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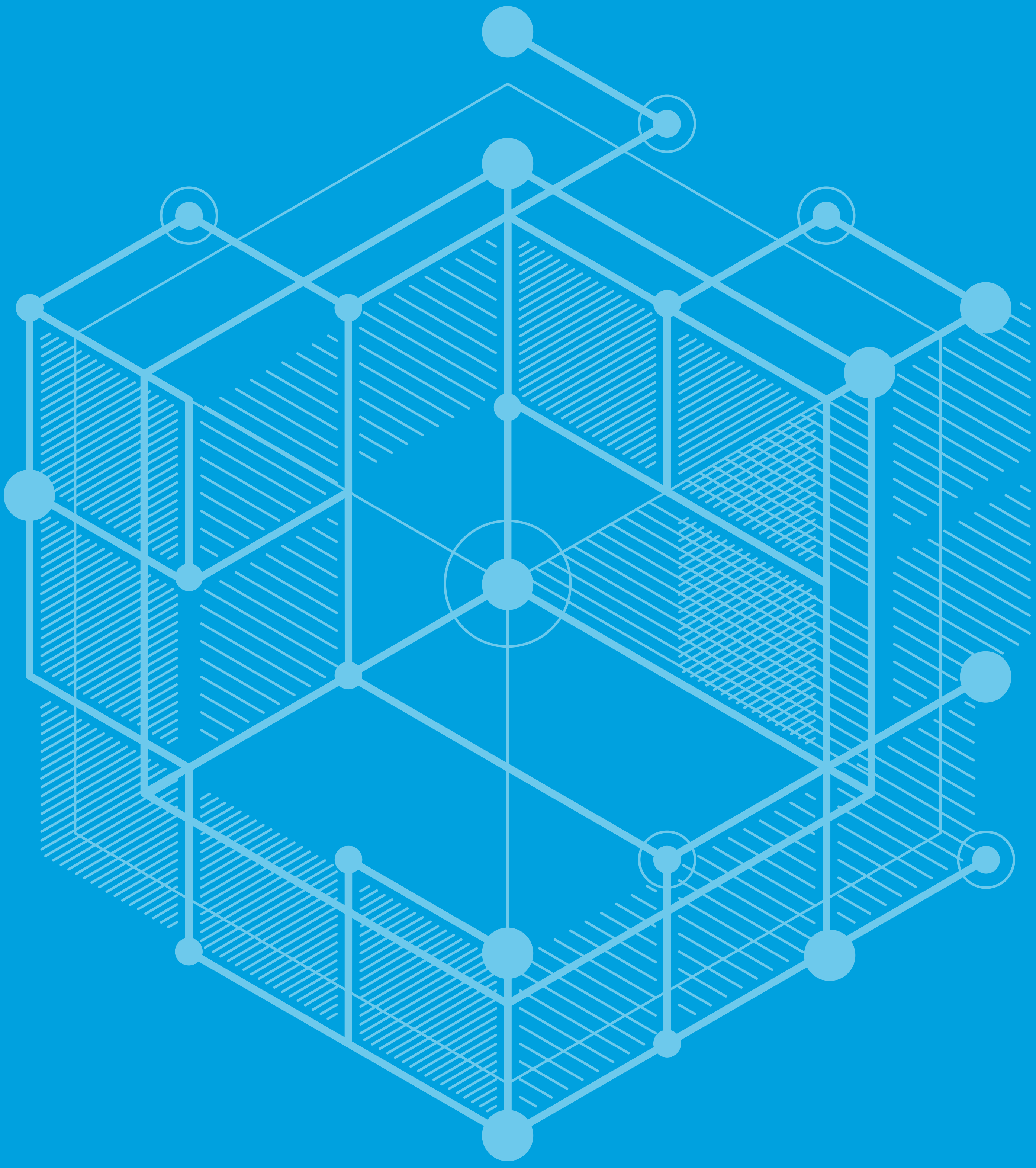
WHITEPAPER

# API strategy essentials:

## A practical guide for winning in the API economy



# Contents

Introduction ........ 4

API strategy blueprint ........ 7

Establish digital strategy ........ 9

Aligning stakeholders ........ 11

Identifying business outcomes ........ 13

Identifying target audiences ........ 15

Validating ecosystem and business models ........ 17

Prototyping ........ 18

Executive backing ........ 18

Align organization and culture ........ 20

Socialize API vision and executive mandate across the organization ........ 21

Establish trust, security, and privacy as organizational values ........ 23

Drive a services-oriented culture ........ 25

Organizationally align teams by service boundaries ........ 26

Institutionalize a product-centric approach ........ 26

Hire domain experts ........ 28

Democratizing innovation ........ 29

Evaluating and building supporting tech ........ 32

Engaging your ecosystem ........ 36

Build and nurture community ........ 37

Publish comprehensive developer portals and productivity tools ........ 38

Establish a training program ........ 40

Hackathons ........ 41
Launch collaborative feedback loop for versioning/support ........ 43
Incentivize community partnership ........ 44
It’s about community ........ 45
Defining and measuring success across the API strategy blueprint ........ 46
Financial rigor and ROI ........ 47

**Conclusion** ........ 49

**Next steps** ........ 50
Questions to assess your progress ........ 50

**About MuleSoft** ........ 51

# Introduction

When businesses consistently over-deliver on customer, partner, and employee expectations at moments when timely, personalized, and surprisingly delightful experiences are least expected, it could very well be the result of strategic platform and ecosystem thinking.

Airlines, for example, should be anticipating frequent flier personal preferences for in-flight food and entertainment just prior to boarding. The data exists. However, it remains to be seen whether or not there's an airline capable of digitally aligning its food service, entertainment and other partners around such a highly personalized just in time air travel experience; one that generates improved customer satisfaction, loyalty, and measurable value for all parties involved.

Today's always-on, always connected, always-engaged technologies — the Triple-A of real time business — make it possible for your organization to envision, fabricate and iterate new, timely, customer, partner, and employee experiences that simply weren't possible before. The potential of such moments to tip the competitive landscape in your favor is a clarion call to strategically re-imagine your organization and its various constituencies as members of a digital ecosystem powered by your business as a platform; one that enables the democratization of innovation and the co-creation of value through manifold business models and customer experiences.

Consider how Sears recently declared bankruptcy. Business pundits unanimously pointed their fingers at Amazon. Early on, Amazon envisioned itself as a digital platform. Sears — referred to by some as "the original Amazon" — saw itself for too long as a retailer. While Amazon leveraged platform-thinking to create new digital moments and revenue across an ecosystem of internal and external stakeholders, Sears (like many other legacy retailers) spent much of its digital energy trying to strike a balance between its online and physical shopping experiences. Among other opportunities, it waited too long to re-envision its Kenmore and Craftsman brands as potential home automation platforms.

In contrast, Amazon is a now master of that thriving ecosystem; one that routinely leverages a networkable software interface known as the API or application programming interface as its means to that end. Whether it's Amazon, Uber, Lyft or any of the other darlings of the digital age, API technology is invariably under the hood keeping their ecosystems glued together, while also serving as business channel and business model multiplexers.

For example, the full capability of Amazon's Alexa technology — well-known to end users of the company's Echo brand of voice-enabled personal assistants — is also available over the Internet as an on-demand service to non-Echo and non-Amazon products. To achieve this, Amazon uses a standard set of APIs to export Alexa's capability for re-use by an ecosystem of independent software developers, third-party device makers, and, in "eat your own dog food" fashion (aka "dogfooding"), even Amazon's own offerings like Echo and Fire TV. Each of Amazon's constituencies, including Amazon itself, involves different business channels and, in turn, each of those channels involve different business models that drive value for all parties involved, all enabled by API technology.

