

KIN+CARTA

# MACH for Everyone:

An Everyday Guide to  
Composable Technology

2023

Whitepaper

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Brian has more than 25 years of experience envisioning, designing and delivering transformational digital experience solutions for clients across a diverse range of industries. Having delivered more than 125 experience projects ranging from strategy roadmaps, web sites, mobile and custom applications, Brian's expertise in delivery enables him to create uniquely tailored sales solutions, partner relationships and go-to-market strategies.

Brian's technical knowledge covers digital experience platforms (DXPs) and MACH-driven approaches to experience creation. In addition, Brian serves as a thought leader, speaking at conferences, authoring blogs and whitepapers and supporting podcasts and other related activities.



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## Intended Audiences

This white paper is offered for non-technical business people who are interested in learning more about the opportunities that MACH-based technologies represent. While much of the material delves into technical subjects, the overall intent of this white paper is to engage with business stakeholders who are developing brand-new digital products and experiences. Additional technical and reference information is widely available, both from Kin+Carta as well as the MACH Alliance, an industry trade group devoted to sharing information about MACH technology.

## Overview

MACH for Everyone is organized in a way that initially describes what MACH technology is and where it fits within the overall story of digital experience development. Next, we look at the tangible business outcomes that are driving much of the interest that businesses and organizations are seeking to attain in a modern, cutting-edge approach to experience crafting and delivery.

We wrap our discussion with an in-depth look at how to get started with MACH technology, from POC/MVP builds, to larger projects, programs and eventually, Centers of Excellence that serve the entirety of an organization. We then pivot to better define the readiness of an organization to implement MACH projects, products and programs. We extend that discussion to a series of MACH ecosystem maps that help to define best-in-class configurations of MACH tools across content, commerce, search, personalization and other lenses.



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# Defining the MACH Opportunity

## How MACH Came to Be

The commercialization of digital experiences began in earnest in the mid 1990s as the world rushed to monetize and innovate using a web-based approach to delivering content and commerce experiences. While the Internet itself had been around for decades, it was the sole province of academics, military specialists and researchers, until the first successful web browsers became widely available (Netscape Navigator and Microsoft's Internet Explorer chief among them). The opportunity for organizations to broadcast content about themselves, their offerings and position in the marketplace represented a fundamental and generational shift forward.

The widespread success of web browsers led to a different challenge, though: how to democratize access to websites so that non-technical business people could also participate in the publishing process. Most websites in the mid-90s were built by IT teams that received content and direction in the form of MS Word documents sent by business

users. It was this challenge that led to the creation of content management systems (CMS), tools designed to be accessible by non-technical business professionals, bypassing the IT team, while still maintaining auditing and related controls.

## Digital Experience Platforms: An Overview

By the end of the decade, CMS capabilities started to expand beyond simply publishing web pages by including functionality that allowed users to do something more than just read. Features like internal search, login authentication, content syndication, multisite, multilingual, translated content and the birth of elements of personalization began to be included in websites, often powered by the same CMS platform.

Capitalizing on the commercial transaction side of the marketplace, commerce-specific tools began to emerge that utilized websites to offer traditional electronic commerce capabilities, including displaying

complex product catalogs, dynamic pricing, order management, shopping cart functionality and integration with tax and shipping providers. Eventually, some of these commerce-specific platforms merged with CMS tools to create more powerful and complex products.

As the adoption of mobile phones increased and experiences began in earnest in the early 2000s, the idea of a web page / website started expanding to include experiences that extended beyond desk-bound PCs and laptops to smartphones and tablets. The ability of mobile phones to support not just web browsing, but native applications that often offered similar experiences to websites became another complexity to master. Social media and social networking added the dimension of being able to share content and applications with friends and family around the world, instantly.

What had started as a web content management system (WCMS) or a commerce-specific tool had expanded into what we now refer to as a digital

experience platform (DXP). Common DXPs today include Adobe's AEM, Optimizely DXP, Sitecore, Umbraco, Drupal and Wordpress. Each of these DXPs survived years of evolution, acquisition and growth, which has enabled them to provide a powerful way for some organizations to deliver digital and omnichannel experiences.

However, as DXPs evolved and became more expansive, they also began to suffer from bloat and a lack of responsiveness. By trying to accommodate an incredibly disparate set of use cases all on one platform, they would often be able to perform the basics of any one feature well, but not necessarily innovate. As a result, it was often easy to find better alternatives for any given function: search, commerce, recommendations, personalization, etc.

DXPs also suffer from the challenges of legacy support and in turn, fail to adopt the latest best practices or benefits of modern application design. In many cases, the codebase itself may be decades old, requiring significant elements of it to be



fundamentally re-architected and re-platformed . The availability of modern cloud architecture is at direct odds with the way that software tools were built in the 1990s and early 2000s. Tools that depended on older architectures were burdened by having to be hosted on-premise and therefore unable to take advantage of the incredible advances in dynamic, elastic cloud scaling without fundamental re-writes.

## MACH Terminology

In fact, it's the modern approach to leveraging cloud-based infrastructure, coupled with forward-thinking approaches to integration and application development that has afforded another fundamental advance: MACH technology. MACH is an acronym that stands for the core characteristics of a modern digital experience delivery platform:

**M**

Microservices-  
based

**A**

API-first

**C**

Cloud-native  
SaaS

**H**

Headless



The following table highlights the key values of each:

Characteristic	Description	Essential Value
Microservices-based	Microservices is a core characteristic of modern application architecture, consisting of loosely coupled services that are independent and highly maintainable.	In the hands of a competent technical architect, a microservices-based application is able to be maintained by a small team, innovate at speed and scale, and can be used to power a multitude of different channels and experiences.
API-first	APIs, or application programming interfaces, allow developers to share and consume content and data with different systems without having to know and be experts on all aspects of those systems.	API-based development dramatically speeds the sharing and consumption of content and data in a standardized, well-understood manner.
Cloud-native SaaS	Cloud technology, especially elasticity, means that applications are able to dynamically scale up and down as demand warrants, as opposed to physical limitations imposed by server architecture.	Organizations pay only for what they actually use in terms of hosting support. Elements of the infrastructure can be scaled independently, allowing them to handle wild swings in usage – ideal for event-based experiences or campaigns that drive interest and traffic without months of pre-planning.
Headless	Separating the front-end experience from the back-end logic, content and data allows for the same content, experiences and data to be used in multiple ways simultaneously.	Powering websites, mobile applications, kiosks, and IoT experiences are all possible with a headless approach. Headless solutions allow the same features, content and functionality to be managed centrally while being presented in completely different channels and experiences, while sharing a common codebase and back-end repository.

MACH technology is founded on these core principles, which enable a fundamentally different approach to delivering digital experiences than traditional DXP platforms. MACH solutions offer a tremendous amount of advantages, many of which will be explored in the next section. Most of the next generation of digital experience creation, crafting and delivery will leverage MACH principles, architecture, tools and technologies.

