



The Definitive Guide to Embedded Analytics

How product teams can deliver better user experiences and exceed business goals



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INTRODUCTION

There's never been a more difficult time to stand out.

There's never been a more difficult time to stand out. Today, there's an application (or ten) for everything—and businesses face an uphill battle to provide truly differentiated, value-added products and services to their customers.

Customer expectations have evolved too. Gone are the days of the obliging customer willing to overlook delays and product shortcomings. With endless choices just a click away, customers are quicker to churn and product stickiness is more precarious than ever.

But the size of opportunity is also growing. By 2024, Software as a Service (SaaS) revenue is [projected to reach US\\$369.4 billion](#)—an estimated growth of nearly US\$200 billion in five years. Companies that are able to win customers over stand to benefit exponentially. But, to do that, they need to be able to give customers a product that delivers a valuable user experience with unique features.

In this landscape, the ability to offer deeper insight has become a winning feature for businesses. The modern consumer is thirsty for knowledge; they love being able to dive deeper into understanding how they can drive better business outcomes using your products. This means that products and applications that can offer an extra layer of data analytics and intelligent visualizations are considered more useful than those that don't.

In this eBook, we'll explore how product managers can meet the challenge of driving product-led growth through embedded analytics. And, by doing so, grow revenue, improve net promoter scores (NPS), increase customer lifetime value, and reduce customer churn.



The Product Manager's market challenge

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Stand out in a crowded market

The independent software vendor (ISV) market is expanding rapidly—by as much as **30% annually**, according to one study. In just a decade, the number of ISVs has shot up tenfold, going from 10,000 in 2008 to 100,000 in 2018. By 2028, that number is **projected** to hit a million.

In short: Competition is fierce. Customers are inundated with choice and are increasingly deaf to the white noise of businesses marketing to them. This is especially true in the B2B space.

To truly stand out, ISVs need to be able to offer incremental business value to customers—such as by offering in-app analytics.

Keep up with rapid innovation and change

The pace of technological innovation and change is faster than ever now. Instead of timed release cycles, companies are now able to continuously deliver new features.

This is largely thanks to the widespread availability of technologies such as the cloud and AI/ML, which experienced an uptake boom as a result of the pandemic. And this accelerated pace of digital transformation seems set to stay.

Customer expectations have evolved as a result. Users now expect swift resolutions to problems and fast turnaround times for updates, patches, and new features. Instant gratification is the new name of the game—and businesses that are able to meet this need are more likely to maintain a stable user base.

Lack of personnel, capital, and time

Product Managers are always forced to choose between important features, due to limited resources and time. This has only been exacerbated by recent resource shortages and uncertain economic times. As a result, important strategic (if fundamentally unurgent) capabilities keep getting pushed to the wayside—and the product suffers as a result.

That resource shortage could mean the difference between keeping your existing users and losing them to competitors with a faster innovation cycle. It's a difficult problem to solve, as finite resources are part and parcel of the job. But one thing you can do to combat the effects of this is by opting to use purpose-built, modular solutions rather than dedicating the time and resources to build and maintain your own components from scratch.

Boost your applications with embedded analytics

Boost your applications with embedded analytics

In a highly-competitive environment, an effective way to stand out and drive customer value is by fulfilling your customers' desire to explore data. Embedded analytics makes it easy for you to let your users dive into their data with ease.

What is embedded analytics?

Embedded analytics refers to the technology that allows companies and developers to make data insights and visualizations accessible to customers within their software applications.

Embedded analytics removes a lot of the UX steps that would otherwise be required to switch between applications. With embedded analytics, users don't need to leave their primary application and open another to access insights. Instead, a data dashboard or individual visualization can be embedded within the application, so users can find everything they need in a single place.

The rising popularity of customer-facing analytics

Embedded analytics are appearing in an increasing number of applications, including both customer-facing B2B and B2C ones.

You've probably used some yourself in your personal life through B2C apps you use. For example:

- Fitness apps, where you can see your improvement over time and track your progress.
- Commuter apps that help you identify the fastest travel routes in real-time.
- Learning apps that allow you to see your ranking over time compared to your peers, people in your country, and people all around the world.

