

How to Build a Digital Business Technology Platform

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By Analysts [Bill Swanton](#), [Deacon D.K Wan](#)

Initiatives: [Software Engineering Technologies](#)

Software engineering leaders cannot buy a digital platform or build one without help. This research shows them how to plan, organize and develop a platform, highlighting the key business, organizational and technical decisions required. It shows how to establish goals, set expectations and mitigate key challenges.

Overview

Key Findings

- Software engineering leaders tasked to “make us more digital” struggle to get a clear vision of what sequence of capabilities they need to build over time.
- Digital platforms will introduce new technologies and methods requiring skills that most leaders don’t have on staff and can’t hire in a competitive market.
- The full digital vision will take years to fully realize requiring leaders to build it incrementally and carefully plan the steps to maximize early benefits.

Recommendations

Software engineering leaders responsible for building a digital business technology platform should:

- Set goals and budget expectations by working with the business to establish a digital vision and plan the incremental platform capabilities needed to achieve it.
- Assemble the team by creating a cross-functional business and IT organization and engaging a service provider that can get the effort started and help the team learn the necessary skills.
- Deliver the required platform and digital business capabilities by making key technology decisions and building out a minimum viable product for the first platform capability, and then scaling and extending it over time.

Introduction

Unless a software engineering leader has previously established experience (or in-house talent) for building highly scalable, cloud-based systems, building a digital business technology platform (DBTP)

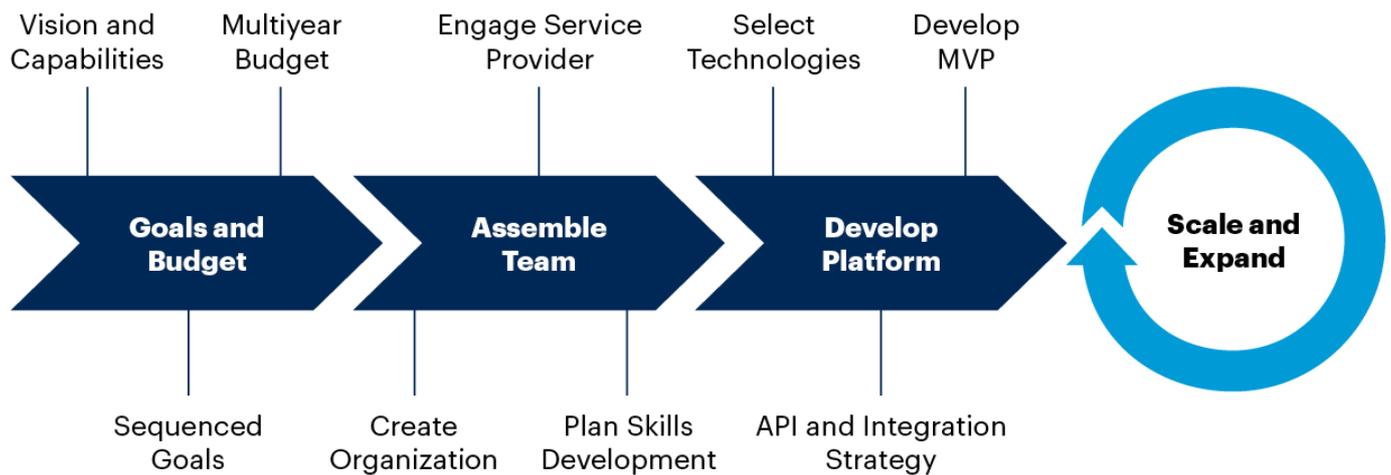
may be the most challenging development effort they have ever undertaken. It requires new technologies and architectures, which in turn require new skills to apply. This isn't just another software development project.

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Gartner has surveyed hundreds of organizations that have built a DBTP over the last few years and captured their key challenges and approaches (see the Evidence section). The learnings from these surveys and interviews with software engineering leaders have been combined here into a step-by-step set of actions for deciding what's needed, setting up the team, and delivering the platform. These steps are shown in Figure 1, which also depicts the contents of the rest of the document.

