

BUILDING MODERN APPS FOR THE AGE OF THE CUSTOMER

Inside the world's #1
enterprise cloud platform



Apps are the engine of this revolution. In one industry after another, established giants have watched their dominant positions vanish as startups, fueled by apps, have disrupted long-established ways of doing business. Uber is often cited as the poster child for this new way of thinking – a startup with virtually no assets or market presence that overturned an entire industry overnight. But Uber was just the beginning. The rate of change – and the heat of competition – is only accelerating.

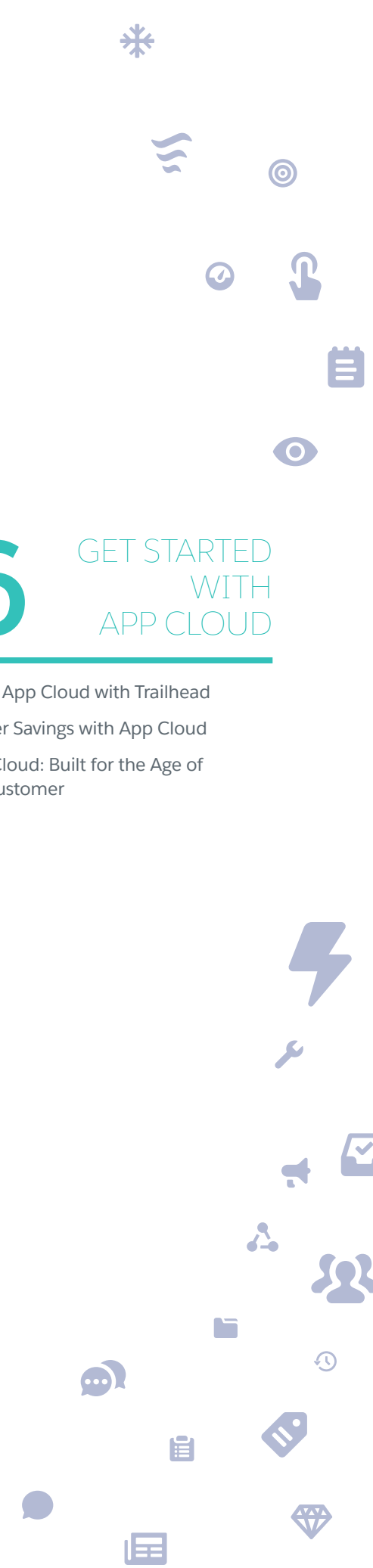
Meeting these high expectations requires finding new and effective ways to deliver value faster – regardless of legacy technologies and complex environments – by connecting with the customer in real time, using cloud, social, mobile, data science, and internet of things (IoT) channels. This process is known as digital transformation. Because digital experiences, like apps, are increasingly the single-most common way your customers interact with your brand, you need to deliver apps – apps for your customer, apps for your internal departments, and apps for your partners – that are richer, more engaging, more sophisticated, and more connected.

Inside these pages, you'll discover why Salesforce App Cloud is the fastest way to build, connect, optimize, and deploy every kind of app. App Cloud allows anyone in your organization – from professional developers to admins – to build apps. That means you can accelerate your digital transformation so you can streamline processes, boost productivity, disrupt your industry, and get closer to your customers than ever before.



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CHAPTER 01

WELCOME TO THE WORLD OF APP CLOUD

“With our banking apps built on App Cloud, we can deliver more services to underserved communities.”



Teri Williams Cohee
President & COO
OneUnited Bank



Why App Cloud?

As the rate of change in business is increasing and competition is becoming more and more intense, every company needs to differentiate itself so it can stand out from a sea of competitors with commoditized products. The common element in every success story these days is how businesses are using apps to connect with their customers in new ways. Whether it's for product info, e-commerce, support, or entertainment, your customers are using apps to interact with your products and your company.

That means every company today is in the apps business – or should be. Whether large or small, high tech or low tech, every business needs to focus on creating engaging, beautiful apps.

Exponential growth in the demand for apps is putting tremendous pressure on IT departments to deliver – and in many cases, that means a growing backlog of apps. The demand for enterprise mobile apps will soon be five times the current capacity of IT to deliver, according to Gartner.* To get ahead of the curve, every organization has to find a way to deliver better, more connected apps, faster.

The solution is a platform flexible enough to let almost anyone build apps fast with clicks and code so you can democratize the app-building process beyond IT – yet sophisticated enough to let developers build with the modern languages, tools, and processes they love. With the right solution, you don't have to worry about infrastructure or maintenance, and you can build apps faster for customers, employees, and partners.

App Cloud is the app-development platform for the customer era. It connects all of your data, networks, and identity across your entire organization so that you can build the connected experience that your customers expect. At the same time, you get the cloud infrastructure, compliance, and security customers have come to rely on from Salesforce. Now, instead of having silos, you get deep, rich data context so that you can create richer, more engaging apps that stand out from the crowd.

App Cloud also delivers a best-in-class development environment so you can create the apps customers, employees, and partners have come to expect – and the ones that will exceed all expectations.

App Cloud delivers a best-in-class development environment so you can create the apps customers, employees, and partners have come to expect – and the ones that will exceed all expectations.



* Gartner research note, June 2015

What Is Possible with App Cloud?

Modern apps support a wide range of businesses, use cases, and devices. They must also support several developer and app types, including:

- **Model-driven:** Analysts and developers use drag-and-drop tools to compose productivity apps.
- **Elastic:** Developers tap into expandable, scalable computer power to create engaging experiences.
- **Streaming:** Admins and developers craft business rules to filter and process enormous amounts of data from IoT devices.

These three categories of apps all require a rich set of best-in-class services connected across a trusted, secure foundation (or “fabric”) and open to an ecosystem of ISV and SI partners. App Cloud provides all of these powerful capabilities.

BUILD PRODUCTIVITY APPS

Employees and teams need apps that increase their productivity. Most companies are using a spreadsheet or legacy system to manage one or more processes. App Cloud provides you with the tools you need to bring automation to any team that works with your internal or customer data. With model-driven development, you get a higher level of abstraction than with traditional app development. App builders can visually construct complex apps quickly, increasing productivity.

Using prebuilt components and add-ons, you can assemble interfaces and set display options quickly. With a few additional clicks, you can add processes to automate workflows. Finally, you can deploy these apps and have them instantly available on mobile, desktop, and tablet. Building apps, reports, and dashboards is easy because your data already lives in Salesforce.

CREATE ENGAGING EXPERIENCES

We have all become accustomed to sophisticated, robust apps that create engaging experiences. App Cloud gives you all the tools you need to build modern apps for any device so you can deliver a digital experience that delights your users – whether they’re customers or employees.

With App Cloud, it’s easy to build apps that are elastic so they can scale instantly to handle peak demand or interruptions and failure of underlying components – ensuring you always deliver the best app experience.

App Cloud easily connects your customers' interactions – as well as any other information they choose to share – back to their customer record in Salesforce so you can anticipate needs and serve them better in the future.

GET COMPLETE CUSTOMER DATA

Enhance your understanding of your customers even further by taking advantage of data in external systems, streams of data from consumer interactions, and the internet of things. Unlock the data that’s stored in your legacy systems, such as SAP, Oracle, and Microsoft, by easily integrating your back-office data with apps that you build on App Cloud. When all of this data is available at your fingertips, you can use intelligent processing engines to uncover insights and drive results.

Connecting external data sources to App Cloud is fast and easy. Data is available quickly, so you can make more effective decisions. Paired with the thriving ecosystem of integration, middleware apps, and partners on AppExchange, you can turn your data into a competitive advantage by creating opportunities to better connect with your customers.



The Benefits of App Cloud

FAST APP DEVELOPMENT AND CUSTOMIZATION

Iterate and build faster because anyone in your company can build with clicks and code. This allows IT to deliver more rapid innovation to the business. Developers can build with the tools and languages that they love, and then scale their apps effortlessly with a high-performance platform for rapid growth.

CONNECTED EXPERIENCE

Build apps that have shared identity, network, and data so that they get a single view of the customer. Every app is instantly mobile, and customers can build, deploy, and manage mobile apps for employees, customers, and partners, fast.

WORLD’S MOST TRUSTED ENTERPRISE CLOUD

Deliver apps that are inherently secure, available, and high performing, even to the most demanding customer's expectations. We reflect our values of transparency and trust in everything that we do.

PROVEN SUCCESS AND SCALE

App Cloud is the proven enterprise platform that powers not only Salesforce products, such as Sales Cloud, Service Cloud, Community Cloud, IoT Cloud, and AppExchange, but also processes over 4 billion transactions per day (50% via API), and has over 5.5 million apps and over 2.6 million developers building on App Cloud. These developers can extend the power of Salesforce with apps and Lightning Components from AppExchange, the world’s largest enterprise app store.

Salesforce Cloud Infrastructure by the Numbers



SPEED

4 billion+

transactions a day with an average response time of less than 250 ms



ALWAYS ON

99.9%+

uptime



INNOVATION

5.5 million+

apps



TRUST BUILT ON

Transparency

trust.salesforce.com



A Complete Portfolio for Every App

THE POWER OF CHOICE

When we look across the enterprise app landscape, it's clear that no single platform can fit every need. Instead, IT departments for businesses of all sizes must decide which portfolio of technology supports the broadest set of needs and offers the greatest interoperability, while also providing the best return-on-technology investment. That's why App Cloud includes three sets of technology: Force.com and Lightning, Heroku, and Thunder. Each platform is purpose-built for specific needs and is fully integrated with the others.

BETTER TOGETHER

The most productive employees collaborate across teams, skill sets, and functional groups. Why shouldn't your apps do the same thing? Whether your apps are built by business users with Force.com and Lightning using intuitive point-and-click tools, or coded by developers on Heroku, every app becomes more valuable when it can share relevant data, processes, and workflows with other apps. Today, there's no reason why a customer-facing mobile app can't share data with your CRM system and, in turn, share that data with a custom employee app running operations or inventory. App Cloud empowers anyone to build connected apps for customers, employees, and partners.

THE POWER OF TRUST

As the first company to pioneer enterprise cloud computing, we know how to build and maintain a secure, trusted technology platform. Whether you're building process-based apps on Force.com and Lightning, engagement apps on Heroku, or streaming apps on Thunder, we've got you covered.



Learn more at
trust.salesforce.com

Architecture for Complete Customer Data

What would you rather have your IT department doing: building, securing, managing, and virtualizing a new database for each new app project – or innovating immediately on the apps the business needs today?

It's always been a daunting challenge for IT to create an architectural environment that effectively makes data available to your apps from disparate sources – such as legacy databases, third-party add-ons, or CRM data. App Cloud puts the world's leading cloud data technology at IT's fingertips so your team can build rich forms and customer data models without complex code, and resources can be devoted to creating apps that create business value, faster.

With App Cloud, all the apps supporting your business processes interact with a consolidated 360-degree view of customer data across the customer lifecycle, giving you a single source of truth – and IT doesn't have to devote resources to expensive and difficult integrations between apps.

In addition, Heroku Connect extends App Cloud data services so that you can synchronize data between Salesforce and Heroku Postgres, unifying contacts, accounts, and other custom objects in the Salesforce database. Easily configured with a point-and-click UI, it's simple to get the service up and running in minutes – no coding or complex configuration required. With Salesforce Connect, you further extend data services. Apps can reference database objects from SAP, Oracle, Microsoft, and other third-party services, so that you get a complete, 360-degree view of the customer.

App Cloud data services include the Force.com Schema Builder, predesigned user interfaces, autogenerated APIs with security controls, structured and unstructured file-oriented content, query support, triggers and validation rules, automatic indexing, backup, replication, and disaster recovery.

CHAPTER 02

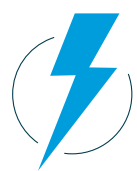
UNLOCK A NEW LEVEL OF PRODUCTIVITY

“One of the great things we've found about App Cloud is how easy it is to build apps. You do not need to have an in-depth coding background.”



David Edge
General Manager, Development
Financial Times





Lightning Platform

Now everyone can build apps, fast.

Lightning Platform is the UI service of App Cloud that gives you all the tools you need to deliver modern apps – and a beautiful user experience on any screen – fast. To help IT deliver apps faster, Lightning enables a new app delivery continuum that brings together developers and admins to collaborate and deliver apps to end users, faster.

Now you can design apps to work uniquely on your phone, tablet, laptop, and desktop – all from one place, and all while maintaining the flexibility to extend your apps with custom-coded Lightning Components for the best of both worlds.

Lightning brings different groups of users together in a way that no other platform does. Now, developers build reusable components that admins use to assemble into pages. Instead of the slow development cycle of building the app – bringing it to the admin/end user, getting feedback, and then iterating – developers now build Lightning Components that admins assemble into apps. This not only allows for rapid prototyping and redefining agile development, but it also reduces the overall workload for the developer and shifts the last 20% of the development work to the admin, who is empowered to build the apps the users need.

This creates a new model of collaboration between developers and admins that was never possible before. Lightning enables a new continuum of developers – programmatic and declarative. Shifting some of the development ability and facilitating better collaboration and rapid iterations enables customers to deliver apps faster with Lightning.

Lightning Platform provides a way for IT to meet business demands faster and become a true partner in driving business forward, and it also creates an environment that helps IT manage it all at the pace of business.





Lightning Builders

Lightning gives you the tools you need to build in a flash. Whether you are building mobile apps, customizing pages, or building customer communities, you can drag and drop components to deliver modern user experiences on any screen.

Lightning App Builder

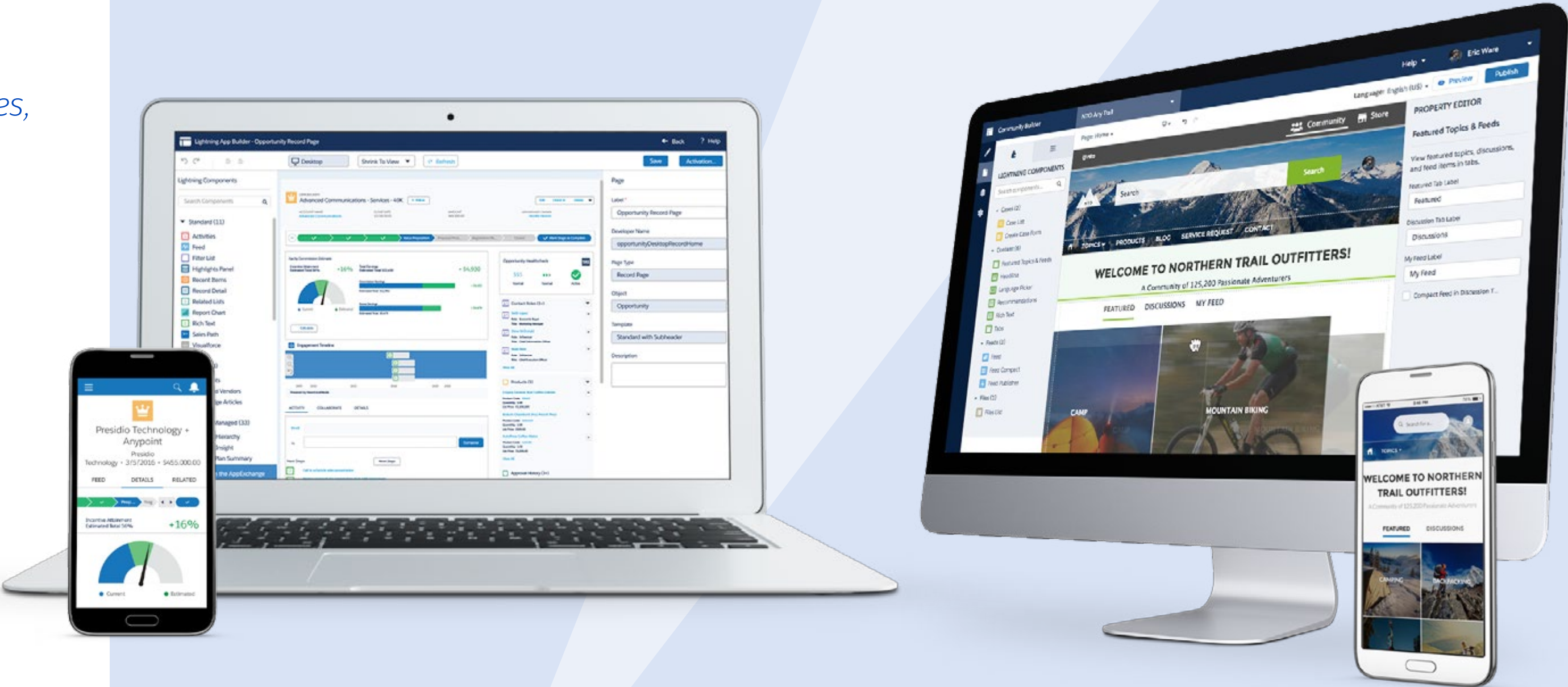
With Lightning App Builder, assemble apps and customize pages with a library of easily configurable drag-and-drop components.

- Build custom mobile apps with responsive design for any business process.
- Leverage templates and forms for quick deployment.
- Preview apps as you build and optimize iteratively.
- Get more components ready for use in Lightning App Builder from Lightning Exchange built by Salesforce partners and Salesforce Labs.

Lightning Community Builder and Templates

With Lightning Community Builder, quickly build a custom community with a seamless, branded experience to connect customers, employees, and partners that are integrated with your content, data, and business processes.

- Build, publish, and maintain communities with prebuilt templates that work on any device.
- Rapidly set up and streamline access with single sign-on and identity.
- Drag and drop custom and third-party Lightning Components to create an experience optimized for any screen.



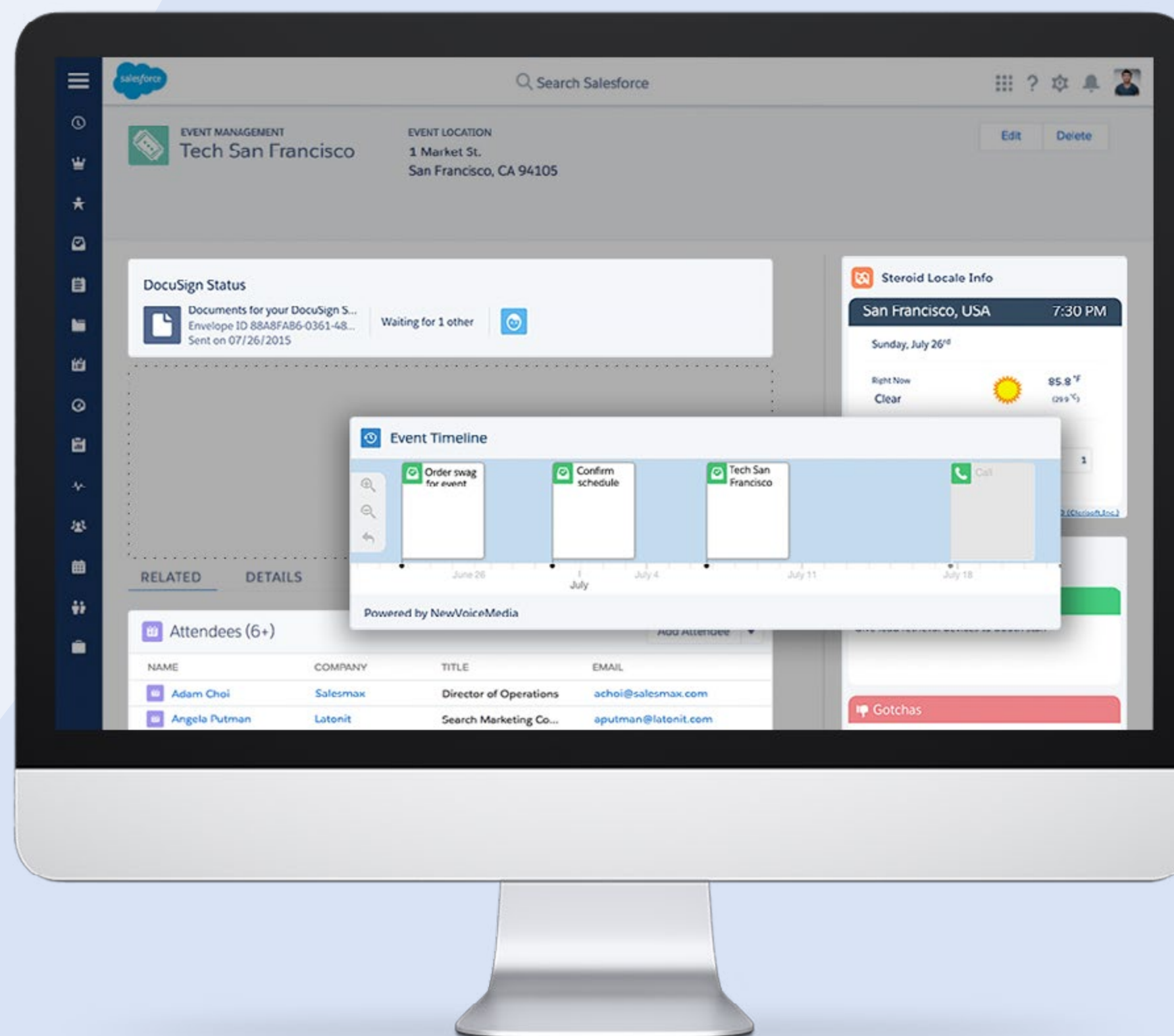


Lightning Components

At the core of Lightning Platform, Lightning Components are the modular, self-contained, and reusable building blocks of apps. Lightning Components enable the new continuum of developers by bridging the gap between business and IT. Developers can focus on doing what they love – solving hard problems and having far less repetitive work. Business analysts can now be directly involved in the development process, give fast feedback, and assemble apps that are a better fit for the purpose.