And so on. But analytics aren't yet the standard. Many applications still don't offer analytics for customer end-users; analytics capabilities remain a nice-to-have value add. This is especially true in B2B applications. For example, if you are a marketer in your professional life, then you would want analytics on how your content is performing

within your content management system to take corrective actions. Or if you are a customer success professional, would you want account usage analytics within your CRM to drive better decisions with your customers.

But demand for analytics is on the rise. Users tend to like the extra level of personalization and usefulness offered by analytics-capable applications. Data visualization offers an easy way for users to process information, which in turn makes it easier for them to make informed decisions.

But adding analytics to applications is often easier said than done—especially when it requires retrofitting. Building from scratch requires developers to build within the margins of existing app infrastructure, which is difficult and limits their capabilities. It also puts the burden of maintenance and improvement on the developers going forward—a necessity that grows more cumbersome over time as the list of features grows.

Embedded analytics solutions offer an easier path forward for Independent Software Vendors (ISVs).

The easier way to add analytics to your applications

Embedded analytics solutions, provided by third-party vendors, allow businesses to easily incorporate powerful analytics into their applications without the need to reinvent the wheel.

Embedded analytics serve both internal and external needs. They can be used to provide internal employees with a quick way to analyze customer data and internal performance metrics. They can also be used to add an analytics component to customer-facing products and applications, so end-users can reap the benefits of deeper data insights.

Whether external or internal, an embedded analytics solution is the answer to fast-to-market, powerful analytics capabilities.

How can embedded analytics help Product Managers meet their business goals?

Differentiate your product in a crowded market

Embedded analytics allow you to offer more than standard operational workflows. Give your users more independence and power with data-driven insights directly in the space they work.

Drive engagement and product stickiness

When you offer greater insight and democratized data visualization (through interactive dashboards and natural language queries), it keeps customers invested and coming back. Encouraging data visualizations—such as progress over time—can also create positive feedback loops that encourage users to continue using the product.

Monetize data to open additional revenue streams

Add additional revenue streams by monetizing additional value-added features within your application. Offer optional extras that give customers the ability to pay for extra functionality and deeper insights.

Do more with less

Using a ready-made solution allows you to divert your engineering resources to other business problems instead of reinventing the wheel. It also means your developers can focus their efforts on creating innovative new features at a lesser cost than before.



Embedded analytics in the real world

Here's how three leading organizations enhance customer experience and drive growth with analytics embedded into their applications.

Use Case 1: ConexED

ConexED is one of the fastest-growing EdTech companies in the US. Designed specifically to enhance the student experience and elevate student success, ConexED seeks to remove obstacles that hinder student persistence and access to student services, while also providing advisors, counselors, faculty, and campus staff with the tools they need to meet students where they are.

ConexED used Amazon QuickSight to embed a business intelligence (BI) dashboard into its student success and case management platform, in order to empower its institutional partners with the insights they need to make informed, data-driven decisions.