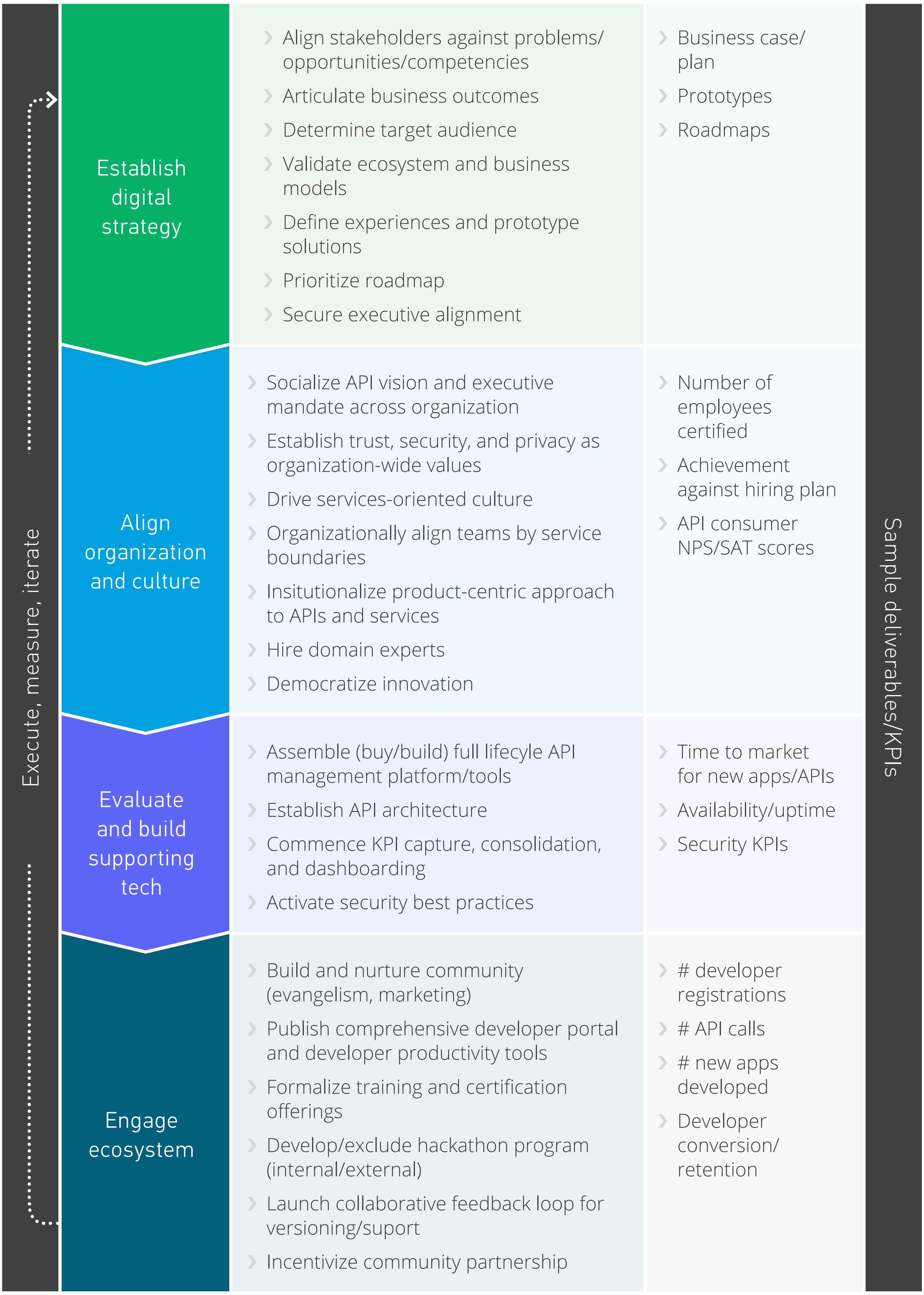
When an organization strategically envisions APIs as engines for new products, new business channels, and new business models in ways that ultimately produce new revenue or other measurable value, that organization is said to be monetizing its APIs. In aggregate, the organizations around the world that directly or indirectly monetize their APIs form the basis of what the media often calls the "API economy." As a subset of the total global economy, the API economy is annually responsible for the exchange of trillions of dollars.

Taken together, an organization, its platform of APIs, the channels of platform availability, and the various constituencies to which those APIs are available (internal developers, external developers, partners, etc.) can form a thriving ecosystem. With APIs getting credit for the ecosystem successes of digitally native companies like Amazon, Google, Netflix, and Uber, it's not surprising that CEOs and boards are pressuring their teams to follow in their footsteps.

The real hurdle however is to transform an existing business into one where digital platform and ecosystem thinking are the dominant mindsets leading to participation in the API economy. But what does that really entail, and what best practices will get you from here to there? Based on MuleSoft's experience with over 1,000 enterprise customers and ProgramambleWeb.com's history of chronicling the successes and failures of the API economy, we have assembled this API strategy blueprint to help.

The API strategy blueprint is very pragmatically broken down into four stages. Each stage represents a collection of critical business and technological fundamentals easily tackled by committed organizations who have the necessary executive backing and long-game patience. Those stages are:

- Establish digital strategy
- Align organization and culture
- Evaluate, build, and deploy supporting technology
- Engage your ecosystem



Execute, measure, iterate

| | | Sample deliverables/KPIs |
|---|---|---|
| Establish digital strategy | Align stakeholders against problems/ opportunities/competencies<br>Articulate business outcomes<br>Determine target audience<br>Validate ecosystem and business models<br>Define experiences and prototype solutions<br>Prioritize roadmap<br>Secure executive alignment | Business case/ plan<br>Prototypes<br>Roadmaps |
| Align organization and culture | Socialize API vision and executive mandate across organization<br>Establish trust, security, and privacy as organization-wide values<br>Drive services-oriented culture<br>Organizationally align teams by service boundaries<br>Insitutionalize product-centric approach to APIs and services<br>Hire domain experts<br>Democratize innovation | Number of employees certified<br>Achievement against hiring plan<br>API consumer NPS/SAT scores |
| Evaluate and build supporting tech | Assemble (buy/build) full lifecyle API management platform/tools<br>Establish API architecture<br>Commence KPI capture, consolidation, and dashboarding<br>Activate security best practices | Time to market for new apps/APIs<br>Availability/uptime<br>Security KPIs |
| Engage ecosystem | Build and nurture community (evangelism, marketing)<br>Publish comprehensive developer portal and developer productivity tools<br>Formalize training and certification offerings<br>Develop/exclude hackathon program (internal/external)<br>Launch collaborative feedback loop for versioning/suport<br>Incentivize community partnership | # developer registrations<br># API calls<br># new apps developed<br>Developer conversion/ retention |

**Figure 1:** The API strategy blueprint

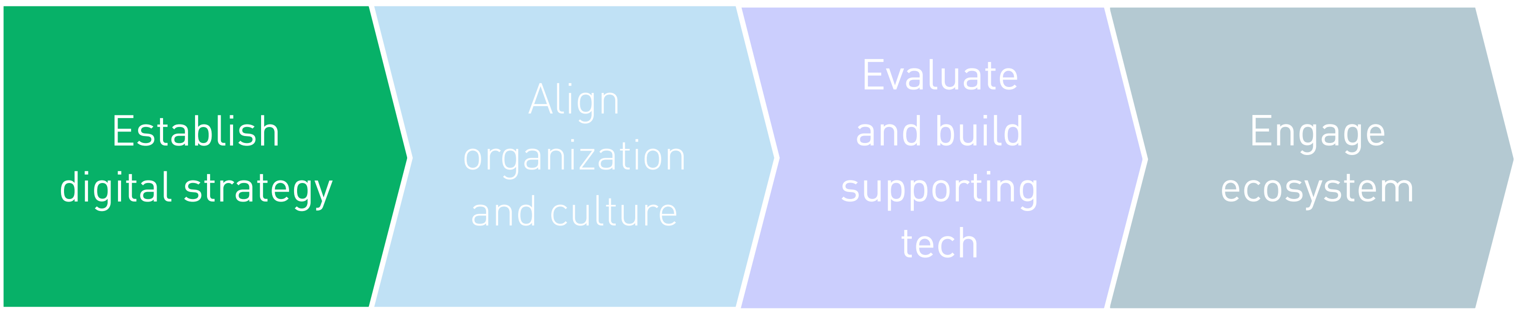
## API strategy blueprint

The blueprint, shown in Figure 1 above, is not intended to be the be-all end-all compilation of activities for your to-do list. Nor will this whitepaper touch on every bullet point across the blueprint in detail. Although it surfaces some of the most important action items, the intention is to help you and your team logically frame the journey while giving you an idea of the business and technology-related activities that your organization must be prepared to undertake.

While the four stages are logically ordered, it is just as important to note that once the journey starts, iteration is a constant for each of them. The activities of each are therefore always overlapping. For example, while you are engaging with members of your ecosystem related to one part of your digital strategy, other parts of your digital strategy are still evolving in response to a variety of forces ranging from new customer requirements to competitive pressures to changing market conditions.

Furthermore, there are two ever-present themes that horizontally cut across the four stages; (1) financial rigor and (2) establishing goals and measuring performance against them. We'll revisit both issues later in this paper after covering each of the stages starting with establishing your digital strategy.

# Establish digital strategy



Establish digital strategy

Align organization and culture

Evaluate and build supporting tech

Engage ecosystem

If there's one stage in the API strategy blueprint that's critical to the success of the others, it is establishing your organization's digital strategy. Although it will morph over time, your digital strategy is your true north for the remaining three stages. Without a validated, well-articulated, and executive-backed digital strategy (a truly strategic plan), it will be nearly impossible to organize for success, much less deploy the right technologies or court the most relevant constituents with whom you'll work to co-create the long-term success of your ecosystem and ultimately your company.