*With Lightning Components,
you can solve business problems
by delivering apps, fast.*

- Assemble apps and pages with self-contained building blocks with HTML, JavaScript, and CSS.
- Build responsive components for any device with drag-and-drop tools on an open, multitier framework.
- Scale development by sharing and reusing components to build apps faster.
- Build better-performing apps with reduced server trips via client-side caching and shared transport layer.
- The out-of-the-box UI components set kick-starts your app-building, plus developers can build custom components.



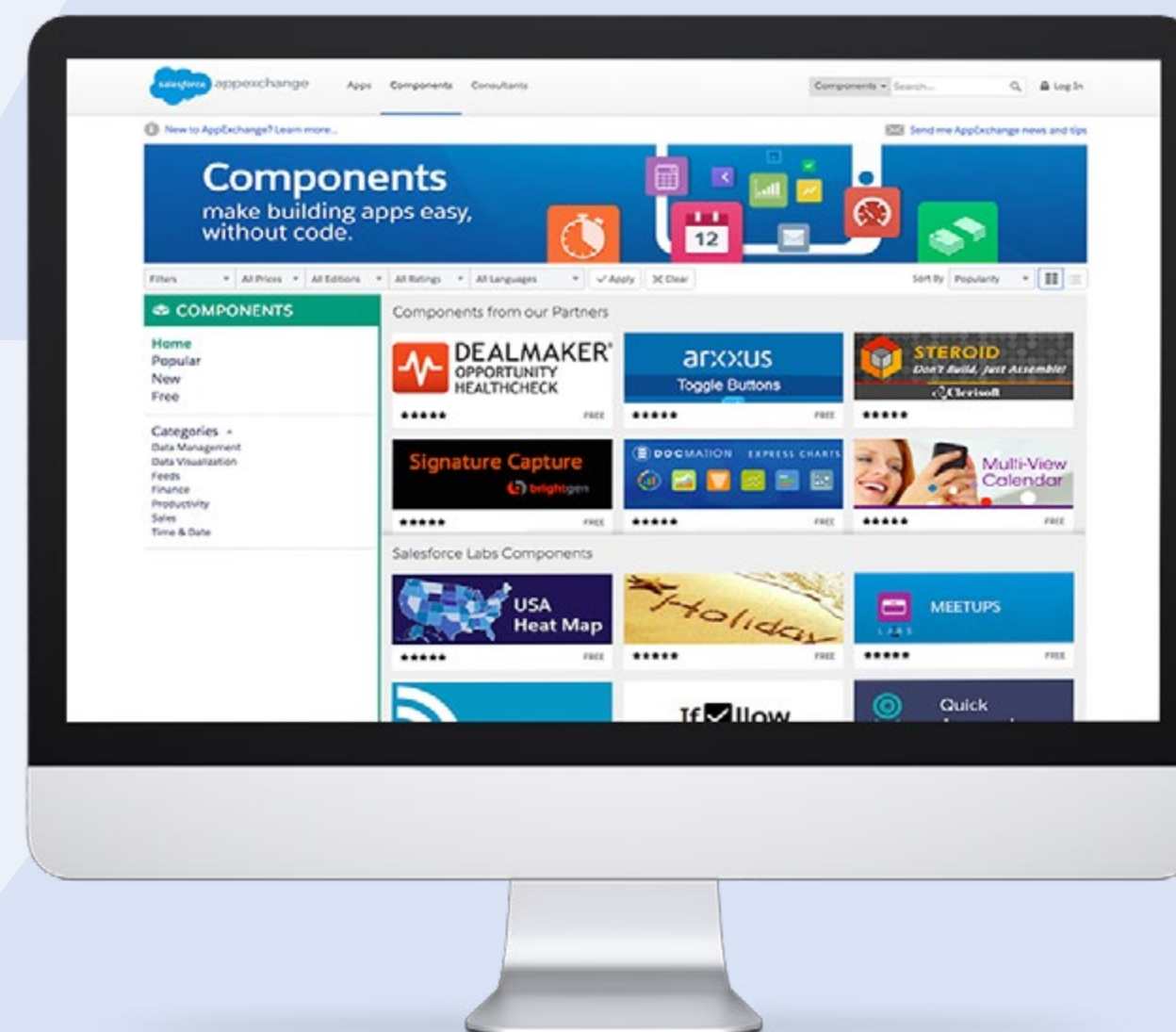


Lightning Exchange

Lightning Exchange is a store within AppExchange that's dedicated to Lightning Components built by partners and by our internal developers through Salesforce Labs.

- Get all the prebuilt components you need in one place.
- Use Lightning Components that are interoperable out of the box and can be shared easily with packaging, saving you development, debugging, and maintenance time.

Find the online store at
salesforce.com/appexchange

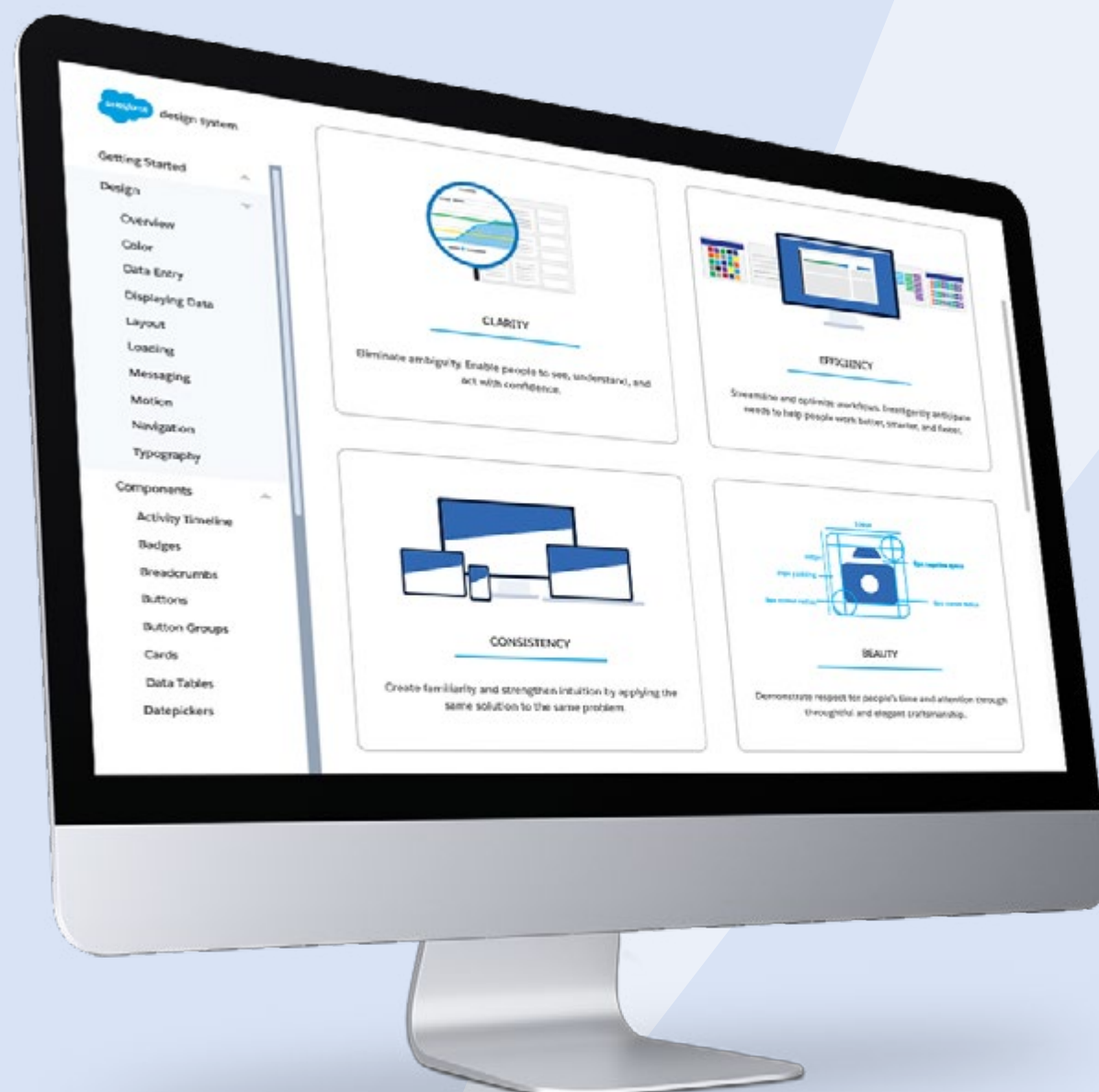


Lightning Design System

Lightning Design System makes it easy for you to build apps using the latest enterprise UX best practices, and give them the Lightning look and feel.

- Save development time and easily create modern, consistent apps with a collection of design patterns, components, and enterprise UX best practices.
- Develop apps that are seamlessly unified with the Salesforce user experience.
- Keep an updated look across Salesforce releases by simply updating design tokens to roll out the new styles without manually updating code.

Find the online store at
lightningdesignsystem.com



Everything – from the app server to the database, messaging, testing, version dependency, security patches, code frameworks, and more – is taken care of automatically.

1

common view of data



How New England BioLabs Connected Freezers with App Cloud

New England Biolabs (NEB) provides enzyme samples to genetic researchers. To provide better service, NEB put freezers full of products in labs around the world and built a connected app that sits on each freezer and interacts with scientists, collects product use and freezer data, and manages inventory. Scientists log in and out, and the data is synced with NEB's corporate Salesforce implementation to create a richer relationship with customers.

- 1

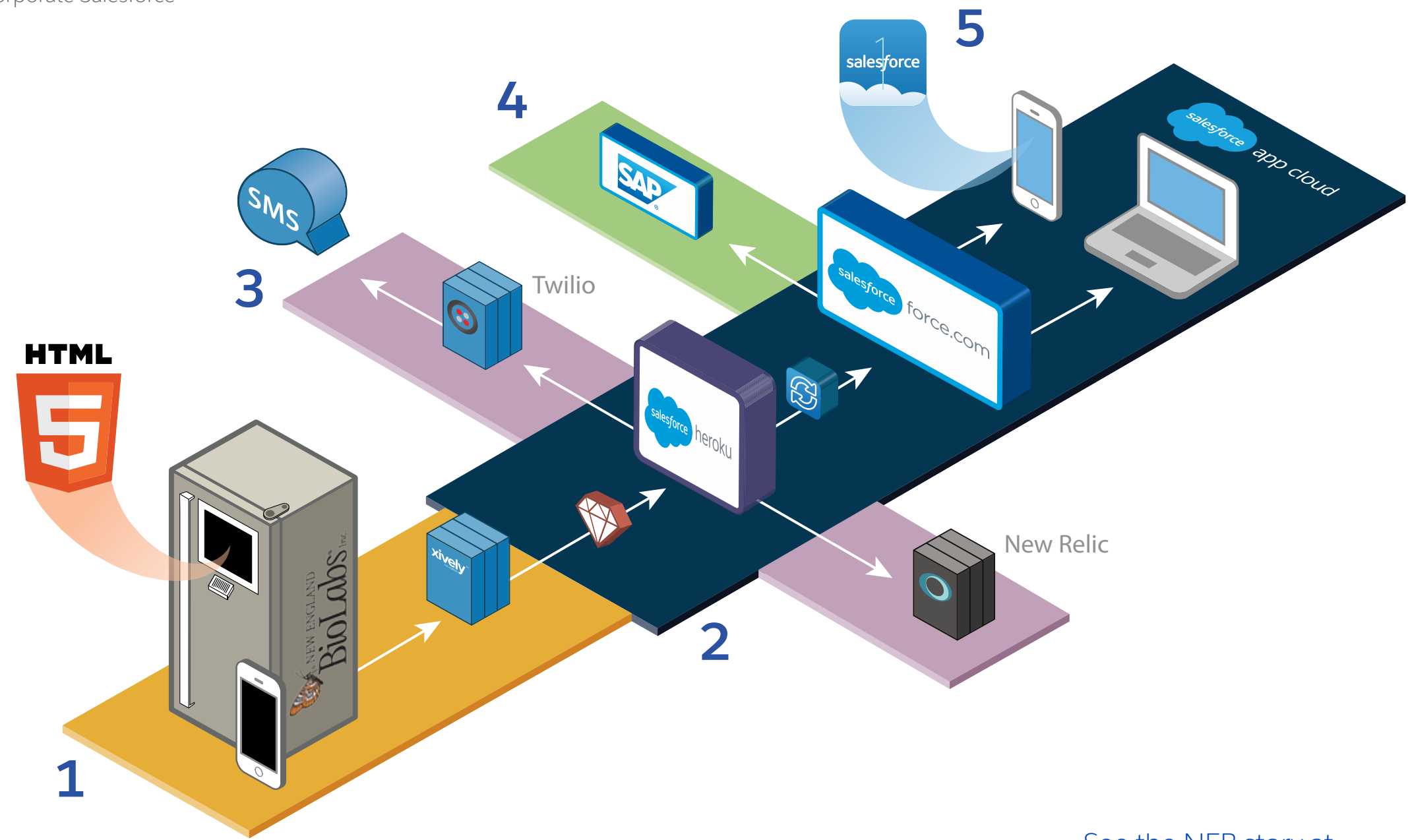
On-site, scientists use the tablet UI and scanner on the NEB freezer to authenticate themselves, trigger the freezer to unlock, and record product consumption.
- 2

The scientists' purchase and interaction histories are transferred via Ruby on Rails into Heroku. It is then recorded and synced into Salesforce via Heroku Connect.
- 3

Heroku connects with the New Relic add-on to alert NEB of any app performance errors. Scientists receive their receipt via Twilio SMS.
- 4

Once the transaction is synced to Salesforce, the Force.com management app lets NEB employees view and track customer interactions. Force.com is bidirectionally integrated with NEB's ERP system, SAP, to manage inventory in real time and monitor revenue trends.
- 5

NEB executives see the data via the Salesforce1 Mobile App from anywhere, gathering insights from dashboards.



See the NEB story at salesforce.com/neb

Mobile App Development

A successful app-building strategy requires a platform that can connect your existing customer data for use in both internal and customer-facing apps. With the Salesforce App Cloud Mobile Application Development Platform (MADP), you can build app logic and design, and build a user interface, deploy your apps, and manage an app through its lifecycle on any device. Companies choose App Cloud MADP for three important reasons:

CONNECTIVITY

Our MADP allows our customers to take advantage of their existing Salesforce data and connect to any back-end systems. For mobile apps built to serve employees and partners, this means that the app can interact with all relevant information and allow employees to perform any action using data from any source. For mobile apps built to serve customers, this means that customer data will not be siloed between systems. Every customer interaction, preference, and update made in a mobile app can be captured and made available to employees (or employee mobile apps) seamlessly.

COMPATIBILITY

Our MADP works with a company's existing talent, tools, and technology. Business administrators can quickly learn to develop apps using Trailhead, an innovative learning tool that teaches any employee to build apps fast using only clicks, if preferred. Developers can code apps in languages that they already know, using any preferred tools from Xcode to Visual Studio. IT departments can connect Salesforce to any other system, or access Salesforce data from other systems using APIs and connectors.

CAPABILITY

Mobile apps can be written in any framework and deployed to any device. This functionality is supported by App Cloud, itself a full mobile back end as a service (MBaaS) that makes app development easy, with features including:

- Data management and storage
- Business processes
- Workflow capabilities
- Third-party integration
- Test, versioning, and release controls
- A rich identity and security model
- Validation rules
- Analytics
- Mobile SDK

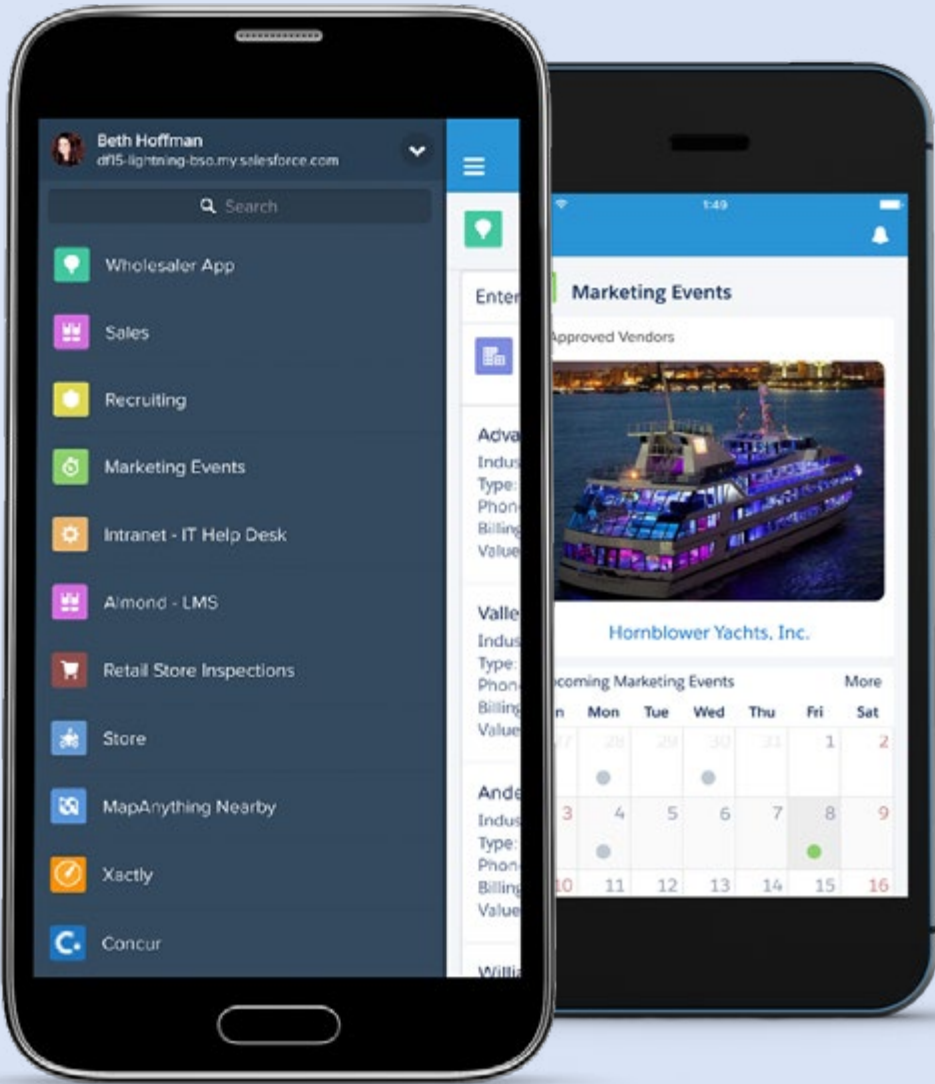
These built-in features mean that you can focus on creating your app without worrying about back-end infrastructure.