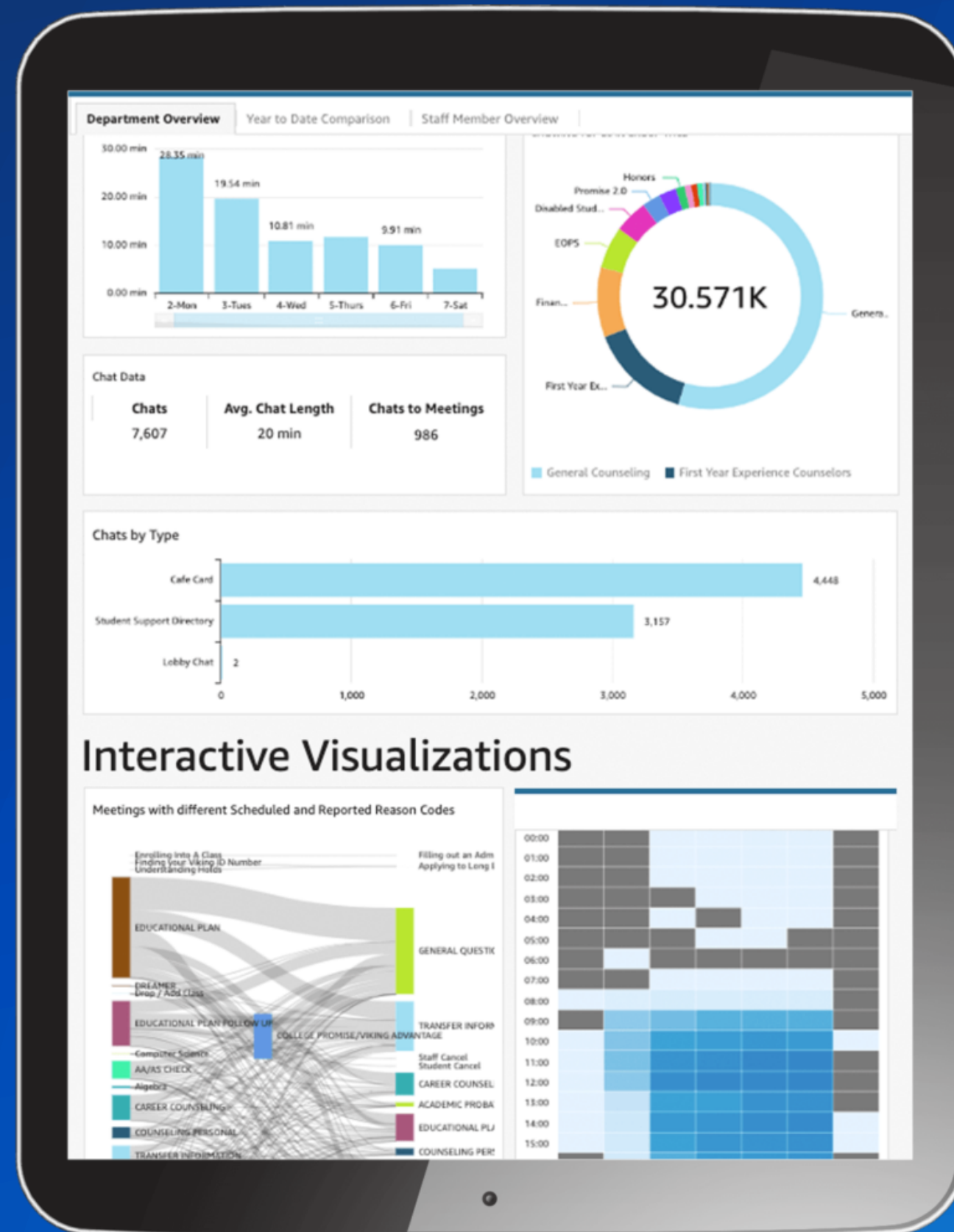
Manual reporting is a classically time-consuming process. As a result, reports would often be created infrequently, based on outdated information.

ConexED sought to change this by democratizing access to instant data with automated report generation capabilities. Originally, this was done through the hard work of their in-house development team, but it quickly became clear that their time would be better spent elsewhere in creating more competitive new features. To free up their team's time, ConexED turned to an embedded analytics solution.

Using Amazon QuickSight, ConexED is able to provide its users with attractive, custom reports that represent important information in easily ingestible data visualizations. Their users are also able to exert more control over the output of these reports, so they can pull and aggregate information that is most helpful to them in real-time using drill-down filtering, predictive forecasting, and aggregated insights.

The development team was also able to build an internal QuickSight dashboard to view customers' QuickSight usage in just one day—unlocking data that could then be used to further improve the service offering for customers.

[Read the case study >](#)



Use Case 2: Lucerna Health

Lucerna Health is a data technology company that connects people and data to deliver value-based care (VBC) results and operational transformation. They use clinical, sales, and operational data to help healthcare providers and payers grow and succeed in the VBC environment through payer-provider integration, health engagement, database marketing, and VBC operations.

Real-time analysis and reporting sits at the heart of everything they do. But their in-house data analytics team struggled to stay ahead of user growth. However many dashboards they built, it was never enough to keep up with user demand.

They knew they needed a more scalable analytics solution that would be capable of securely meeting growing customer demand for business intelligence (BI). Amazon QuickSight helped them meet this need.

Though they had used other simple BI tools in the past, they knew they needed a fully embedded solution to provide greater automation capabilities and seamless, self-service insights for users.

