MAINTAIN, AND MODIFY NEW SERVICES**
- **QUICKER RESPONSE TO MARKET CHANGES AND CHALLENGES**
- **ACCELERATED TIME TO MARKET OF PRODUCTS AND SERVICES**
- **24/7 BUSINESS CONTINUITY FOR YOUR CLIENTS AND USERS**
- **EXTREMELY FAST ABILITY TO PROVIDE NEW FEATURES TO USERS**
- **BUSINESS CHANGES ARE HARMONIZED WITH IT CHANGES**

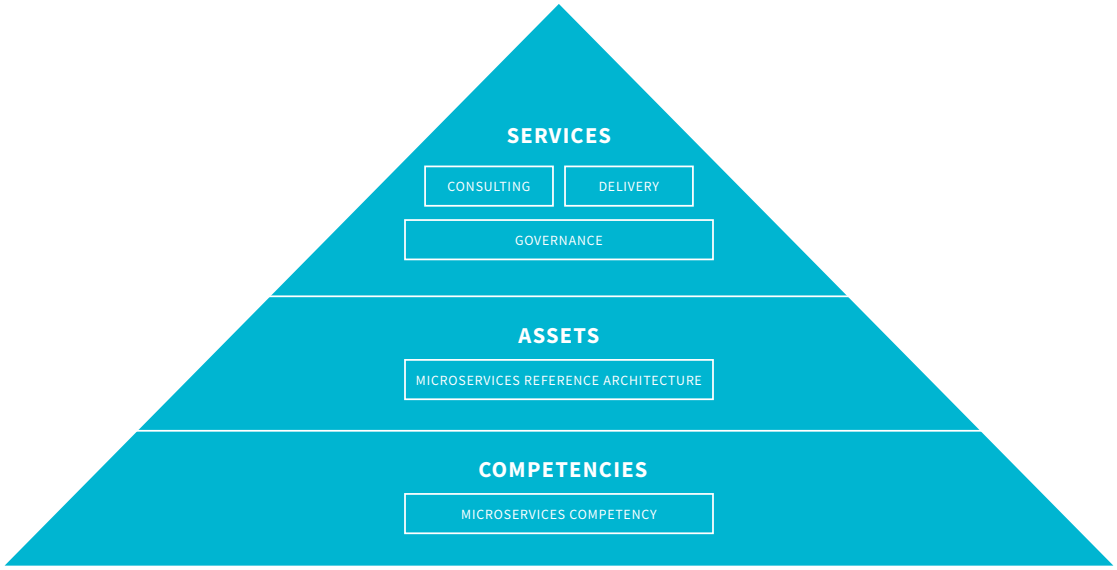
INCREASE BUSINESS AGILITY WITH EPAM'S MICROSERVICES REFERENCE ARCHITECTURE

With EPAM's Microservices Reference Architecture, there's no need to develop your architecture from scratch to begin integrating microservices into your applications. Designed to accelerate all things microservices, the architecture captures industry best practices for microservices implementation, code templates, and pre-configured deployment of best-in-class open-source components. Whether you're developing new microservices or incorporating existing ones, the architecture is built to provide an optimal outcome to any change or challenge in development.