Figure 1: How to Build a Digital Business Technology Platform

How to Build a Digital Business Technology Platform



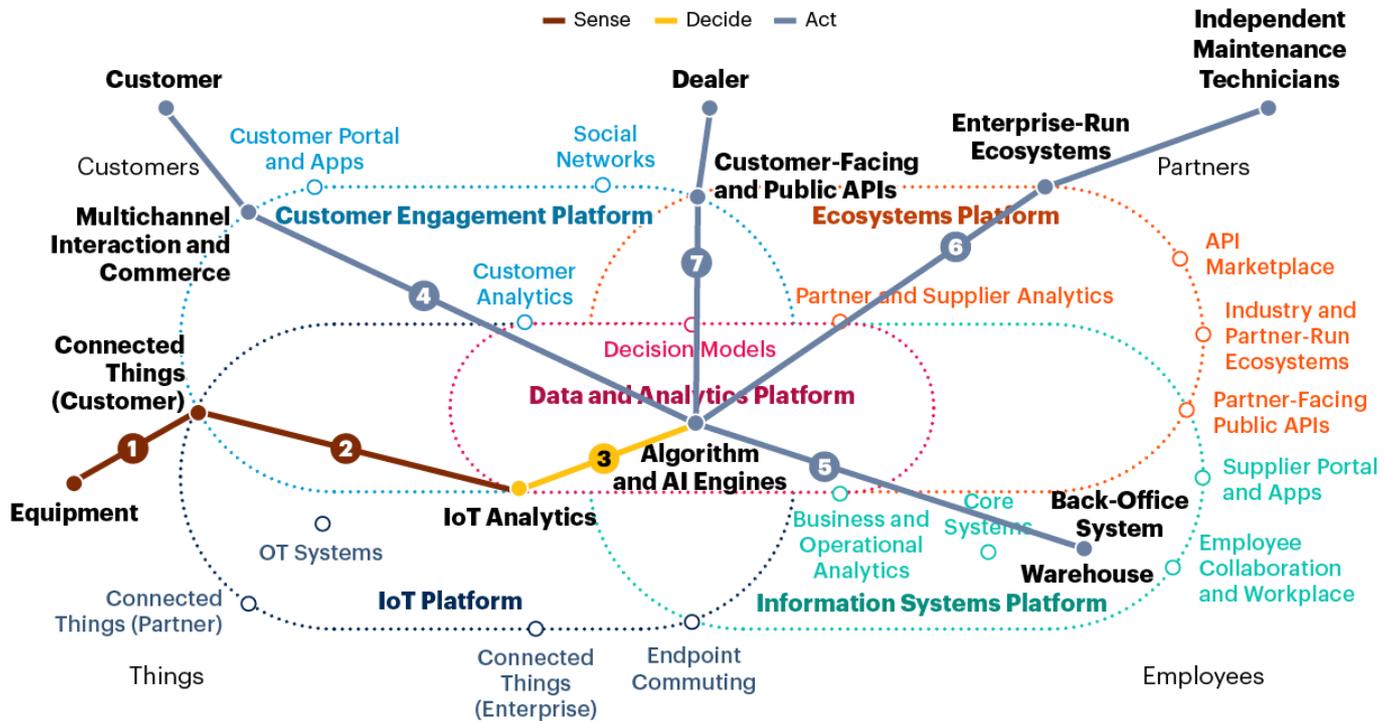
Source: Gartner
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A digital business technology platform does not replace your existing applications. It is a layer on top — interlaced and meshed with existing systems — that requires new thinking, orchestration and integration for them to work cohesively for your evolving digital business.

Figure 2 shows a logical representation of the DBTP with an example digital use case for an adaptive maintenance process. Five overlapping subplatforms typically represent several existing application systems for running your IT systems, customer engagement, data and analytics, IT systems and partner ecosystems. Internet of Things (IoT) is usually a net new capability built as part of the DBTP.

Figure 2: Digital Business Technology Platform Integrates and Orchestrates Your Existing Systems

Digital Business Technology Platform Integrates and Orchestrates Your Existing Systems



Source: Gartner
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The platform exposes the capabilities of these underlying systems to support development of digital use cases that deliver something of value to the customer.

These use cases tend to involve the following steps:

- **Sense something:** A device’s data on IoT, a customer request or action, a message from a partner.
- **Decide what to do about it:** Use logic, a machine learning program, or user interaction to decide.
- **Act:** Use the capabilities of the platform to set a sequence of events in motion.

The DBTP and these use cases are described in more detail in [Use Gartner’s Digital Business Layers to Communicate Your Digital Intent](#). Where we refer to “building the platform” in this document, we are referring to the basic platform plus all of the code required to build the use cases to implement the functioning digital business.

Analysis

Set the Goals, KPIs and Budget Required to Achieve Your Digital Vision

Before you can build the DBTP, you have to understand what your digital business ambitions are and determine how the platform will work to achieve that vision (see [Digital Business Ambition: Transform or Optimize?](#)). You also have to understand your emerging business model to make sure it creates value for your customers, your partners and your organization. Gartner has devised a series of models for the decisions that need to be made, which are summarized in [Digital Business Overview: Major Frameworks in One Report](#). These models enable you to define the vision for your DBTP.