With QuickSight, Lucerna Health was able to embed analytics capabilities within its Healthcare Data Platform. Customers can use a portal to register new dashboards within the user interface. This allows them to ingest and visualize complex healthcare data such as clinical EMR systems data, eligibility and claims information, and patient and digital interactions data.

Healthcare data customers can also build their own datasets and quickly share that data with a wider group of users through our platform. This gives customers a developer experience that enables them to customize and share analytical reports with colleagues.

QuickSight made it easy for Lucerna Health to offer insightful, 360-degree aggregated reports to its users, which could then be used to make more strategic decisions.

Best of all, it's fast to implement as well as use. By Lucerna Health's own reckoning, they can craft a new dataset, apply permissions to it, build out an analysis, and publish and share it in a report twice as fast as they could before. Time saved that could be used for other business-critical operations.

[Read the case study >](#)





Use Case 3: Bolt

Bolt is a hosted checkout company in the e-commerce space. They provide a cloud-based SaaS application that handles checkout for merchants, fraud detection, order approval, and payment processing.

They processed over US\$2billion of payments in 2020—a number that has doubled year over year for the past few years. They also have over 10 million shoppers with registered accounts on Bolt—another figure that’s growing exponentially every month.

Bolt realised there was an appetite for business intelligence (BI) and analytics among its customers after learning that all of their merchant partners were building their own BI dashboards. These customers were using an assortment of different tools, but they were all largely trying to determine the same metrics.

For example:

- Checkout conversion rates
- Approval and rejection rates for orders
- Percentage of payment volume by payment providers

Bolt decided to embed an analytics solution into their product. They had a few key criteria they considered when looking for a solution provider:

- Easy to white-label and customize
- Seamlessly merge into the existing application
- Provide clear data visualizations for both external merchants and internal data analysts
- Allow self-service data filtering for end-users
- Be quick to get started on
- Be affordable to operate

They chose Amazon QuickSight as the ideal provider to serve these needs. Cost in particular was a big decisioning factor. QuickSight operates on a per-session basis as opposed to a per-seat basis—which was ideal for Bolt, as they constantly experience a fluctuation of new users and existing users, and can never predict exactly how many of each to expect per month. By paying on a per-session basis, they can moderate their costs over time while offering a premium service to users.

They were able to take the analytics feature from inception to launch in just two months, using a team of just three engineers—something that would otherwise have taken years to build in-house and perfect.

Using an embedded analytics solution has also allowed Bolt to reduce their headcount by around 40%, as they don’t need to maintain an infrastructure team or front-end experts.

[Watch the case study video>](#)

Things to consider when selecting a vendor

There are a number of embedded analytics solution providers in the market. Here are some of the general considerations you should bear in mind while making your decision.

Fast Time-to-Market

Time is money. Specifically, every additional moment spent in development is money out of your pocket.

By getting your product to market sooner, you increase its overall revenue capacity. It also allows you to lower costs of development—the less time your engineers need to spend on getting the product market-ready, the less you'll be spending on producing it. Using a purpose-built solution allows you to lower costs of development (and maintenance) and increase overall profitability. Getting to market fast can also improve your likelihood of capturing market share, as you'll be more likely to be alone in your corner of the market for longer.

Look for a solution that can be setup fast, without the need for infrastructure concerns, and that is easy-to-use. Serverless architecture with pay-as-you-go models make it easy to get started—and having an intuitive user experience with decoupled visual and data layers also helps you build rapidly.