All custom apps built with the Salesforce MADP can be used as standalone apps, and are also accessible to employees in the Salesforce1 Mobile App.

THE BEST PLATFORM FOR BOTH KINDS OF MOBILE APPS

Employee apps can remove major bottlenecks across the company. For example, a mobile app for quick approvals can help a sales organization close deals faster. Or, an app alerting key IT personnel about system outages can drastically reduce recovery time. Mobile apps can also provide employees with the information they need at key moments, such as in sales meetings or while at a field service call.

Customer-facing apps improve the customer experience by enabling customers to interact with your company immediately, wherever they are. Whether your customers want to make new purchases, reorder, read up on product specifications, or request service quickly, mobile apps can reduce the time and effort it takes to connect with you. Even simple apps can usher a huge transformation within a business.



A Closer Look at the Salesforce1 Mobile App

The Salesforce1 Mobile App is the ultimate business app, designed to help you run your business from your phone. The Salesforce1 Mobile App gives you the power of Salesforce, anywhere. Now your teams can collaborate and take action on the go.

And you can extend and customize the power of Salesforce with the easy deployment of Salesforce1-ready mobile apps from AppExchange, and App Cloud's easy-to-use customization tools. Plus, any app you build in Force.com can be instantly mobile with just a tap. It's a perfect example of how point-and-click development and mobile services work together.



Process Builder

Process Builder is the most powerful process designer for enterprise. Without code, anyone can build business workflows and visually automate complex processes in minutes. Process Builder provides companies with the flexibility they need to respond to changing business needs fast and take action – whether it's creating a new record, posting to Chatter, or sending email blasts. With drag and drop, you can rearrange process criteria instantly without creating an entirely new process. You can also schedule actions with multiple schedules, scale to handle records in bulk, and deploy once across every device to increase overall employee productivity across your business.

From daily activities, such as sending follow-up email reminders, submitting approval requests, and assigning tasks, to more complex processes like employee onboarding, vendor procurement, and more, Process Builder helps companies collaborate and move faster than ever before.

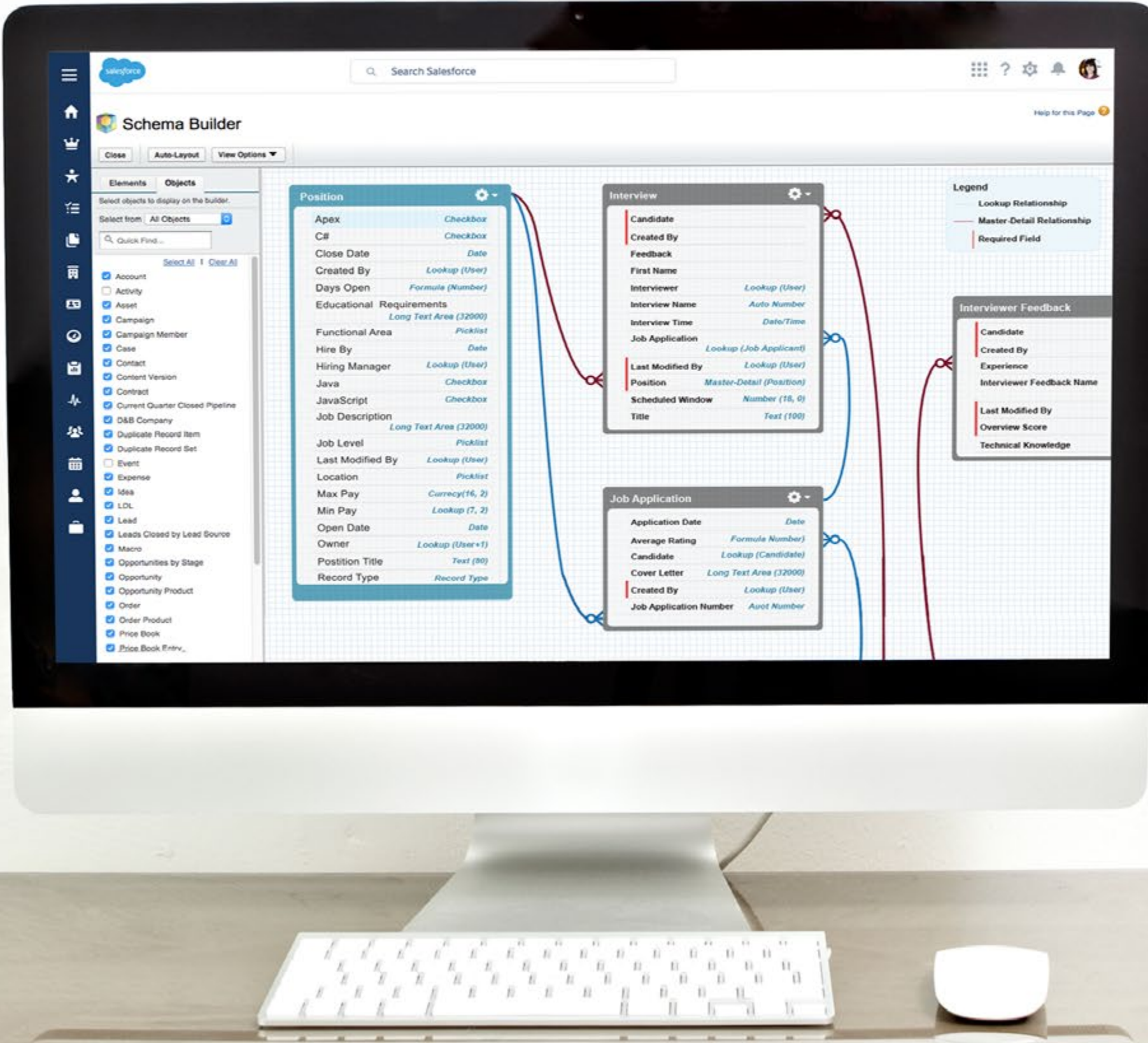
- Easily automate complex business processes with point-and-click tools.
- Automatically update or create new records, emails, and tasks, or submit approval requests in few simple steps.
- Visualize the entire process in one place to design and collaborate directly with lines of business owners.
- Easily extend processes with flows.
- Deploy workflow once, across every device.



Schema Builder

A trend consistent across IT is the growing demand for tools that reduce the time spent on repetitive tasks. With Schema Builder, you can simplify designing, implementing, and modifying your schema or data model, across all of the objects and relationships in your app. Schema Builder is a visual environment where you can see your Salesforce data objects, custom fields, and relationships in a graphical way. You can view details such as the field values, required fields, and how objects are related with lookup and master-detail relationships for both standard and custom objects.

In addition, you can easily create and modify objects, fields, and relationships with point-and-click ease. As you drag objects around the canvas, Schema Builder automatically implements the changes and saves the layout of your schema, drastically improving the speed of configuring the data model and viewing the relationships. With Schema Builder, you spend less time setting up your data model and more time building the apps users love.



Embedded Analytics

One of the biggest challenges IT has faced over the last few years has been satisfying the demand for business analytics. With more and more customer information being shared and used by different teams for sales, service, marketing, product, research and development, supply chain, and more, business stakeholders are naturally asking for more ways to look at, and work with, that data.

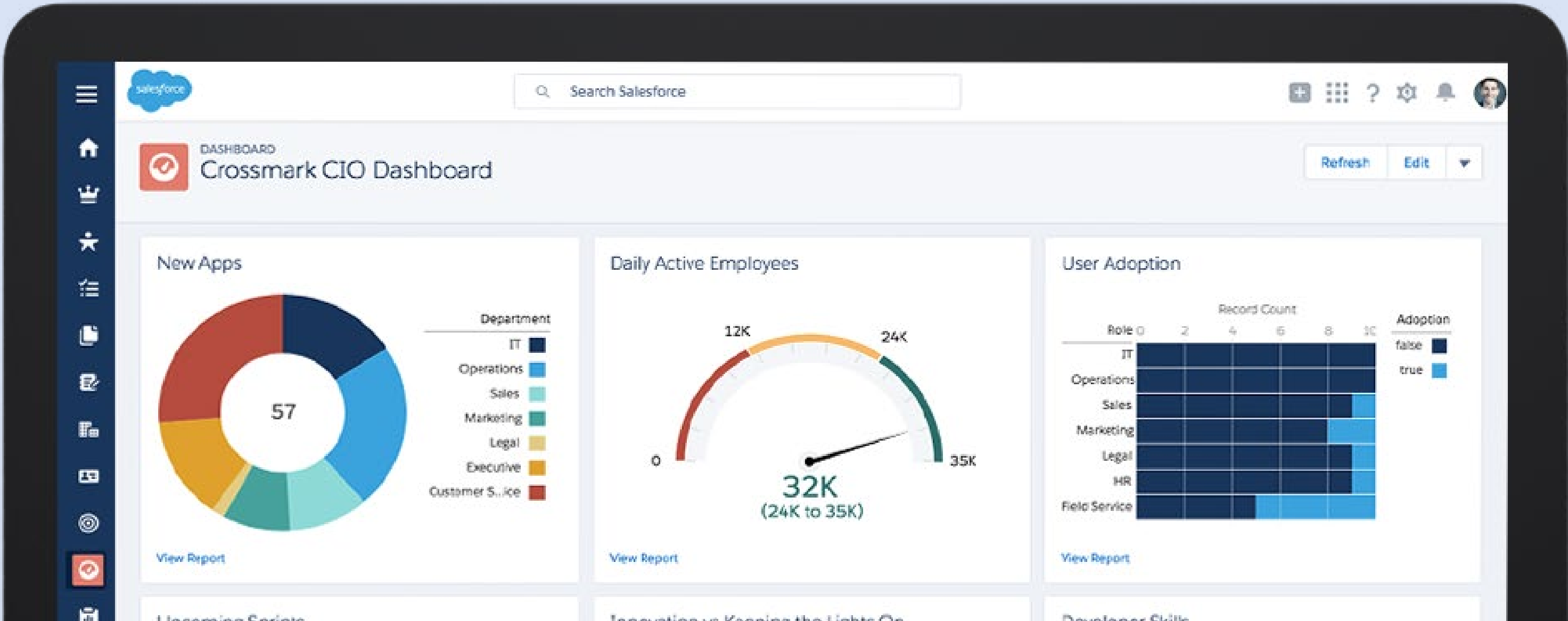
And since the pace of business today is moving faster than ever, that means seeing it next month, next week, or even tomorrow, simply isn't good enough. They need to see data in real time.

Until now, that's been nearly impossible to deliver without purchasing expensive business intelligence software that is hard to implement (and often hard to use), or dedicating a specific group of IT staff to develop a customer solution to help business stakeholders crunch numbers.

App Cloud takes the need for all of that out of the picture, delivering a flexible UI that allows business stakeholders to create personalized reports and dashboards by department, role, and individual with the simplicity of drag-and-drop tools.

You can literally just drag and drop the fields, filters, groupings, and charts that you want, and get an immediate real-time view with instant drill down to operational data. Then you can share these insights via social feeds and across mobile devices.

And since the data is all stored on App Cloud's cloud database using a multitenant infrastructure, it's accessible with the security you can trust, on any device, anywhere in the world, on demand.



Social Collaboration

With social collaboration built into App Cloud, not only are your users social, but so is every record, every case, every opportunity, every page, and every app. In fact, with just a few clicks, App Cloud lets you build all of this spectacular social collaboration power into any app that you create – instantly.

FEEDS

Keep up with your critical projects, topics, and teams. Work together on sales opportunities, service cases, and marketing campaigns. Capture organizational knowledge in a single location.

ACTION BAR

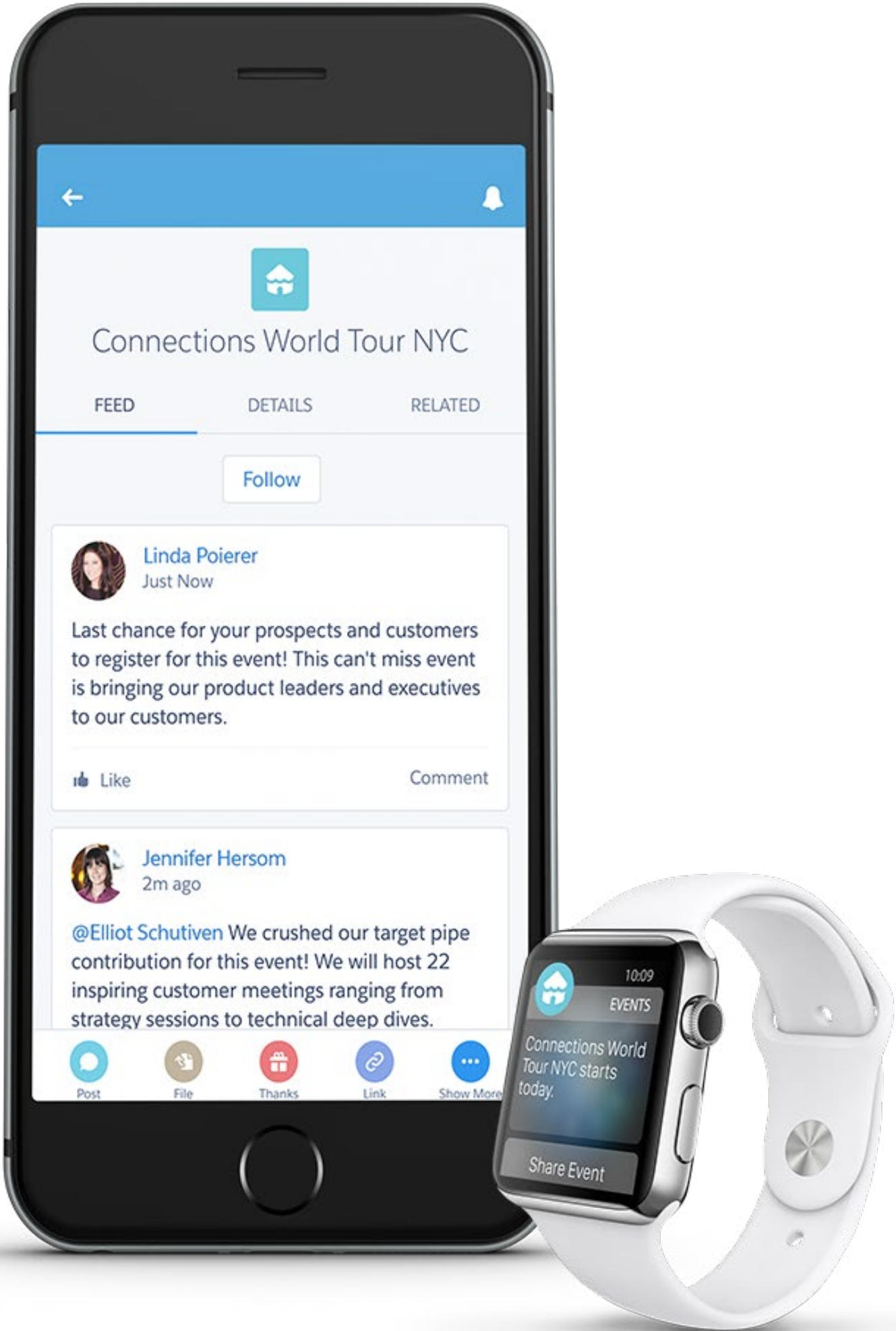
Create instant actions for any business process: expense reports, support cases, orders, and more. Customize actions, enable approvals, add polls, share dashboards and reports, and even integrate third-party apps.

FILES

Secure, social, and mobile file sharing puts files in the context of business processes. You can always find what you need, fast, and discover valuable resources you didn't even know about.

SOCIAL INTELLIGENCE

Get recommendations for relevant people, files, and information to follow based on your activity and interests. Plus, search and track any topic to quickly find information and identify experts.



A Platform for Creating Communities

Reimagine every customer touchpoint – from sales and service to your distribution channels and supplier network – as an opportunity to provide an engaging experience. Connect to partners to sell more effectively, agencies to work more efficiently, and employees to drive productivity and innovation.

App Cloud lets you easily create branded communities to connect your employees, customers, and partners to your key business processes and data. Communities are a powerful way to share information and collaborate with people outside your company who are key to your business processes, such as customers or partners.

FOR CUSTOMERS

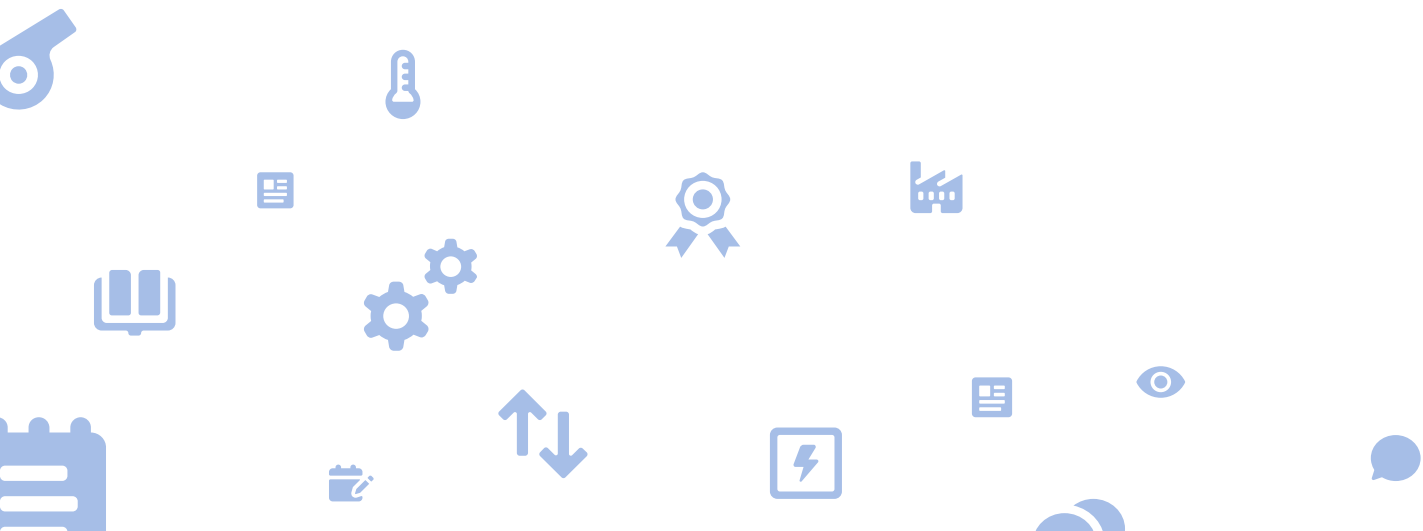
Deliver world-class service by giving your customers one place to get answers.

FOR EMPLOYEES

Transform the workplace by connecting employees to help them find the experts, information, and apps they need.

FOR PARTNERS

Drive more sales by connecting your distributors, resellers, and suppliers directly to business processes and data.




Force.com Runtime Services


Traditionally, setting up the underlying runtime services for your apps can be a time-consuming endeavor, not to mention maintaining those services through upgrades and expanding app requirements.

But with App Cloud, all of the app services come right out of the box, from a powerful workflow engine to API services, integration services, authentication, event log framework, analytics, collaboration services, and all of the other powerful services behind Salesforce's award-winning apps trusted by hundreds of thousands of companies.


Now you can use all of those services in any app you create, and use Salesforce's robust and easy-to-use, rapid-development tools to create apps to fuel every part of your business faster than ever before.