Define the Sequence of Capabilities Required to Achieve That Vision

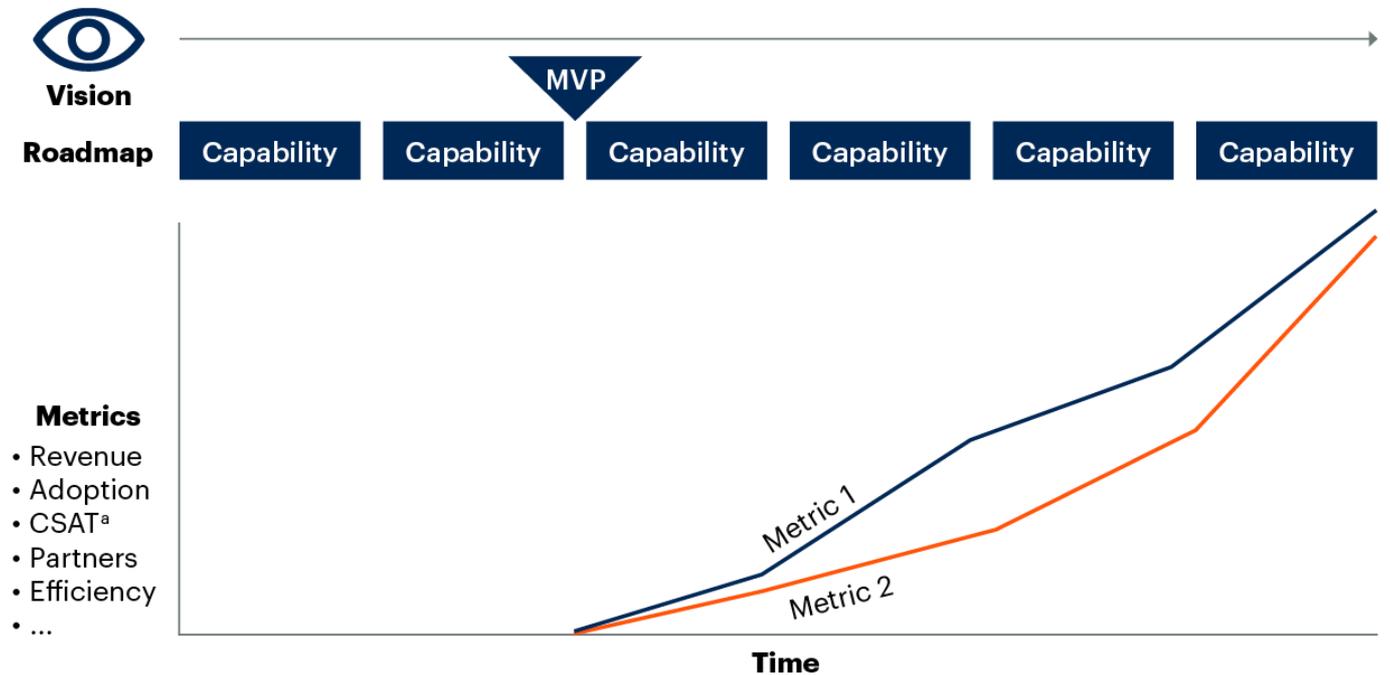
With the vision defined, and the business model in hand, you must break the development of the DBTP down into a set of business capabilities that you will deliver over time. Use product management and roadmapping tools (see [Market Guide for Product Management and Roadmapping Tools](#)) to help stakeholders and IT communicate and keep track of the roadmap and associated opportunities as shown in Figure 3.

The sequence is important because your first goal should be to get something out into the market and in use by customers and partners as soon as possible. This minimum viable product (MVP) may not even be complete enough to get customers to pay for it, but you need early feedback that the DBTP is working and doing something useful.

You also need to set the expectations with stakeholders that this is an ongoing effort and that the platform will be enhanced in depth and breadth over months and years. It is not a short-term project with a fixed end date. It is a first solution to your customer's needs as an evolving product or service that will be enhanced, maintained and continuously improved over its life cycle.

Figure 3: Vision, Sequenced Capabilities and Multiyear Metrics

Vision, Sequenced Capabilities and Multiyear Metrics



^a Customer satisfaction

Source: Gartner

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Establish Measurable Multiyear Goals to Track Success

As part of establishing the expectations for this multiyear journey, you should define metrics to measure success. You can find ideas for digital metrics in [Digital Business KPIs: Defining and Measuring Success](#) and [The Gartner Digital Business Value Model: A Framework for Measuring Business Performance](#). As shown in Figure 3, they should at a minimum measure the use and adoption of the platform and how well it is accomplishing its value added activities (revenue, savings, efficiency, etc.).