Performance and Pricing to Scale with your Needs

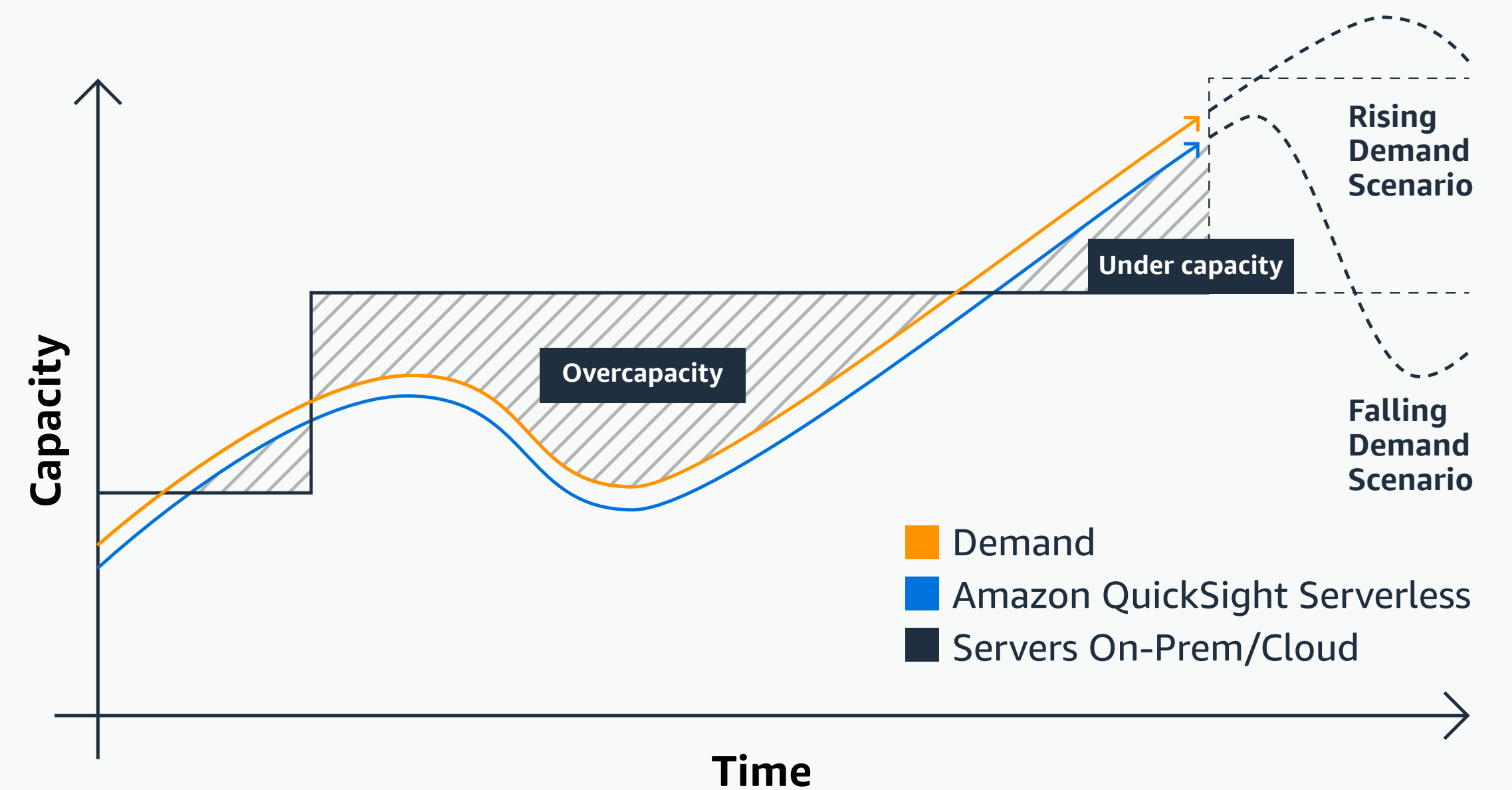
Customer experience is critical—and application performance plays a massive role in that.

As a product owner, it's only natural that you'll want to roll your product out to as many customers as possible—and there's no upper limit to how large your user base may become. This means you'll need an underlying technology and architecture that is built for cloud scale. You also don't want to be overpaying for usage and seats that you don't need as you start on your embedded analytics journey.

To give yourself space to grow, look for a true serverless solution that scales seamlessly to accommodate new users, use cases, or complexity, and that offers a pay-as-you-use model with flexibility to optimize costs once benchmarks and usage patterns become evident with growth. APIs for automation workflows will also be important as you scale up, as they will support your user and use case growth.

De-Risk your Analytics Investment

Performance and consumption-based pricing to scale with your needs



Seamless Experience with Extensive Customizability

There's nothing worse than a jarring user experience. And nothing is more jarring than being thrust unexpectedly into a visually (or operationally) distinct area of an application.

Embedded analytics shouldn't look or feel like a third-party addition. To offer your users the most frictionless experience, you need to ensure there are no 'edges' between your application and any analytics capabilities. The fewer clicks (or taps) required to get to a desired result, the better.