## Monolith versus MACH

It's important to note that traditional DXPs still have value and are appropriate for a number of use cases, depending on alignment of an organization's internal staff, capabilities and/or commitments to long-term legal contracts and licenses. Some DXPs offer elements of MACH technology; notably, DXPs typically offer some form of API support that can be used to extend DXP-powered experiences to new channels. But even in these cases, they are not able to take advantage of the full spectrum of MACH's pay-offs.

In some cases, DXPs remain configured to use on-premise hosting models, impeding the ability to take advantage of truly elastic scaling. In others, the APIs are limited to simple content delivery and aren't robust enough to deliver more complex features or capabilities. In some DXPs, APIs aren't even offered for the full set of features that the platform offers (for example, a DXP that can deliver content via API call, but not dynamic content recommendations).

Typically, when a DXP is deployed, it's done as a single, complete solution. This lack of flexibility or componentization can mean that deployments are time consuming and often present a risk: should there be an issue, the entire solution needs to be rolled back. When you need to scale, you scale the entire platform, rather than the specific area that needs the resources.

It's these limitations that lead some to reflect upon and label DXPs as "monoliths" – tightly coupled platforms with loosely integrated features and capabilities that offer limited abilities to match the full range of capabilities found with MACH solutions.

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# Practical Business Results of MACH

In addition to the technical benefits of the MACH approach, it's also important to think about the business advantages of embracing MACH architecture and approaches.

### Consider this:

- Businesses need more agility and speed to be successful in a dynamic and competitive environment.
- Increasingly, customers aren't loyal to brands and can be easily swayed by (or retained by) innovative experiences that best cater to their specific needs.
- At the same time, organizations have to demonstrate ROI and support business cases before larger investments are made, so any digital experience solution must support a quick line to evidence of profitability and viability.

## Speed, Speed and Speed

Organizations are operating in a world that requires speed to market. Compared to many other approaches, MACH solutions tend to offer a significant advantage when it comes to speed, on a number of fronts. Because MACH tools are cloud native, they can be spun up and provisioned within minutes or hours rather than days or weeks. This means developers are able to save significant time in provisioning and on infrastructure-related elements.

Speed of the actual digital experience is another compelling reason to adopt MACH-based approaches. Unlike DXPs, which typically render pages or answer queries in real-time, MACH-based solutions can employ powerful static rendering (full site or incremental) which enables lightning-quick delivery of a given request. This is noticed by Google and other search engines and can provide a powerful lift to organic and related search results, as Google prioritizes the overall performance of an experience

and ranks that highly in its Search Engine Result Page (SERP) algorithms.

It's fair to say that with the right performance modeling, MACH solutions can provide the exact same experience as traditional DXPs with speed improvements of 50% - 90%. That's a significant uplift that drives conversions, better serves the customer and increases traffic flow to a given property. This performance improvement extends beyond just web pages to any experience that is driven by MACH solutions, including native mobile apps and kiosks.

## Enhanced Security

We live and operate in a world filled with increasingly aggressive hackers, unscrupulous competitors and rogue agents who love nothing more than to attack highly visible, public web sites. Modern digital experiences are major targets for malware dissemination, denial of service attacks, cross-site scripting and other evolving forms of exploiting security vulnerabilities - all focused on stealing data,

spreading malware and embarrassing well-known brands.

Composable technology offers powerful new ways in which to combat these attacks and provide more secure digital experiences for brands and customers alike. In many cases, organizations that take advantage of Static Site Generation (or alternatives including Incremental Site Regeneration) serverless rendering models are able to publicly expose only client-facing code, significantly reducing security vulnerabilities. Access to the content database is only required when rendering the site, not when it is live in production. This approach not only provides remarkable speed improvements, but completely eliminates many of the most popular security vectors from being exposed.

Even though rendering models that utilize some forms of dynamic generation can further mitigate the exploitation of security gaps compared to traditional DXP platforms, it's still critically important that security around API access is a major focus when architecting MACH-based experiences. But compared

to traditional DXP solutions, composable technology and experiences represent significantly more secure solutions.

## Best-in-Class Components

One of the biggest drawbacks of traditional DXPs is that, for any given feature of the platform, there are often dedicated, more powerful solutions available outside the DXP. This happens over time and is an inherent issue when having to support legacy builds of a DXP. In order for a traditional DXP to improve, or provide a step-change in a core feature (for example, internal search) it must first deprecate the existing functionality so that older builds don't break. The new feature typically must be implemented first within the DXP and then by partners to take advantage of new capabilities.

A MACH approach solves this challenge at a fundamental level because each component of a MACH solution is already an independent element of the overall solution. Switching from one element

to another is as simple as replacing the component, with the rest of the MACH ecosystem instantly gaining access to the new capability without deprecation.

### Let's consider an example:

An organization needs to showcase product images on its website, but want to add a watermark to the images to prevent people from stealing the photos. With a traditional DXP, the organization would have to hope that the digital asset management (DAM) feature of its DXP supports watermarking. If not, it would have to buy a new DAM (yet still pay for and have the code bloat of the original DAM), then integrate the new DAM everywhere images are called.

With a MACH solution, many more options are available because it isn't necessary to work around the constraints of the monolith. The organization could implement something to apply the watermark within the solution through its APIs, or find a new alternative DAM that could be installed into the MACH ecosystem, then migrate images across and for that platform to instantly have all aspects of the imagery watermarked. Even better, the commerce capability would have access to the new, watermarked images. The search engine, blog and other features would also have instant access to the new capabilities, as well.

Using a MACH approach, organizations are able to incorporate new, innovative capabilities and features without requiring the same investment in re-writing and architecting the codebase. This enables an opportunity to select the best-in-class for each feature and capability, uniquely tuned to the organization's need.

## Flexibility and Adaptability

The need for speed is followed quickly by the need for increased flexibility and adaptability. Many organizations are moving away from iterative-based (sometimes called "Big Bang") approaches to digital experience development. Previously, companies would invest in building a digital experience, launch it and wait three to five years before the inevitable upgrade, redesign, refresh or other form of enhancement. In today's competitive environment, that's simply not fast enough. As a result, many organizations are adopting a more agile-based approach to development. This new direction focuses on identifying a Minimum Viable Product (MVP)

build of a given digital product, then continually learning and improving the product or experience based on direct user feedback. The result is a much smarter investment of time and resources, essentially guaranteeing that what is built will resonate with the customer and achieve the desired business outcome.

While it is possible to support agile-based approaches with traditional DXPs, a MACH-based approach focuses on identifying the MVP experience up-front. The component-based nature of the MACH approach means that companies need to invest only in those components that are required for an MVP release and adopt additional features and modules once they are proven to be necessary. The key is to define a product vision, then articulate that vision across a roadmap that identifies prioritized goals to be achieved over time.

This is, in essence, also the MACH approach. Even better, as time evolves, the overall experience itself can be improved across the board. Experiences become more and more resonant with customers



because the cost to improve an existing function is no longer nearly as daunting as having to re-architect and implement a DXP, or to migrate to another DXP. Instead, the specific component to improve the experience is identified, then implemented. The result is agility and flexibility, while responsibly using resources.

