

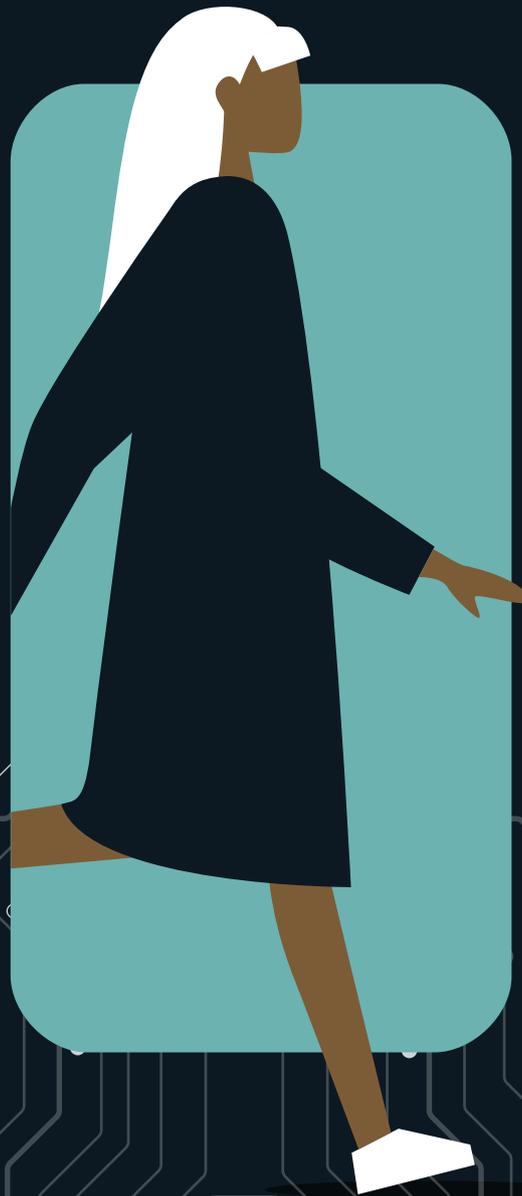
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THINKING BIG

API DEPLOYMENTS IN LARGE
ORGANISATIONS

WHITE PAPER



Introduction

In 2002, Jeff Bezos issued what is now known as the API mandate, 'The new direction at Amazon is that all capabilities will be designed and exposed as APIs.' This is an early version of what today is called API First.

The growing maturity of Cloud, with its virtually unlimited processing power, and the reality of Big Data combined with the impact of Covid over the last 2 years has pushed us ever faster into 'The Digital Economy' and an API First Approach.

Some of the motivations for building APIs into a Company's technical roadmap are:

- The migration and rationalisation of legacy infrastructure into a single, simplified environment. This includes scenarios where they may be already 2 or more API Platform instances in play.
- The never-ending search for efficiencies and oversight over national and multinational distributed operations
- The streamlining of communication with employees, customers, partners and suppliers.
- The monetisation of assets and capability.

However, it's clear that there is little point in building out an API based organisation unless there is a proper understanding of what it is to be used for. In fact, in C-Level conversation, we advise that the Digital Economy is 50% technology and 50% creativity, whereas in legacy infrastructure this ratio was nearer to 80/20.



In this white paper, we will look at:

- The importance of conceptualising and planning an API Program before it commences
- Change Management and the positioning of an API First Program
- How we have rolled out API First Programs in Large Organisations
- The streamlining and management of legacy technologies
- The Cataloguing and Presentation of APIs
- The monetisation of APIs