But that doesn't mean you need to build it all from scratch. You simply need to find an embedded analytics solution that allows you to customize it to match your application's look and feel.

The ability to change the look and feel of analytics and reporting, embed fine-grained visuals, and customize interactions between the host and embedded applications are critical to supporting a unified experience.

Seamlessness also extends to how the customer accesses analytics—and removing the need for additional login steps. This can be done through automated authentication and permissioning that doesn't require additional effort from your customer.

Look for solutions that offer comprehensive embedding options, such as:

- embedding entire dashboards, individual visuals, natural language querying, reporting views, and dashboard authoring
- customize the entire look and feel to seamlessly match your parent application
- API-led automation and integration workflows
- single sign-on and automated security setup
- flexible tenancy deployment options to suit your data and application architecture





Augmented Analytics to Drive Adoption and Delight Users

Historical analyses through visualizations, while important, have become increasingly standard. Stand out from the crowd by going above and beyond with additional features that allow your customers to predict better outcomes and make better decisions.

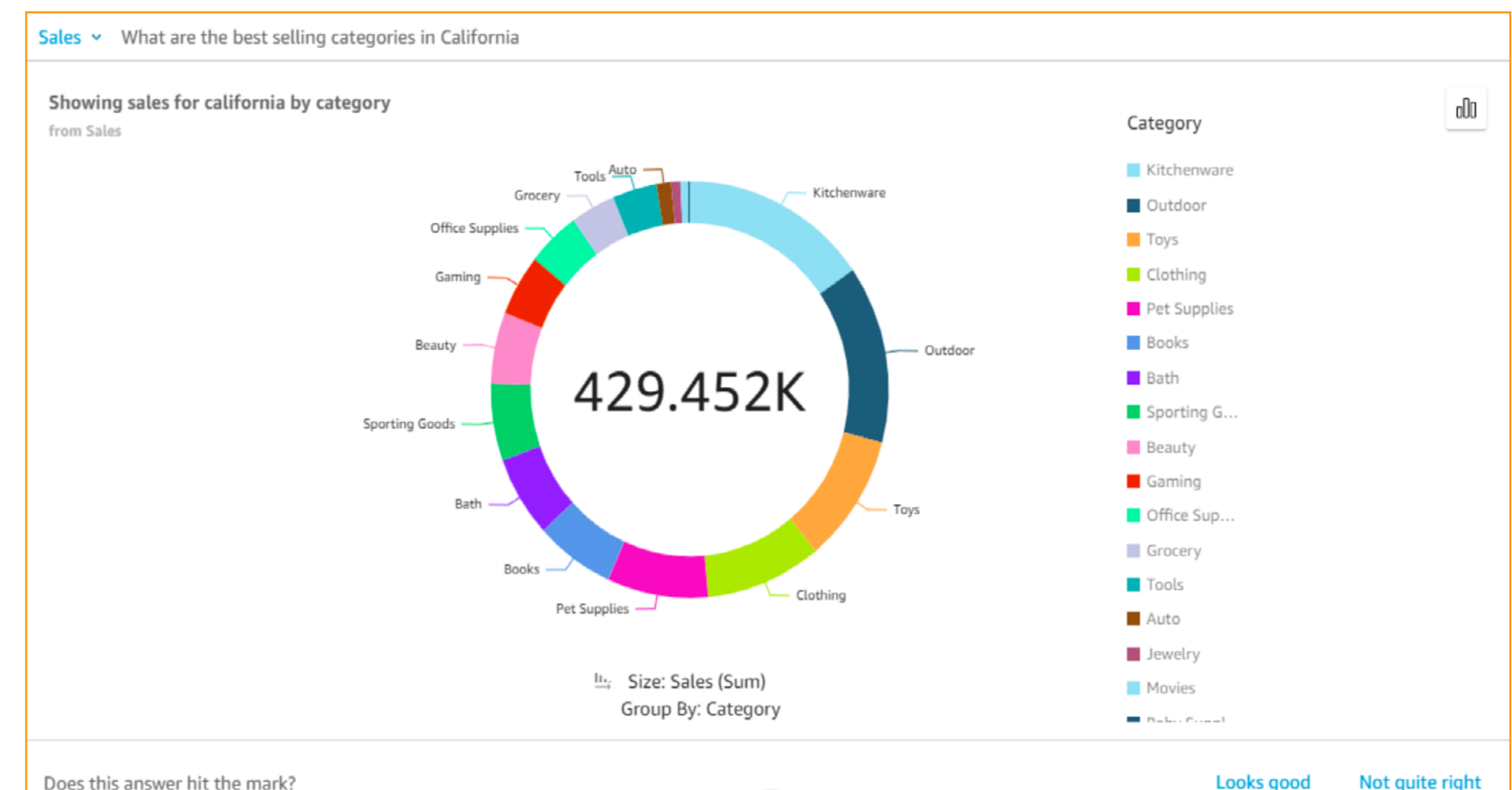
Give your customers additional autonomy and democratize your data by offering features such as natural language queries (NLQ).

