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## Deconstructing the Monolith:

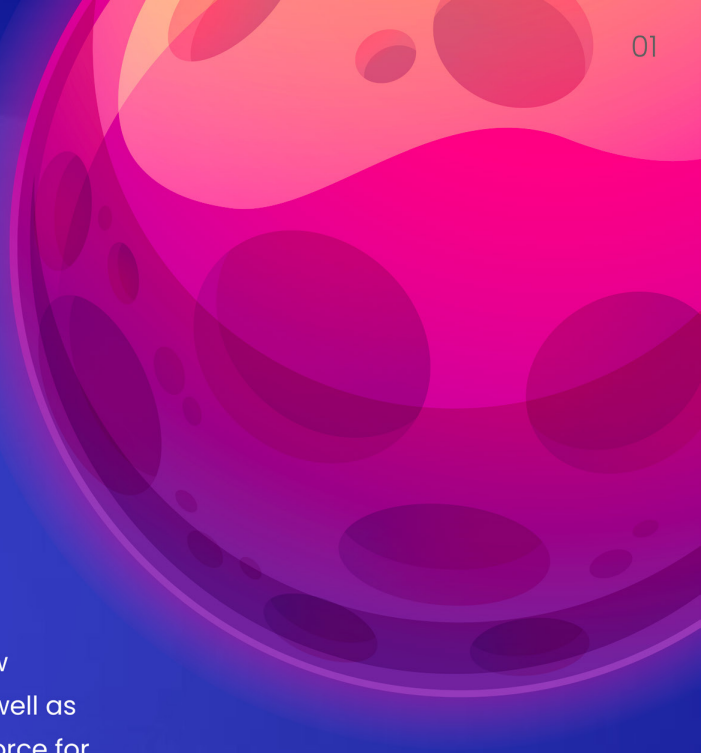
# 3 Digital Integration Trends Reshaping the Business Landscape

Take a couple steps back from the digital façade and you will see it clearly...

The age of monolithic integration is over.

In its place, for those empowered to access it, is an exciting and promising new era of increased flexibility, capacity, scalability, profitability, and innovative potential.

While even five short years ago an enterprise would be forced to start from scratch between not only each project but each integration between project systems, powerful new methodologies, technology, and expertise now create harmony between internal and external systems as well as legacy and proprietary systems while freeing up your workforce for higher-value deliverables.



# I. Dream Big, But Think Micro

"Great things," Vincent Van Gogh averred, "are done by a series of small things brought together."

Born in 1853—or, as some modern tech-focused people might prefer it, pre-Internet—the painter likely was referring to the post-impressionist path toward, say, a "Starry Night."

But the ethos is one that finds new resonance in our current tech landscape with the rising popularity of microservices—themselves the individual services in a microservice architecture, an increasingly foundational Service-Oriented Architecture (SOA) that provides a framework for application creation.

This architecture, MuleSoft CTO Andrew Dent writes, is "distinct from traditional applications, or monoliths, that are structured as single self-contained artifacts."

"Think of a microservice-based application as one built from Lego bricks," Dent adds, "and a monolith as one built from a single slab of concrete."

It's an apt metaphor: Most of us have built a Lego set strictly according to the step-by-step plans included in the box. Which is wonderful. But where you go from there is limited only by your imagination and the number of bricks on hand. You can combine multiple sets or buy new bricks to build out, up, or across.

Similarly, a microservice architecture—which may incorporate anywhere from a few to thousands of microservices—is, by its nature, expandable and scalable. Enterprises no longer need to start from scratch as they seek to build and integrate applications. The process is customizable according to current need and opportunity—which means lower costs, faster speed of deliver, greater innovative potential, exponentially increased capacity to take on new projects and initiatives, and, as a corollary to all of this, better ROI.

So, what does this have to do with integration?

"In the microservices approach, functionality is segregated in smaller services, so each service can scale independently," a Microsoft guide on the topic explains. "The microservices approach allows agile changes and rapid iteration of each microservice, because you can change specific, small areas of complex, large, and scalable applications. Architecting fine-grained microservices-based applications enables continuous integration and continuous delivery practices. It also accelerates delivery of new functions into the application."

The initial skepticism microservices would have widespread utility outside of specialized web-centric enterprises has been firmly and fully vanquished as it reaches further and further into the marketplace.

After assessing your network's readiness and compatibility for implementation, OZ can design and deliver extendable, reusable, secure, and discoverable microservices architectures—unleashing the full, true potential of your IT team.

# II. The Golden Age of APIs

"The telephone," Alexander Graham Bell confidently proclaimed, "will be used to inform people that a telegram has been sent."