As Figure 3 shows, they should also be time based with target values at different points in time along the journey. Again, you are trying to set the expectation on how long it will take the platform to mature and contribute more to financial performance of the company.

Set Budget Expectations for a Multiyear Journey

Digital business is a multimillion-dollar annual investment. In our survey, almost 80% of companies with revenue over \$5 billion reported spending more than \$5 million a year on digital business software and professional services, and 45% of them were spending more than \$10 million per year. Of the companies with revenue between \$1 billion and \$5 billion, 90% spend over \$2 million annually.

Based on the data patterns and our client inquiries, we believe that many of the 45% invest well over \$10 million, which is consistent with some large companies we have spoken to.

Assemble the Team

A DBTP requires a dedicated cross-functional team working together for several years. Unless you have previous experience and in-house talent with large cloud systems, you will also need to get help to architect the platform and upskill your people on new technologies and architectures (see [How to Help Software Engineering Teams Modernize Their Application Architecture Skills](#)).

Determine Where the Digital Business Team Will Report

Fewer than half (45%) of the digital business teams in our survey reported into IT. In some cases they reported into a business unit or were a separate corporate organization parallel to IT. The reporting relationships we explored are shown in Table 1.

Table 1: Digital Business Team Reporting Relationships

<i>Reporting Relationship</i>	
Digital team reports into IT	45%
Digital team reports into business unit(s)	10%
Digital team is a separate business unit	9%
Digital team federated (shared services/BU)	16%
IT reports into a digital business unit	16%
Digital business is a separate legal entity	6%

Q: How does the team leading digital business product development fit within your organizational structure?

Source: Gartner 2020 Building Digital Platforms

[6 Common Reporting Relationships for Digital Business](#) describes these and the pros and cons of each. Our survey found that there was no correlation between the structure used and how successful the digital team was. We recommend you choose one that will work best within the structure and power dynamics of your organization.

Create Initial Product and Platform Teams

The size of the technical teams working on digital business capabilities in our survey shows a similar pattern to the budget. About 75% of global companies have at least 50 people working on digital business technology platforms, as do 65% of companies with revenues between \$1 billion and \$5 billion.

If you have people skilled in cloud-native development, you will want them on these teams. If not, select people who are willing to learn new skills on the job. In any case, you will probably need to bring in outside help.

Engage a Service Provider

As shown in Figure 4, almost all of our survey respondents engaged a service provider to help them get started with building their DBTP. The reality is that this is the only way to get enough people with the right skills to build the platform.