BENEFITS OF EPAM'S MICROSERVICES REFERENCE ARCHITECTURE

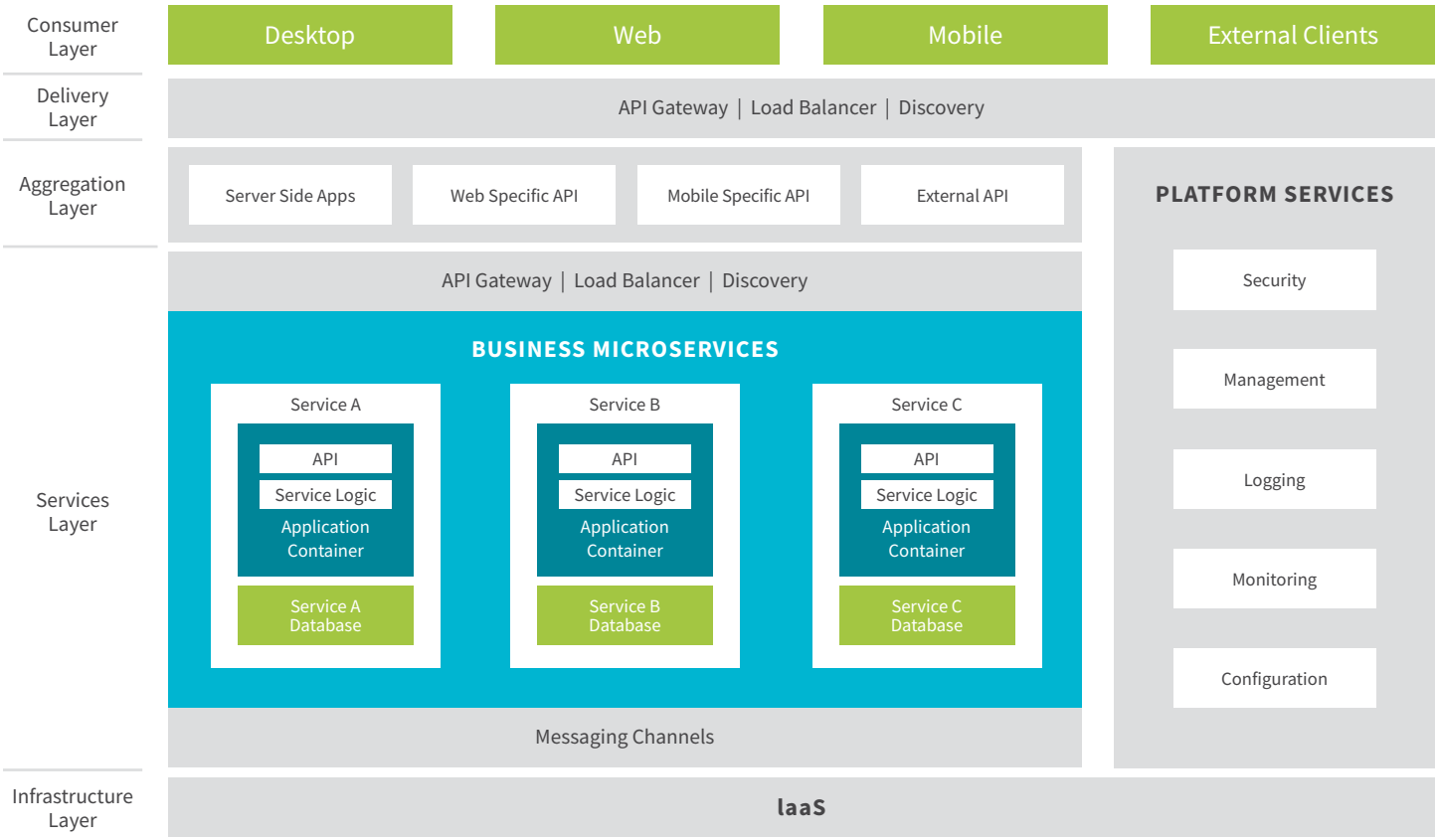
- Simultaneous availability of several versions of the same service
- Easy to add new services and features to your applications using APIs
- Independent scalability, development, and deployment of services
- Ability to gradually upgrade new services through the entire platform
- Easy onboarding of new team members so they can quickly become productive
- Efficient resource utilization with lightweight technology stack
- Pre-built platform eliminates all platform coding time
- Change management is greatly simplified with componentization and interoperability of parts
- Decentralized governance and data management for making changes to different portions of software
- Code is organized around business capabilities to enable business-tech alignment
- Architecture composed of different technologies allows added opportunities and agility

EPAM'S MICROSERVICES FRAMEWORK OVERVIEW



EPAM's Microservices Reference Architecture is designed to accelerate the transition from legacy architecture and enable fast bootstrapping for new products and services. It is not a one-size-fits-all solution, but rather a comprehensive framework built over the course of numerous microservices engagements with clients that can integrate nearly any software or technology within it to create a cohesive environment that supports microservices.

Below is a high-level model of EPAM's Microservices Reference Architecture:



DELIVERY, DEPLOYMENT, MONITORING & BEYOND

Beyond designing and building the architecture, we enable continuous integration and delivery to ensure that each microservice release is 100% tested for any device or scenario. We transform siloed teams into cross-functional, hybrid teams with capabilities in all aspects of the software delivery lifecycle. We offer tools that allow for monitoring of decoupled system functions, helping clients to gain greater insight into how different business functions are performing.

Whatever we do, it's aimed at optimizing each client's IT investment, making every process synchronized – or desynchronized, depending on the situation – with the next to create a symbiotic relationship between technology and business. It's how EPAM delivers digital transformation as a service to our clients.

START SIMPLIFYING YOUR MICROSERVICES TODAY

WANT TO LEARN MORE ABOUT EPAM'S CAPABILITIES IN MICROSERVICES AND OUR MICROSERVICES REFERENCE ARCHITECTURE?

SCHEDULE A FREE CONSULTATION EITHER OVER THE PHONE OR AT YOUR OFFICE TO GET STARTED!

For more information,
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