Put another way, it's one thing for the journey to end up a few degrees off of north, thereby requiring minor recalibrations along the way. It's an entirely different challenge to pivot the entire business due to a serious miscalculation that sent you South.

Compared to the rest of the blueprint which is very executional in nature, your digital strategy is far more theoretical because, to a large extent, it relies on digital instincts, creativity, and expertise; disciplines that may not be areas of strength for the existing organization. Imagining realistic business outcomes such as new customer experiences (an important part of establishing your strategy) based on platform and ecosystem thinking is a muscle that many organizations have never effectively exercised before. So, it's not surprising that many organizations struggle to establish great digital strategies.

While the second stage addresses organizational culture and build-out, it is imperative for the strategy-setting process to begin with your first organizational change by involving the assistance of someone with a history of game-changing, platform business outcomes. This could be a newly created role on the executive team such as a chief digital officer (CDO) or it could be a consultancy whose digital practice has a strong track record of driving successful business transformations.

Either way, when it comes to crafting your digital strategy and getting on with your journey, it is no time for amateur hour. Getting the assistance you need, if you don't already have it, will greatly improve your odds of success.

From the executive sponsor's point of view, properly resourcing this responsibility also sends a strong signal to the rest of the organization that big changes are not only coming, but that those changes have executive backing and need to be taken seriously; an issue that's further addressed in this paper's discussion about organizational and cultural alignment.

Once key stakeholders, including business leaders from across the organization and an experienced leader for the process, are in position the next steps are straightforward. It's important to note that to participate in the external API economy, businesses need to drive an internal API economy first. Innovation at the edges doesn't work unless a business can unlock its core, which is often made up of a big, monolithic infrastructure. By opening up APIs internally, businesses can free themselves from the limitations of their legacy systems, changing the way they deliver digital products and services to customers, partners, and employees.

The two efforts — one driven by the need to modernize existing systems of record and the other driven by API economy explorations — represent two different but concurrent modes of business transformation; one focused on certainties and the other on more speculative uncertainties. Most importantly, many of the decisions, organizational changes, and technology choices will be common to both modes. The IT research company Gartner refers to this approach as “bimodal” operation, saying that APIs are like hinges between the two modes and that APIs are not just enablers of bimodal operation, but that bimodal success thoroughly depends on APIs.

To learn more, see Understanding the impact of legacy modernization.

Once your house is in order and ready to craft digital strategy, here is a short list of priorities to kickstart your journey.

## Aligning stakeholders

Similar to a SWOT analysis (strengths/weaknesses/opportunities/threats), getting stakeholders aligned requires mutual recognition of the organization’s core competencies and biggest challenges.

When ecosystem thinking is involved, this alignment is no ordinary meeting of the minds. As you turn to technology as the enabler of new business channels, models, products, and revenue, stakeholders from across the business — everyone from executives to custodians of the IT estate to customer-facing personnel — must be invited to take ownership of the new direction.

For example, before Amazon offered its cloud computing offerings as API-delivered services, the company's executives were simply taking stock of the situation. According to TechCrunch:

> "As the team worked [at an offsite], Amazon Web Services CEO Andy Jassy recalled they realized they had also become quite good at running infrastructure services like compute, storage, and database ... What's more, they had become highly skilled at running reliable, scalable, cost-effective data centers out of need. As a low-margin business like Amazon, they had to be as lean and efficient as possible ... It was at that point, without even fully articulating it, that they started to formulate the idea of what AWS could be, and they began to wonder if they had an additional business providing infrastructure services to developers."

That meeting took place in 2000, long before Amazon even joined the API economy. As can be seen, the stakeholders from across the company were beginning to recognize some of the competencies that were less about business capabilities and more about running extremely efficient data centers to improve profitability. This naturally led to the conclusion that what's good for Amazon must be good for others. Alignment around the opportunity followed.

Most of the goods and services that generate value in the API economy are ones that were previously offered in non-API form. Another part of the Amazon platform — its shopping API (i.e. the product advertising API) — is a good example of a service with its own ecosystem involving customers and affiliates that existed in non-API form first. It's a reminder that customers, partners, and prospects (both internal and external) are, as stakeholders, also worthy of consultation before committing to a strategy. Not only might you get validation of your own hypotheses, you might also be alerted to opportunities that originally escaped your imagination. This is part of the democratization of innovation.

## Identifying business outcomes

When stakeholders brainstorm the most important organizational competencies and the most glaring problems, the process can't help but lead to a laundry list of opportunities that inform the digital strategy. From there, the process naturally leads to the identification of business outcomes. Here for example, are some real-world outcomes that organizations have targeted:

- Decreased new product time to market.
- Increased new product cadence (number of new products over a given year).
- Revenue growth (as a result of new products, recurring/subscription services, better customer experiences, and/or improved partnerships).
- Better decision making by way of Increased transparency and accurate/timely reporting.
- Optimized cash flow.
- Increased brand awareness.
- Faster recruiting cycles.
- Better situational awareness.
- Improved customer self-service.
- Backlog reduction.

These outcomes may or may not come in the form of easily measured KPIs.

For example, transactionally speaking, the Centers for Medicare and Medicaid Services (CMS) is one of the US government's biggest agencies. Medicare is responsible for a whopping 25 percent of all federal spending. More than 4% of the total US economy flows through CMS' systems, much of which is programmatically inaccessible to the massive healthcare ecosystem that CMS serves (including patients, healthcare providers, and insurance companies). Why? Because it runs on 15 disparate mainframe computers involving nearly 10 million lines of obsolete code written in programming languages that are over 40 years old (COBOL and assembly).

In contemplating potential business outcomes, CMS might envision capturing a range of bureaucracy-defeating patient experiences across a variety of mobile applications, some of which come from healthcare providers and others that come from insurance companies or other constituencies from across the Medicare ecosystem.

Likewise, as it looks to create the API-led foundation on which those apps will depend, the end-game may involve the elimination of some or all of those 15 mainframes and the gargantuan maintenance and licensing expenses that go with them. Of course, there would be cost associated with whatever takes their place. But someone in the CFO's organization has an idea of the financial outcomes should those mainframes get phased out.

Pinpointing and articulating these potential business outcomes is crucial to winning executive support and pointing the organization in the right direction as the journey gets underway.

To learn more, see the case study: How the USDS is modernizing Medicare's 50 year old payment system.

## Identifying target audiences

Envisioning and validating an ecosystem also means identifying who its participants are — both internal and external to the organization — and how they will be targeted. For example, In its Lightning and AppExchange platforms, Salesforce is operating two different business channels and models across a single ecosystem, both of which are enabled by APIs, and both of which have access to the company's core business capabilities including Salesforce automation and customer relationship management. But the audiences for each are different.

For example, in its Lightning Platform, Salesforce targets both "pro coders" and "no coders" within the Salesforce customer base with the ability to further customize their organization's access to Salesforce's core capabilities. Whereas the former constituency involves software developers looking to program their way towards new, customized user interfaces, Salesforce targets the latter constituency with more of a drag and drop experience for building customizations.

Salesforce AppExchange platform, on the other hand, involves a marketplace where independent software vendors (ISVs) can offer turnkey solutions that complement the native Salesforce experience and where Salesforce customers can discover and procure those solutions. Compared to the Lightning approach, the AppExchange approach targets an entirely different community of developers.

Netflix took a different approach and originally pursued an ecosystem strategy that involved third-party developers; developers that through Netflix's public APIs, were free to imagine and build applications that relied on Netflix's entertainment content. The original strategy was successful in signing up thousands of developers. But it wasn't long before Netflix realized that supporting a public developer program was distracting the company from what was most important to its business;

delivering a flawless customer experience through its partners' platforms such as the Sony Playstation and Nintendo 64.

After pivoting its API strategy to focus on the needs of its partners, Netflix VP of Edge Engineering Daniel Jacobson coined the acronyms LSUD and SSKD as a way of characterizing an API provider's target audiences. Whereas LSUD stands for "Large Set of Unknown Developers," SSKD equates to "Small Set of Known Developers." In the case of the former, you have third party developers, most of whom you don't know, building applications that are difficult for the API provider to keep track of. Such a developer program could involve thousands of developers, all of whom will rely on you for some degree of self-service capability and technical support and none of whose ROI is known.

Meanwhile, with an SSKD, the relationship focuses on a smaller group of internal and/or partner developers, all of whom are well known to the API program, and to all of whom certain business expectations are attached.

Ultimately, the question is about who the organization will ultimately recruit to co-create value and how that intended value aligns with desired business outcomes. As the examples of Salesforce and Netflix demonstrate, organizations can better understand and articulate the implications of each audience in the context of their digital strategies.

Clearly identifying who those constituencies are, researching their needs, having empathy for their pain points, and envisioning their role in co-creating value go a long way in validating your ecosystem and business models, and it will set the stage for successful engagement with your ecosystem when the time comes (the focus of the blueprint's fourth stage).

