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The Creative Possibilities Of Microservices

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POST WRITTEN BY

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This article is from Shankar Kambhampaty, [DXC.technology](#).

There's a new approach to application development trending today, and it's a direct result of the huge growth we're seeing in cloud and mobile technologies. Although this technique has a diminutive name, it has the potential to seriously disrupt the way enterprise IT develops applications in the future.



Microservices are fine-grained services that publish human-readable application programming interfaces (APIs) built for a particular application. They're self-contained, not necessarily built for reuse and have the singular responsibility to deliver the exact functionality they are designed for.

While the term "services" has traditionally been used in service-oriented architecture (SOA), the principles between the two approaches vary.

Although based on the same architectural principles -- and built with the exact same technologies as microservices -- typical SOA services are more coarse grained, machine processed and built to address the problems of reuse, integration and agility at the enterprise level.

Microservices, on the other hand, are built on cloud back ends, and they publish their APIs for consumption by mobile front-end apps. Given the current state of cloud and mobile technologies, this approach makes a lot of sense.

In doing my research with the third edition of a book on SOA and microservices, I noted several creative possibilities for the concept of microservices that are worth exploring.

Microservices In Publishing

The traditional business of publishing is a one-way track from author to reader, with the text being unchangeable after print. E-books allow for content to be changed more frequently, ensuring that the text remains more current. But in both cases, the author and reader can only communicate through email.

Now, with microservices, authors can enhance interaction with easy-to-program APIs that create a continuous communication model.

I put this concept to the test, defining what I called APlary API with three methods: addQuestion, listAllQuestions and notifications. I used the Google App Engine to implement and expose the API methods and designed and built simple iOS and Android apps. The app provided screens for users to post questions, look at the answers and receive notifications with links to additional content.

With these capabilities, I can push notifications of additional content -- such as YouTube videos that provide an overview of each of the chapters of my book - to my readers and answer their questions in a timely fashion. This turned out to be a simple and effective way to create a dynamic, interactive relationship with my readers.

Microservices In Other Industries

Creating an interactive publishing experience is just one idea made possible with microservices, but the opportunities extend across various industries.

In retail, for example, microservices can assist with inventory, accounting, shipping and storage. An [online retail application](#) may be built using these microservices, along with a few other supporting ones.

Transportation and logistics are other vertical segments that are already using microservices extensively. For instance, software systems for connected vehicles expose and consume microservices to provide vehicle location and status, which is used for intelligent and efficient management of the vehicle.

Challenges To Adoption

While microservices offer many potential benefits, there are a few challenges that could prevent wider adoption.

Since microservices are tiny pieces of functionality used as services, it follows that each of these services needs to be developed, deployed and modified with changing requirements over its lifetime. For this to be managed well, an organization needs a strong DevOps culture and the right skill sets. Experience with container technologies, such as Docker, is also useful, but finding experienced developers in container technologies is not easy at the moment.

There are also challenges associated with managing large numbers of distributed components. With microservices, enterprises must manage changes to functionality and interfaces at design-time, and they must continue to monitor the health and availability of applications that consume the published microservices.

This can be a big undertaking, making a focus on comprehensive testing critical. The very strength of microservices is in being able to support increased parallelism (to provide greater scalability) through asynchronous service execution. But this can also increase complexity, especially when distributed transactions and concurrency control is required.

Of course, these problems are neither new nor unique to microservices, but they do call for careful thought and strong DevOps and engineering practices.

Even with these challenges, microservices have great potential to benefit the enterprise, especially medium-sized businesses. These companies now have the potential to put creative models into action, to engage with customers and provide differentiated services that compete with the biggest enterprises.

With the increasing interest in microservices, we're sure to see even higher adoption and new and creative uses of this approach in the near future.

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