## Consumption-only Model

Another major business benefit to adopting a MACH-based approach is that organizations only pay for what they actually use, to support its ongoing operations. Instead of inefficient, on-premise costs that are prohibitive to begin with (often overestimated because they are based on unknowns) – and increase over time – MACH-based ecosystems are transparent, controllable and based only on what is actually consumed.

To better understand this, it's necessary to think more about the economics of dealing with cloud-native, SaaS models. With MACH, the provisioning

and ongoing management of the environments are typically the responsibility of the vendor, not an internal IT team. Further, each vendor is responsible for managing the ongoing operation and improved efficiency of its respective platform. This further moves costs and support away from the organization and to specialized vendors that have invested extensively in resources to support its platform, component or tool.

## Content, Commerce? Yes.

It's tempting to think that MACH or headless solutions are best suited to niche applications, but the truth is that MACH is represented as a complete ecosystem of vendors that can be integrated into any number of truly powerful experiences. In fact, MACH is such a vast ecosystem that we've developed a series of MACH ecosystem maps (see next section) to help jumpstart discussions toward building a specific roadmap for any given experiential outcome.

MACH ecosystems typically are focused around either a content-oriented or commerce-oriented set of experiences. In some cases, both content and commerce work alongside one another to deliver a truly seamless experience. Regardless, a series of supplemental MACH-compliant tools can round out the experiences, including search, digital asset management, single-sign on, authentication and permissioning, personalization, analytics, experimentation and much more. The value of being able to stitch together a best-in-breed platform using MACH tools also provides dramatic flexibility in the speed and pace at which MACH-powered experiences are delivered (and paid for).

**The bottom line is:** there is almost no digital experience available today that can't be built and delivered using MACH technology. Increasingly, there are digital experiences that can only be delivered using composable technology.

The trend continues to point to mass adoption of MACH approaches to digital experience development.

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# MACH Ecosystem Maps

There are more than 100 enterprise-level providers today that offer composable architecture, or MACH-based solutions. The MACH Alliance was formed in 2020 as an industry trade group designed to educate buyers on the value of MACH solutions and serves to be the official voice of composable technology. Its member list (<https://machalliance.org/members>) is a who's who of implementers, technology and solution providers that are available to support composable builds.

To better facilitate MACH development, we've created a series of MACH ecosystem maps that serve to demonstrate which specific MACH tools and technologies tend to pair well together. These ecosystem maps are intended to start a conversation around how an organization may choose to build out a MACH-based set of capabilities and are not meant to be prescriptive nor set in stone. We encourage you to review the maps and adjust, modify and adapt for your specific use cases.

## Commerce / PIM / ERP

Can enable commerce experiences, pulling content from multiple sources into a compelling presentation

## Personalization Engine

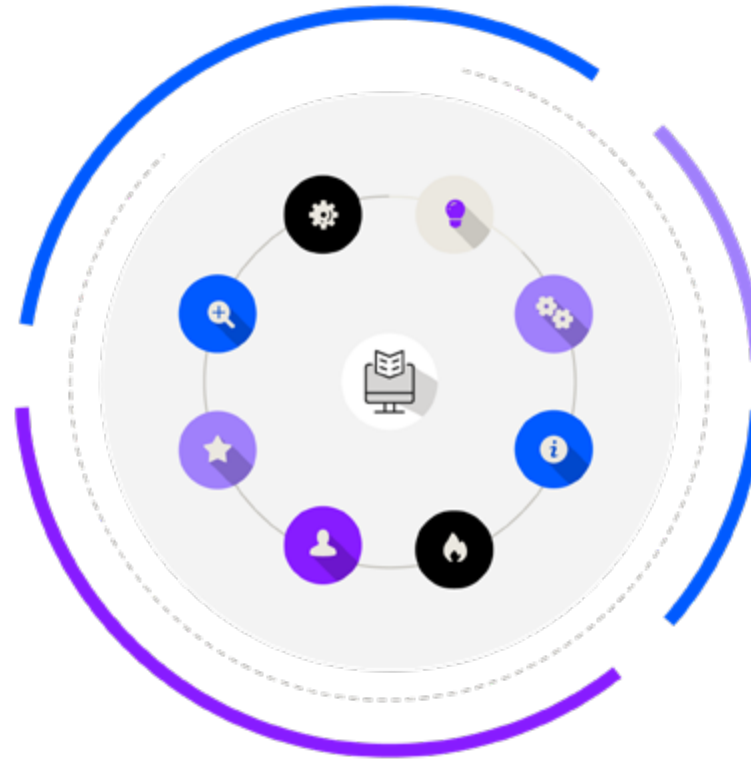
Can be utilized by external personalization engines to deliver custom messaging

## Search

Can provide guided experiences to help customers select the right vehicle, product or related content

## CRM Platforms

Can be aligned to specific customer segments to drive relevant content messaging to the right audiences



## SSO (Single Sign-On)

Can enable authentication and provisioning experiences tailored to unique users

## Analytics

Can provide detailed analytic information about customer traffic patterns

## Digital Asset Management

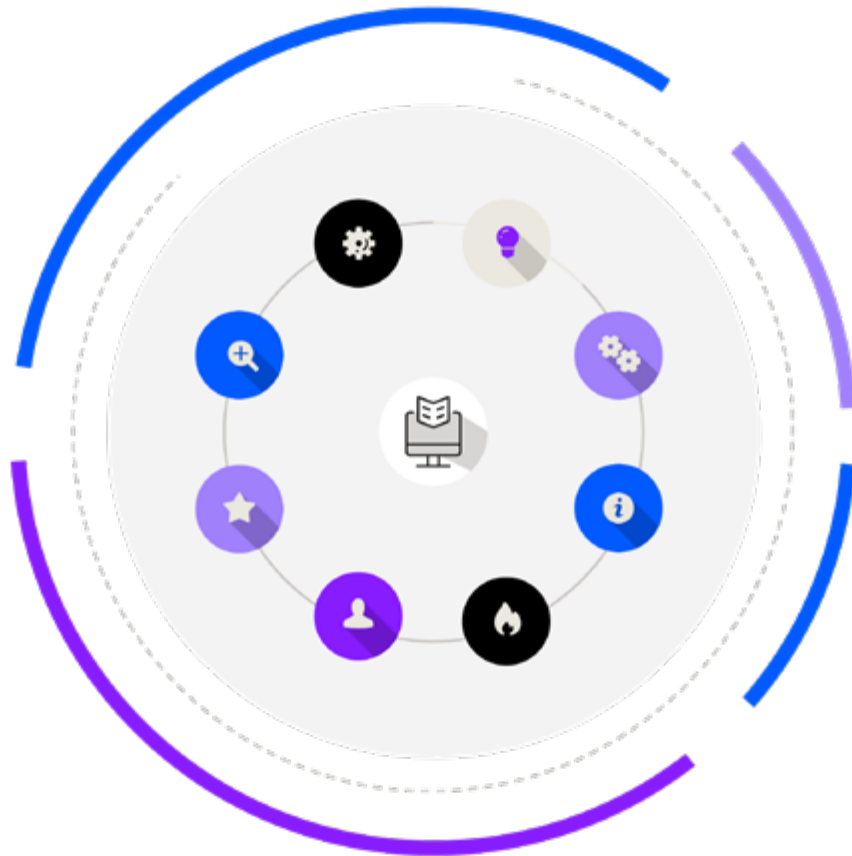
Can integrate with DAM tools to ensure the latest, approved imagery and related assets are delivered