Identifying and getting to know your target audience will also help when it comes to conceiving the experiences and moments that will get delivered across your ecosystem. These are the experiences that will ultimately drive consumption of your organization's digital capabilities which in turn will drive the overall value of the ecosystem. While it's important to leave room for blue-sky innovation, the grand majority of your conceptual experiences should be grounded in the sort of experiences that keep your constituents (customers, partners, employees, etc.) deeply engaged with you and coming back for more.

## Validating ecosystem and business models

It is important to recognize that the best ecosystems involve the co-creation of value between the host and the members of the ecosystem and how, similar to the Salesforce use case, value could involve either direct or indirect business models.

For example, Salesforce derives a significant amount of its revenue from customer subscription to its core services. When Salesforce customers build their own customizations using the company's Lightning platform (which in turn accesses the Salesforce business capabilities through APIs), those new applications will drive more usage of the Salesforce platform in ways that make Salesforce customers more successful, ultimately driving more subscription revenue for Salesforce. As opposed to a direct business model where revenue is driven directly by volume of API usage, Salesforce is relying on an indirect model of API monetization.

But on another side of the Salesforce ecosystem, ISVs are building and reselling turnkey applications that rely on Salesforce APIs in the course of complementing Salesforce's out-of-the-box capabilities with new experiences. This channel involves a different business model that includes an application marketplace AppExchange, and the co-creation of value where the ISVs drive more usage and loyalty to Salesforce, but are profiting from the sales of their solutions in return.

Organizing complex ecosystems that involve myriad nuanced business models is a bit of a black art, which is why it's imperative to have the right talent in your midst to draw upon experience while leading the process. It is equally important that you are validating your proposed ecosystems with all relevant constituencies (customers, ISVs, etc.) on whom you'll depend on to co-create that value. Do not rely on internal stakeholders alone for validation. By working with participants from across your intended ecosystem, you may not only discover flaws in your thinking, their feedback may lead you to new opportunities that are better than the ones originally envisioned. After all, there's something in it for them too.

When an ecosystem doesn't materialize as originally intended, it is often because due diligence and validation were dismissed or overlooked as key steps in establishing digital strategy.

## Prototyping

Once you're done whiteboarding your experiences, prototyping them and/or proofs-of-concept shouldn't be far behind. Given how visual humans are, the viscerality of a prototype should not be underestimated. Prototypes, functional or not (for example, they could be slideware), can help stakeholders to envision both the totality of your digital strategy, as well as its obvious flaws. For example, as CMS contemplated how it would migrate Medicare from mainframes to the cloud, it developed a proof-of-concept just to prove that a mainframe could call a cloud-based service. Either way, prototypes and proofs-of-concepts are a last minute opportunity to recalibrate before seeking executive buy-in and sponsorship.

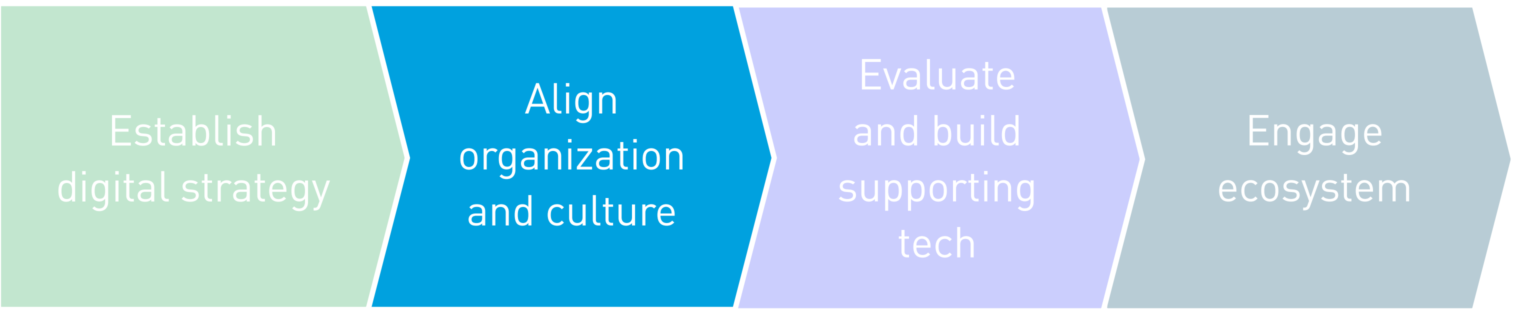
## Executive backing

Ideally, your organizational CxOs will, as key stakeholders, be fully engaged in the strategy deliberations. But if not, a strong appreciation of executive sensitivities and their enthusiasm for reinvention can prevent the presentation of a strategy that has no chance of executive endorsement.

Executing on your company’s digital strategy will be one of its biggest endeavors — if not the biggest — ever. By comparison, it will make the oft-invoked business metaphor of turning a battleship look simple. Many have likened today’s new business environment to the Fourth Industrial Revolution. As we have already seen from today’s bankruptcy headlines, surviving this revolution will require the sort of organizational reinvention that some companies have proven incapable of.

To maximize the chances of success, the organization will need to marshall the sort of energies and resources that unequivocally require executive backing. The executive sponsors of the effort will want to know that the strategy has been holistically conceived, with no stone left unturned in terms of identifying and validating business outcomes and opportunities with all stakeholders. They must be supportive of the necessary financial investment and the duration of the journey, and be prepared to reorganize the company, mandate behavioral changes, and fundamentally change the organization’s culture.

# Align organization and culture



Establish digital strategy

Align organization and culture

Evaluate and build supporting tech

Engage ecosystem

If you're a regular air traveler and have flown United Airlines with any frequency, then you know that the air carrier's mobile app provides travelers with access to a variety of United's existing business capabilities; everything from booking new travel to checking award status to double checking departure gates and times. In addition those standard airline app features, United also makes it possible for its passengers to access its in-flight entertainment options (movies, TVs, etc.) through their mobile devices. Instead of a seatback playback system that's prone to failure, the flier's smartphone or tablet serves as the in-flight entertainment hardware.

This digital strategy is brilliant because it incentivizes travelers who might not otherwise download the application to acquire the mobile app, and register to use it, thereby creating a longer term digital engagement opportunity for United. Through the app, United can more easily notify customers of special, revenue-driving, and offers. If the app is capable of placing in-flight food orders, United can use that as well as the entertainment system consumption data to anticipate customer requirements.

Consider the organization-wide effort that it takes to achieve the desired business outcomes. Someone had to envision the mobile app as a new business channel that could keep customers engaged with a variety of United's core competencies, driving more revenue. Maybe someone else with responsibility for in-flight entertainment spotted the opportunity to drive mobile application adoption by turning the passenger's smartphone into an in-flight entertainment outlet. And somewhere along the line, the gate personnel and flight attendants got involved, driving passenger awareness of this new experience so that the mobile applications were installed and ready to go before take-off.

This alignment of the organization and culture around new, game-changing digital experiences does not happen by mistake. It happens when the digital vision is socialized across the organization in ways that extend well beyond the buy-in of just the executive and management teams. Rather, the entire organization is bought-in and driving as hard as possible towards the business and experiential outcomes that were outlined in the digital strategy.

Cultural and organizational adjustments must be driven by the same executives that have backed the vision in the first place. Without the right organization and culture, the chances of your digital strategy succeeding greatly diminish.

In the blueprint's second stage — Align organization and culture — there are several organizational and cultural changes that every organization must consider:

## Socialize API vision and executive mandate across the organization

Your digital strategy will be all-encompassing for the entire organization and as such, will require a significant amount of socialization in order to get everyone on board and marching in the same direction toward the same objectives and business outcomes.

As you will see in next few sections of this stage, the digital strategy and its associated API vision will:

- Involve organizational changes
- Focus on certain organizational values
- Ask everyone to think about the value they provide in different, services-oriented terms
- Democratize innovation in a way that everyone can participate

Some of what you'll be introducing can and should come across as a mandate. For example, from a security point of view, APIs are a bit of a double-edged sword. By activating APIs, an organization is essentially opening up new digital "surface areas" for hackers to attack. On the other hand, given how APIs can be secured, their institution may result in the shutdown of other surface areas resulting in a net improvement of overall digital security. This will require the mandating of certain security practices and values across the organization.

The introduction of so many changes at once can be extremely unsettling to organizations that are locked into certain patterns, which is why transparency will be key as the organization is prepared for the journey that lies ahead.

As such, the vision and mandate should be widely communicated across the organization. This could be through town halls, online FAQs, newsletters, internal blogs, or email communications. The organization should also consider training and orientation programs to prepare the organization for the journey that lies ahead, and get new employees to take ownership of it as well.