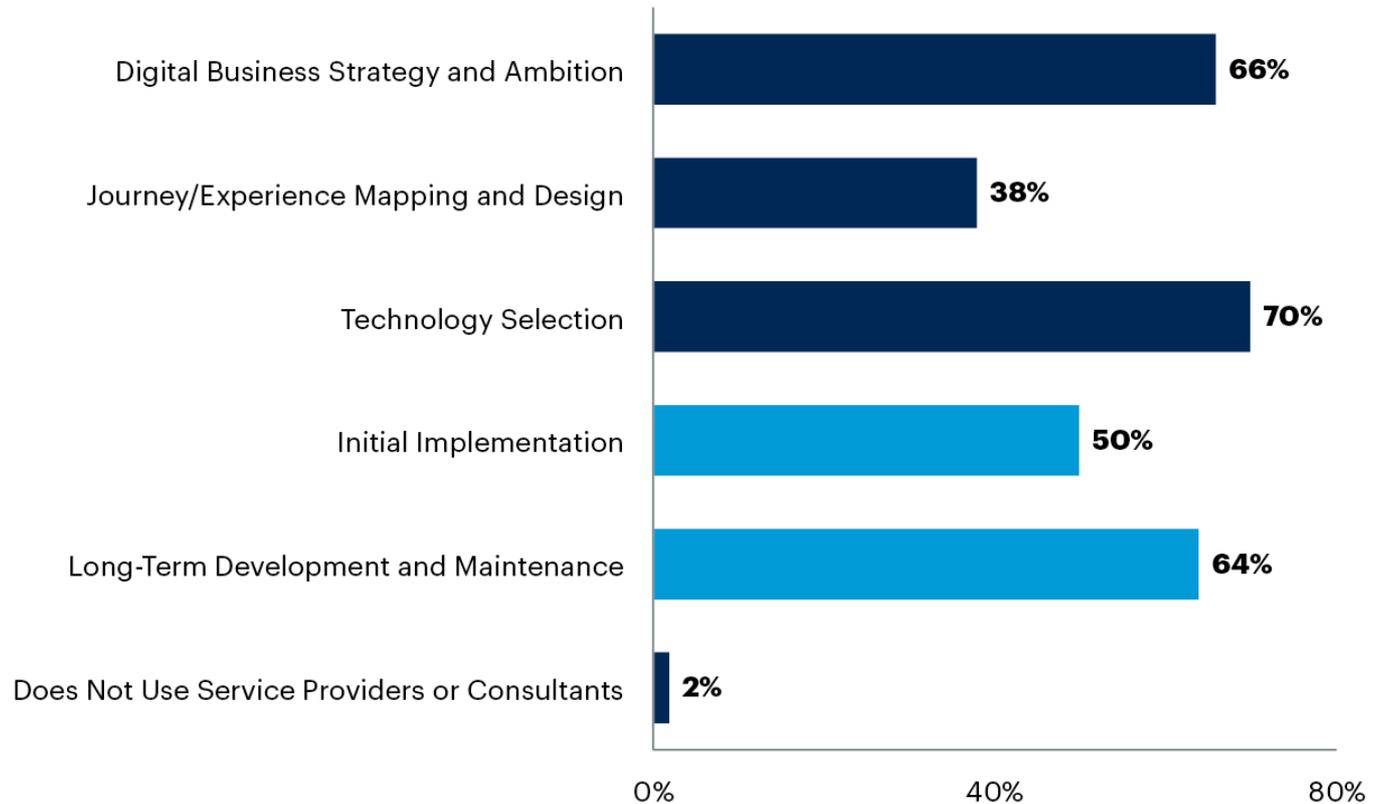
Some service providers also bring reusable assets to the table. For example:

- BearingPoint has built services for communication services providers that it has used in engagements with multiple clients.
- Cognizant has domain-specific reusable services that it shares across engagements in multiple industries.
- Idrica brings its GoAigua platform for the water and wastewater industries.
- NXN's DNX platform targets the smart city and property development industries

Your service provider will help you get your initial platform up and running. While the service provider may provide technology and skilled people, the engagement should also include having your own people as part of the joint teams to learn the technology. You need to be able to own your platform and extend it using your own people in the future.

Figure 4: What Services Are Service Providers Delivering Related to Digital Business Technology Platforms?

How Are Service Providers Currently Delivering Digital Business Technology Platforms?



n = 205, all respondents, excluding not sure

Q: "How does your organization use (or plan to use) service providers or consultants to build its digital platform?"

Source: 2020 Gartner Building Digital Platforms

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You need to be able to own your platform and extend it using your own people in the future.

Create a Training and Skills Development Plan

The need for advanced skills, coupled with the time and expense of hiring people with those skills, make an internal skills development strategy critical. In addition to technology transfer from the service provider, you will need to actively deliver training and education to the teams. The service provider won't stay forever and you will be hurting badly if you have not acquired the skills by then.