Prior Planning and Preparation

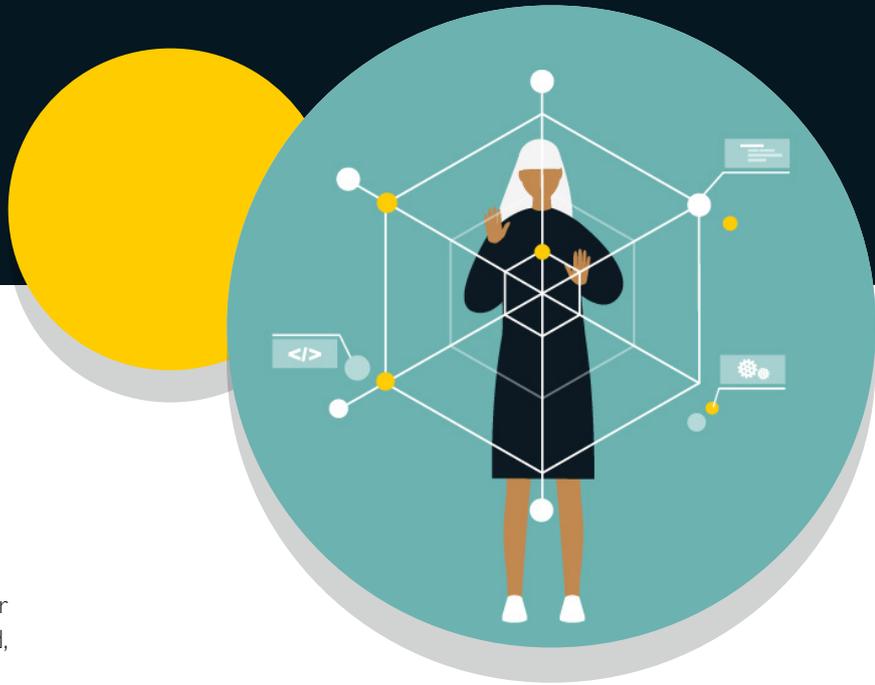
As stated in the introduction, it's vital that the reason/s for deploying an API environment are properly understood, and that clear objectives are given at Executive level.

Additionally, getting the maximum value out of APIs and their Platforms requires an up to date understanding of their utility and detailed lifecycle management. It's important to understand the existing technological landscape and how APIs will complement and enhance it. Deploying an API infrastructure is not like throwing a tablecloth across a surface; it is usually built out use case by use case.

Though this white paper is product agnostic, it's essential to build an optimum technology stack, which elucidates the interplay between Cloud, API Platforms, Data and Security as part of the planning process. There are many API Platforms in the marketplace, and Gartner provides a useful annual update on their relative strengths.

In the initial phase of an API Project, there is often a debate between open source and proprietary products, and in some cases, it does make sense to kick off with a low-cost open source 'trial' Platform. However, one of the common tenants of a successful Digital transformation is the concept of the 'Leanest Possible Technology Stack'. Many Companies accept that they cannot keep pace with the rate of change in customer dynamics and technology innovation.

Therefore, while a short-term investment in open-source tools and "good enough" point solutions will deliver similar immediate results to complete technology stacks, over time this changes. Choosing the most suitable proprietary product, that shows committed investment to a road map, allows Companies to take advantage of product innovations without serious retooling or business change.



Selling the Concept

In a large, geographically distributed organisation there is often see a degree of resistance to the implementation of an API First approach. There are many reasons for this, but we commonly come across difficulties with departmental silos, and getting buy in from technical leadership that has an established and functional modus operandi. Change is hard, and the inevitable centralisation of technical infrastructure that an API First approach brings may not be in everyone's immediate interest.

In the last paragraph we stated that API First Programs should be led and directed from the top, but it's also important to evangelize and explain their value to actors and stake holders at all levels. One recommended way to do this is to start small with one or 2 primary use cases as quick wins, and use these as a jumping off point to exponential growth.



Delivery - Think Global, Act Local

The delivery team requires careful selection and management, and in a large organisation we have seen it grow exponentially as a project progress from 5 to a 100 or so personnel.

The key skills required are:

- Overall Program Leadership (a Senior Executive with the experience and gravitas to straddle the Business and Technical needs of an organisation).
- Agile Scrum Masters and Program Mangers
- Business and Systems Analysts
- Technical Cloud and Kubernetes/ Containerisation Architects and Specialists (as largescale API infrastructure is often hosted in a Cloud/Containerised configuration for maximum flexibility)
- API Platform specialists – with certification on the particular API Platform that has been chosen.