## Establish trust, security, and privacy as organizational values

Entire books can and should be written about API security and entire books have been written about the broader topic of digital security. As part of the blueprint's overview, this section can hardly do justice to the topic. However, thanks to the ever present headlines in the mainstream media, it goes without saying that every organization is now a target for malicious hackers and the enduring livelihood of your company is connected to its ability to engender trust across its ecosystem while simultaneously complying with a wave of new regulations geared towards privacy.

Moving forward in today's digital economy (which includes the API economy), trust will be the number one concern of customers. You might have the most comprehensive solution in the market. But if it is proven to introduce intolerable vulnerabilities to members of your ecosystem, your ecosystem will eventually die and so too may your company.

As said earlier, APIs introduce new surface areas for malicious hackers to attack. So, along with your API vision and digital strategy comes the need to leave no stone unturned in protecting them.

It's worth noting that when it comes to API security, almost all of the biggest internet brands have experienced major API security or privacy snafus. Many of them could have been avoided because they involved human error or circumvention of best practices. But the larger question to consider is, if the wealthiest companies on the planet are experiencing problems with their API security, what are the odds that your organization will too?

If the rhetorical answer to that question makes you wonder whether the journey is even worth it, it's important to remember that every digital technology that the human race has found to be both promising and useful has also come with risks. No technology is infallible. But we, as people, very often come to the conclusion that the efficacy of such technologies greatly outweighs the risks associated with using them. This is certainly the case with APIs.

So, while no digital or API security strategy is infallible, great digital security boils down to:

- Relying on solutions and tools that are inherently secure by design.
- Great complementary technologies for securing infrastructure that's tangential to API provisioning. For example web security technologies like vulnerability detection, threat prevention, and data-loss prevention.
- Strictly enforced best practices that are constantly tested for adherence.
- A security-first organizational culture that's obsessed with security, trust, and privacy.

Whereas security was once a functional domain for the organization, it is now a cultural domain as well. Similar to the obsessions with service orientation and product-centricity, all digital strategy and execution conversations must be colored by organization's vigilance when it comes to security, trust, and privacy. This is why, among the domain experts that your organization must acquire early in the journey, onboarding someone who specializes in API security is consistent with a secure-by-design culture and is not to be overlooked.

## Drive a services-oriented culture

Virtually every organization is broken down into divisions and departments, many of which are responsible for certain business capabilities. It is those capabilities and competencies that should be reimagined as API-led digital services consumed from across a network in the same way that Salesforce exposes its business capabilities to different types of developers including itself.

Whereas some of these capabilities will surface as priorities in the digital strategy, it is still culturally beholden upon all parts of the organization to rethink the availability of their core competencies as such reusable digital services. This cultural shift — from one of building projects from the ground up to one to first searching for reusable components with a focus on enablement, feedback, and KPIs, creates the speed and control organizations that need to deliver experiences at the speed of customer demand. It will also be a departure for many organizations where capabilities and data are historically tied directly into other applications through non-standard, non-reusable, purpose-built integrations; integrations that, left to metastasize, snowball into expensive monoliths that — like CMS' 15 aforementioned mainframes — are expensive to maintain and impossible to leverage for new opportunities.

It is therefore up to the executive(s) leading the charge to instill a cultural change whereby the entire organization is held accountable for transforming its existing business capabilities into API-led services while ensuring that no new capabilities are developed without first ensuring their service orientation.

For example, in 2002, sensing a monolith in the making, Jeff Bezos knew he had to change the culture of his young company before it repeated the mistakes made by so many enterprises that came before it. The future of Amazon depended on it. He mandated that all business functionality across all of Amazon must be exposed over the network as reusable services and that all consumption of business functionality must, without exception (no workarounds) be through those service offerings. This was so important to organizational value that he threatened to fire anybody who didn't comply.

Today, Amazon is a transformed company and no new business capability — be it for internal or external consumption — can launch unless it launches as a service. That service-oriented approach is baked into the culture, the DNA, and the org chart of the entire company.

## Organizationally align teams by service boundaries

As existing monoliths are decomposed into modularized collections of API-led services and new business capabilities are raised from scratch as modularized services, the opportunity to reorganize the company according to the boundaries of these services should naturally present itself. Don't resist the temptation. This is what is known as a microservice organizational pattern and once your company is organized into teams that mirror these service boundaries the lines of responsibility and accountability for the financial and technical success of those services are very clearly drawn such that there's only one direction to point the finger when things go well, and one direction to point the finger when things go wrong. And that's exactly the sort of accountability you want.

## Institutionalize a product-centric approach

For your digital strategy to succeed, APIs cannot be viewed as mere cogs in the organization's technical engine. Pursuant to the previous section on aligning the organization according to API service responsibilities, it is equally beholden on those teams to take those service offerings so seriously that, regardless of the scope of exposure to your ecosystem (whether APIs are being offered to internal consumers, external consumers, or both), they are treated as though they are full-fledged products unto themselves.

Typically, for example, when a company offers some product to its customers, that product has to:

- Be designed with the intended customer in mind.
- Be packaged and marketed in a way that attracts targeted customers.
- Provide the customer with a great experience that inspires confidence in the brand.
- Be backed by guarantees it will work as advertised.
- Come with whatever support is necessary when customers have problems.

When APIs designed and resourced as products that must bear all of these characteristics, the stage is not only set for enduring excellence in execution and provision of service, the odds of customer satisfaction and ongoing engagement are greatly improved.

Even if the service is never presented externally to partners or third party developers, nothing will please internal consumers and encourage adoption like a service that is offered to the organization as though it were a product or service coming from an outside vendor that wants to keep your business.

A product-centric approach will have important reverberations across the entire blueprint, from resourcing and staffing (see the next section) to technology selections, to the myriad techniques for successfully engaging your ecosystem (including evangelism, documentation, training, support, and events). Furthermore, by taking a product-centric approach to your internal service offerings, you are essentially preparing and practicing for the eventuality that the services might get exposed externally. All services should be developed with that potential exposure in mind.

Product-centricity should be a formulaic way of life. It must be culturally baked into the way the organization sees itself as a provider of services regardless of who it ultimately provides those services to.

## Hire domain experts

While your company may have already on-boarded a chief digital officer to lead this revolution, it's quite possible that the organization still lacks certain talent to handle the cultural change or the shift in business and technical priorities. If the organization is really serious about product-centricity, it will resource and staff its service offerings appropriately. Attempted short cuts, particularly within certain domains of expertise like API security, could be absolutely disastrous.

While the complete list of relevant roles of responsibilities will be the subject of another article, it should be noted that certain roles are not only more critical than others, they must also be addressed earlier in the journey than others. In particular, in addition to a chief digital officer or equivalent, three of the most important roles that must be addressed early in the journey are those of the API product manager, the API developer, and the API security specialist.

That said, it should be noted that these roles do not necessarily have to be filled on a per service basis and there are a variety of configurations that will work for different organizations. For example, whereas a certain team within the organization might bear responsibility for multiple services, that team may only require one API developer to support those services. Depending on their size, other organizations might prefer a central pool of API developers that caters to all teams in an effort to preserve certain API development standards across the organization.

API product managers on the other hand cannot be so easily centralized into a pool because of how the API product manager is ultimately responsible for the success of specific services. Not only is the product manager the liaison who sits between constituent consumers within the ecosystem and those who are technically responsible for securely provisioning the API, the API product manager has a broader purview that connects desired business outcomes to technical KPIs while never losing site of the intended moments and experiences the organization aspires to create.

While there are many roles and responsibilities that must be addressed, from one organization to the next and from one team to the next, not every role will require dedicated headcount. For example, in some organizations, the API developer may also have a hand in API evangelism and support. Still, in other organizations, the ecosystem might be so gargantuan that a single API requires the efforts of an entire team of evangelists that blankets different geographic regions.

## Democratizing innovation

When you stop for a moment to consider the 15 mainframe computers that CMS is hoping to modernize in ways that stakeholders across its ecosystem can more easily connect with the Medicare business capabilities that live across them, it's important to also recognize how that government agency is about to democratize innovation in ways that simply were not possible before.

When an organization's digital assets and business capabilities are buried in a monolith that's technically impenetrable to all but a handful of people, those people become the gating factor to the pace of innovation. Often times, the bottleneck is the "if it ain't broke, don't fix it" approach (the fear that any attempts to change something complicated will break it instead). Other times, it is simply a question of resources, headcount and priorities. Still, in other situations, there's a massive bureaucracy in the way.

Not only do such autocratic barriers stifle an organization's ability to innovate in ways that might be game-changers for business, the ecosystem it works with can become incapacitated from participating in the innovation process as well.

If the “not invented here” syndrome (where’s there’s no interest in an invention when it comes from someone else) is on one end of the innovation spectrum, then the opposite end of spectrum (and the place that organizations must culturally move to in order to compete in today’s digital economy) is where innovation is democratized across the organization as well as the entire ecosystem.