## Native Mobile Apps

Content delivery can be done across multiple platforms without requiring repeated app updates

## Content Focused

### MACH Ecosystem Maps



## Headless CMS

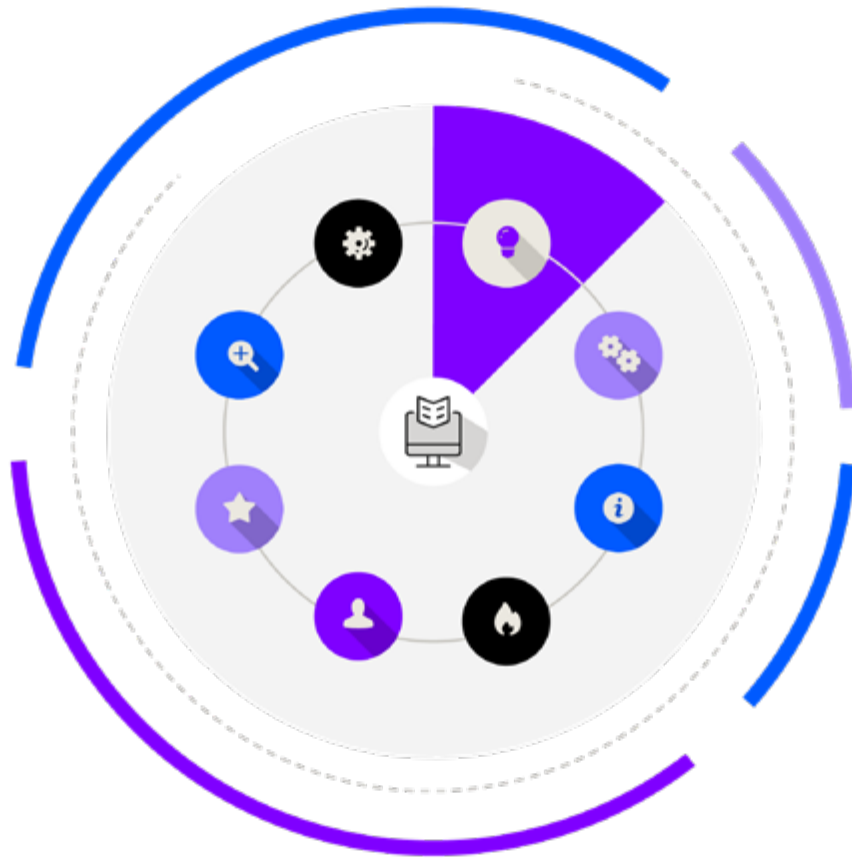
The heart of a MACH Ecosystem is typically a Headless CMS (in some cases, a Headless CMS may also be accompanied by a Headless Commerce platform at the heart, as well). The CMS serves as the center point, or anchor, of the overall ecosystem. Each component that's added to the ecosystem becomes a contributor to the overall experience to be delivered.

Headless CMS platforms for MACH ecosystems include:

- Contentful
- Contentstack
- Kontent.ai
- Sanity.io

## Content Focused

### MACH Ecosystem Maps



## Analytics

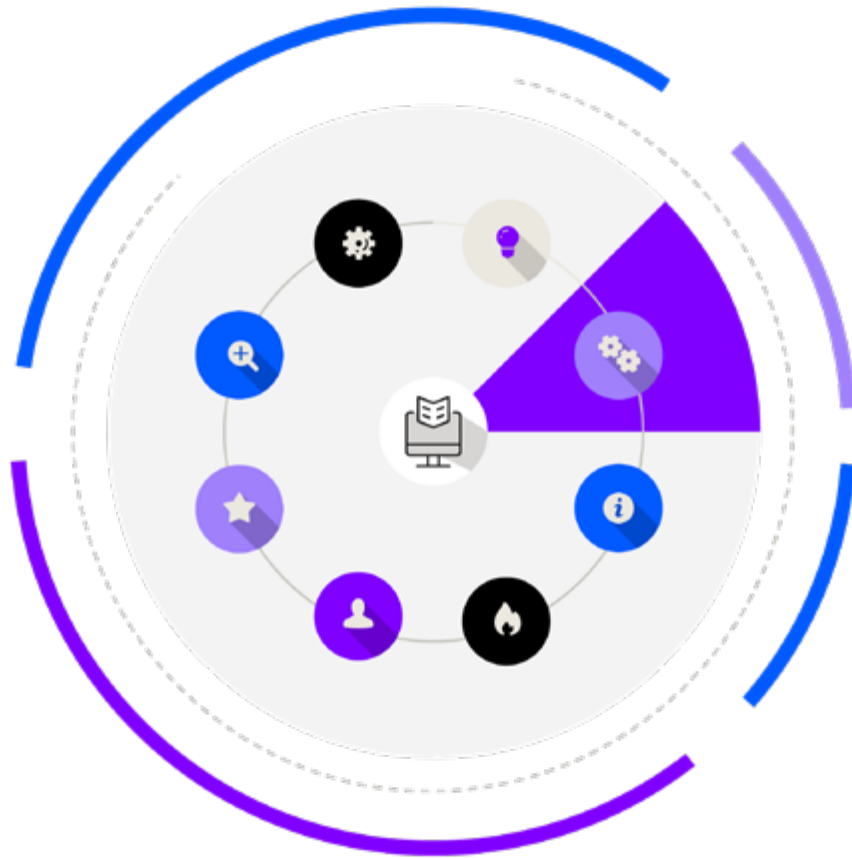
Analytics help to establish when events occur throughout the MACH ecosystem. Augmenting core analytics are human empathy measurement tools which help to provide further context to why events happen, ultimately driving experimentation and related hypothesis generation.

Core analytic tools for MACH ecosystems include;

- Google Analytics (GA4)
- Adobe Analytics
- Snowflake

## Content Focused

### MACH Ecosystem Maps



## Hosting

MACH solutions require specialized hosting environments in order to truly scale on an elastic basis. Experiences that utilize modern capabilities like incremental static regeneration, serverless delivery or dynamic builds especially gain when connected to MACH-specific hosting solutions including Netlify and Vercel.