The delivery team is often complemented by a structure such as a Center for Enablement (C4E), a group that drives the IT operating model shift. It enables business divisions — including but not exclusively IT — to build and drive the consumption of assets successfully, enabling speed and agility. It allows the business and IT teams to shift from a production-based to an agile production-and-consumption-based delivery model.

A C4E is a cross-functional team (Fig 1) charged with productizing, publishing, and harvesting reusable assets and best practices. It promotes consumption and collaboration and helps drive self-reliance while improving results through feedback and metrics.

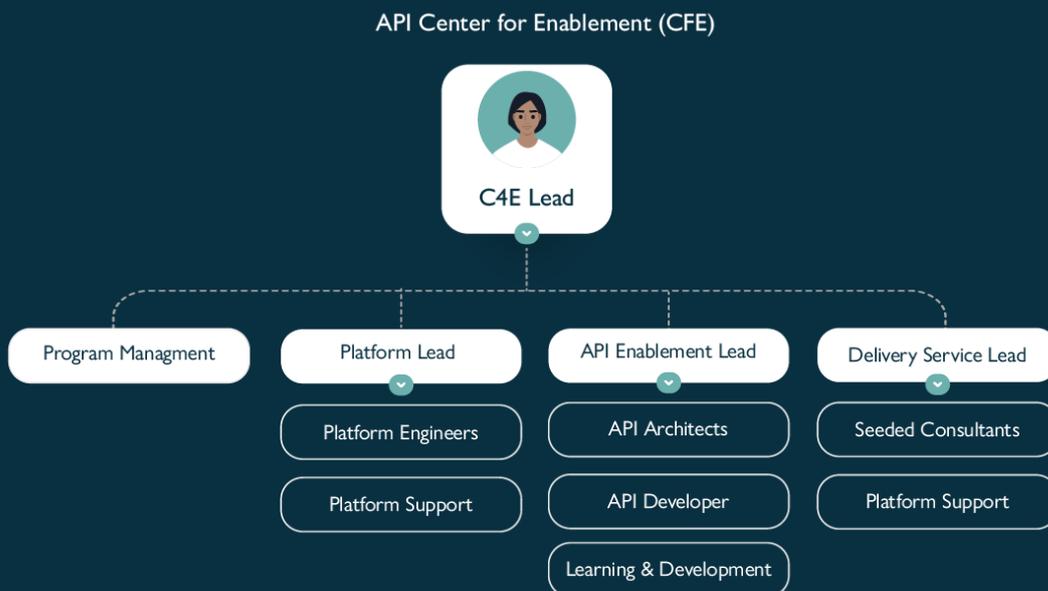


FIGURE 1: API Center for Enablement (CFE)

Once a program is up and running, the challenge is to provide centrally directed and standardised frameworks and processes without stifling creativity and generating opposition. To this end we have successfully implemented what we call the 'Cub-Scout' model where the centre (HQs) lays down the uniform and the badges, whilst leaving the individual 'troops' (subsidiary departments and operating companies) to pursue their own activities. Cub Scouts in Nigeria don't go skiing but they do in Norway!

In our experience, the central direction comes through carefully managed structures process such as:

- A C4E Structure (Fig 1)
- Scrum of Scrums and the Exchange of Ideas
- Centralised Architectural Approval
- Software Quality and Standardisation
- Documentation and API Life Cycle Management