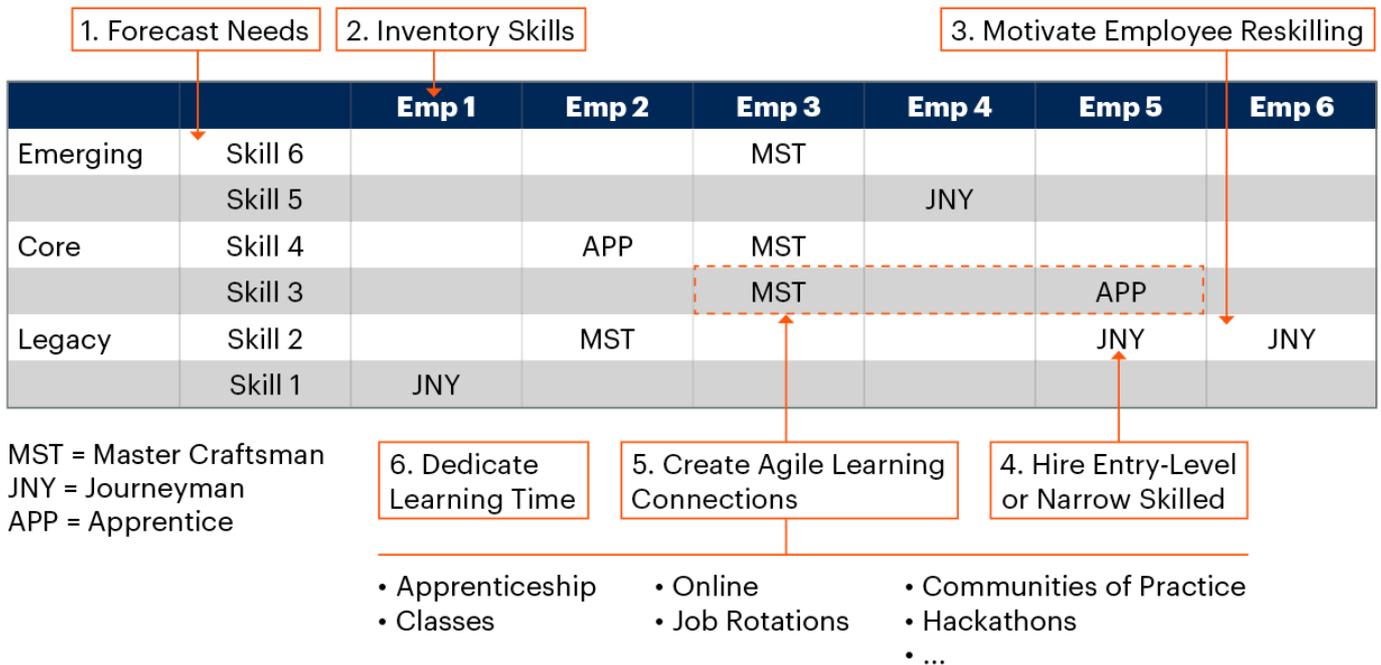
Figure 5 describes the elements of a training and skills development plan, which is described in more detail in [How to Establish a Reskilling/Upskilling Talent Development Program](#).

The key elements include:

1. Determining the skills needed, how many people need them, and when.
2. Inventorying the skills of your people including their level of mastery (apprentice, journeyman, master craftsman, for example).
3. Motivating people to gain new skills by establishing a “learning organization” culture and being clear to employees that they are expected to constantly broaden their skills, focused on the skills the organization needs the most.
4. Creating learning connections (connecting an apprentice and master who work together, for example) or by establishing classes, communities of practice and other ways of sharing knowledge.
5. Hiring entry-level people with a narrow skill set and developing them over time.
6. Dedicating time each week for everyone to learn.

Figure 5: Training and Skills Development Program

Training and Skills Development Program



Source: Gartner
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Establish learning connections by following the advice of Gartner’s Agile Learning Manifesto. This includes creating learning events that are built into the work day and allow the learner to apply the skill quickly to better reinforce the learning. Such development programs are much more successful as shown in our learning survey (see [Survey Analysis: Agile Learning Delivers Superior Outcomes](#)).

Build the Initial Platform

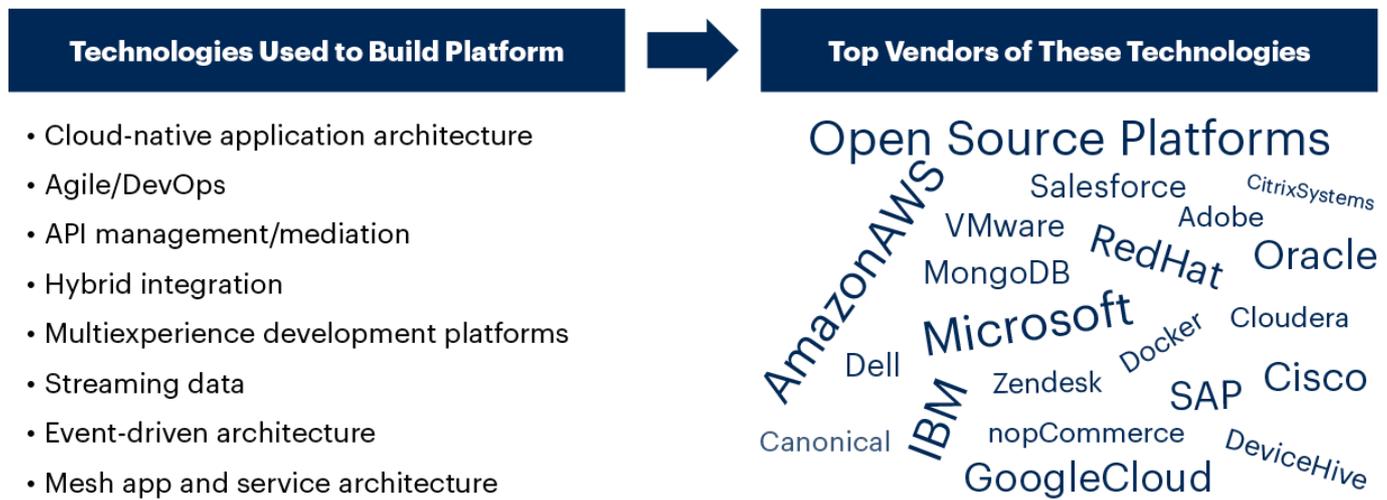
With the team in place, construction can begin. The initial steps will be establishing the fundamental architecture of the platform, which will depend somewhat on your initial and long term vision for what the platform needs to do.