Which is to say, it is not always easy to predict the path a new technology will beat once it is released from its inventor's mind and hands into the world.

So, too, it has been with the Application Programming Interface, more commonly known by the acronym API, which allows multiple computer programs to communicate.

Readers may be surprised to learn the term first appeared—as laid out in a fascinating and comprehensive presentation by former Google Chief Java Architect Joshua Bloch—in a 1948 book by Herman Goldstein and John von Neumann published by Princeton University entitled Planning and Coding of Problems for an Electronic Computing Instrument.

This is remarkable for several reasons, but, as Bloch notes, primarily because…no stored-program computer yet existed!

British computer scientists Maurice Wilkes and David Wheeler, hands full with building a primordial software library, further published the first API specification in 1951's The Preparation of Programs for an Electronic Digital Computer, and throughout the next four decades, as technology and theory became more harmonized, the definition sharpened until famed technologist and creator of the first internet radio station Carl Malamud succinctly summed it up in his 1990 book *Analyzing Novell Networks* **as such**: "A set of services available to a programmer for performing certain tasks. Network APIs are the programmer's interface to the network."

This would prove key in the establishment of the spread and popular adoption of the internet over the next decade.

The details of that journey, of course, could fill volumes.

To be necessarily reductive, APIs would come to use an external application or tap into its data. In the early 2000s companies such as Salesforce, Amazon, and eBay re-imagined this process in such a way that increased developed access in service of commerce. (Short version for those who just arrived from another planet: It worked out pretty okay.)

"These developments meant that for the first time, commerce and data-sharing were openly accessible for a wide range of customizable uses," Matt Hawkins **writes in *Forbes***. "Between 2004 and 2006, the use cases for APIs begin to expand beyond basic information sharing and e-commerce capabilities. During this two-year window, we started to see the early stages of a highly connected world emerging."

Circa 2007, the socials begin to rise, using APIs first to nurture the raison d'etre (connection) and then the evolved raison d'etre (yes, again, commerce).

In today's device and application-driven world, APIs are near-ubiquitous. But to harness the full potential of APIs for both enterprises and consumers—i.e., to truly migrate oneself to the Golden Age of APIs—your systems and various APIs must be properly, efficiently, and securely integrated.

If this is done manually, the degree of manpower and time required can be substantial.

Thankfully, with the right partner and resources, there is a much more streamlined and powerful roadmap for API integration.

Two components:

- **Real-time data synchronization via cloud:** Support legacy Integrations migrate your integrations to cloud. To keep up with the pace of change your Biztalk interfaces can be migrated to Azure Logic Apps, Azure functions and managed using Azure API management.
- **A strong, unified foundation:** Make connection between disparate systems the rule rather than the exception. This not only frees up developers and support staff to focus on higher-value tasks, but provides the flexibility to scale quicker, access your data more effectively and strategically, and open up further avenues of innovation.

From EDI to flat files to proprietary connectors, OZ has extensive experience in integrating enterprise applications necessary to help you incorporate or move to the cloud—quickly, efficiently, and at a time and place of your choosing.

**Some benefits for Enterprise Application Integration between internal and external systems include:**

- **A seamless and improved Customer Experience (CX)**
- **Better decisions-making across multiple communicative systems**
- **Improve supply chain disruption issues**
- **Enables communication and functionality**

Bring your SCM, CRM, ERP, and more together with guidance from OZ's Enterprise Integration and Intelligent Automation experts working from a toolbox that includes Microsoft (as a Microsoft Gold Partner for 20+ years, we enable clients to understand Microsoft software capabilities), MuleSoft, WS02 (a variety of middleware products that enable users to simplify the development, management, sharing, and running of APIs), and more.

# III. Graphing a More Integrated Future

Whether you realize it or not, you are already a datapoint on an AI-enhanced graph.