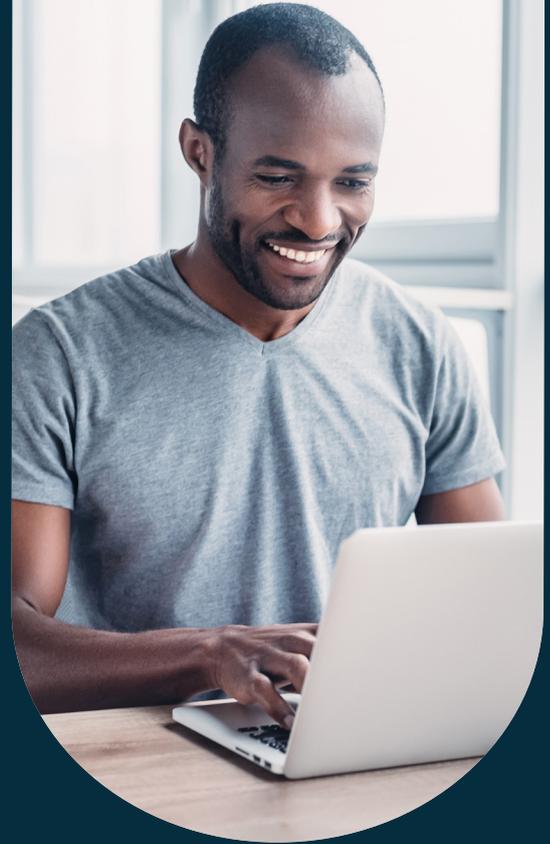
An additional local factor that needs to be taken into account in multinational organisations is the cross border/organisation management of data flows in the context of POPIA/GDPR in an API framework. In some cases, this can lead to a hybrid architecture where sensitive data is retained on-site in its country of origin, while less sensitive data is processed in the Cloud.

Streamlining and Migrating

One of the major drivers for initiating an API First Program is the rationalisation of legacy technologies into a single, unified containerised environment. This can be achieved through the use of APIs that can then be used to manage the overall infrastructure and its associated connectivity thereafter. Though this is an easy statement to make, the reality is that existing systems and data may be in a variety of forms and repositories that have been procured over many years, or acquired through acquisitions.

The starting point is usually a detailed inventory of all the existing infrastructure, and then a build out of a detailed plan with a full appreciation of the risks. The plan should clearly articulate the end state, the reasons for consolidation and the expected gains. It then needs to be communicated and discussed with all stake holders. In a large organisation a project of this nature may take months or years to implement. Systems should be decoupled from each other, rationalised and given API interfaces that are easily discoverable, understandable and usable. This is the foundation of an architectural approach called 'API Led' connectivity.

'API Led' connectivity builds on the central tenets of SOA, yet re-imagines its implementation for today's unique challenges. It is an approach that defines methods for connecting and exposing assets shifting the way IT operates and promoting decentralized access to data and capabilities, while not compromising governance.



Making APIs Accessible and Useable

As an understanding of the power of APIs and their utility grows, their number grows to the hundreds, or even thousands. Their discovery, accessibility and availability can quickly become an issue if they are not properly managed. This is normally done through a Portal that acts as a store front and catalogue, for both internal and external use. Most of the leading API Platforms have this facility built in. Figure 2 is example of an external API Portal.

The portal must be straight forward to navigate, allowing users to get to value fast and this is often done by grouping the APIs into functional areas. Additionally, the APIs on the Portal must be clearly documented to give a full understanding of their use and capability. For monetizable APIs, the rate plans should be clearly laid out in the Portal with bundles and offers (see below), and access to payment facilities

Just like a website, the Portal needs to be kept up to date, and in a large API First Program this usually means the provision of a dedicated team. This team can also be responsible for harvesting the analytics supplied by an API Platform which can then be used for reporting, enhancing the usability of the Portal and driving an API's lifecycle management.

An API portal should remove friction and instantly answer questions. It should allow for an ecosystem for developers to “play” with APIs and imagine how they can further extend their business capability with the innovation that is made available. The days of taking weeks and months to onboard developers and partners for API access are over. They need timely access to both internal and external APIs, and the support of a community to understand how to derive efficiencies and/or value.