NLQ uses AI and ML-driven natural language processing capabilities to make it possible for you to interact with analytics software in a more intuitive, natural way.

Instead of having to manually search for and query datasets through clicks, you can instead ask the software a direct question (such as, “What’s the growth rate of average users per month from 2019 to now?”) and it will parse the language and return a relevant data report that answers the question.

Customers can also ask forecasting and “why” questions to get forward-looking analyses and understand contributing factors to key metrics over a user defined time period.

Having NLQ capabilities within your applications can make them more accessible and valuable to your users. It also allows you to democratize data for your end users, meaning they can autonomously get to relevant information faster.



A blueprint to seamlessly embed analytics into your applications

A blueprint to seamlessly embed analytics into your applications



1

Set your objectives

Start by setting the business objectives for your application if you add an analytics component. What are your revenue, NPS, and user adoption goals? Do the math on return on investment and determine your milestones for breaking even and making a profit.

If you can charge or earn \$X dollars with a ramp up across a percentage of customers over five years, map out your expected earnings vis-a-vis your investment to get a clear understanding of your growth and expenditure goals.

Also establish your reasons for adding embedded analytics.

Are you trying to drive new revenue? If so, will you do it by charging more for your product, or by upselling additional analytics capabilities or an added fee?

Or, are you more motivated to increase product uptake and stickiness with customers through a free analytics offering?

2

Know your customer

Next, you'll need to get into your customer's head. The best products always start with a focus on the end user.

Identify the personas who will be consuming the insights. How can you help them be better at their job using your product better through data-driven insights?

- What are their key pain points?
- Which visualizations and metrics would offer the most value to them?
- What are their goals?

You can do this by conducting customer research into insights your customers would like to be able to see—through surveys, field interviews or even workshops with current customers.

Once you've determined your customers' pain points and desired end goals, translate those needs to business KPIs and metrics. (Don't worry about how you'll solve the problem just yet—you simply need to know where you intend to go with your product.)

3

Outline your plan

Now you've identified the *why*, it's time to figure out the *how*.

Determine your analytics visualization plans, data sources and production timelines. You'll also need to decide whether to go down the build route or the buy path.

Map out timelines by working backwards from your minimum viable product. Be sure to plan follow-up phases with a robust roadmap—and don't forget to include time for testing and feedback.

Translate your KPIs and metrics to dashboard and data plans. Ask yourself:

- Will you embed dashboards or individual visuals in your application?
- Will you deliver analytics as stand-alone white-labeled analytics?
- What will your integrated application look like? What look and feel are you going for?
- Will the host application interact with the embedded dashboards to set the context?
- How will you manage security? Will you have separate instances for customers, or combined data with row-level security for each customer?
- What will the customer experience be like?
- How will users access analytics? Will it be through single sign-on or separate login credentials?
- What does scale-up and down look like to meet demand or vice versa? How would you add users, additional security measures, and data in the future?

4

Build your analytics

Once you have your plans and designs in place, building out your analytics offering should be the easy part.

As you do so, always keep your end user at the heart of your considerations. Will they find it easy to use? Will they be able to locate everything they need on the dashboard? If not, is it clear what next steps they should take to seek out further information?

5

Create a seamless user experience

Building on from the last point, be sure to build with the user experience in mind. Early on, you'll want to determine your app and user integration workflows. You want to make movement from the host app to your analytics solution as frictionless as possible—ideally, the user should not be able to notice a transition.