Workflow Engine




API Services




Integration Services




Mobile SDK




Authentication




Sharing and Permissions




Event Log Framework




Analytics Engine




Collaboration Services



Search



Files and Content Management



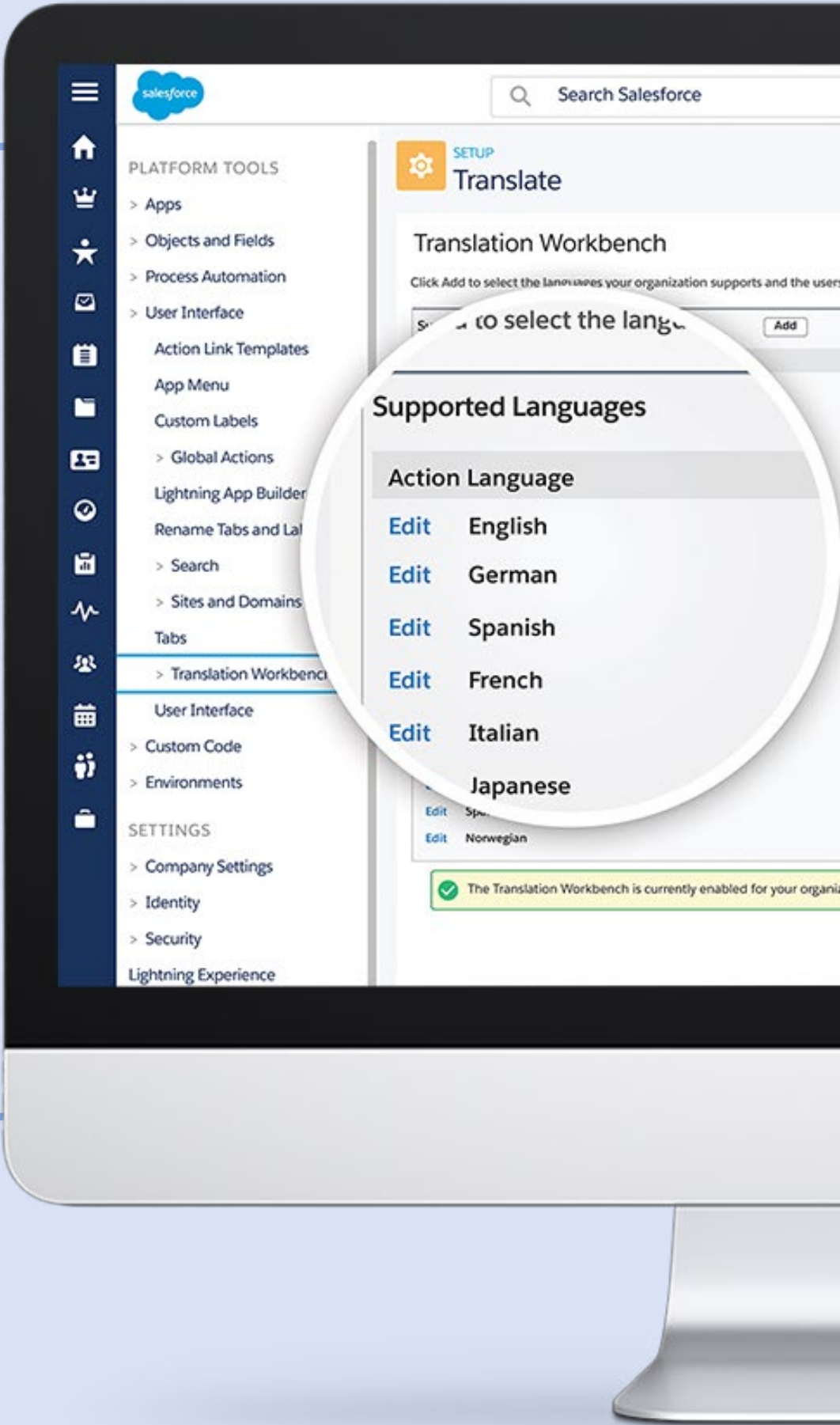
UI Framework

Translation Workbench

For IT, a global enterprise can present global challenges. Many platform providers offer UI templates that require IT to find development time and resources to customize for every single spoken language where the enterprise does business.

It's slow, painstaking, prone to error, and can lead to a serious lag in setting up and accelerating business in a new territory.

With Translation Workbench, App Cloud changes the game, delivering a service unlike any platform out there. Instantly deploy across the globe without worrying about hardware, installation, or maintenance, all with built-in support for 14 languages and most worldwide currencies. Your data is always accessible and relevant, wherever you need it.



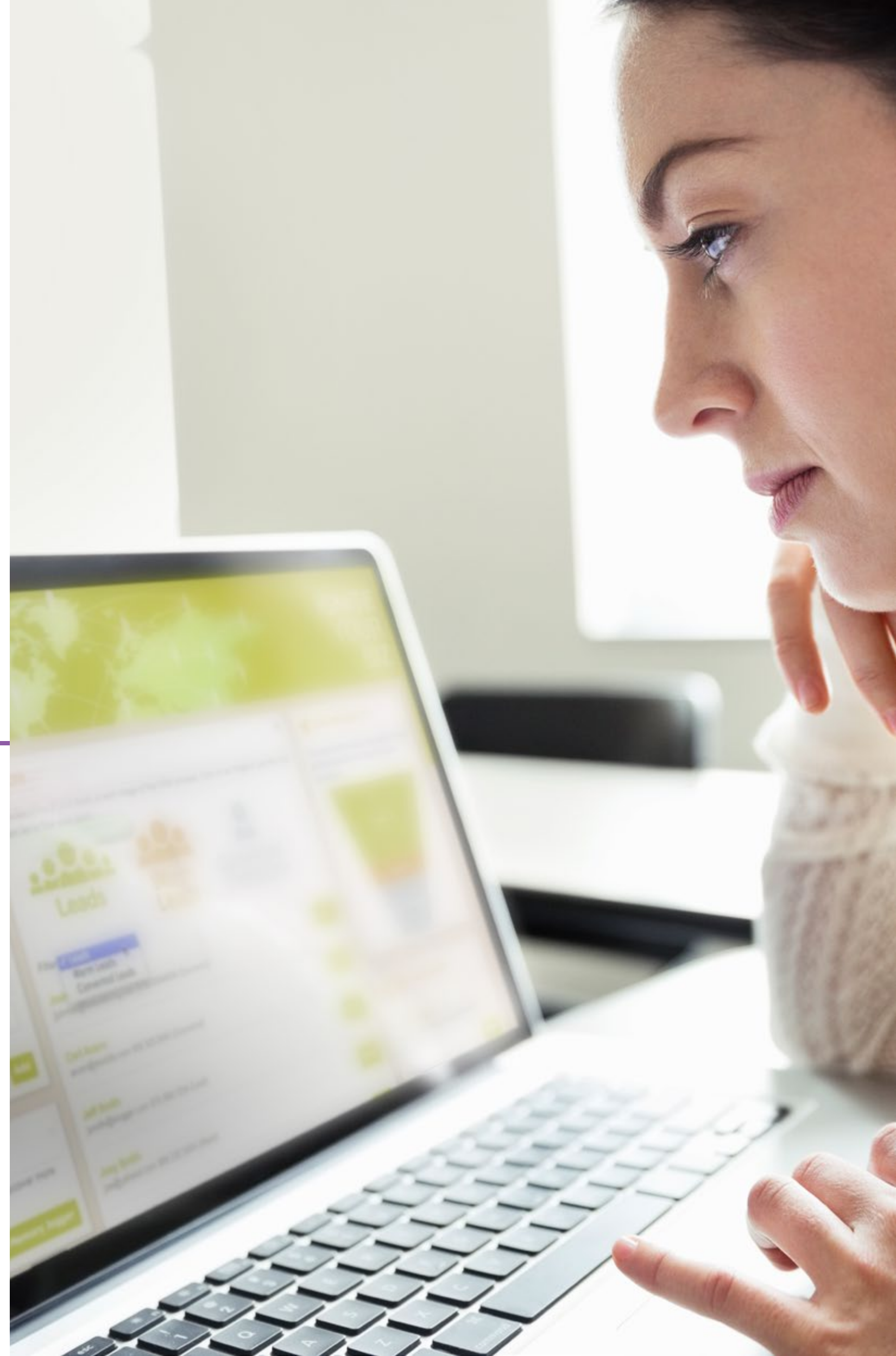
CHAPTER 03

ENGAGE AND SCALE

“App Cloud is the enterprise engine behind our global suite of apps that powers our multibillion-dollar business.”



Andrew O'Hare
VP, Information Technology
Forever Living



Heroku Enterprise

Heroku Enterprise gives developers the flexibility and control to rapidly create, deploy, monitor, and scale apps using preferred languages and tools, while maintaining the enterprise trust and control you need. Corporate app development teams leverage powerful features – such as smart containers, instant scalability, and the leading Heroku developer experience with support for continuous delivery and collaborative development – to deliver the next amazing app for your customers, partners, and employees. Heroku Enterprise offers a catalog of over 150 preintegrated add-ons, including external data stores, monitoring, logging, caching, messaging and queuing, alerts and notifications, and other advanced capabilities, as well as a fully managed set of data services hosted by Salesforce and

optimized for app developers. Build apps in the programming language of your choice – including Ruby, Node.js, Python, Java, and more – then deploy your app in seconds.

Heroku Connect makes it easy for you to integrate your Salesforce deployment with elastic apps built on Heroku. Using bidirectional synchronization between Salesforce and Heroku Postgres, Heroku Connect unifies your app data with the contacts, accounts, and other custom objects in the Salesforce database. Easily configured with a point-and-click UI, it's simple to get the service up and running in minutes – no coding or complex configuration required.



Support for Modern Open-Source Languages

Run multiple languages, like Node, Ruby, Java, Clojure, Scala, Go, Python, and PHP all from the same platform. Use the right technologies for your app needs.



Smart Containers, Elastic Runtime

Your apps run in dynos – smart containers that are part of an elastic runtime platform that provides orchestration, load balancing, security, logging, and more.



Simple Horizontal and Vertical Scalability

Heroku Enterprise runs some of the most demanding and highest traffic apps in the world. Easily scale apps in a single click with no downtime.



Trusted App Operations

Heroku's global operations and security team is on duty 24/7/365, freeing development teams to focus on creating more compelling user experiences.



Built for Continuous Integration and Delivery

Deploy from Git, GitHub, or Docker, or using an API. Plug into the most popular CI systems and servers for consistent and automated app delivery.



Leading Platform Tools and Services Ecosystem

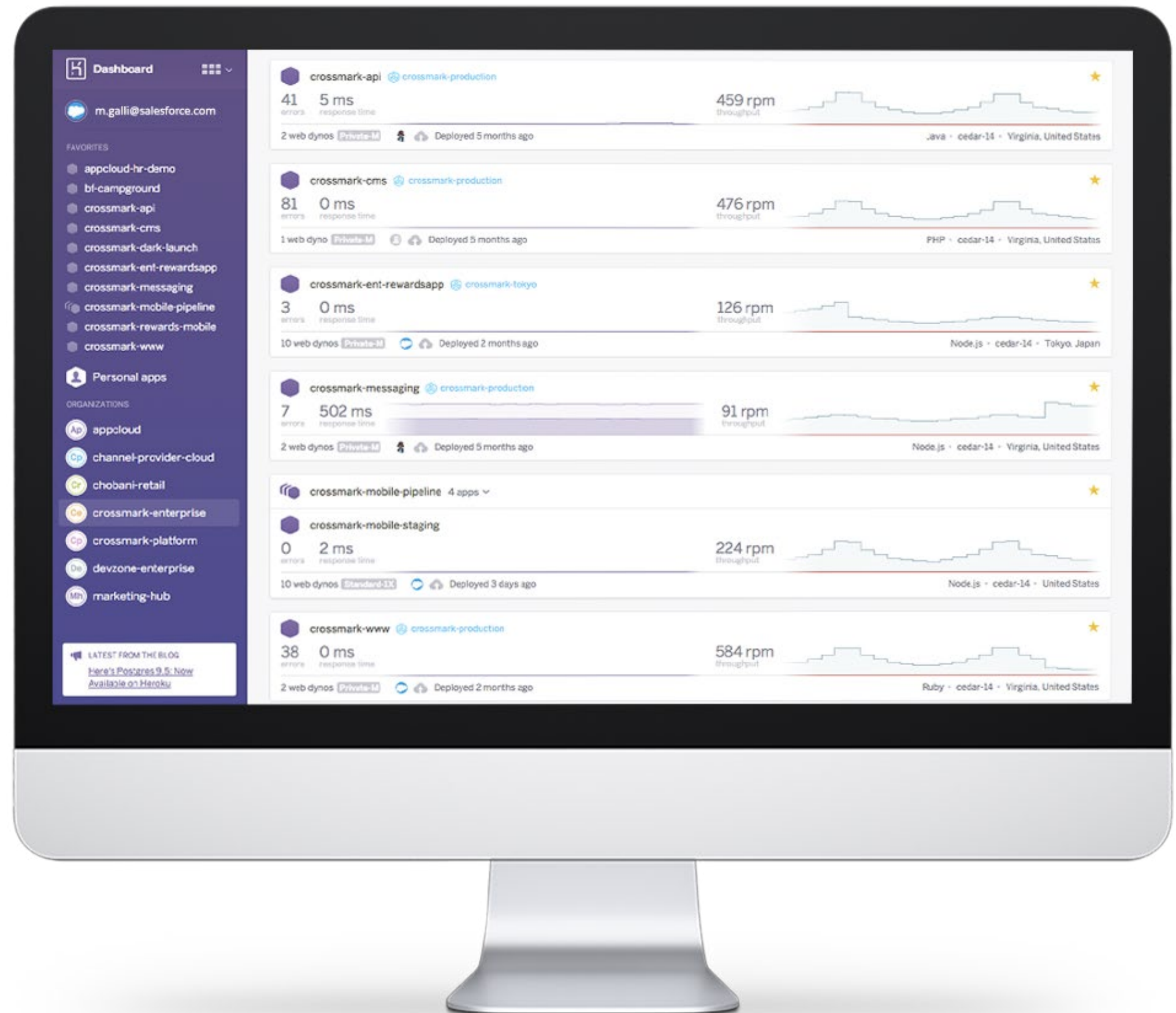
Compose apps with add-ons, customize language stacks with buildpacks, and jump-start projects with buttons, all from the Heroku Elements Marketplace.



Heroku Private Spaces

Heroku Private Spaces combines the powerful elasticity of Heroku's compute and data services with the privacy and control of your own private network. Leveraging virtual networking and software controls, Private Spaces allows you to run your apps in an isolated network, and in a designated geographic region of your choosing, which can be entirely private or connected via managed access controls to your on-premises environment or other cloud services.

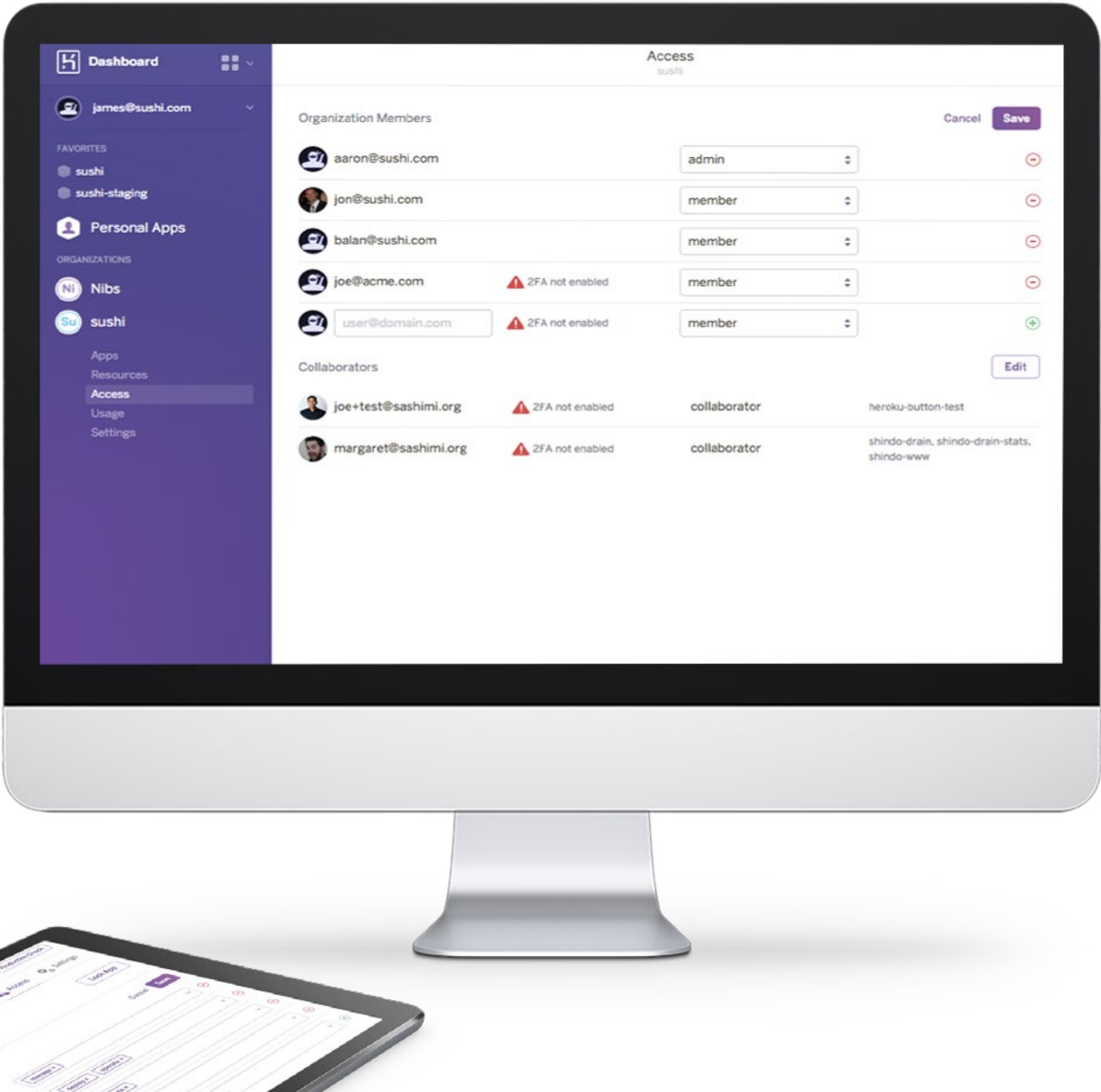
This powerful mix of a multitenant “control plane” with private runtimes and enterprise-grade secure networks, abstracted to the app layer so you do not need to manage discrete networking configurations at the infrastructure layer, is what makes the Heroku Private Spaces architecture unique. At the same time, Private Spaces preserves the existing Heroku development and deployment experience of the Heroku platform, leveraging the Heroku Button, git push deployments, review apps, pipelines, seamless scaling, self-healing, and the Heroku Elements Marketplace – all of which are included with Private Spaces. With Private Spaces, you can build apps with the powerful Heroku developer experience and get enterprise-grade secure network topologies.