Select Technologies Required

In our survey, the more successful companies used more new technologies and architectural approaches than less successful companies. Figure 6 lists the architectural approaches and methods employed as well as the key vendors used.

Figure 6: Architectural Approaches and Methods Used to Build DBTP

Architectural Approaches and Methods Used to Build DBTP



Source: Gartner
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From the vendor list it is clear that DBTPs are primarily built in the cloud and heavily use open-source software including vendor-supported open source. This is true in part because most new development is undertaken in the cloud nowadays, but there is also an economic angle. Clients have selected cloud platform-as-a-service and open source to minimize their upfront costs while building the platform. They avoid paying upfront hardware and software licensing fees that would be significant for the target scale of their digital business. The cloud fees will be modest during development and then only grow as the digital business (and revenue) scale up.

Your service provider will help make these decisions, indeed as shown in Figure 4, 70% of survey respondents relied on their guidance. If the service provider brings reusable assets to the table, some of these cloud and open-source technologies will inevitably be drawn in.

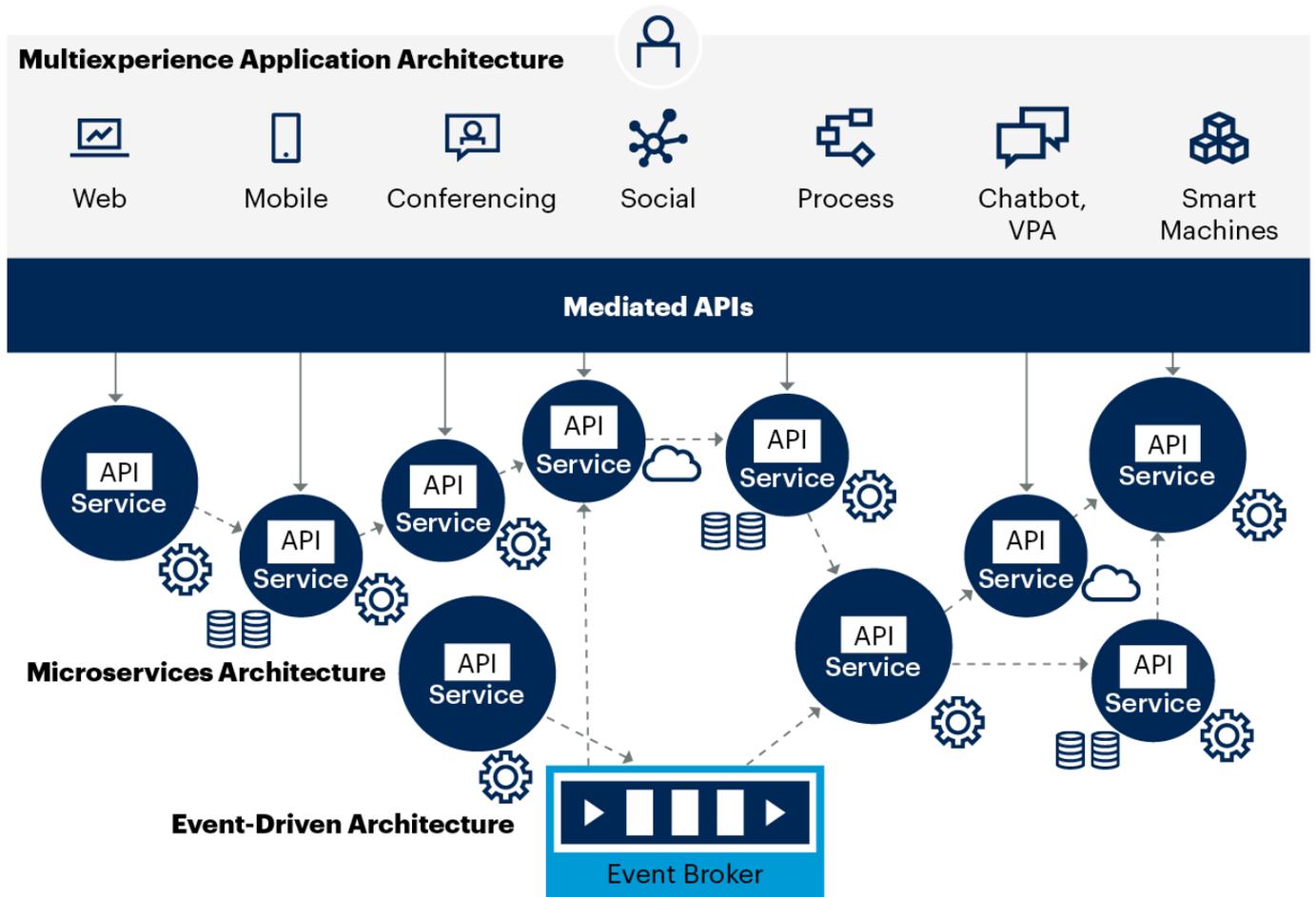
Establish API Management and Integration Strategy