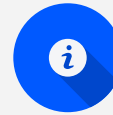
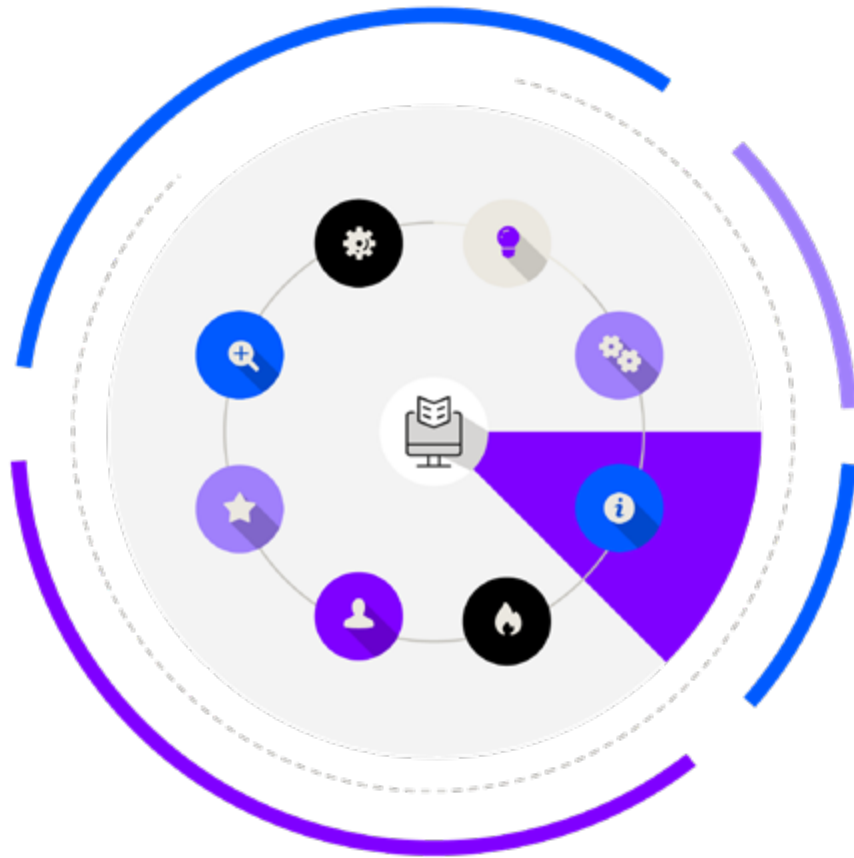
MACH Hosting partners include:

- Azure
- AWS
- Netlify
- Vercel
- Gatsby Cloud
- GCP



## Content Focused

### MACH Ecosystem Maps



## Commerce

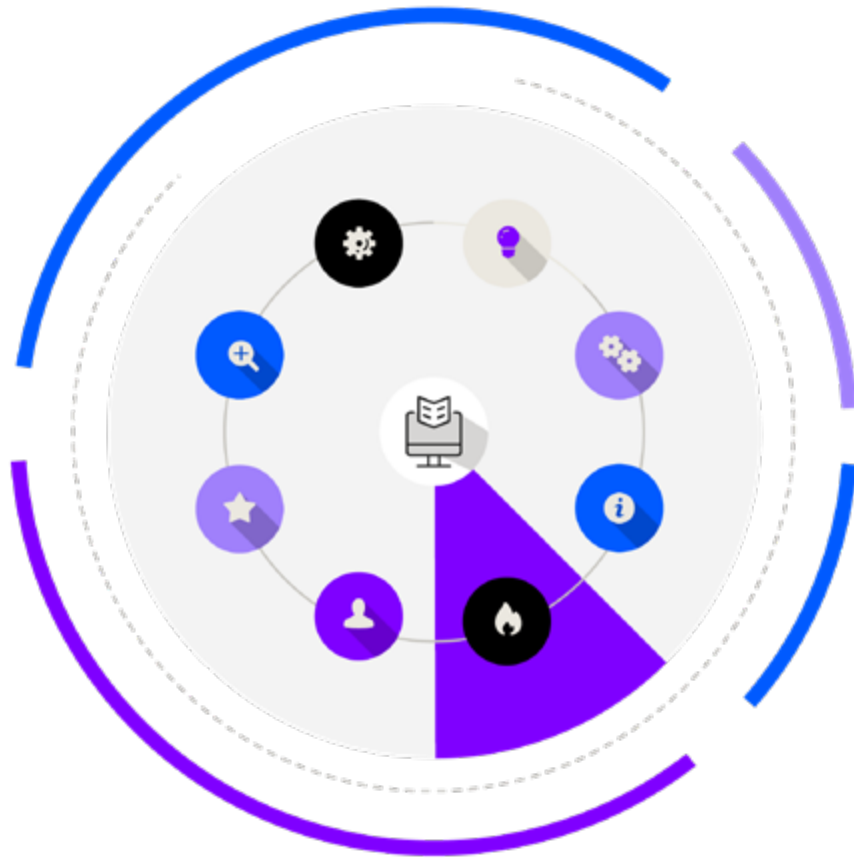
Commerce experiences benefit greatly from MACH-native tools and platforms, especially when coupled with complimentary PIM, DAM and personalization tools. Providing transactional commerce capabilities through composable architecture represents another significant expansion of the MACH ecosystem.

Native MACH Commerce tools include:

- Commercetools
- VTEX
- Spryker
- BigCommerce

## Content Focused

### MACH Ecosystem Maps



## Personalization

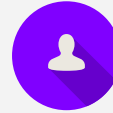
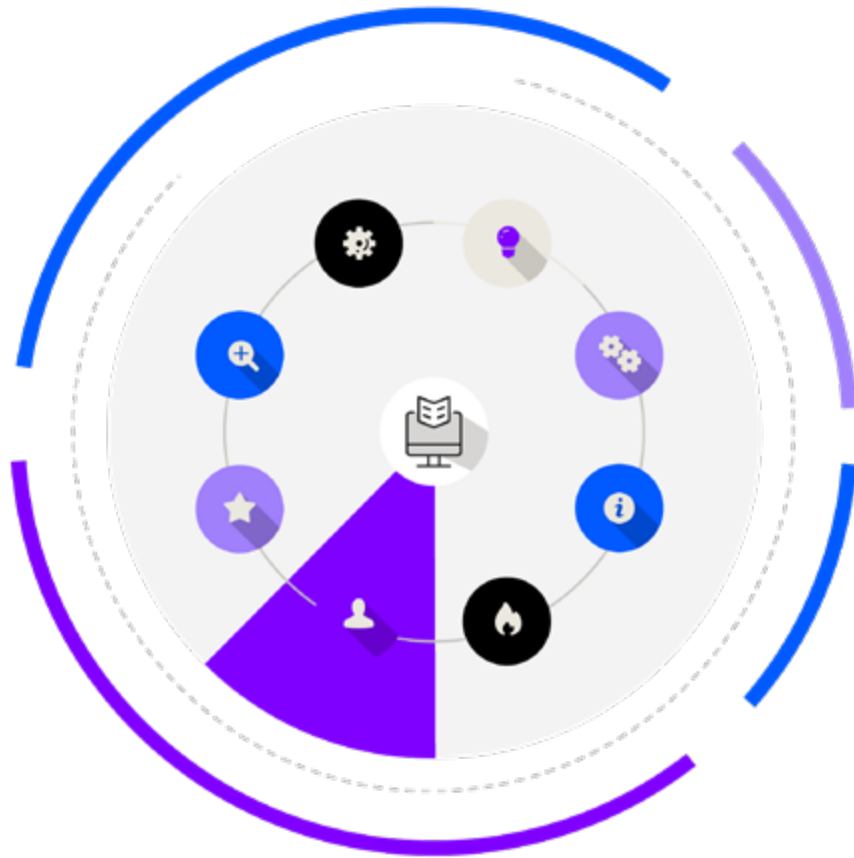
Personalization is the engine that adds intelligence to MACH solutions, catering experiences to unique audience segments. Whether through simple personalization (geodetection, language selection, etc) or more individualized experiences (segment or 1:1 personalization), multiple tools exist to deliver performant personalization in a composable ecosystem.