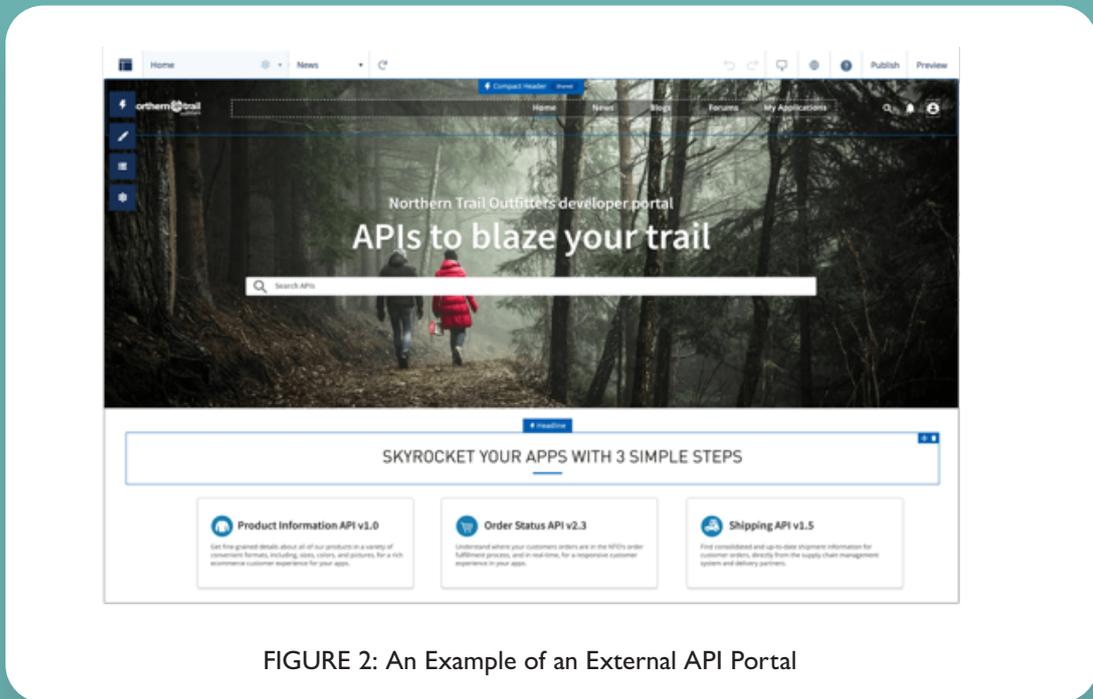


FIGURE 2: An Example of an External API Portal

Monetising APIs

Though many API First Programs start with internal rationalisation, the advent of the ‘Digital Economy’ means that many organisations are looking for new routes to customer engagement and incremental revenue as follows:

- There is often significant value in the information an organisation holds on individuals. An example of this could be information that goes into a Know Your Customer (KYC) credit rating application. Though this kind of activity is subject to GDPR/POPIA legislation, making it available can generate significant revenue. Data scientists can help to find seams of gold in verticals as diverse as Telco, Retail, Advertising, Government and Transportation.
- Another way in which APIs are being used to generate value is by providing the front end to system output. An example of this is the growing trend to provide remote AI based medical diagnosis using unloadable X Rays and other medical artefacts

As outlined in the section above, APIs for external, monetizable consumption need to be corralled into a Portal/Catalogue which makes their discoverability and an understanding of their value

straightforward. Another option could be to expose API capability on one of the growing number of API Market Places such as Rapid API or Prompt API though given their size it may be necessary to guide potential customers onto and within these facilities.

Finally, when monetising APIs it’s essential to have a full understanding of which transactions are billable events and should generate a fee, and then to have a way of presenting this as an invoice that can be agreed with 3rd Party users. There are number of models that are used such as Transaction Based, Bundles, Mash-Ups and Freemium as examples. Most of the major API Platforms provide a monetisation utility to some degree, but we have found it necessary to use Plug-Ins to provide robust customer and commercial reporting and interaction.

It’s important to build the monetisation of APIs into an organisation’s overall business plan. This will help to implement the methodology to bring together important technical and business metrics. The right business model will also establish a framework that aligns to the digital strategy, paving the way for a sustainable API ecosystem.

Conclusion

Whether we like it or not the world of commerce is perpetually evolving, and disruption caused by companies using an API First approach such as Uber, Airbnb as well as a myriad of Fintech Start-Ups is all too real. We have heard the expression. 'Adapt or Die' used in connection to the 'The Digital Economy', and although melodramatic, the slogan reflects reality.