Two critical decisions are establishing an API management and integration strategy. Nearly 70% of high-success companies used API management technology and they typically integrate to between three and four existing systems.

API Management is a critical part of a mesh app and service architecture (MASA, see Figure 7), which is frequently the pattern for a DBTP. It creates mediated outer APIs for consumption by platform users and logic and provides security and traffic management that may not be present for underlying services, such as inner APIs for existing systems or newly built microservices (see [Mediated APIs: An Essential Application Architecture for Digital Business](#)). As Figure 7 shows, event-driven architecture can also be accommodated as part of MASA.

Figure 7: Mesh App and Service Architecture

Mesh App and Service Architecture



Source: Gartner
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Develop an MVP and Get It in Production

With the architecture set, start to break down your sequence of capabilities into features and stories for each team’s product backlog. The focus should be on getting something that functions and that can be

tested in the real world as early as possible, even before the MVP is reached.

Given that your initial deployments will probably be limited to a few customers and partners, you may decide to incur some technical debt to get to production faster. This would usually be in terms of the ability to scale the users and data rates the platform can handle. The teams can pay down this technical debt as you gain initial customer feedback and be ready to scale the platform for more customers.

Continue to Scale and Expand Platform Capabilities Iteratively

As noted earlier, you should expect to continue to build out the platform and digital business use cases for several years. Not only will the rest of your long-term vision be on the backlog, but you will discover new capabilities needed and new opportunities to pursue as the platform is used by customers and partners.

In addition, be prepared to spend effort refactoring what you have already built. The limits of your initial architecture may become apparent and the ecosystem of tools and technology available through your cloud vendors will improve.

Evidence

Gartner's 2020 Building Digital Platforms Survey was conducted online during May and June 2020 among 206 respondents working for organizations in North America and Western Europe with at least \$1 billion in annual revenue.

Organizations were from the manufacturing and natural resources, communications, media, services, retail, banking and financial services, insurance, healthcare providers, transportation and utilities industries.

Organizations also had to be working on digital business efforts or have plans to do so, defined as involving IoT, delivery of public APIs, private/B2B APIs, or a combination thereof. Quotas were set to ensure a majority of organizations have a fully implemented digital business initiative.

Respondents were required to have a job title of director or more senior and to be involved in either digital business, data analytics, IoT or API-based platforms for partners.

In respect to digital business initiatives they were also required to have a role in either defining technology requirements, investigating or evaluating service providers or making final decisions.

The results of this study do not represent global findings or the market as a whole, but reflect the sentiment of the respondents and companies surveyed.

The survey results and methodology are described in [Building a Digital Business Technology Platform Requires Clear Goals and a New Team With Cloud Skills](#) and [Building a Digital Business Technology Platform Requires New Technology and Service Provider Support](#)

Document Revision History

[How to Build a Digital Business Technology Platform - 26 November 2018](#)

Recommended by the Authors

[Use Gartner's Digital Business Layers to Communicate Your Digital Intent](#)

[Digital Business Overview: Major Frameworks in One Report](#)

[Digital Business KPIs: Defining and Measuring Success](#)

[The Gartner Digital Business Value Model: A Framework for Measuring Business Performance](#)

[6 Common Reporting Relationships for Digital Business](#)

[Survey Analysis: Agile Learning Delivers Superior Outcomes](#)

[Mediated APIs: An Essential Application Architecture for Digital Business](#)

[Building a Digital Business Technology Platform Requires Clear Goals and a New Team With Cloud Skills](#)

[Building a Digital Business Technology Platform Requires New Technology and Service Provider Support](#)

[Inspire Customer-Centric Experimentation to Kick-Start Application Innovation](#)

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