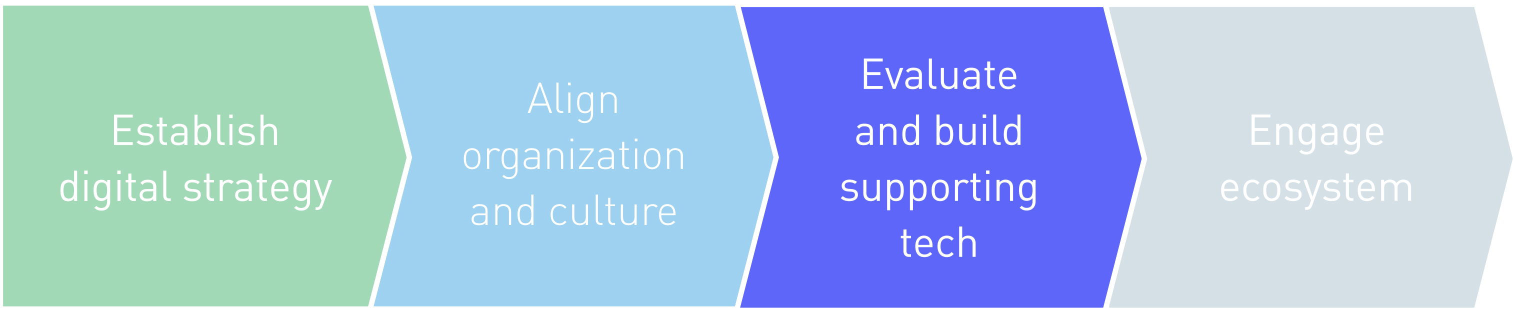
Once CMS reconstitutes its mainframe monolith as a modularized collection of business capabilities that are programmatically accessible through APIs, the agency will have made it possible for its entire ecosystem to experiment with those capabilities in ways that it could not have imagined itself.

The reason democratization of innovation is a such a cultural issue for organizations is three-fold. First, like service orientation, security, and product-centricity, it must be a subtext to every digital initiative, similar to “secure-by-design,” think “innovative by design.” Second comes the question of whom, across your ecosystem, do you envision participating in the innovation process? It doesn’t have to be everybody. But once you’ve uncloaked all of that business capability, it’s important to consider which of your constituents will invent something meaningful from it.

The third question is, what will the organization do to foster the innovation process, making it an expected and everyday part of corporate culture; a reason that people want to come work for your organization or join your ecosystem? Maybe it’s running regularly recurring hackathons. Maybe it’s Workshop Wednesdays. Or maybe employees can allocate some percentage of their time to innovation the way Google allows 20% of employee time to be dedicated to side projects. In some ways, it’s like a political democracy. It isn’t enough to just open the system up for participation. There’s a lot of work involved in engaging voters and getting them to take advantage of that system by actually voting. It has to be a part of the organization's culture to continually to pressure the ecosystem to get involved.

In summary, as organizations look to reinvent themselves for the digital economy, it's not enough to strategize, install some technology, and, as some are wont to do, wait for the cash register to ring. There are several instincts from product-centricity to security to innovation that must ooze from every organizational pore in support of that strategy. Getting the culture right isn't just key, it is critical. Once your culture is habitually on the right track it's time to turn your attention to the technology.

# Evaluating and building supporting tech



Establish digital strategy

Align organization and culture

Evaluate and build supporting tech

Engage ecosystem

With your digital strategy in place (but constantly evolving as it should) and your organization's culture morphing into one whose priorities are fully aligned with that strategy, you'll need the right technology to digitally engage your ecosystem.

As you no doubt have surmised by now, APIs will be the key enablers of your digital strategy. As you look to publish each of your new or existing business capabilities for consumption by constituents from across your ecosystem, each of those capabilities will be facilitated by one or more APIs.

Similar to the way the aforementioned Amazon has, over the years, assembled a portfolio of APIs (Alexa, shopping, cloud computing, etc.) that, taken together, form the basis of the Amazon platform (officially known as Amazon Web Services), your organization's digital platform should consist of APIs that are easily discovered and consumed by the members of your ecosystem and the applications they use and build. These APIs will come as a result of any renovations of existing capabilities and systems of record as well as any API-economy related explorations of new functionality, potentially leading to new business channels, new business models, and new products.

When an organization commits, as it should, to taking a product-centric approach to providing APIs, it should also commit to rigorous execution of what's known as the full lifecycle API management lifecycle. Generally speaking, full lifecycle API management can be broken down into the phases listed below:

- Planning and initial design
- Test-driven development
- Flexible deployment
- Secure operation
- Governance and monetization
- Analysis and testing
- Developer engagement
- Versioning and retirement

As the purpose of this white paper is designed to cover the four stages of the API strategy blueprint, we will not be providing an in-depth review of API lifecycle here. But, in terms of API strategy success, there are some important things to understand about the lifecycle.

First, since the lifecycle primarily consists of technical tasks, this is where your technical team will be stepping in to do most of the work, like establishing API architecture and standard API design principles. This is why it's important to address certain API-specific roles like the API developer role early in the process. Depending on the extent to which your APIs will draw upon your organization's existing IT estate, other technical stakeholders — everyone from database administrators to system architects to full stack developers — will need to be a part of the process too.

Second, your successful execution of the API lifecycle will depend on the selection and deployment of a comprehensive platform for full lifecycle API management. This is where the business and technical teams will need to collaborate. Whereas the technical team will have its own set of concerns to address, the business team must be assured that the chosen solution is capable of supporting the aspirations identified in the digital strategy. For example, if the digital strategy depends on thousands of unknown software developers gaining self-service access to certain APIs, does the management solution automate the provisioning of self-service registration?

Believe it or not, many organizations are tempted by the idea of creating their own customized API management solutions from scratch. However, the further they get into such an endeavor, the more they realize how integral the system's functionality has to be under the hood. For example, as APIs are being designed in one phase, the system should be automatically publishing the API documentation, consoles, and sample code for the online engagement phase. Then as more APIs are published and your platform takes shape, the online publication of an ecosystem-friendly API catalog should be automatic as well.

Perhaps most important is how your API management solution must be secure by design. As said earlier, there are hardly any well-known internet brands let alone companies in other verticals that haven't experienced an API security oversight if not a catastrophic exfiltration of sensitive information. It is within this stage that all of the security best practices and technologies must be activated. Organizations that cobble together their own home-grown solutions are virtually guaranteed of inviting hackers in through a back door. For this reason, it is also critical to constantly test your security practices and technologies for potential issues, even enlisting your ecosystem for help using bug bounties as incentive. Given the risks to your brand, not to mention your customers, API security is not to be trifled with.

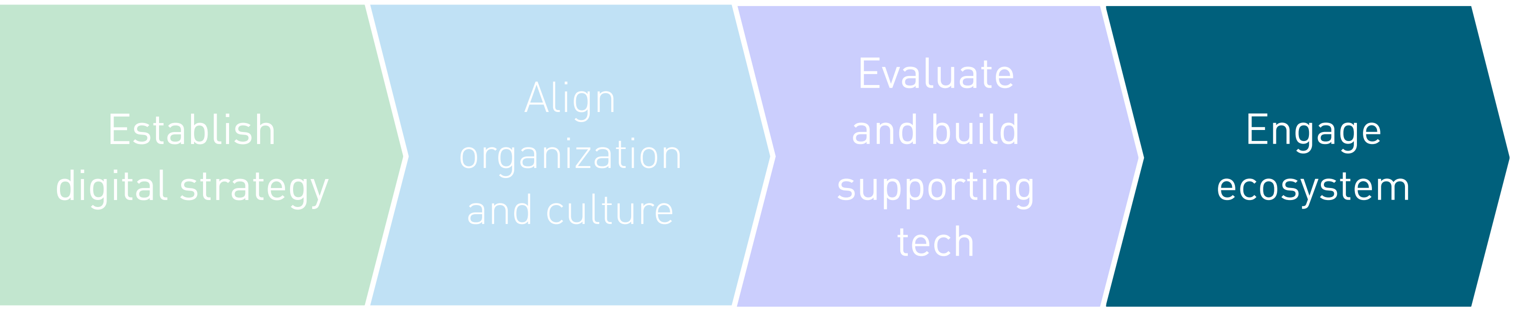
According to Gartner:

> “Differentiation does not come from building your own API management platform. It comes from the APIs you publish … full lifecycle API management comprises a very wide set of functionality. At the start of API programs and digital strategies, clients need only a small subset of that … however, API programs and digital strategies quickly require more and more API management functions when they take off — far more quickly than any development shop can keep pace with.”

Organizations are no more suited to building their own API management solutions than they would be building their own database management solutions (as opposed to turning to Oracle or MySQL) or their own content management systems (as opposed to using Wordpress or Drupal).