Personalization tools include:

- Uniform
- Dynamic Yield
- Kibo

## Content Focused

### MACH Ecosystem Maps



## Authentication & Permissions

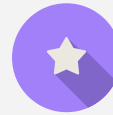
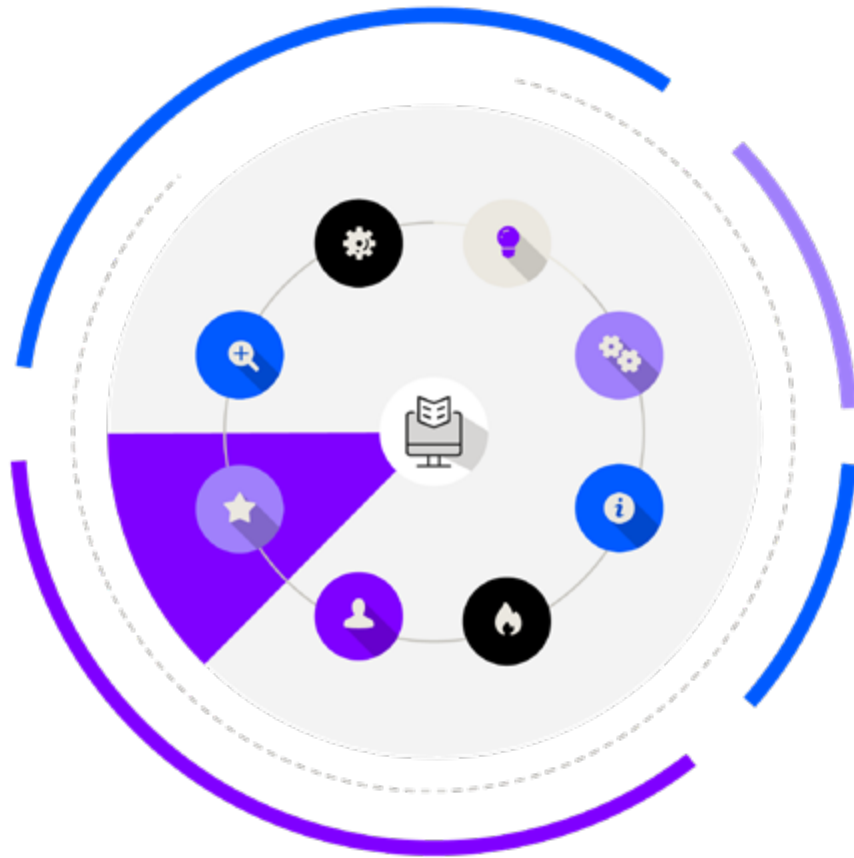
Authentication and Permission tools allow experiences to be access-controlled and to provide granular-level permissions for users, groups or roles within an application.

Content-focused authentication and permissions tools best suited toward MACH builds include:

- OKTA
- Auth0
- Azure AD
- Forest Admin

## Content Focused

### MACH Ecosystem Maps



## Experimentation

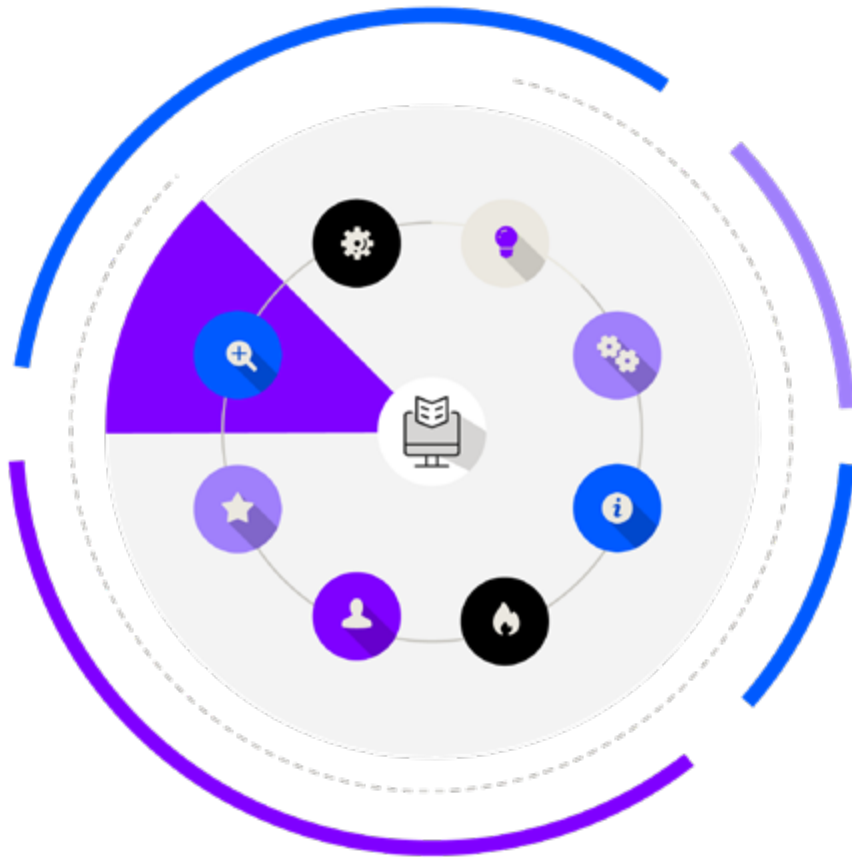
Coupled with analytic insights, experimentation tools allow customers to test hypothesis using either traditional A/B testing or more complex multivariate testing, all without affecting core traffic flows. Experimentation is the key to driving improved conversions throughout MACH-powered experiences.

Experimentation tools that support MACH experiences include:

- Optimizely and Optimizely Fullstack
- Dynamic Yield
- Kibo

## Content Focused

### MACH Ecosystem Maps



## Search

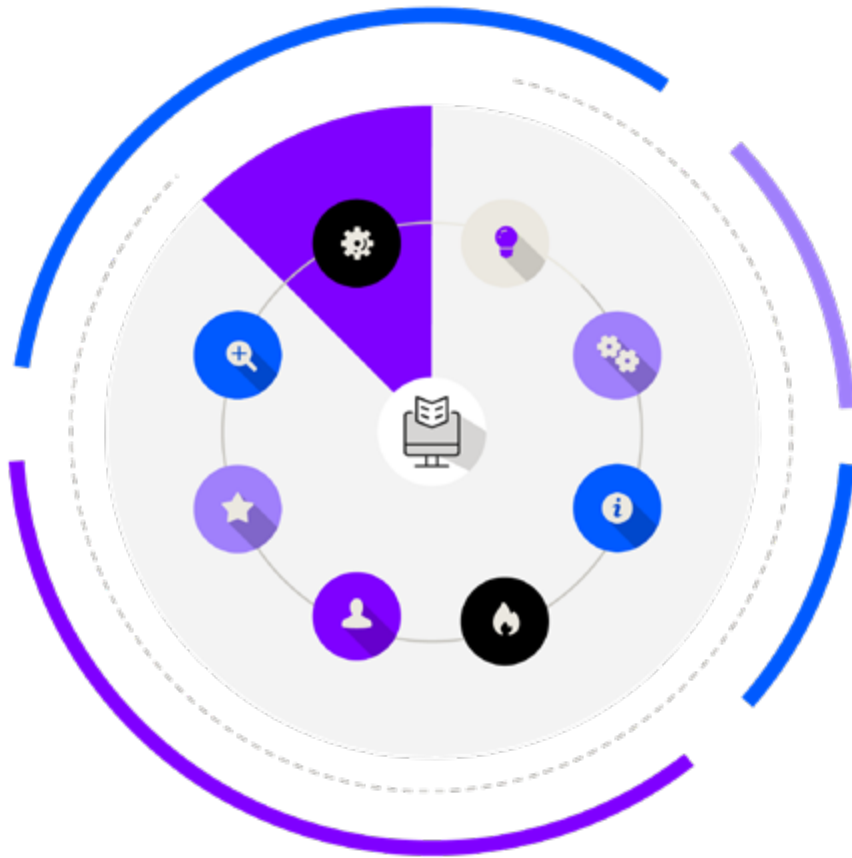
Search is one of the most effective ways to drive digital experiences. Going well beyond simple internal search experiences, search tools can provide dynamic navigation, custom landing pages, “complete the look” experiences and even wizard-based approaches to product selection.

Search tools well suited for MACH ecosystems include:

- Algolia
- Search.io
- Constructor
- Kibo
- Amazon CloudSearch
- Azure Cognitive Search
- Google Retail Search

## Content Focused

### MACH Ecosystem Maps



## Other speciality providers

Many additional specialty providers can add value to a MACH ecosystem, including:

DAM	PIM	Recommendations	Email Campaigns	Visual Editing
Cloudinary Bynder	Akeneo	Kibo	MailChimp MailGun	Stackbit

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# Assessing MACH Readiness & Maturity Models

Many organizations see the value in adopting MACH technology to drive results, but not all are well-suited to implementing it. Composable architecture tends to align well with agile-based methodologies due to their inherent flexibility and nimbleness. While MACH experiences can be delivered following traditional iterative (or waterfall) methodologies, one of the biggest advantages of MACH is a quick demonstration of business value. The same holds true of agile methodologies: they tend to outperform traditional iterative approaches when it comes to defining and demonstrating business value.

Organizations that have already embraced an agile mindset, coupled with product-oriented thinking, tend to adapt to composable architectures more quickly than those that don't. Oftentimes these same organizations have more maturity around governance, alignment to business value and ability to execute. Less mature organizations may be better served by leveraging partners to get up to speed – not just on the core technologies and architectural approaches –, but also by having expert advice available on the

enablement side. Still other organizations may have no desire to own the technology stack in-house and would be best served by partners that can implement MACH-powered experiences under their specific direction, then manage the resulting platforms in-house.

## Approaches to MACH Adoption

Organizations seeking to adopt composable, or MACH, technology can often be best served by following a model that first aligns the technology to solving actual business problems, rather than simple demonstrations of the technology itself. Candidly speaking, baseline technology demos are the province of the MACH vendors. Building a business case requires first the identification of a specific problem that can be well served by MACH technology.

As an example: Implement an experimental landing page that can be used to improve conversion rates, which leverages both an experimentation tool alongside a headless CMS. That same experience



can be rendered on the web and/or in a mobile application.

The value of this approach is that the technology is positioned to improve the business result right at the outset, so it's not an argument for technology's sake, but viewed as a solution to solving a business problem and achieving practical results.

## Start with a MVP Use Case

A cautionary note: The use case selected should, in effect, be a form of MVP or a prototype and must be presented as an element, not as a complete solution. Otherwise the technology is seen only as a niche solution instead of a comprehensive ecosystem of MACH components that deliver wide-ranging, diverse digital experiences.

With a business problem or objective identified, building a proposal for a MVP / POC implementation to solve the problem or achieve the desired outcome becomes an important next step. Working with an external partner or through internal resources, it is

important to secure funding and alignment with key stakeholders to complete the MVP / POC initiative. This is where experience greatly matters: many organizations lack deep expertise across multiple MACH vendors. Working with only one MACH vendor to do the MVP / POC is not always the right approach because the vendors don't typically implement directly. Even in rare cases where they offer some form of professional services, it tends to focus on enablement, not working with other MACH vendors.

Given the importance of the success of the initial MVP / POC, partnering with an external, independent consulting firm is often the best way to align internal business stakeholders, different MACH vendors and to ultimately stitch together a solution that achieves the business goals within established timelines and budgets. Further, experienced consultancies know best practices around architecture development and are best positioned to ensure that the investment in the initial MVP / POC can be repurposed and utilized in larger, follow-on initiatives. An experienced partner can also help reduce risk by avoiding common pitfalls

and bringing solutions or approaches to solve the basics ahead of time, maintaining focus on the real value. Once the MVP / POC has been delivered, it is important to orient and highlight how the project solved the intended problem or produced the desired benefit.

## Evolving Beyond the MVP

The next step is to progress from a MVP / POC mindset into how MACH, or composable technology, can evolve further within the organization. Many companies benefit from conducting prioritization exercises built around different outcome-based initiatives. The following list demonstrates some ways to expand the use and role of composable technology:

**1. Using MACH to deliver brand new, custom products, services and experiences** – Comparing this against using DXPs or custom application development will often produce a faster and less expensive solution that will lead to established funding.

**2. Using MACH to drive standardization** within the organization's larger digital ecosystem often drives contrasts around TCO and ongoing operation. Kin+Carta has seen multiple organizations seek to reduce overall TCO for aging platforms that are more expensive to operate over time by adopting MACH as an overarching theme and approach to cost reductions.

**3. Using MACH on a slower adoption basis to find specific niches** – Consider where MACH technology can solve problems and build momentum on a more focused basis, while proving value much more quickly than more complex initiatives. Examples of niche MACH adoption use cases include:

- implementing experimentation capabilities in a website and/or app
- automating content translation capabilities
- consolidating content and data stores and providing access to digital asset management capabilities

- building custom landing pages focused on CRO (conversion rate optimization) campaigns

#### 4. Using MACH to create Sitebuilder experiences

– Standardize (using design systems and related pattern libraries) marketing or customer experience-focused sites that leverage a federated model that shares design, content and assets from a parent organization to a large number of children sites powered by a single, powerful platform. MACH is ideally suited for these kinds of engagements due to the component-based nature of both its architecture and execution.

#### 5. Using MACH to centralize duplicate or inefficient processes

– When legacy technology has been implemented multiple times, it often causes siloes of content or data and requires multiple tiers of duplication, from management, licenses, support and development. By systematically replacing the platforms to a composable centralized model, teams can be aligned to deliver a consistent experience, reducing onboarding and time to market.

