Impact of API-LED Integration in Digital Transformation

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Abstract

API-led connectivity results in an application network: a network of applications, data, and devices that are 'pluggable', providing the agility that the speed of today's digital transformation demands. API-led connectivity is a method that defines techniques for connecting and exposing your assets. In this paper we propose a new approach to integration — API-led connectivity — that lengthens traditional service-oriented approaches to replicate today's connectivity needs. We'll sketch the core of this approach, operation challenges, and discuss how IT leaders can realize this vision in their own organizations.

Keywords: API, API-Led Connectivity, SOA, Digital Transformation, Integration.

Introduction

Companies must embrace digital transformation with a view to stay relevant to their customers, or else danger ceding market share to competitors who are able to adapt extra quickly. Digital transformation basically driving companies to reframe their relationships with their customers, suppliers, and personnel through leveraging new technology to have interaction in procedures that were not possible before. These new technology — SaaS, mobile, and the Internet of Things (IoT) — demand a new degree of connectivity that can't be carried out with yesterday's integration approaches. In this paper we recommend following solution to this to this key challenges:

1) Build an application network by manner of adopting an API-led connectivity approach that bundles applications underlying connectivity and composition of services as easily-available and reusable API constructing blocks.

2) Structure these constructing blocks throughout distinct systems, process, and experience layers to attain both extra organizational agility and control.

3) Drive technology exchange holistically across people, processes, and systems.

I. Digital Transformation is Vital

Today's digital transformation is unique and exceptional. For example, Banks are doing more than their basic feature of accepting deposits and landing loans, hospitals are covering care beyond the hospital ward; non-banking financial players are driving innovation in the payments space; media distribution companies are moving into media production.

These changes are conclusively reforming industry boundaries and business models and quickly changing competitive industry dynamics.

Technology is the main enabler of this digital transformation. Cloud and mobile are now confirmed drivers of IT-enabled business disruption, both inside and outside the enterprise. APIs, once seen as gears for programmers, are now business strategies providing new wat to market for a new portfolio of digital products and services. Business and IT leaders must turn now to ensure their businesses stay relevant and competitive. Customers have the means to quickly identify and switch to companies that can better meet their needs. Businesses who do not turn now will be left behind.

However, Digital transformation can only be achieved when organizations are able to bring many

technologies together to create unique and distinguished offerings. In order to do so they must bring data from different sources such as customers, suppliers and employees securely and at scale.

II. Research works

Traditional approaches for integration applications do no longer work for digital transformation. These methods, developed at a time with fewer endpoints and relaxed delivery beliefs, often cannot flow at the pace of today's enterprise requirements. Point-to-point application integration can be brittle and

highly-priced to maintain. Service-oriented architecture (SOA) approaches provide some preparation in theory, but were poorly implemented in practice. The principles of SOA are sound: well-defined services which can be easily available and

reusable. In reality, these goals were rarely achieved. The preferences for well-defined interfaces ended in top-down, big bang initiatives that have been mired in process. If anyone asked to discovery and consumption of services, less efforts are made to think. SOA were developed using SOAP-based web services technology. which proved to be a heavyweight approach that was improper then and even more improper now for today's mobile use cases.

IT leaders then should meet two reputedly contradictory goals: they have to ensure balance and regulate core systems of record, while permitting innovation and rapid iteration of the applications that access those systems of record. This is the task now variously referred to as bi-modal or two-speed IT. Existing connectivity approaches does not match for these new challenges.

III. Proposed System

API-led connectivity advanced at the vital tenets of SOA, however re-imagines its utility for today's distinct challenges. API-led connectivity is a method that defines techniques for connecting and exposing your assets. The approach shifts the manner IT operates and endorses decentralized access to data and capabilities, while no longer conceding governance. And the end result of API-led connectivity is an application network: a network of applications, data, and devices that are 'pluggable', imparting the agility that the speed of today's digital transformation demands.

API-led connectivity demands for a unique connectivity building block that compresses three components:

• Interface: Presentation of data in a governed and secured form.

• Orchestration: Application of logic to that data, such as transformation and enrichment.

• Connectivity: Access to source data, whether from physical systems or from EXTERNAL SERVICES.

Figure 1: Anatomy of API-led connectivity
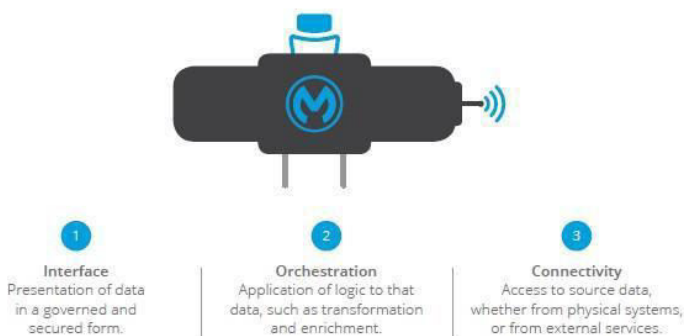
It is designed while keeping consumption of data as a top priority, APIs are the tools that provide both a consumable and measured means of retrieving connectivity. They act as a contract between the consumer of data and the provider of that data.