Learn more about why Gartner named MuleSoft’s a leader in the 2018 Magic Quadrant for Full Lifecycle API Management.

# Engaging your ecosystem


Establish digital strategy

Align organization and culture

Evaluate and build supporting tech

Engage ecosystem

While it's critically important to support your digital strategy with the right technology, it's equally if not more important to recognize that your technology choices are really about enabling your ecosystem. But, technology alone cannot galvanize and nurture that ecosystem.

For example, the previous stage on evaluating and building the supporting technology includes mention of full lifecycle API management, one phase of which is online engagement. As you may have guessed by now, that phase of the API lifecycle overlaps with this fourth stage. So, what are the key distinctions between the two?

In much the same way your digital strategy will fall short of its potential if you overlook organizational culture, it will outright fail without a comprehensive effort to engage the intended consumers of your platform from across your ecosystem; an effort that, not coincidentally, also reflects the importance of your culture's product-centricity. Whereas the online engagement phase of the API lifecycle is mainly concerned with the features found in API management solutions that cover specific engagement activities (e.g,. API developer registration, documentation, consoles, sandboxes, mocking services, sample code, etc.), this broader stage of the API strategy blueprint is about those forms of engagement as well as all of the other online and offline activities that, taken together, represent the totality of your ecosystem engagement efforts.

Presumably, you've identified your target audience and modeled your ecosystem as a part of the digital strategy setting process. Chances are it involves different constituencies, each of which involves its own most effective channels of communication. For example, whereas one constituency is internal to your organization and reachable through Slack and email distribution lists, another might have its own Google Group. Or maybe you'll have to conduct an awareness campaign, reaching them through more traditional marketing techniques like advertising and conference sponsorship.

When it comes to support of its APIs for example, Uber could have built its own custom support forums and hosted them on its domain at Uber.com. Instead, in true "fish where the fish are" fashion, Uber decided to meet its target audience where it felt that audience already spent a lot of its time; on the forums at StackOverflow.com.

StackOverflow.com is an insanely popular website where developers know they can go to get expert help on just about any programming topic. As Uber's community on StackOverflow grew, it started to become self-sustaining as members who didn't even work for Uber began to answer support questions coming from other members. Recognizing this as a key part of its overall developer experience, Uber starting gifting swag to volunteer mentors which in turn generated good will across the community and more interest in the Uber API.

## Build and nurture community

Most of the activity in this stage will be driven by evangelists whose sole responsibility is to drive adoption and usage of your platform. As said earlier, depending on the breadth and depth of your platform, whom your constituents are, and where they are, that could be one evangelist for multiple APIs or multiple evangelists for one API. For example, it doesn't matter whether you're looking to drive internal adoption within your organization or external adoption. In either case, someone or some team has to take the full-time roll of API and platform evangelism seriously; treating the API as a full-fledged product.

When it comes to the myriad of ways to target members across your ecosystem — from traditional marketing to hackathons to incentivizing community partnership with schwag and bug bounties, an API/platform evangelist's job is essentially to maximize the community of consumers who are rabidly enthusiastic about consuming your platform and APIs.

> "An API/platform evangelist's job is essentially to maximize the community of consumers who are rabidly enthusiastic about consuming your platform and APIs."

Recruiting an API or developer evangelist early in the process will not only expedite many such go-to-market decisions, it will jumpstart the co-creation of value across your ecosystem. Part of the API evangelist's job is to work with the ecosystem prior to the launch of an API to gauge the likelihood of adoption. If the target members of your ecosystem can't envision an exchange of value that's commensurate with their efforts, they may reject the offering. But they might also offer some feedback on what works for them. The API evangelist is your liaison to this community and is essential to the success of your APIs and, in the bigger picture, your business as a platform.

## Publish comprehensive developer portals and productivity tools

Across the API economy, there are few topics regarding the practice of API provisioning that developers are more passionate about than the quality of API documentation. API documentation is typically the most significant part of what's known as a "developer portal." Depending on the degree to which you intend to make APIs available to developers outside of your organization, your developer portal is a web destination that is found on either your organization's intranet or its public web site and is where developers go to discover everything there is to know about your platform and the APIs that make it up. In addition to housing an API's technical documentation, the developer portal is where developers go to discover all of the resources necessary to make them successful and productive with your APIs. The list can include but is not limited to:

- Searchable, browsable API catalogue
- API overviews with business capabilities, typical use cases and terms of availability
- Self-service registration
- Technical documentation
- Sample commands and code snippets
- Interactive API console
- Access to SDKs
- "Sandbox" versions and version navigator
- Change log
- Blogs and news about your API
- Support forums

This is just a partial list of what makes for a comprehensive API portal. But it also speaks to the importance of product-centricity. Nothing makes a great first impression on developers more than a comprehensive developer portal that proves how you view, promote, and resource your APIs as though they are some of your organization's most important offerings.

## Establish a training program

One of the key responsibilities of your evangelism team will be to get a training program into place. The good news is that there are all sorts of ways to reach the members of your ecosystem with training content and materials.

One of the most basic forms of training content is example code that teaches software developers how to use their favorite programming languages to take advantage of your business capabilities through your APIs. As said earlier, some turnkey API management solutions can automatically generate sample code in a variety of languages. This way, developers looking to get familiar with your APIs can just cut, paste, and experiment with that sample code in their own programming environments.

After sample code could be step-by-step tutorials that walk developers through detailed explanations of how to solve fictitious business problems with programming code that relies on your APIs for whatever business capabilities they have to offer. These tutorials could be published through a content management system like Wordpress that points to programming code that's maintained in code repositories like Github.com. Part of the developer evangelist's role is to answer questions that readers leave as comments.

Beyond text based tutorials, there can be video tutorials, live and on-demand webinars, and even face to face training at conferences. Organizations can also add certification regimes to their training programs for developers who have proven their proficiency with your platform.

Obviously, there are a range of options when it comes to the breadth and depth of your training offerings, each of which is more or less suited to the constituencies you'll be working with across your ecosystem and each of which involves entirely different degrees of effort and resources. But in the early going when the objective is to get some initial traction for a new program, it is strongly suggested that your evangelists get out into the community in any way they can for face-to-face education and evangelism.

## Hackathons

One of the most powerful forms of ecosystem engagement is what's known as the hackathon. When you host a hackathon, it is an event that generally involves a fixed period of time during which software developers attempt to build new experiences and moments with the business capabilities offered by your platform (via API). Some hackathons are contests where the final outcomes, submitted by individuals or teams, are judged on both the idea (does it serve a legitimate need?) and the execution (the experience).

Some hackathons are internal ones where members of the platform team and developers from across an organization break away from their daily routine for a day of highly collaborative interaction, the end of which involves some key takeaways for both groups. The platform team might get some incredibly important feedback about the design of an API. Meanwhile developers might get an idea of what's coming, which, in the spirit of democratizing of innovation, surfaces some initially unimagined ideas for new moments and experiences that turn into actual business initiatives.

Hackathons can last for hours, days, weeks, or even months. Some hackathons result in cash prizes and other awards. In other hackathons, the winners might get bragging rights. Or, if a final solution has real business potential, it could net the developer a new job, a venture capital investment or acquisition. It often depends on format. Part of the excitement of a hackathon is how just about anything can happen.

Not all hackathons require the physical presence of the participants. Through DevPost.com for example, many platform providers will launch a long term hackathon where the participants engage virtually and then the finalists are flown to a central location for a final judging.

For platform providers, hackathons represent one of the best opportunities to find out where developers might be struggling with certain APIs and what the source of the problems are. Or, if the API itself isn't working as advertised. For example, maybe the API's resources are inconsistently represented in ways that developers must spend a disproportionate amount of time with the documentation or in "trial and error" mode. After all, to a developer, one of the most important benefits of an API is how productive it makes them. Rather than writing thousands of lines of code to create some business capability, they only need to write one line of code to import that capability from across a network. But if the API proves too difficult to use or otherwise interferes with developer productivity, then it is also risking successful adoption. Hackathons are invaluable in helping to correct such issues.

A good API or developer evangelist should have the skills to organize a hackathon. But for organizations that aren't ready to host one themselves, there are other options. For example, there are turnkey outfits like AngelHack that will organize and run a hackathon for you. Or, you can partner with an existing tradeshow or conference producer that traditionally runs multi-vendor hackathons as a part of their events, or that has the capacity and the capability to add a hackathon to an existing event.

Regardless of how you go about running your hackathons, they serve as an indispensable means of engaging your ecosystem, co-creating value, driving innovation, and optimizing your platform for maximum adoption. But for hackathons to be effective, they cannot be one-time events. They must be regularly scheduled to the point that it's a part of your organization's culture and your ecosystem has the expectation that another one is always coming.