Collaboration and Control

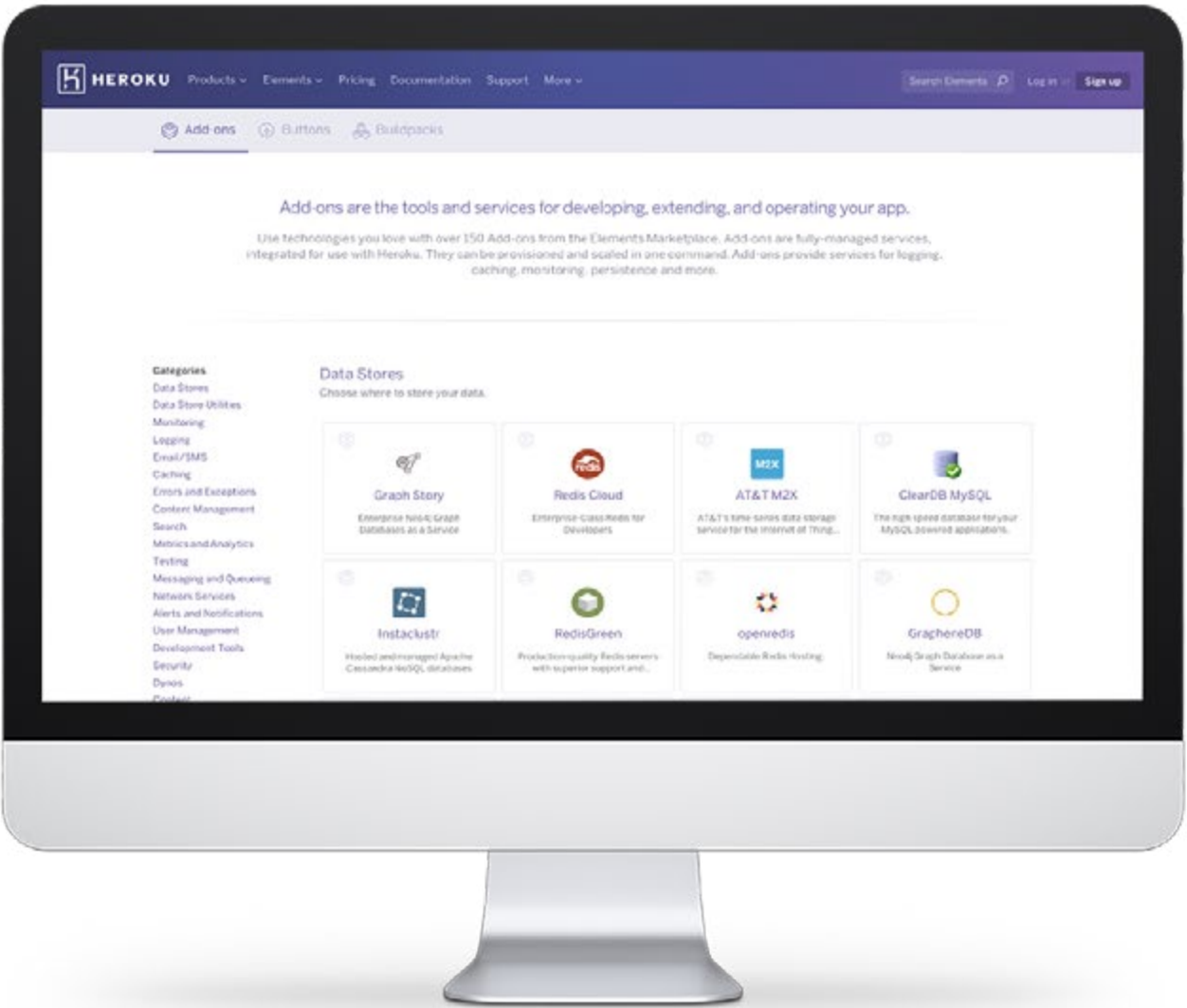
IMPROVING DEVELOPER COLLABORATION AND PRODUCTIVITY
Heroku Enterprise helps corporate development teams iterate quickly, collaborate effectively, and automate the development process. Bring distributed and heterogeneous development teams into shared app workspaces, so you can build more engaging apps together. Seamlessly integrated permissions sets give users the access privileges they need without slowing productivity. Automate your delivery process with Heroku Flow, a continuous delivery model built on top of Heroku Pipelines that brings structured workflow to the development process by moving apps through stages, from review and development to staging and production, allowing simple promotion of apps across stages. You can leverage GitHub Sync for automated deployment of pull requests to staging, creating a disposable review app that allows team members to easily test out code changes before pushing to production.

ACCOUNTABILITY WITH AGILITY
When you ask customers to entrust you with their personal or business information, you (and they) will want to know who has access to that data and who can deploy code that touches it. Heroku Enterprise uses privileges that let you separate areas of responsibility so that access is only granted to those who need it. Manage and administer your organization's development processes, resources, and users from a unified dashboard. And with single sign-on, you can use your identity provider of choice, like Salesforce Identity, Okta, PingOne, Microsoft Active Directory, or PingFederate to manage developer access and authorization.



Heroku Connect

Heroku Connect unlocks the scale, elasticity, and open development environment of Heroku Enterprise as a complement to your entire suite of App Cloud and Salesforce apps. Heroku Connect automatically synchronizes data between Heroku data services and your other Salesforce services, including Force.com. With Heroku Connect, your productivity apps built on Force.com can leverage services built on Heroku Enterprise to deliver elasticity, data consolidation, and complex custom app architectures. The data generated by apps developed on Heroku can be brought back into your sales, marketing, and service productivity apps, creating a powerful, integrated App Cloud experience.

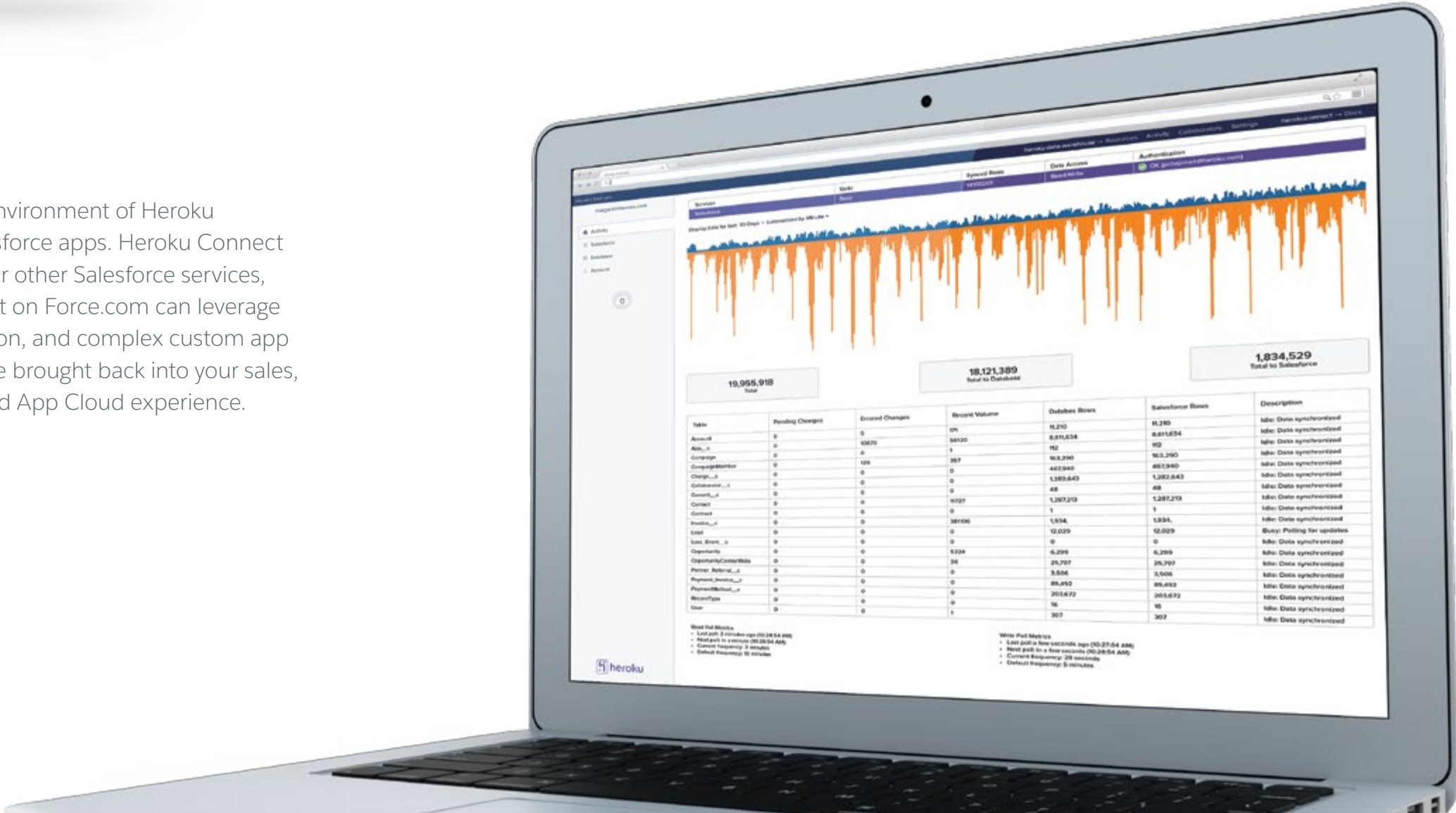


Heroku Elements Marketplace

PLUG-AND-PLAY DEVELOPER COMPONENTS

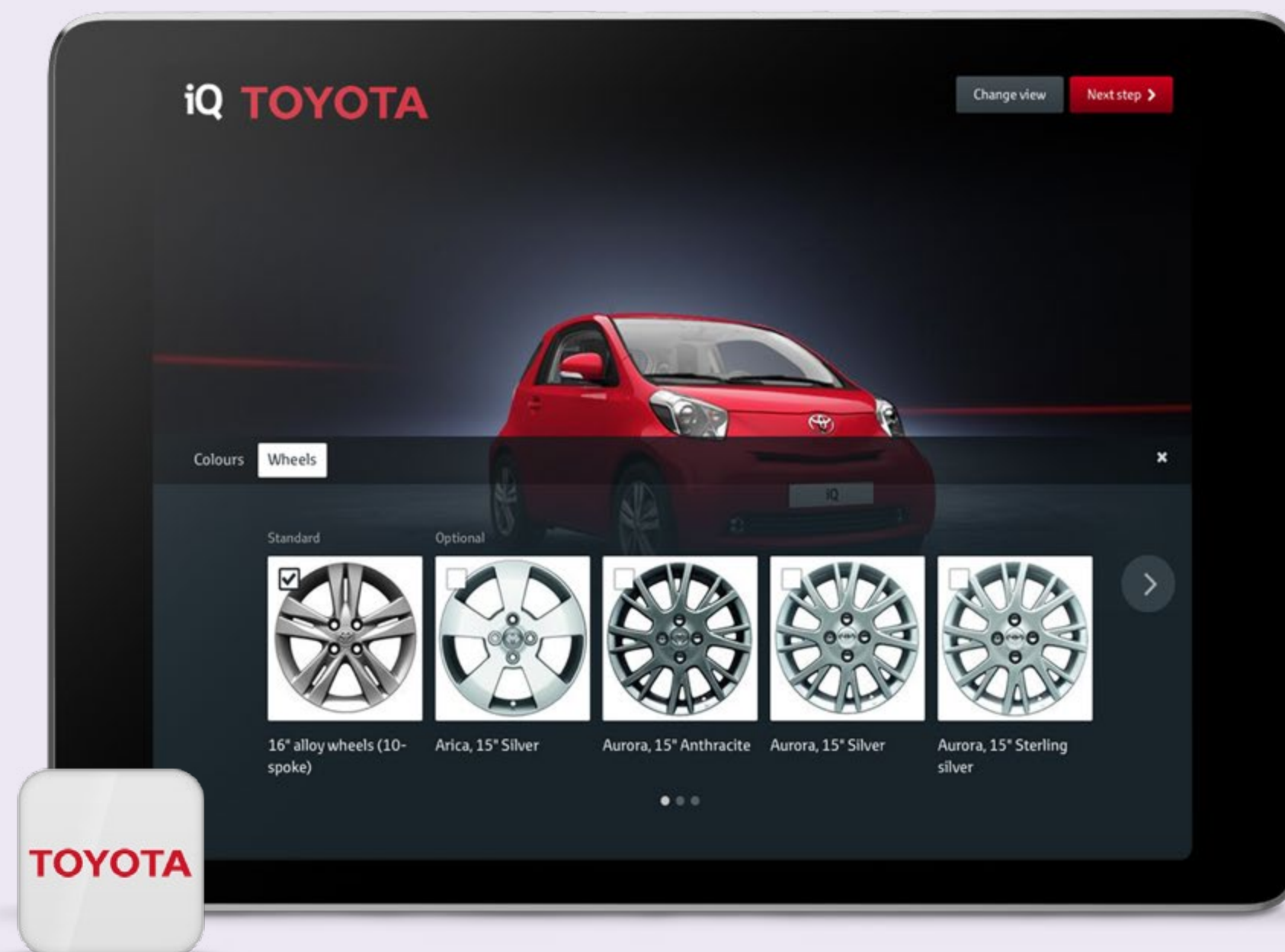
Building on the extensive AppExchange ecosystem, the Heroku Elements Marketplace is a curated collection of over 150 add-ons that can be easily integrated into your Heroku app. With add-ons, there's no need to tame the wilderness of unvalidated components off the internet or reinvent the wheel and write code from scratch for every part of every app. Add-ons are fully managed services, integrated for consumption within Heroku. Example add-ons include services for databases, logging, caching, monitoring, persistence, email services, and more.

Learn more at addons.heroku.com



Build Elastic, Engaging Apps

Heroku is powering the app revolution by giving developers the ability to create stunning and engaging apps using the language that is best for the job. And it is all connected to Salesforce.



Toyota Motor Europe

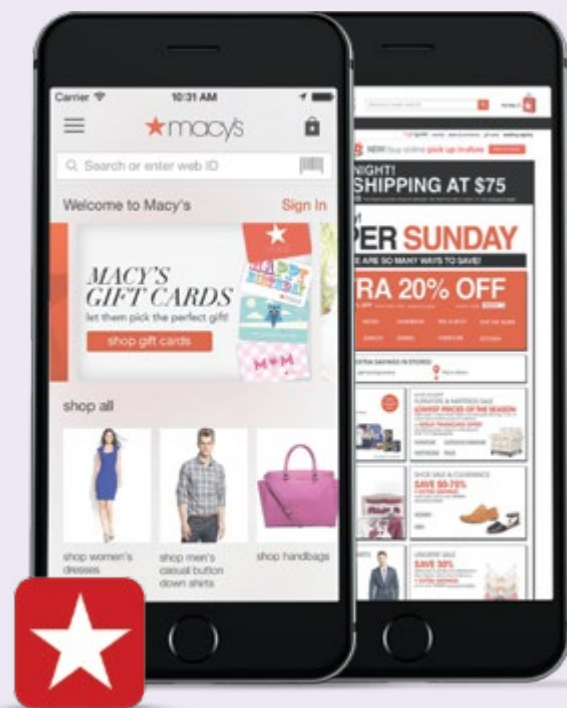
CAR CONFIGURATION APP

Build the perfect Toyota before you even visit the dealership. With the car configurator app, customers can select the perfect model and customize it to their heart's content. Because Toyota Motor Europe built its app with Heroku on App Cloud, it's ready for visitors on any device: mobile phones, tablets, or desktops.

See more apps at
salesforce.com/app-gallery

Build Elastic, Engaging Apps

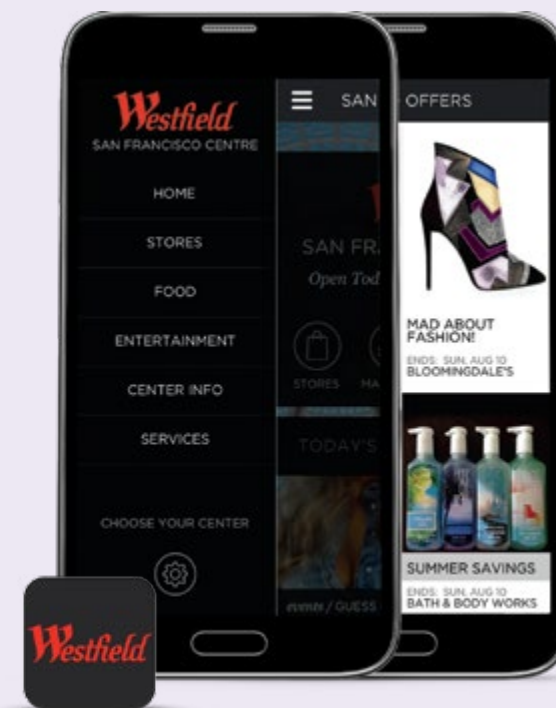
Heroku is powering the app revolution by giving developers the ability to create stunning and engaging apps using the language that is best for the job. And it is all connected to Salesforce.



Macy's

RETAIL E-COMMERCE APP

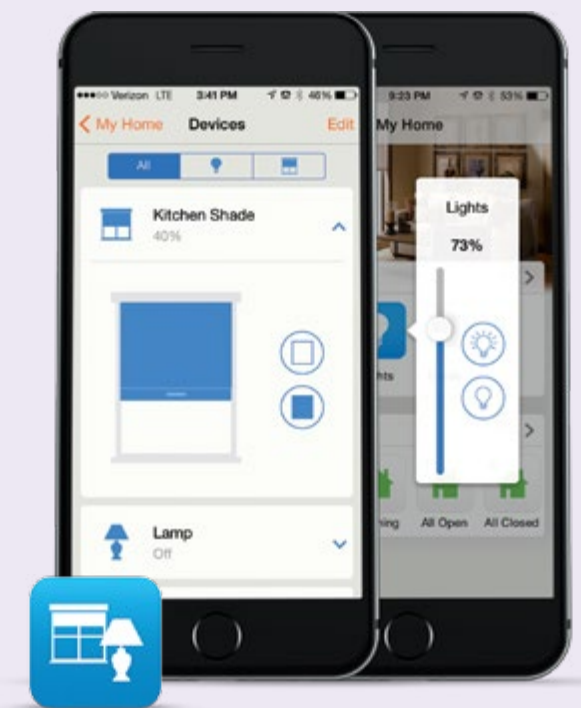
Macy's runs its mission-critical app portfolio on Heroku, including its top retail e-commerce app. Macy's customers can shop by category, find deals and promotions, and have a genuine Macy's buying experience from their smartphones or other digital devices. They can also add to wedding and other registries, or find someone else's registry from which to make a purchase.



Westfield Labs

SHOPPER ENGAGEMENT APP

Westfield Labs helps visitors get the most out of their shopping trip with a portfolio of customer-facing apps. Today, visitors to Westfield shopping centers can browse a map to find their favorite stores, review the newest deals, see the latest styles – and even buy gift cards – right from apps built on Heroku.



Lutron

LIGHTING CONTROL APP

Lutron brings the power of connected devices to homes everywhere, so users can control their lights from anywhere. With the lighting control app built with Heroku, Lutron customers can adjust lights and shades, set lighting profiles, and monitor their home directly from a mobile phone.

See more apps at
salesforce.com/app-gallery

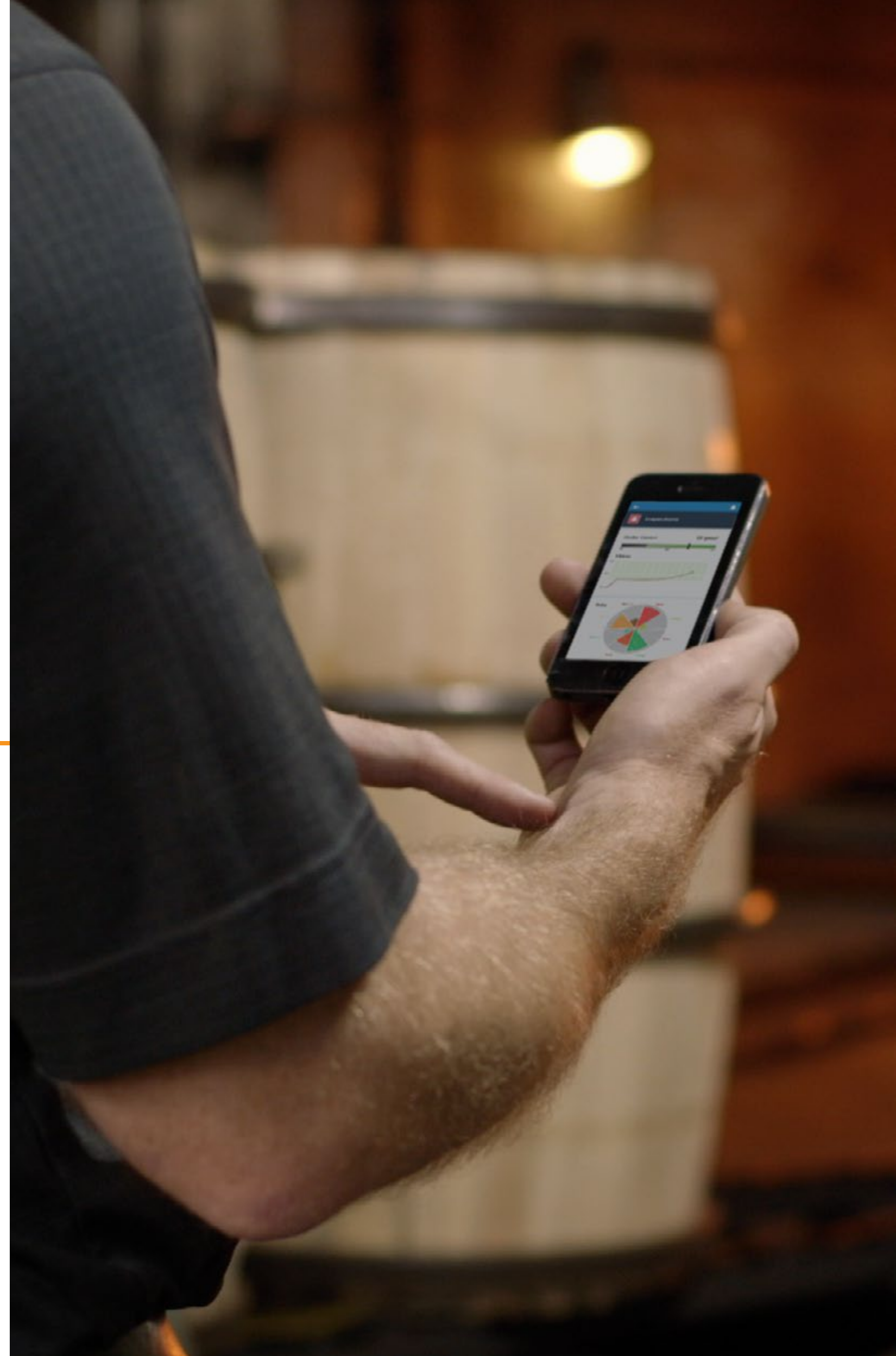
CHAPTER 04

CONNECT AND EXTEND EVERYTHING

“By integrating our SAP data with App Cloud, we are able to easily create Salesforce applications that implement workflow processes that were previously very labor intensive to build and maintain.”