## MACH Maturity Models

Another way of viewing adoption approaches is to consider a maturity model that evolves from MVP / POC into a project, which grows into a program and ultimately, into a Center of Excellence capable of identifying and sharing innovation throughout an organization.

Fundamentally, the maturity model evolution can look like the following:

1. **Develop a powerful and relevant MVP / POC** that demonstrates the viability of MACH technologies by solving a specific business problem
2. **With momentum building**, seek to expand the influence of how MACH technology can be further utilized by attaching it to increasingly higher valued work
3. **Leverage the sample use case models** shared previously to drive interest beyond the MVP / POC and build a more comprehensive MACH platform

4. **Inject intelligence into the MACH platform** to empower it to deliver more personalized and experimental experiences that will allow the platform to become even more efficient and profitable

5. **Invest in innovation** to demonstrate how the MACH platform can go beyond the basic elements of experience delivery and drive actual innovation (new products and services, new solutions to previous problems, etc.) and continually invest in what will become a competitive differentiator in the larger marketplace

# MACH Maturity Model Evolution



## FOUNDATIONAL

1. Develop a powerful and relevant MVP / POC that demonstrates the viability of MACH technologies by solving a specific business problem
2. With momentum building, seek to expand the influence of how MACH technology can be further utilized by attaching it to increasingly higher valued work
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## INTELLIGENT

4. Inject intelligence into the MACH platform to empower it to deliver more personalized and experimental experiences that will allow the platform to become even more efficient and profitable

## INNOVATIVE

5. Invest in innovation to demonstrate how the MACH platform can go beyond the basic elements of experience delivery and drive actual innovation (new products and services, new solutions to previous problems, etc.) and continually invest in what will become a competitive differentiator in the larger marketplace

It's of critical importance to remember that these adoption models are fueled by a fundamental shift towards product-focused, agile methodologies and require a combination of people, process and technology in order to achieve maximum results.

## Foundational Maturity

Foundational maturity is represented when a company or organization has established a basic digital experience delivery system using MACH technology, preferably in a comprehensive way. Having an ecosystem that is a hybrid of traditional DXPs alongside MACH-powered experiences should be considered foundational assuming that the longer term goal is to migrate fully to MACH-based approaches over a defined timeline.

Foundational experiences are typically defined by a “one experience fits all” approach which is acceptable for baseline marketing, educational or other experience that doesn’t benefit from the intelligent application of data to personalize a given experience. It’s important to note that not every single digital interaction is best suited to intelligence-based approaches, if for no other reason than the cost involved to build or support ongoing personalization.

Ideal use cases for foundational experiences include:

- Purely educational websites
- Applications that offer the same features to all customers (regardless of location, customer type, previous purchases, etc.)
- Microsites that are intended to provide broad-based common messaging
- Experiences that are regulated to ensure that every user is treated exactly same way

## Intelligent Maturity

Adding intelligence to a given digital experience, especially when paired with a desirable business outcome, is almost always guaranteed to improve the likelihood of attaining that business outcome – whether it is a purchase, a sign-up or some other form of transaction. The application of intelligence allows digital experiences to anticipate, guide, personalize and otherwise alter a given journey to reflect what we know about a customer, their needs, history, goals and ultimately, what will motivate them.

Making experiences intelligent requires the use of detailed customer profile data, which lends itself well to MACH ecosystems for a number of reasons. Fundamentally, tools like Kibo allow a composable approach to injecting experimentation, search, personalization and content and product recommendations into a digital experience. By building upon powerful data profiles that include not just information about a given customer, but behaviors found in that customer's cohort, many aspects of a given journey can be adapted to drive truly powerful outcomes.

Intelligence should be the goal of any organization that seeks to improve its competitive positioning, retain customers and grow its business. It requires fundamental discipline in assembling and aggregating data, matching it to customers as they interact with a digital journey and actioning at the moments that matter in order to deliver results.

The best use cases for adding intelligence to experience are often found in:

- Commerce experiences
- Product and content recommendations
- Next best action models to drive customers through a specific journey

MACH is essential to being able to inject intelligence into native MACH-powered experiences, and also into legacy experiences that can be supported by composable approaches.

## Innovative Maturity

The long-term viability of composable (MACH) technology is ultimately dependent on its ability to drive the results prioritized by the organization. With a strong foundation established, and intelligence added to experiences that optimize the platform's ability to deliver results, the long-term focus of MACH turns to innovation.

One of the major benefits of MACH technology is its component-based approach to implementation. This means that as innovation is identified, it can be injected into existing and new experiences on a composable basis. An example of this would be stitching multiple MACH components together to create a service that is called by multiple platforms.

For instance, if a parts manufacturer sought to build a “what part should I buy” experience, it could include an interactive troubleshooting tool (built on a MACH CMS), extended by a PIM tool (built on a MACH PIM platform) to personalize recommendations based on purchase history (built through a MACH product recommendation engine) that also bundles parts with tools required to install the part (built by a MACH commerce tool). This service could then be exposed as both a website wizard and a custom mobile application that calls the same back-end experience.

The establishment of a MACH Innovation Center of Excellence is a smart approach for companies and organizations that seek to not just establish the core foundations, but to drive actual, market-defining innovation. Centers of Excellence follow an evolution that establishes standards, provides actionable playbooks to the business and offers a testbed for experimenting with new MACH tools to determine which are viable and actionable in a broader sense for the rest of the organization.



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# Conclusion

A tipping point has emerged in the development of modern digital experiences. Companies and organizations that have previously been able to utilize DXP tools are now presented with an opportunity to take a generational leap forward by utilizing MACH – or composable – technologies that provide unprecedented speed, agility, flexibility and security. Maximizing the value of MACH technology requires careful planning to transforming their digital operations in three key ways:

**1. People** – Upskilling current staff and augmenting them with experts who have direct experience in architecting and deploying MACH technologies.

**2. Process** – Becoming fully product-focused and adopting an agile mindset that utilizes data to determine which features, capabilities and experiences are necessary to achieve the business goals for the customer’s journey.

**3. Technology** – Implementing MACH technology by following the adoption techniques shared earlier (MVP/POC – Project – Program – Center of

Excellence) and documented as an organization-specific MACH Roadmap.

Taken together, these three transformations will deliver much-needed flexibility, agility, innovation and performance across an entire universe of potential digital experiences. The ultimate result is high-value customer relationships, empowered by personalized digital interactions across a multitude of channels and touchpoints. Companies that invest in these transformative principles will be well positioned to win the next generation of digital experience.

**KIN+ CARTA**



## About us

Kin + Carta, a member of the MACH Alliance and one of the leading providers of digital transformation consulting, is well regarded and known in the composable technology community. Having deployed countless MACH-based experiences, Kin + Carta is eager to partner with you to better define and understand how this transformative set of technologies can be leveraged to produce tangible business results.

To help your organization take control of the next generation of digital experience, please get in touch with Leigh Riches, Director-Partnerships, at [leigh.riches@kinandcarta.com](mailto:leigh.riches@kinandcarta.com)



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