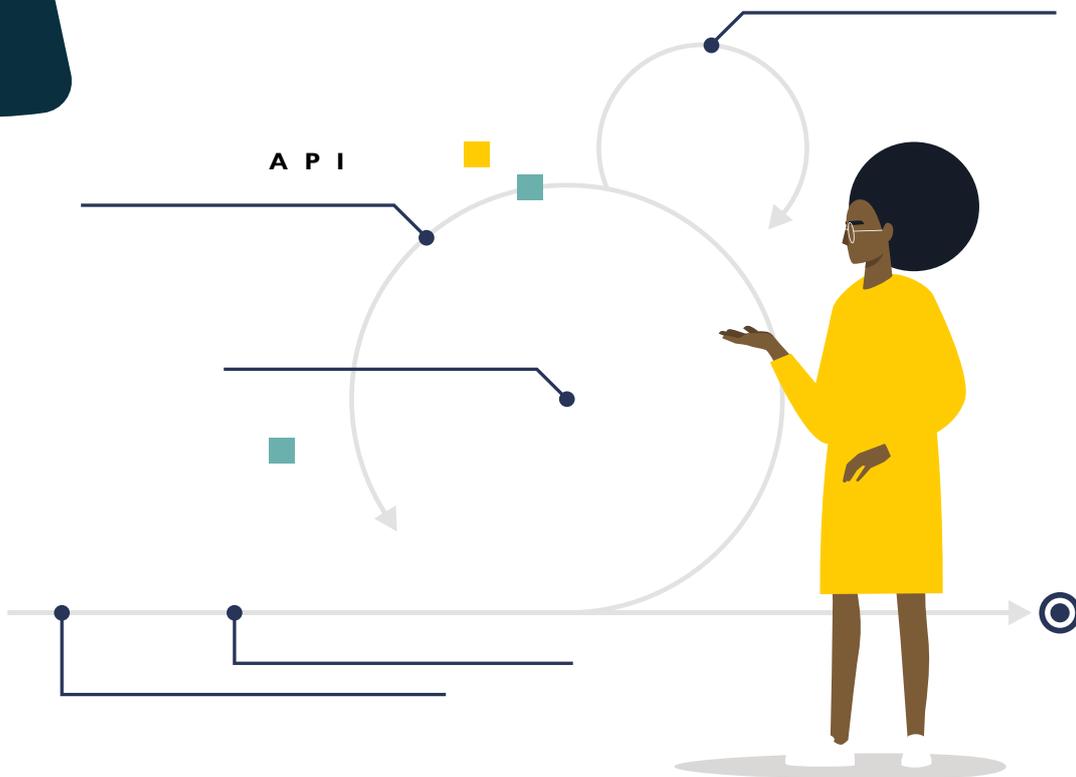
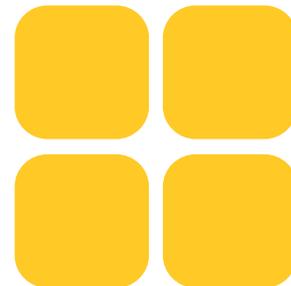
The upside is that it's not too late for most organisations to embrace the future and implement a properly devised and Implemented program of API connectivity. We have seen companies getting a return for their investment in a fairly short (2 year timeframe,) and once the API mindset takes hold, with its associated entrepreneurial creativity, the opportunities and rewards are endless.

But the caveat is that successful API First Programs do not invent or run themselves. They need to be carefully conceived, planned and managed with an eye to the meaningful and realistic objectives. This takes leadership, foresight and courage and sadly we have seen too many examples of projects that were well conceived that have failed in execution. It is our hope that this White Paper will have at least touched on some of the areas that need consideration before embarking on an API First endeavour.

Looking Forward

This White Paper has provided a surface level overview of the implementation of an API First Program, and we will follow up over the coming months with deeper dives (which will include use cases) into:

- The planning, designing and preparation of an API Program
- Implementing the 'Cub-Scout' Model for the Management of an API First Program in a Large and Diverse Organisation
- API Catalogues and UI/UX Issues
- Streamlining and Migrating Legacy Infrastructure using APIs
- API Market Places – New Revenue Streams





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