API can only serve as a presentation layer if it sits over a set of orchestration and connectivity flows. This orchestration and connectivity is critical: without it, API-to-API connectivity is simply another means of building out point-to-point integration. These APIs perform specific functions and provide access to non-central data and may be built by either central IT or line of business IT.

IV. API-led connectivity Architecture

It is multi-tier architecture containing three different layers. Define as follows:

• System layer: Underlying all IT architectures are core systems of record (e.g. ERP, key customer and billing systems, proprietary databases, etc). Often these systems are not easily accessible due to connectivity concerns. APIs provide a means of hiding that complexity from the user. System APIs provide a means of accessing underlying systems of record and exposing that data, often in a canonical format, while providing downstream insulation from any interface changes or rationalization of those systems. These APIs will also change more infrequently and will be governed by central IT given the importance of the underlying systems.

• Process layer: The underlying business processes that interact and shape data should be strictly encapsulated independently of the source systems from which the data originates, as well as the target channels through which that data is to be delivered. For example, in a purchase order process, there is some logic that is common across products, geographies, and retail channels that can and should be distilled into a single service.

• Experience layer: Data is now consumed across a broad set of channels, each of which want access to the same data but in a variety of different forms. For example, a retail branch POS system, e-commerce site, and mobile shopping application may all want to access the same customer information fields, but each will require that information in very different formats. Experience APIs are the means by which data can be reconfigured so that it is most easily consumed by its intended audience, all from a common data source, rather than setting up separate point-to-point integrations for each channel.

Following table shows the ownership of each layer:

Layer	Ownership	Frequency of changes
System layer	Central IT	6-12 months
Process layer	Central IT and line of business IT	3-6 months
Experience layer	Line of business IT and application developers	4-8 weeks; more frequently for more mature companies

Table 1: Each API-led connectivity layer provides context regarding function and ownership
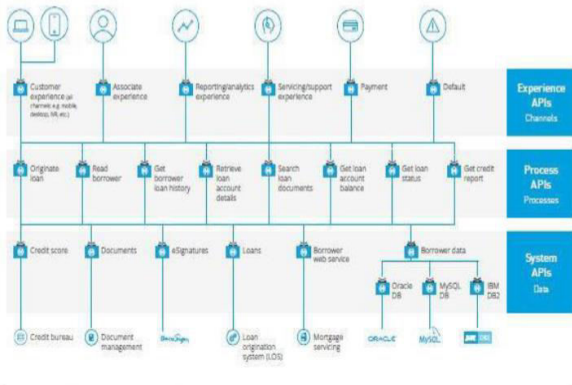

Figure 2: Illustrative architecture: Mortgage lending transformation — the emergence of an application network and a foundation for reuse.

V. Business journey to API-led connectivity

Realizing the API-led connectivity vision is not a discrete goal, but rather a continuous journey. Moreover, it is a goal that can only be achieved in incremental steps. Through connecting with dozens of Fortune 500 companies on their API-led connectivity digital transformation journeys, we have refined the best practices into the following steps:

• Start-up mode: For the AP-led connectivity vision to be successful it must be realized across an organization. However, in large enterprises it is simply not possible to wipe the slate clean and start

from scratch. Consequently, the API-led connectivity customer journey must start with a vertical slice of the business, for a specific use case or for a specific line of business. By bounding the problem, the scope of change is reduced and the probability of success increased. Training and coaching to drive role modeling of new behaviors is critical at this stage.

• Scale the platform: Once initial proof points have been established, these use cases will naturally

become lightning rods within the organization that will build mindshare and become a platform to leverage greater adoption. In addition, the service-oriented approach results in the natural creation of reusable assets which exponentially increases the value of the framework as the number of assets increases.

• Build a Center for Enablement (C4E): Once scale has been established, it's critical to quickly codify best practices and provide a platform for discovery and dissemination through the organization. The result of such a process is mass adoption across the enterprise. The core of this C4E may also be built during the start-up mode and scaled as required.

VI. Conclusions

- It acts as an enabler for the business by exposing resources.

- Increase developer productivity through reuse of logic to across different parts.

- More predictable change: By modularizing integration logic and ensuring a logical separation between modules.

- Distributed and tailored approach recognizes that there is not a one-size-fits-all architecture. So, capability to be exposed through the API or microservices.

- Systems are loosely coupled for greater agility.

- At each step, fine-grained analysis is possible, which cannot be easily realized when considering connectivity in a piecemeal fashion.

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