## Launch collaborative feedback loop for versioning/support

In the early days of the API economy, various API providers were known to launch one version of an API and then, without giving developers any adequate warning, they'd either change its programming structure or deactivate it in lieu of a new improved version. It wasn't long before API providers learned the hard way that once existing applications are programmed to rely on an API, that any sudden changes to that API are bad for business. Such changes and shutdowns invariably caused those applications to malfunction. Across the API economy, this unwelcome phenomenon (to both developers and users of applications) is known as a "breaking change" because of how it breaks applications.

Getting back to the aforementioned co-creation of value, the better approach is to overlap versions so that developers have time to test the new functionality for inclusion in their apps while also providing you with important feedback about the new versions (i.e. bug reports).

Likewise, as indicated in the prior section on publishing your API portal, it's important to open up multiple channels for developer feedback. These channels could come in the form of online forums, email capabilities, comment areas on blogs and docs, interactive chat capabilities, etc. When you send the message to your community that you're not only open to feedback, but that you're openly soliciting it, you are sending a subtle message to developers that you are in this journey together and that you care as much about them as you do your own organization.

## Incentivize community partnership

As implied several times, success of your digital strategy depends on the overall success of your ecosystem and the success of that ecosystem involves an exchange of value that you co-create with your ecosystem's community.

Clearly, the AppExchange part of Salesforce's ecosystem offers tremendous incentives to ISVs to build solutions that help drive usage of Salesforce's offerings. Salesforce provides a marketplace where its customers can shop for add-on solutions and the ISVs profit from the sales of those solutions.

Similar to the way that Uber has successfully deputized community members into providing technical support to other community members, there are all sorts of other ways to get your community engaged in the co-creation of value.

Hackathons (mentioned earlier) are essentially engines of co-creation (not to mention innovation) and, by turning them into very rewarding competitions (for example, offering big cash prizes), you are incentivizing your community's growth and participation.

> "Hackathons are essentially engines of co-creation (not to mention innovation) and, by turning them into very rewarding competitions you are incentivizing your community's growth and participation."

Surprisingly, most API providers do not offer bug bounty programs where developers get cash, recognition, or both in exchange for discovering bugs and security vulnerabilities in their APIs. Google, for example, compensated a developer who discovered a catastrophic API security vulnerability in a YouTube API that made it possible for hackers to delete any YouTube video whether it belonged to them or not.

Another great way to get the community involved is to ask for its help in developing open source SDKs for languages that are out of your mainstream. The Github public code repository is filled with thousands of SDKs that come from independent developers (as opposed to the API providers themselves). Whereas an API provider might choose not to build SDKs for less popular languages like Clojure or Haskell, it could incentivize its developer community to build them instead. For example, at the time this paper was published, Spotify had a section in its API portal listing independently developed SDKs for .NET, Clojure, Elixir, Go, Java, Javascript, and Node.js among others.

## It's about community

When you think about the type of communities that people want to be a part of — local communities, business communities, religious communities, etc. — the members of those communities want to feel as though they're a part of something bigger. Something where they can contribute and, in return, they receive value, they feel respected, nurtured, and cared for. Platform ecosystems are communities.

As a platform provider, you are the host of your community. The list of things you can do to take great care of your community is far too long to enumerate here. The more important point is that there's no better way to engage your ecosystem than to treat it like a community that you'd want to be a part of where everyone is coming along for the ride. Because, after all, it is a journey, and the members of the ecosystem are on that journey, with you.

## Defining and measuring success across the API strategy blueprint

Ensuring the success of your platform depends on setting objectives for each of the four stages of the API strategy blueprint and then rigorously measuring and monitoring the organization's progress against those goals. The blueprint offers some very brief examples of KPIs that are specific to each of the stages but is by no means meant to be a comprehensive list.

Each of the four stages will involve different goals and KPIs, which, for obvious reasons, will be very different from one organization to the next. The exercises of KPI identification, goal-setting and goal recalibration should be revisited frequently. Again, while the API strategy blueprint has the appearance of a waterfall-like model, the truth is that all of the activities within are constantly ongoing.

For example, in response to successes, failures, market conditions, competition, and customer requirements, your digital strategy will be in a cycle of continuous evolution. As your digital strategy evolves, so too should your measures of digital strategy success, perhaps starting with deliverables and deadlines for specific initiatives.

Different organizations will have different ways of defining success. But if the habit doesn't take root at the beginning of the journey with some goals, it won't bode well for the rest of the journey. It also sends a subliminal message to the organization that accountability is not part of the process. The more practiced an organization is at setting and observing goals, the more the entire organization will culturally become a part of the process.

Such goals should not only involve well-understood and widely appreciated measurements (i.e. number of developer registrations, quantity of API requests, revenue, etc.), they should also identify, if not automate, connections between business and technological metrics. Although it's not listed as a discreet action item in the technology stage of the blueprint, forging such ties is an important part of the measurement and testing phase of the API lifecycle. That's because this will also be your chance to tie technical metrics to business metrics in ways that might reveal new business opportunities or the need to recalibrate a business model that's associated with a business channel.

For example, let's say a fictitious airline waits until passengers have boarded their flights before encouraging the download of a mobile application (as opposed to suggesting it while everyone is seated at the gate where there might be free WiFi). That airline's API metrics (available from the API management platform) might reflect incredibly low usage which in-turn can be correlated to the number of installations of that mobile app (a metric that's available from the app store).

Then, the airline has its aha! moment when it realizes from the data that once passengers are on the jet, they have to pay for WiFi access in order to download the mobile app. When the airline's gate personnel get involved, suggesting download of the app to passengers waiting at the gate, all the metrics improve including in-flight food and premium entertainment purchases (whose revenue can be retrieved from the accounting system). Aggregating these metrics from their canonical sources into a single view makes it possible to correlate specific business outcomes to technical metrics in ways that substantiate or disprove your digital strategy.

## Financial rigor and ROI

Any effort to platformize a business will be so all-encompassing to an organization that CEOs, CFOs, and other backers will have to live with the reality that it's impossible to peg a total cost to the journey before it begins. On the flipside, it is equally absurd to head into the journey with a completely blank check. Across each of the four stages, the conversation about financial expectations, expenditures, and ROI must be honest, transparent, and ongoing.

Use the blueprint to break the financial conversation down into a series of smaller compartmentalized conversations each of which tracks and maps its own costs to that area's relevant goals and outcomes. For example, in the organizational culture area, as you identify the various domain experts you hope to recruit, you can also start to build your budgets for recruiting and paying those new hires.

However, as you move into the tech enablement and ecosystem areas, you will start to budget for and incur a different class of expenses for your technology and engagement efforts. Likewise, as will likely be the case as CMS reinvents the Medicare platform, there will also be savings. These choices, costs and savings will be different from one organization to the next depending on the aspirations and breadth of the intended ecosystems (reflected of course, in the digital strategy) and the extent of renovation and transformation. For example, the engagement expenses involved in a public API economy offering are very different from that of a private offering that stays within the corporate firewalls or that is only offered to partners.

As expenses are incurred, they can be recorded as they usually are (perhaps against certain costs centers) while they are also mapped into a dashboard that offers a more global view of the entire effort's ongoing budget, expenses, savings, and ultimately ROI.

# Conclusion

KPIs provide marks on the ground to measure progress and align stakeholders on expectations. As we’ve seen from the the various examples mentioned in this white paper, an API strategy can and should evolve over time as skills improve and market conditions change. Programmatically, it is important to consider how often the key stakeholders will meet to share learnings, analyze progress, and make adjustments as required. Ultimately, the ecosystem you create will become a living, breathing part of the business — one that is highly responsive and thrives on change.

# Next steps

Whether your organization is just embarking on an API strategy journey or is already pushing out APIs and looking to align stakeholders, measure success, and better engage consumers — MuleSoft's API programs workshop is a great place to start. In the workshop, our team of experienced API strategists walk you through the key activities in the blueprint and help you walk away with a plan to communicate your vision to executive stakeholders, mobilize your API Strategy team, establish KPIs, and organize work. Contact the MuleSoft team today to learn more.

## Questions to assess your progress

- What is the level of executive sponsorship for your digital strategy?
- Have you articulated specific business outcomes for your digital strategy?
- How infused is your entire organization with an API-driven culture?
- What does your ecosystem look like, both internal and external?
- Who are the customers of your APIs and what value are you creating for them?

# About MuleSoft, a Salesforce company

MuleSoft's mission is to help organizations change and innovate faster by making it easy to connect the world's applications, data and devices. With its API-led approach to connectivity, MuleSoft's market-leading Anypoint Platform™ empowers over 1,400 organizations in approximately 60 countries to build application networks. By unlocking data across the enterprise with application networks, organizations can easily deliver new revenue channels, increase operational efficiency and create differentiated customer experiences.

For more information, visit **mulesoft.com**