You can do this by taking the time to customize the look and feel of the embedded analytics solution. Make your dashboards look like the rest of the application, and create branded insights reports.

It's not all about the look, either. It's also about ease of use.

By building out interactivity between your host application and embedded application, you can improve the customer experience by ensuring the user won't need to repeat steps (such as re-entering credentials, or re-adding context). One way to do this is by passing parameters along from the host application so that embedded analytics pulls through necessary context. For example, if your host application is filtered to the account region, "North America", then your embedded dashboard should also be filtered to "North America" automatically. Build out single sign-on if possible, to grant customers automatic access to the dashboard, while also ensuring the right security access levels across all your users.

Depending on your application, it may make sense to embed individual visuals instead of full dashboards—allowing you to truly blur the line between operational workflows and insights.

6

Differentiate your analytics solution

You want to keep users for as long as possible. But, to do that, you'll need to offer something more than your competitors: better functionality, faster speeds, a more intuitive UX, or more advanced analytics capabilities.

Go above and beyond for your users with advanced analytics data visualizations that utilize forecasting, predictive analytics, and NLQ (natural language query) capabilities.



7

Implement & automate governance

Despite wanting to improve your customers' access to data insights, you'll still have to ensure security with the right access controls.

Ensure your customers only see the dashboards and data they are allowed to by setting up correct access controls—both to dashboards and datasets. Modern embedded analytics solutions allow you to get granular with access, so you can decide what each subset of users can see down to the row or column-level. Based on your architecture, it might be critical to implement native multi-tenancy to partition individual embedded analytics customers to ensure both scalability as well as security with lower operational costs.

Having an automated component is critical here, for both the reduction of error and for scalability. By automating this process to be implemented alongside user creation, you can ensure no manual errors are made—so your data is always secure.

8

Launch embedded analytics strategically

Launch your embedded analytics solution with a robust go-to-market strategy and execution plan. It would be a mistake to not treat embedded analytics as any new product launch. All the rules that apply to any big product launch should be applied here as well.

Establish a launch plan that targets your core audience with relatable positioning and messaging (the customer pain points identified earlier in the planning phase will be key here). Drive customer adoption by being proactive about your early marketing and customer education. If your goal is to drive net-new sales, make sure to incorporate messaging across your marketing and sales collateral with updated positioning and new demand generation campaigns. If your goal is to drive adoption, then in-app communication, targeted campaigns with existing customers and working through customer success teams might be the way to go.

9

Continuously improve

Once your product has successfully been launched to market and is growing in number of users, it may seem like it's time to rest on your laurels—but it's not.

Digital products are ever-evolving. They need to be to stay relevant.

Keep your product on top of your customers mind and encourage long-term product stickiness by having a robust user support system in place. Ensure that tickets are easy to file and are promptly addressed. Have trained support on-hand that is capable of answering customers' analytics questions, along with an escalation path for any questions beyond your support team's capabilities.

Use customer feedback to fine-tune your product. Collaborate with your customers to identify areas for improvement and features they would like to see in future roll-outs and updates. Use this feedback to amend your roadmap and set next steps for your development team.

Embed analytics at hyperscale



Embed analytics at hyperscale

As a product manager, you want to do what's best for both your business and your customers—and you want to do it in the most cost-and labor-effective way possible. Embedded analytics solutions can help with that.

Amazon QuickSight powers data-driven organizations and business growth with Unified Business Intelligence at Hyperscale. QuickSight enables all users across an organization and their customers meet varying analytic needs through modern interactive dashboards, paginated reports, embedded analytics, and natural language queries. With a unified, modern BI service, BI authors and developers can use one easy-to-use, no-code authoring experience with comprehensive analytical, built-in ML and embedding capabilities to rapidly deliver rich data-driven journeys. QuickSight's powerful SPICE in-memory data engine and serverless architecture auto-scales to hundreds of thousands of users with no infrastructure or software to manage, lowering operating costs and ensuring consistently high performance. With consumption-based pricing, robust governance controls, and native multi-tenancy, organizations can de-risk their analytics investment and focus on driving growth.

Want to learn more about how you can get started on your own embedded analytics journey?

We're here for you.

Get started

[Explore Amazon QuickSight Embedded](#)

(the all-in AWS embedded analytics solution)