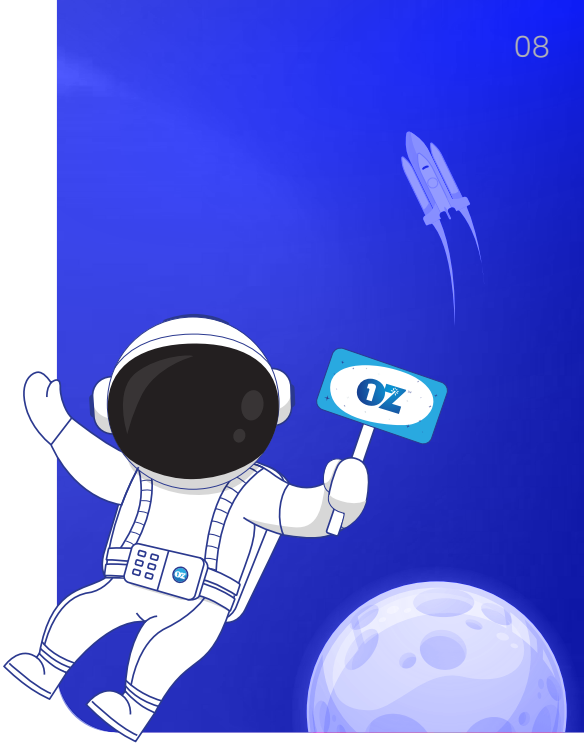
In fact, many graphs.

How can we say this so definitively?

Well, there is the Amazon purchase graph. The Google search graph. The Facebook social graph. Netflix's movie graph. Airbnb's travel graph. Don't forget the mobility and professional graphs from Uber and LinkedIn, respectively.

Beneath the hustle and bustle of our everyday lives is a steady, ongoing, omnipresent graphing of our preferences for work, leisure, learning, shopping, socializing and more.

And, as with most innovations that begin at the macro level, micro enterprises—relative and otherwise—will eventually be obliged to follow.



Or is that the wrong mindset to approach with which to approach this shift?

Dartmouth Professor Vijay Govindarajan and Boston University Professor N. Venkat Venkatraman would likely argue in the affirmative.

"Tracking static data about services and products, such as how many items are sold in a given time frame, no longer generates sufficient insight for a company to differentiate itself from its competition," the pair **argue** in the winter 2022 issue of Harvard Business Review. "Companies that use datagraphs successfully learn at scale and speed, continually optimizing to deliver personalized value to every customer. They use datagraphs to enrich their product offerings, identifying patterns of preference so they can solve customers' problems effectively. And datagraph leaders win their customers' 'moments of truth'—keeping customers engaged with their service rather than moving on."

So, one might ask, what here is new rather than simply a refinement around the edges?

In the HBR article—titled, convincingly, "The Next Great Digital Advantage"—Govindarajan and Venkatraman take pains to differentiate between direct network effects and data network effects, "which occur when data generated by users as they engage with a product or service makes it more valuable for other users."

"Unlike direct network effects, in which the value of a service grows as additional users join (as with Facebook or LinkedIn), data network effects do not require increasing numbers of users to enhance the value of the network," they write. "Instead, the continued engagement of current users generates broader and deeper product-in-use data, which allows algorithms to generate ever-improving results."

Many readers are probably familiar with GraphQL, the pioneering Facebook creation which, as MuleSoft's Larry Salomon puts it, empowers "customers to innovate faster by consuming data from multiple APIs in a single request."

"GraphQL allows developers to retrieve data from many possible sources in a single call in such a way that the results are predictable and are strongly typed, meaning that the caller will know exactly what types of data will be returned," Salomon continues, but adds: "Although GraphQL is great for combining data from multiple sources, you still need to understand how to connect to those systems in order to retrieve the data sets that will eventually be combined."

Or, integrated, if you will.

"Your customers are three dimensional," the page for our OZ 360 solution reads. "Now your data—and ROI—can reflect that."

In other words, collecting better data is only part of the process.



**Whatever method you choose for your enterprise, OZ can put our twenty-five years of experience at your disposal to help you…**

- …reconcile specific customer data across multiple databases, leverage householding logic to significantly improve CX, customer retention, and profitability
- …convert information to a data lake or warehouse quickly and efficiently then seamlessly present multiple accurate, holistic views of data with OZ 360™ accelerators and algorithms—saving time and money while improving ROI
- …uplevel your internal processes in tandem with Salesforce, Majesco, Microsoft Dynamics, Duck Creek, or any other preferred CRM system
- …facilitate more effective business decisions and mission alignment

# Conclusion

Alex Faickney Osborn—the literal father of "brainstorming"—once said the following: "Creation is the production of meaning by synthesis."

This is, at its core, what integration nurtures.

After all, the clearest synthesis of your systems, data, resources, and expertise is not simply placing your enterprise in the best position to succeed—it is, in fact, the primary goal of all endeavors. A smart, well-defined, properly executed integration is the key to that synthesis. And while there are many tools and applications on the market to get pieces of this fundamental job done, there is no substitute for hard-won knowledge and expertise.

**At OZ, we'll use our knowledge and expertise to assess, optimize, and integrate your enterprise's resources so that you can focus on your vision and dreams.**

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