Jennifer McClinton
Director of Technology Development
Brown-Forman



IoT Cloud

CONNECT THE INTERNET OF THINGS WITH THE INTERNET OF CUSTOMERS

Today, a true 360-degree view of your customers has to include the trillions of data points created by the billions of connected devices in the internet of things. IoT Cloud is purpose-built to help companies in every industry tap into the internet of things to build a more complete view of their customers and engage them in real time.

ANY DATA. ANY DEVICE. IN REAL TIME.

The internet of things draws on the data generated by an almost infinite universe of devices, from motorcycles to traffic signals to cell phones. With rich APIs and tools for formatting and transforming data, the Thunder platform can ingest data from a multitude of sources, formats, and velocities. It can also combine historical data, stored at rest, with fast-moving, event-driven data being generated by devices, sensors, or websites to help businesses take intelligent actions.

LOGIC EVERYONE CAN UNDERSTAND

Connecting new devices requires iterating on new business processes, rules, and logic to unlock the full value of IoT. With the intuitive UI in IoT Cloud, you can empower business users and analysts who understand your process to build rules around your internet of things as easily as formulas in a spreadsheet. By empowering all kinds of users, you can free your developers to focus on inputs and outputs and iterate faster.

PREINTEGRATED WITH SALESFORCE

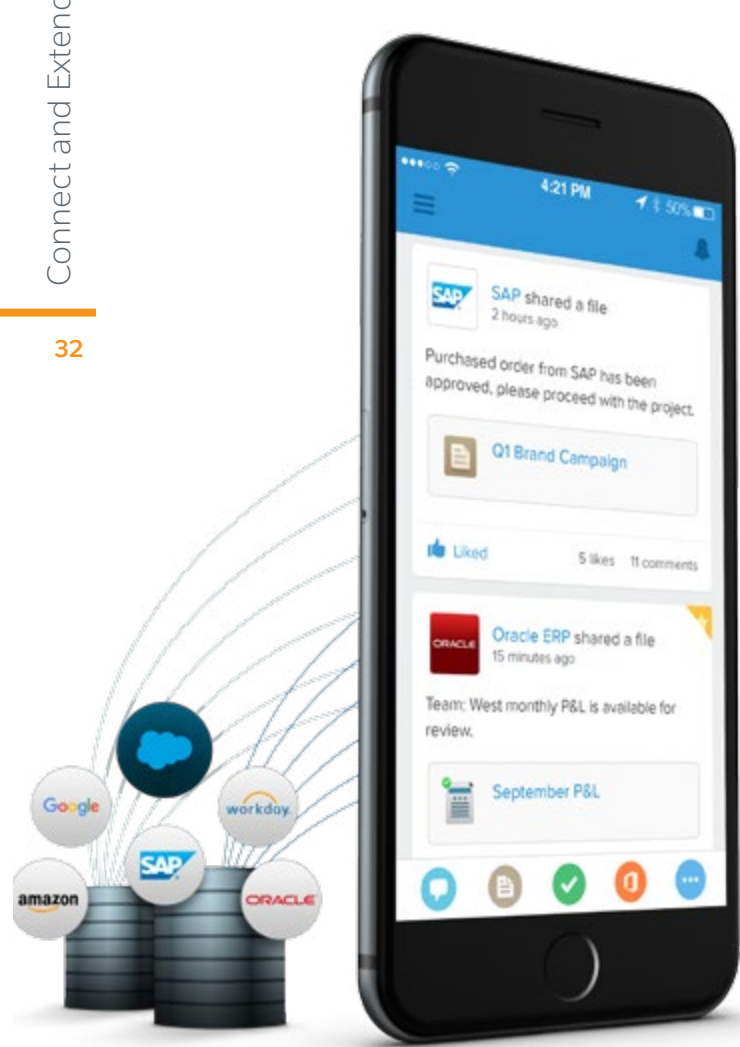
The most powerful IoT solutions turn massive volumes of data into meaningful engagements. Once you've created the logic to identify your critical events, IoT Cloud can pass this information to any other Salesforce cloud, opening a service ticket in Service Cloud, launching a 1-to-1 journey in Marketing Cloud, or firing a custom process in App Cloud. Connecting your IoT solutions to your systems of engagement is easy.



Data Integration

App Cloud gives you the ability to easily build apps in Salesforce that add an agility layer to inflexible legacy systems. App Cloud uses open APIs based on industry standards like REST and SOAP to make it easy to integrate Salesforce with external end points, such as apps or enterprise integration hubs.

General-purpose data integration APIs support apps that need to work with the core data managed by App Cloud.



When working with specific programming languages, several toolkits are also available that abstract the core SOAP and REST APIs to support native development approaches and simplify integrations.

Special-purpose data integration APIs support apps that need to work with peripheral data models in Force.com, or data managed by other Salesforce services:

- Integrate on social media with the Chatter REST API
- Listen and engage on social media with the Radian6 API
- Support customers with the Desk.com API

The Bulk API also provides programmatic access that lets you quickly load data into your Salesforce organization. It is a RESTful API that is optimal for loading or deleting large sets of data.

Public APIs

To truly keep up with the potential that a hyperconnected world creates, you need APIs.

And not just any kind of APIs. You need well-documented and published APIs.

Our engineers understand this. That's why App Cloud delivers a broad range of well-documented, well-designed, easy-to-use, open APIs.

The apps you build can exchange data and deliver experiences that make each app a truly powerful business tool.

Whether you're connecting to refrigerators, wearable devices, or jet engines, you can get data and have insights like never before, all while working with your existing IT investments.

Our APIs let you connect to multiple platforms, so you can:

- Unlock your back office – SAP, Oracle, and others
- Integrate your data
- Connect to data from anything – other apps, products, devices, and even wearable technology

Salesforce was the
1st
company in history to offer
a public commercial API.

4 billion
transactions per day on App Cloud

50%
of those transactions from APIs

Salesforce Connect

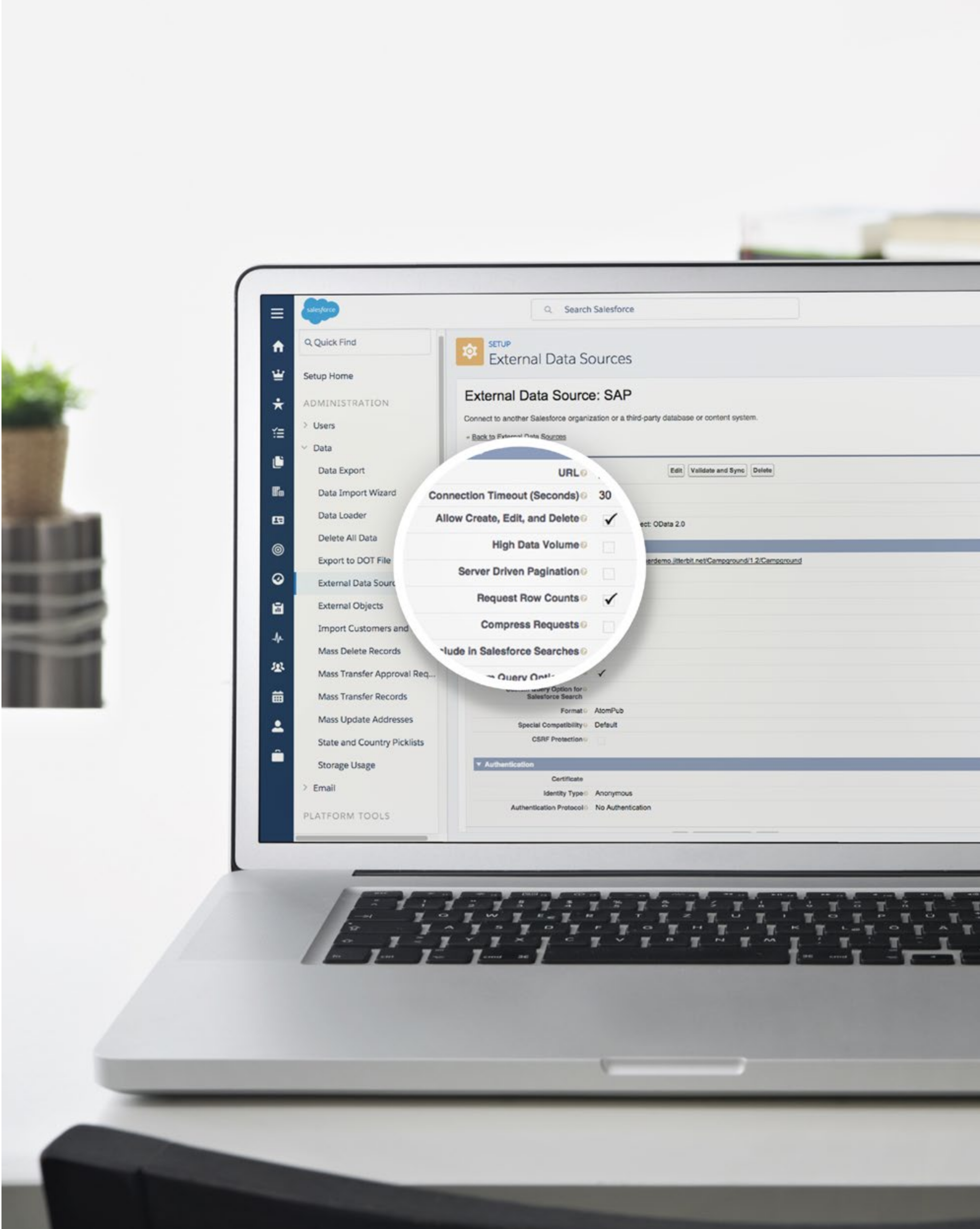
Salesforce Connect allows you to tightly integrate external data sources into your apps, giving your employees and customers seamless access to data from across your organization, from any device. Now, admins can use point-and-click tools to connect to any APIs using the Open Data Protocol (OData) in minutes. Developers can write simple Apex adapters to connect to data from any web service API. You can even seamlessly connect data between your Salesforce instances, without writing any code.

External data sources are connected to Salesforce in the form of external objects, which store metadata about external data sources within Salesforce. Admins and developers can build data from external objects right into their apps, but the data is only ever referenced in real time, and never copied to Salesforce.

With Salesforce Connect, you can change the way you think about integration, transforming it from a burden into an opportunity.

- Tightly connect any API-accessible data source to Salesforce.
- Integrate in hours with more point-and-click tools and less code.
- Read/write external data in real time, without copying data to Salesforce.
- Connect multiple Salesforce instances across your enterprise.

Now, you can add a layer of agility to your back office, connect your clouds, and even connect your other Salesforce instances.



User Interface Integration

A unified and integrated user experience is critical to meet the expectations of customers, partners, and employees, even across multiple web apps. With Salesforce Canvas technology, any external web app can be surfaced inside any Salesforce web app or the Salesforce1 Mobile App to provide a seamless user experience to end users. No more rip and replace. It's all about reuse and integrate with Canvas.

Canvas offers several features that allow a deep UI integration between Salesforce and external web apps, including:

LANGUAGE INDEPENDENCE

The external web app can be developed in any language or platform (e.g., Java, .NET, Ruby, etc.).

JAVASCRIPT SDK

The Canvas SDK provides open-source, lightweight, and easy-to-use JavaScript libraries to authenticate and communicate with Salesforce.

APP REGISTRATION AND MANAGEMENT

Customers can install Canvas apps with a single click, while administrators can manage access and security controls for the app at a granular user or role level.



Business Logic Integration

Today's connected world requires companies to build end-to-end solutions that integrate multiple back-end systems and applications. Salesforce offers a rich library of programmatic and declarative integration tools that let you implement business logic that spans multiple application systems.

Apex offers several programmatic options for integrating business logic with external systems and apps. Apex Web Services allows any third-party app to consume custom business logic written in Apex via standard REST and SOAP interfaces. Apex callouts enable outbound integration scenarios where Salesforce can consume or orchestrate business logic written in an external application. Apex Email Services allows customers to integrate Salesforce with other applications using traditional email protocols.

Our powerful workflow engine also offers an outbound messaging feature that allows customers to develop end-to-end business processes that span multiple apps, all using a point-and-click interface.

AppExchange Ecosystem

Building apps is only one part of App Cloud. You can also get ready-made apps on AppExchange. With free apps to get you started, or full-blown, enterprise-grade apps, as well as customer reviews, you can easily find solutions for any department or industry.

And apps built 100% natively on App Cloud share an integrated, secure data and identity management model so you don't have to worry about integration or security hassles.

Plus, apps on AppExchange are all connected to App Cloud, so users only need one login to manage. Each app goes through a rigorous security review, so you know your company's information is secure and trusted inside of Salesforce. Plus, apps are easy to customize, so you can get the app you want, and leverage developer tools to make it work even better for your business.

And if you build an app on App Cloud, you can list and sell it, too.

#1
business app marketplace

79%
of Salesforce customers
use apps from the
AppExchange



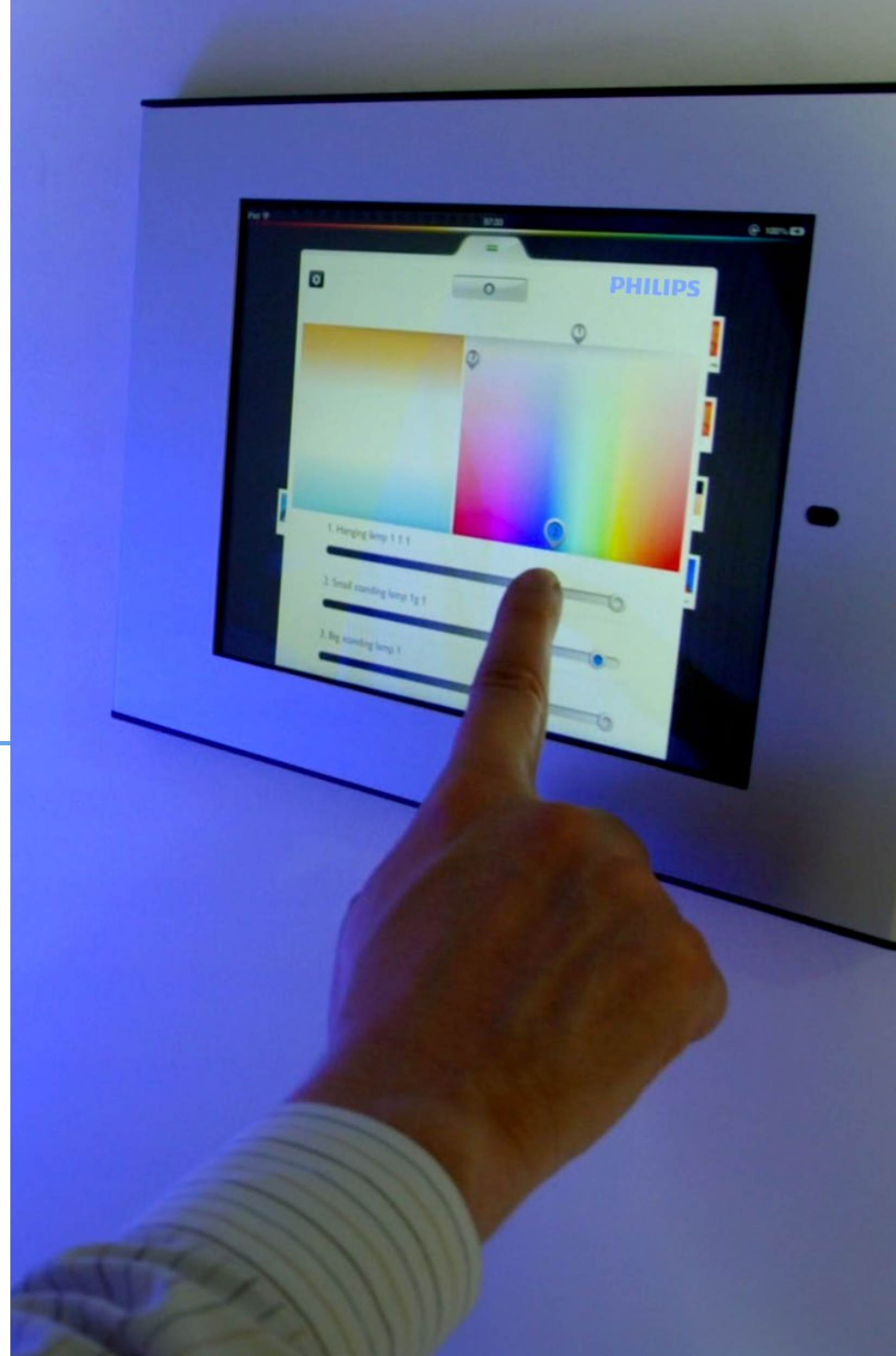
CHAPTER 05

MANAGE SECURITY AND GOVERNANCE

“If you build functionality on top of a common platform, suddenly you see a much better impact – much greater leverage. The platform approach is really the way to go.”



Jeroen Tas
CEO, Informatics Solutions
Philips



A Secure and Trusted Platform

App Cloud is built around a robust and flexible security architecture trusted by companies around the world, including those in the most heavily regulated industries – from financial services to healthcare to government. Its unique multitenant architecture provides you with a fine degree of security control over everything from user and client authentication, to administrative permissions, to the data access and sharing model.

ORGANIZATION SECURITY

Salesforce protects your organization’s data from all other customer organizations by using a unique identifier that restricts access at every level to your data from anyone (including Salesforce Support) outside of your company.

USER SECURITY

User authentication – both delegated and via the Security Assertion Markup Language (SAML) – combined with network-level security by IP address, session restrictions, and audit trails provide control and visibility into what users are doing in the system and their field history.

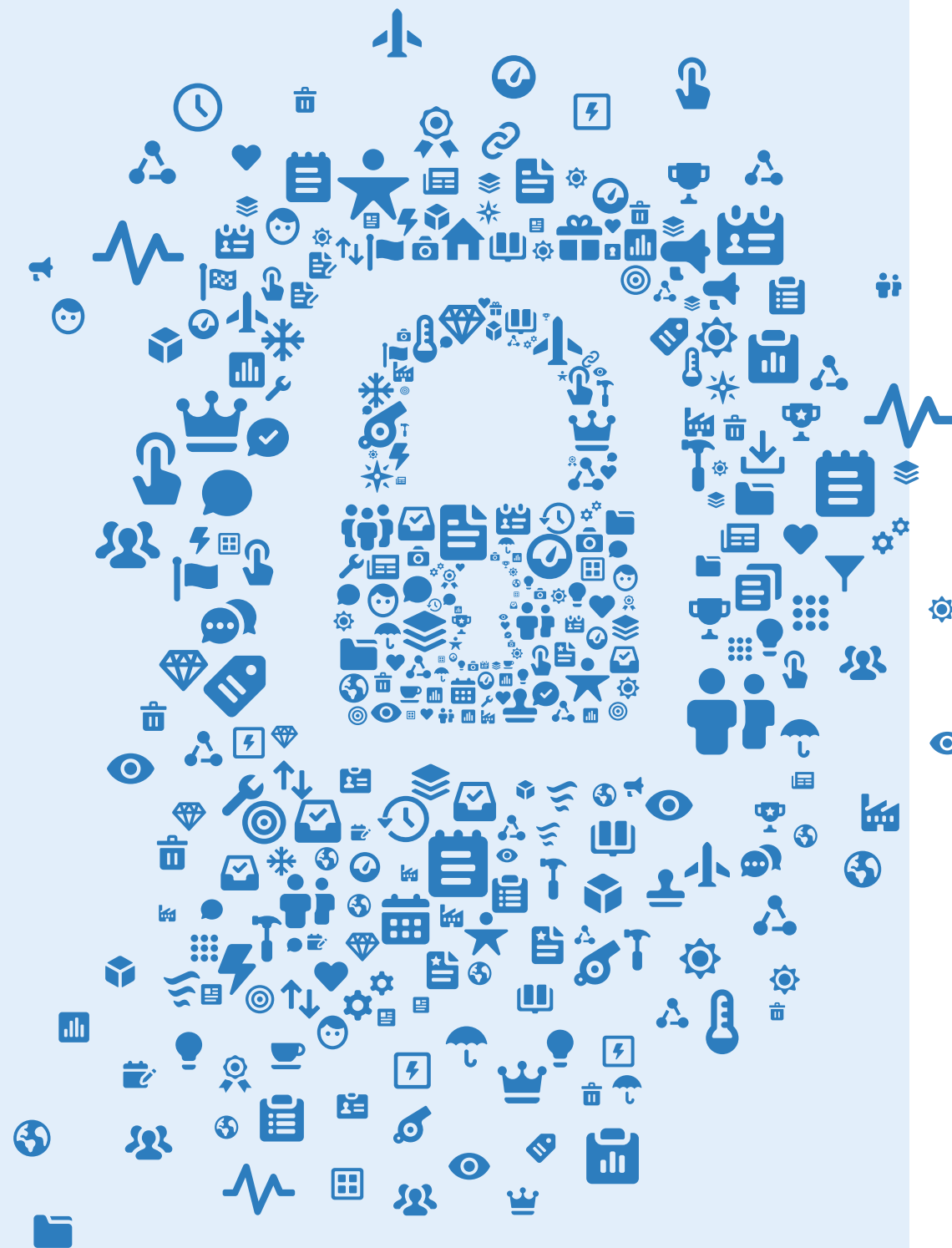
PROGRAMMATIC SECURITY

Configurable, authenticated sessions secure access to logic, data, and metadata. Salesforce even offers a source code scanner that produces a report analyzing the security of your code.

TRUST AND VISIBILITY

Trust starts with transparency. That’s why Salesforce displays real-time information on system performance and security, and offers tips on best security practices for your organization.

See live data on system performance and alerts at trust.salesforce.com



Salesforce Shield

Companies across industries are bringing more types of data into Salesforce than ever before. As more sensitive data moves to the cloud, the security and compliance requirements that CIOs and CISOs must address become more complex. Salesforce Shield is a premium set of security services that provides an additional level of visibility and protection for sensitive data.

EVENT MONITORING

Get complete visibility into your Salesforce apps.

FIELD AUDIT TRAIL

Retain data history for compliance and greater operational insights.

PLATFORM ENCRYPTION

Strengthen data privacy and confidentiality.

Customers can see who is doing what, know the state and value of their data going back as much as 10 years, and encrypt sensitive data at rest – all using powerful point-and-click tools.

SALESFORCE SHIELD

Event Monitoring

Companies of every size and industry – and in every department – are using App Cloud to run their businesses faster. As the adoption of business apps grows, so do security requirements.

Event Monitoring gives you greater visibility into user actions to help you better support your apps, audit your users, and optimize business processes.

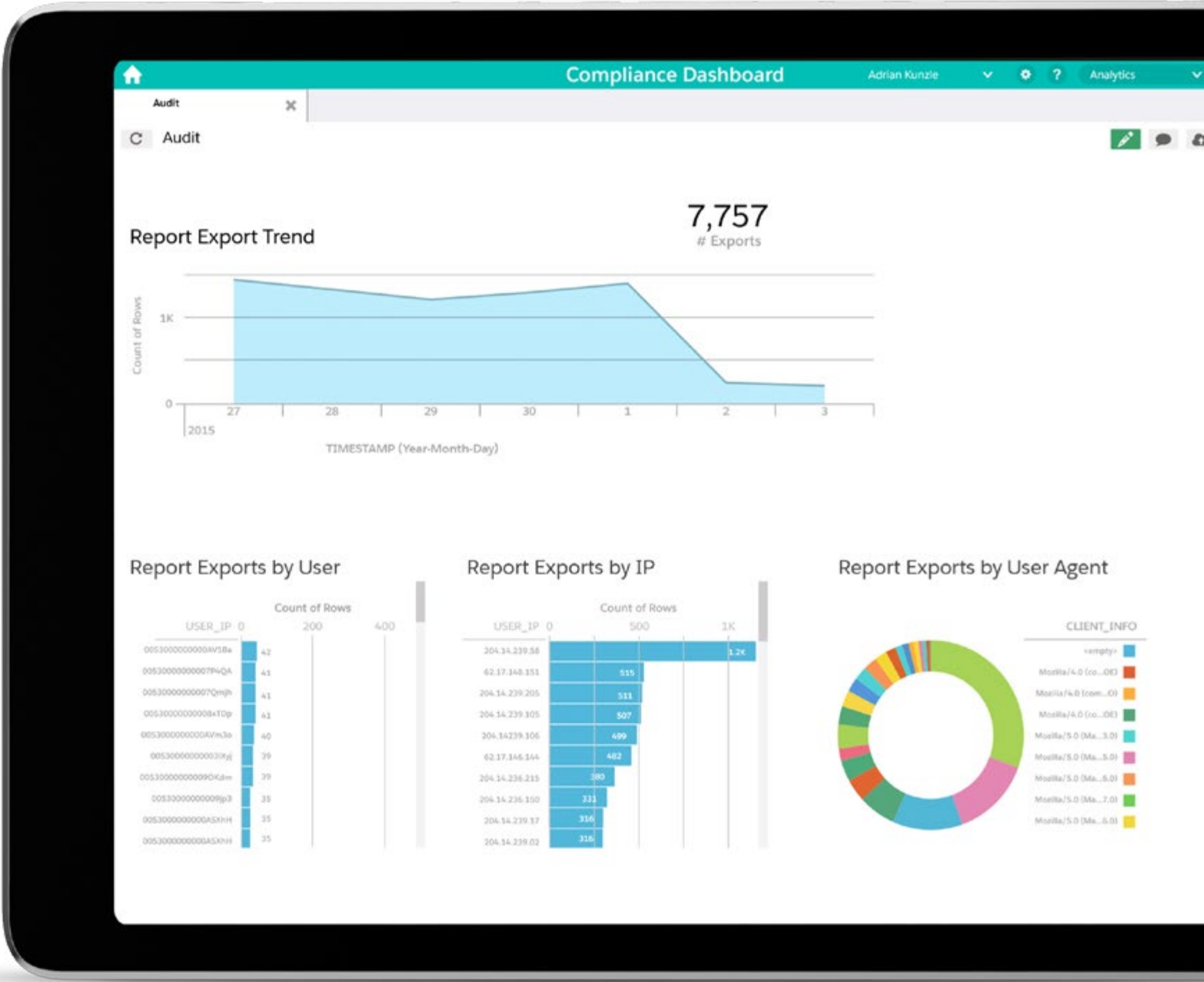
DRIVE MORE INFORMED DECISIONS WITH DATA

With Event Monitoring, all user interactions, app performance, and security are delivered as event log files via the Force.com SOAP API and REST API. You can easily integrate data with your own back-end storage and data marts or import it into a visualization app. Correlate data from multiple organizations across disparate systems and use Analytics Cloud or any other analytics platform to get insight that helps you increase user adoption, optimize business processes, and secure valuable organizational data.

PREVENT DATA MISUSE WITH REAL-TIME POLICIES

Event Monitoring gives customers the ability to not only monitor, but also act on usage behavior in real time. With Transaction Security, a flexible, customizable security engine gives IT the power to identify and prevent malicious user actions with automated policies. The response to these actions changes dynamically based on context such as device, profile, and location – delivering a great user experience and reducing risks.

With Event Monitoring enabled, developers and admins can create an unlimited number of dynamic Transaction Security policies with code, or select from a set of standard policies via the Salesforce Setup interface.



SALESFORCE SHIELD

Field Audit Trail

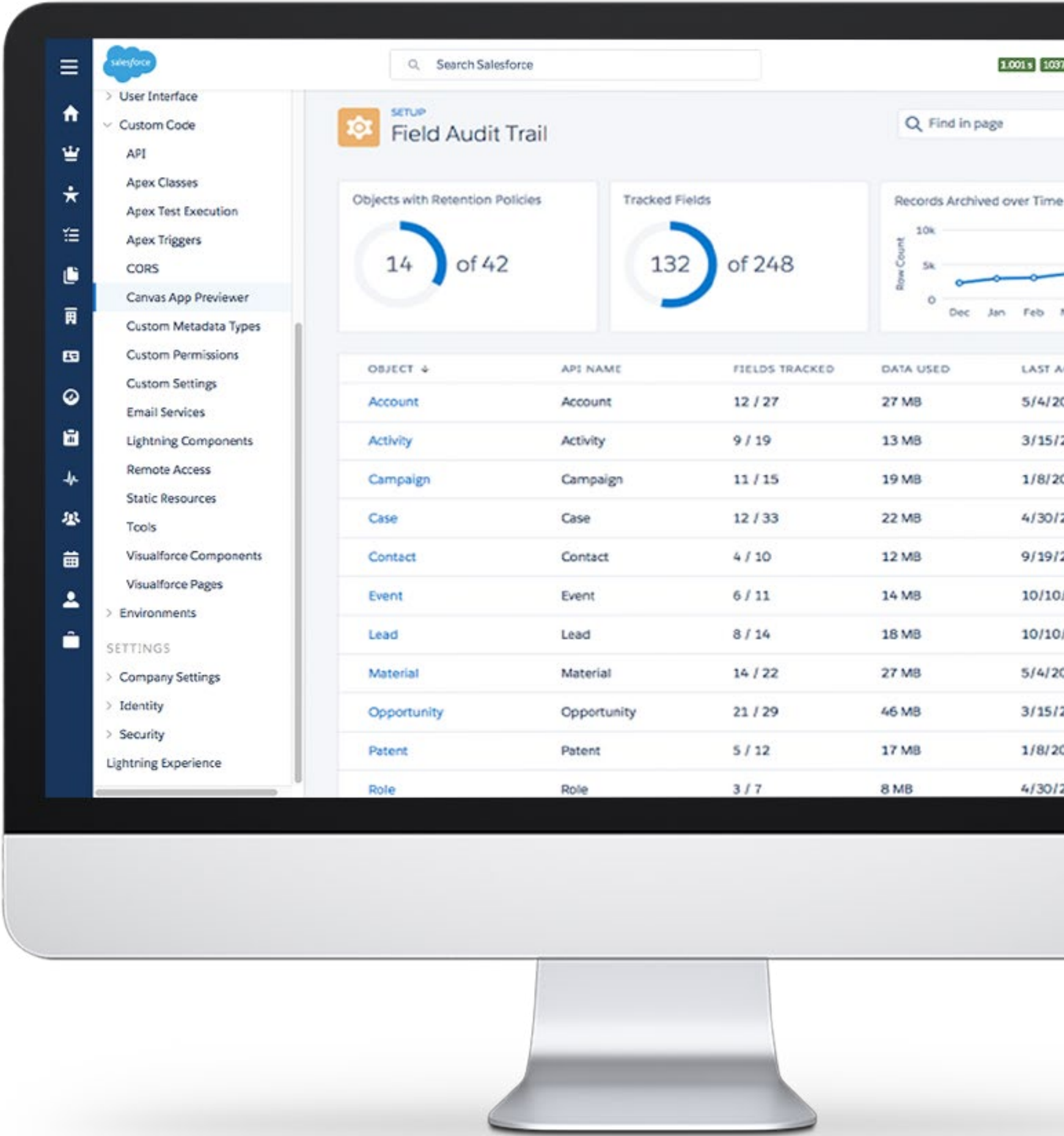
Tracking the massive quantity of data companies generate is an essential part of IT governance strategy. But maintaining a data audit trail can be complex and resource-intensive. Field Audit Trail from Salesforce automates much of this process by giving you a forensic-data-level audit trail with up to 10 years of history. Now you can ensure the integrity of your data, deriving insights into how your data and your company has evolved. With nearline storage for high-volume data, your business can easily meet compliance and security guidelines.

QUICK ACCESS AT MASSIVE SCALE

Field Audit Trail is designed for anyone who could benefit from the ability to go back and audit data, including customers in regulated industries such as financial services, healthcare, life sciences, medical devices, managed research, and customer service organizations.

Now you can define rules for how your data is stored in production and archive environments with point-and-click tools. Field Audit Trail tracks field history for up to 60 fields per object and retains field history for up to 10 years. Salesforce allows you to define a unique data retention policy on a per-object basis and deploy it via the metadata API. By setting an object data retention policy for each object, you can specify the number of months you want data stored in your production environment and how long you want that data archived before it's automatically deleted. Field Audit Trail policies can also be deployed into sandbox instances, and migrated directly to production orgs via Salesforce's Change Set migration capability.

Field Audit Trail is built on a big-data back end to enable massive scalability. Data is consolidated for easier accessibility, reporting, and performance, and can be easily queried via SOQL or Bulk API. Salesforce provides a consistent query performance of 120 seconds regardless of the size of the data.



SALESFORCE SHIELD

Platform Encryption

As companies store more sensitive information in the cloud, such as personally identifiable information (PII), they need to ensure the privacy and confidentiality of that data in order to meet both external and internal compliance requirements. Platform Encryption allows you to natively encrypt proprietary and sensitive data at rest with a button click while preserving key business functionality.

More importantly, Platform Encryption uses metadata to keep information in these files and fields secure while preserving the ability to perform common business tasks.

Designed for regulated industries such as financial services, healthcare, government, and life sciences, Platform Encryption encrypts sensitive data when it's stored at rest, supports customer-controlled encryption key lifecycles, and preserves app and App Cloud functionality.

Platform Encryption is surrounded by a robust partner ecosystem of apps available on AppExchange that can also include and respect data that you choose to encrypt in your org. Platform Encryption is built natively into the platform and can be set up in just a few minutes.

Use Cases

FINANCIAL SERVICES COMPANIES

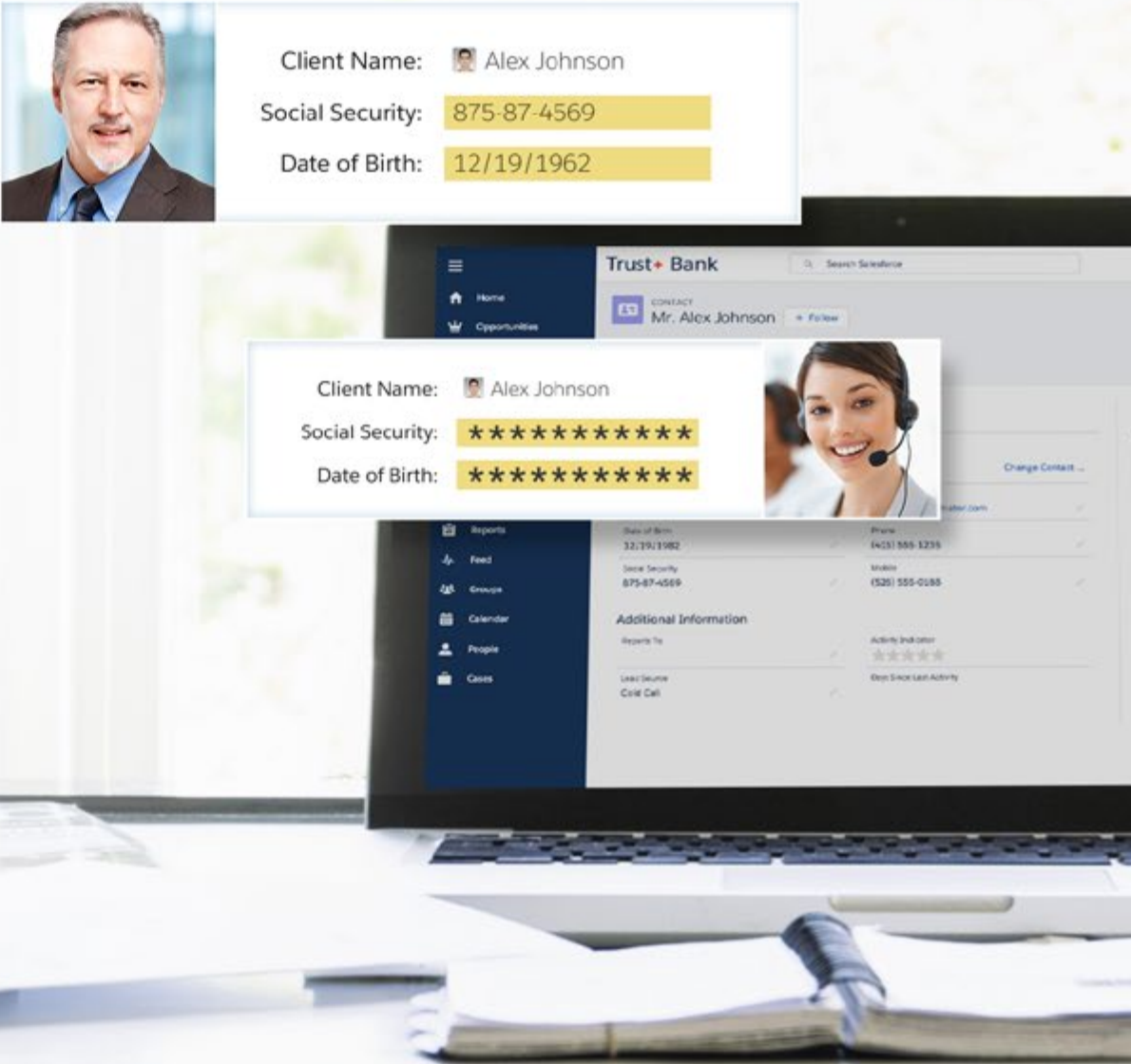
Encrypt customers' personally identifiable information (PII), credit card details, health history, wealth information, and more.

HEALTHCARE COMPANIES

Encrypt protected health information (PHI) such as health history, treatment records, and personal information like ID numbers, social security numbers, and more.

COMPANIES IN ALL INDUSTRIES

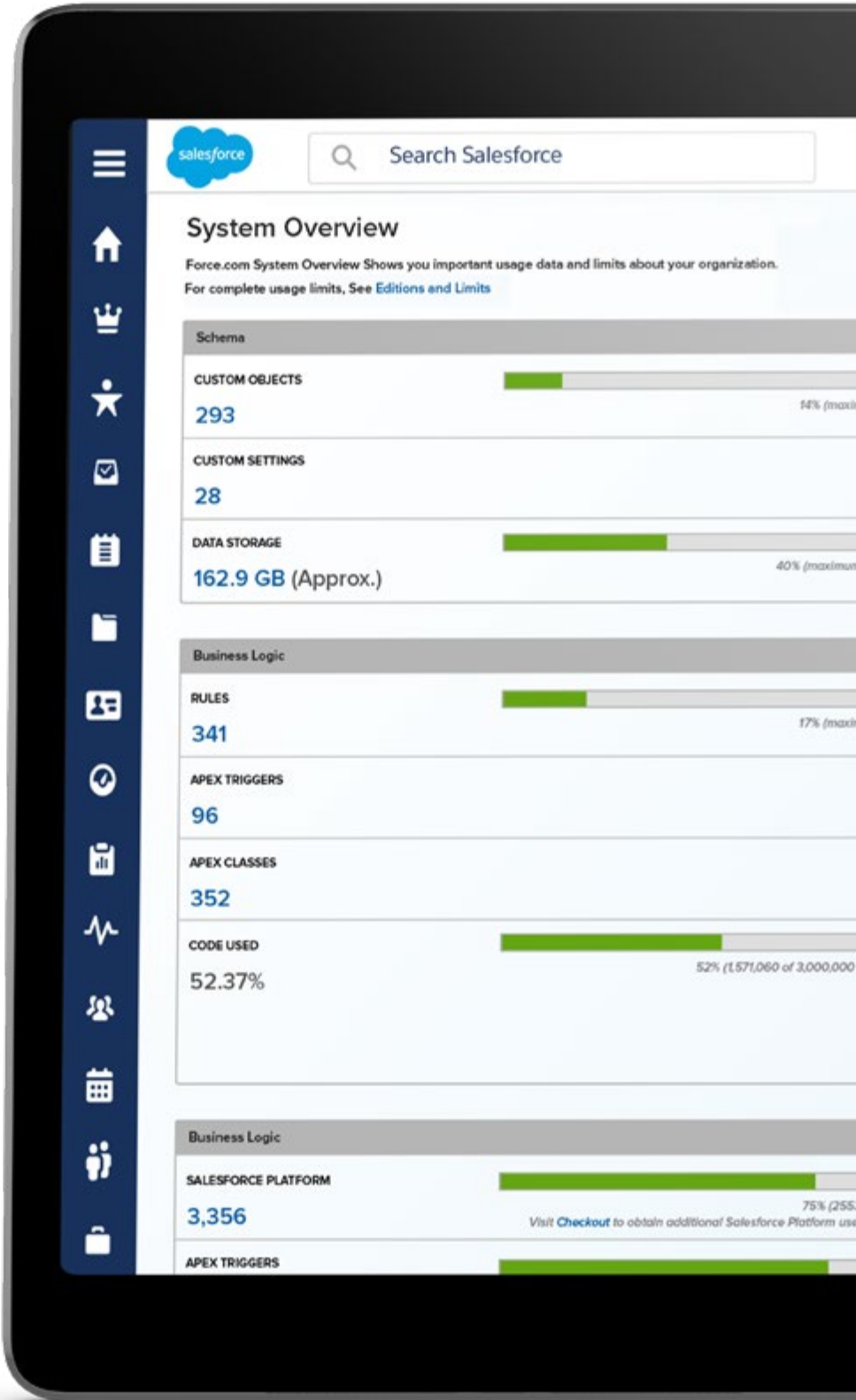
Encrypt sensitive VIP client information, intellectual property, trade secrets, product and service roadmap details, and more.



Centralized IT Governance

Creating a framework that manages change over time and that creates processes to resolve conflicting requirements is a challenge in any IT organization. All too often, this is made more difficult by the complexity introduced by multiple siloed apps and development islands. App Cloud provides a convenient and complete set of functionality to create and manage a centralized, agile, cloud-based IT governance framework, including:

- Control over administrator profiles to ensure only authorized people are able to make changes.
- Detailed visibility into user activity to understand who is changing what, and when.
- A rich sandbox environment to deploy and test changes before rolling into production.
- A collaborative environment to publish policies and promote their review and discussion.
- Rich user permission sets, user profiles, and record types to provide specific views of data for each type of user.
- Workflow to receive, review, and approve change requests from multiple parties.



Access Management

One of the most difficult and time-consuming problems for the IT department is the complexity of managing permissions across various aspects of multiple apps.

App Cloud helps control and manage the enterprise app environment across the hall, the office, and the whole business, from anywhere in the world.

Built-in role-based access allows for control over where apps are deployed, and what data each user can access at the object, field, or record level. You can also create custom rules across roles and profiles so you can share data when you want, with the user you want.

And even better, permission sets are reusable, so you can distribute access among more logical groupings of users, regardless of their primary job function.



AppExchange Store Builder

App Cloud enables your company to quickly build amazing apps to meet business challenges whenever and wherever they arise.

By now you might be asking, “But how can I distribute all those apps to every employee and customer, everywhere?”

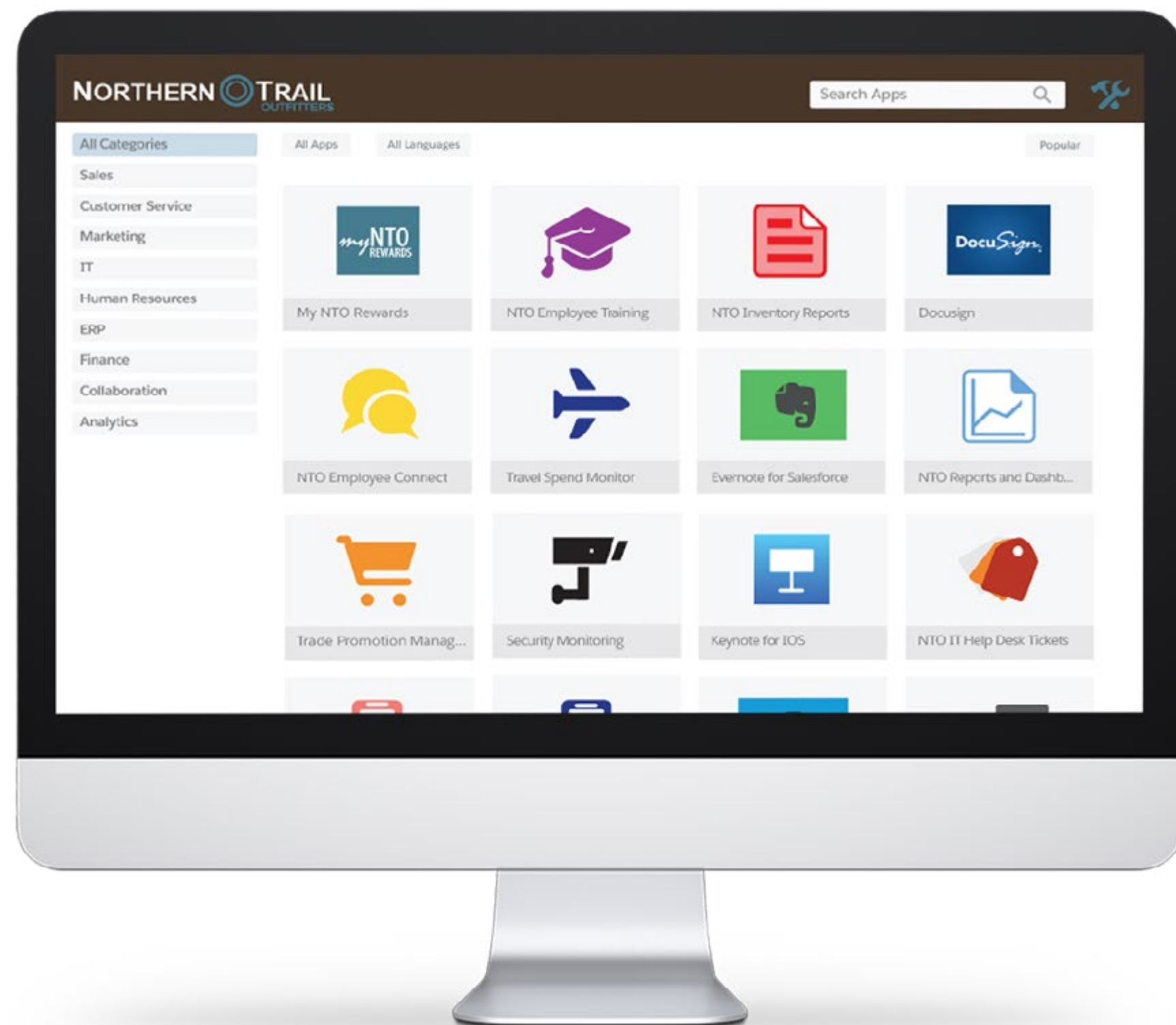
With AppExchange Store Builder, you can create customer- or partner-facing app stores and give instant access to the apps your stakeholders need through a secure app store, tailored to your company. Users can easily search, read app descriptions, watch demo videos, and view app feedback from fellow employees via a simple, intuitive, and productive experience. You can even integrate third-party payment tools from AppExchange.

Customizing your store is equally simple. You can use your own logo and branding, create categories according to your business needs, serve any device, and even adjust admin settings such as permissions and languages, with just a few clicks.

Even after you take your store online, the value keeps coming. You can track app usage to see who’s installing what (and when) with a built-in analytics dashboard.

Now you can provision any type of app, including:

- Mobile apps
- Cloud apps
- Web apps
- Packaged apps
- Native device apps
- Third-party apps
- Apps that run outside of Salesforce
- Custom apps built on Salesforce



Key Capabilities of Salesforce App Development

- API-first
- Multiple sandboxes
- Sandbox templates
- Monitor deployments
- Cloud IDE
- No downloads required
- Open source

- API-first
- Multiple sandboxes
- Sandbox templates
- Monitor deployments
- Cloud IDE
- No downloads required
- Open source

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- Multiple sandboxes
- Sandbox templates
- Monitor deployments
- Cloud IDE
- No downloads required
- Open source



Salesforce Identity

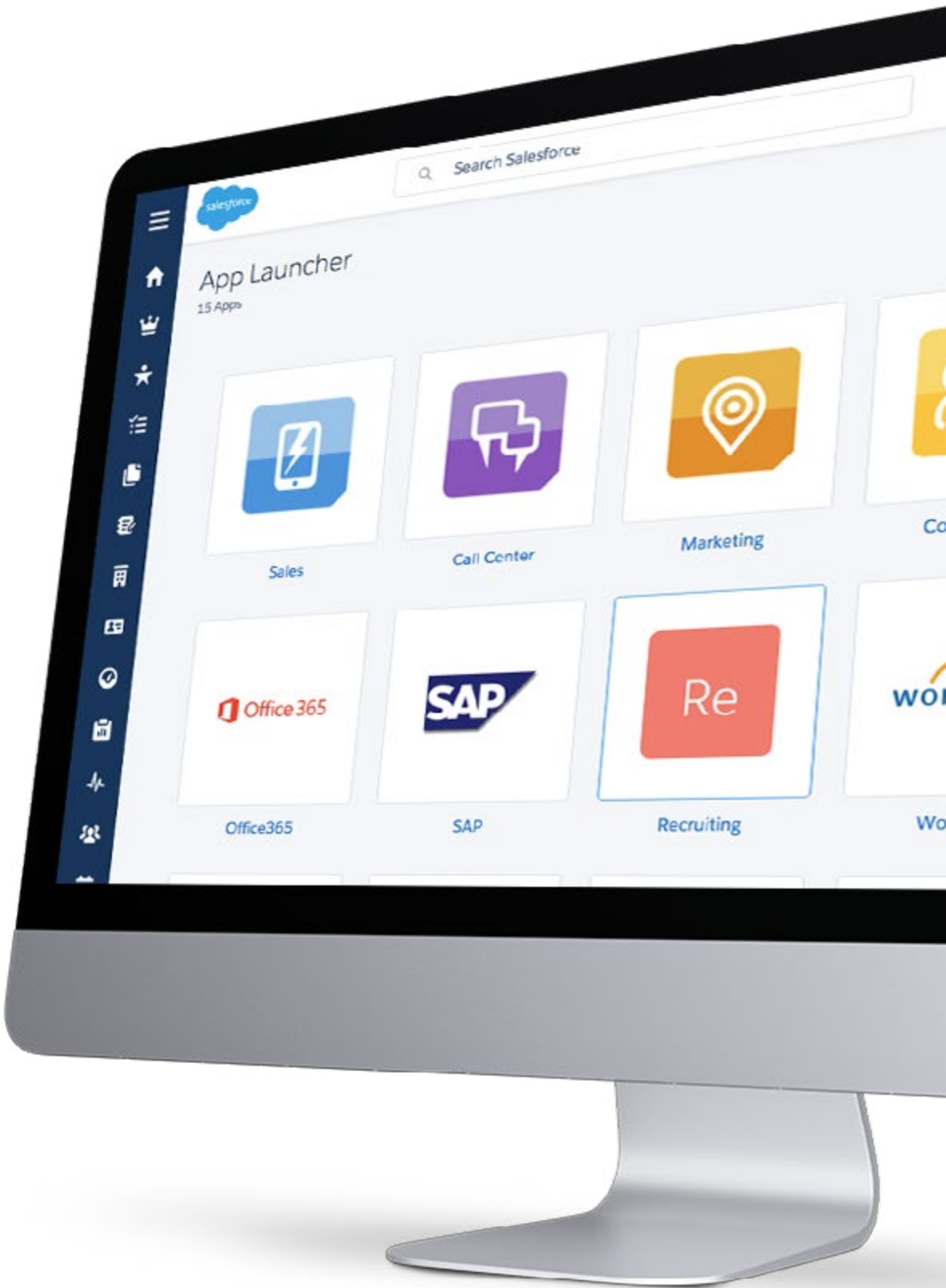
Maintaining a single, trusted identity across a company isn't always easy. Identity and access management practices are often a patchwork of incomplete solutions and result in redundant logins, management complexity, and end-user frustration.

Salesforce Identity is an identity and access management (IAM) service that enables you to manage and extend identity across your

company's entire library of apps. This gives your employees and partners instant access to the apps they need from one trusted login. And for your customers, it helps you create a 360-degree customer profile that enables more meaningful relationships, better user experience, and increased security, all customized to your business.

Salesforce Identity enables you to:

- 1 Create one trusted identity for *all* your apps.**
Enable your employees, partners, and customers to log in once with a trusted secure login, and gain seamless permissions-based access to your company's apps. Salesforce Identity is the industry's most flexible identity provider with support for extensible schema, declarative validation rules, batch processing, triggers, workflow, and more.
- 2 Transform CRM contacts into digital identities.**
Transform your CRM contacts into real digital identities that can self-register, log in, and update their profiles. Salesforce Identity enables companies to create deeper, more meaningful relationships with their customers by connecting them to apps and products, across any channel, customized to their brand and business.
- 3 Integrate your external apps and systems.**
Leverage all of your company's resources by enabling your users to move effortlessly between apps, services, and devices. Extend identity across multiple systems using industry standard federation protocols, including: SAML, OpenID Connect, OAuth, SCIM, WS-Federation or on-premises Microsoft Active Directory (AD).
- 4 Centrally and confidently manage your users' identities.**
Equip your IT team with the tools they need to manage identities for your organization. Use a graphic workflow builder to orchestrate a wide variety of identity automation and provisioning processes. Then leverage deep reporting and analytics capabilities that allow administrators to design reports and dashboards to gain oversight.
- 5 Eliminate friction, while maintaining trust.**
Reduce sign-up friction by leveraging users' existing identities, including their social identities. Then leverage their mobile devices to confirm their identity through two-factor authentication. Salesforce Identity can intelligently detect potential abuse and require additional layers of validation, while suppressing needless validation during normal use.



Salesforce Authenticator

Salesforce Authenticator adds an extra layer of security to your online accounts with two-factor authentication. You can use your mobile device in addition to your password to verify your logins and other account activity. Salesforce Authenticator can use your mobile device's location services to verify automatically from trusted locations, like your office or home.

Salesforce Authenticator works across Salesforce apps, as well as third-party services. Salesforce Authenticator also supports the two-step authentication on Facebook, Google, Outlook, Dropbox, Evernote, and more.



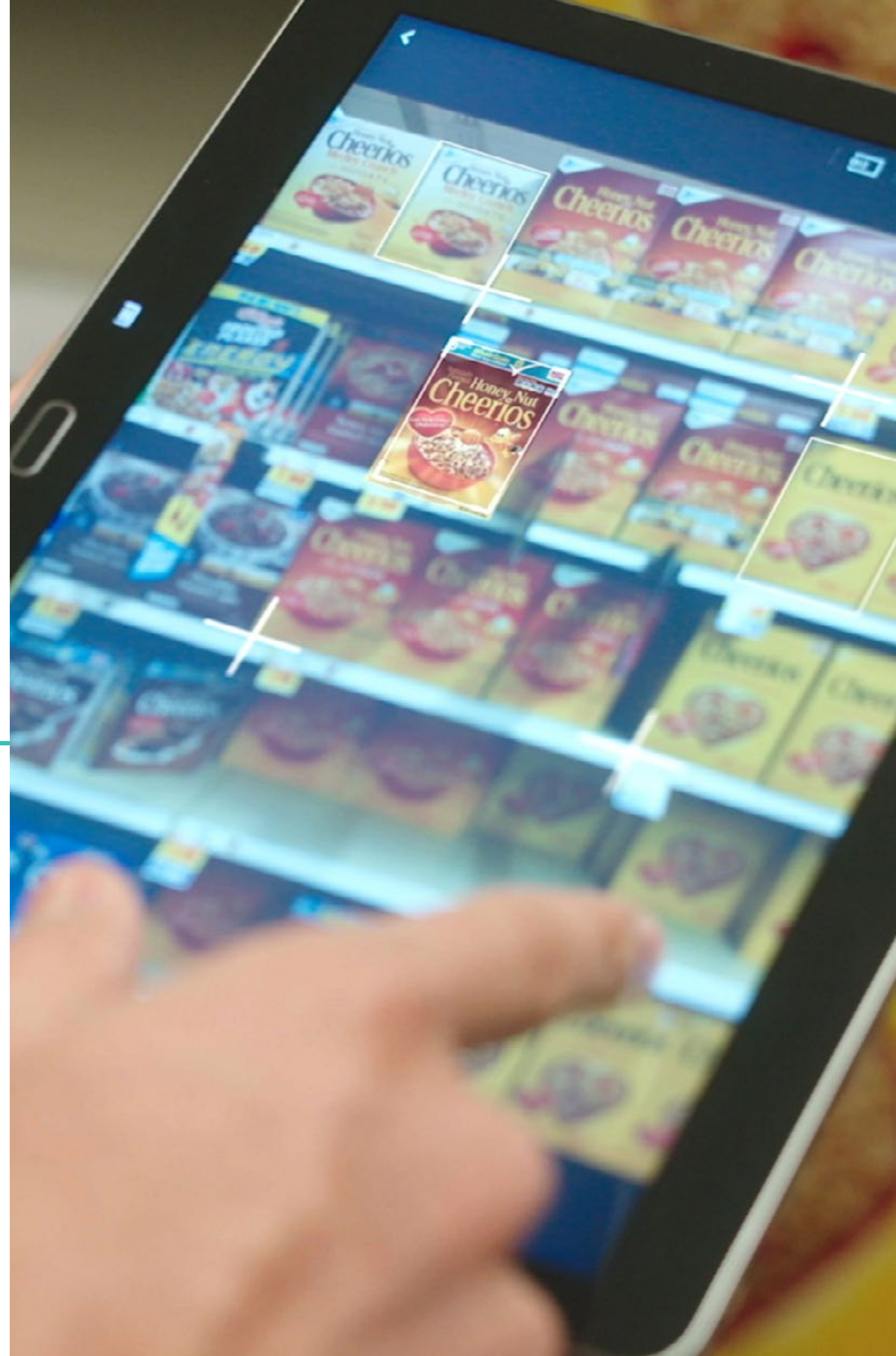
CHAPTER 06

GET STARTED WITH APP CLOUD

“The speed and agility you gain with App Cloud is unprecedented.”



Mike Anderson
SVP and CIO
CROSSMARK





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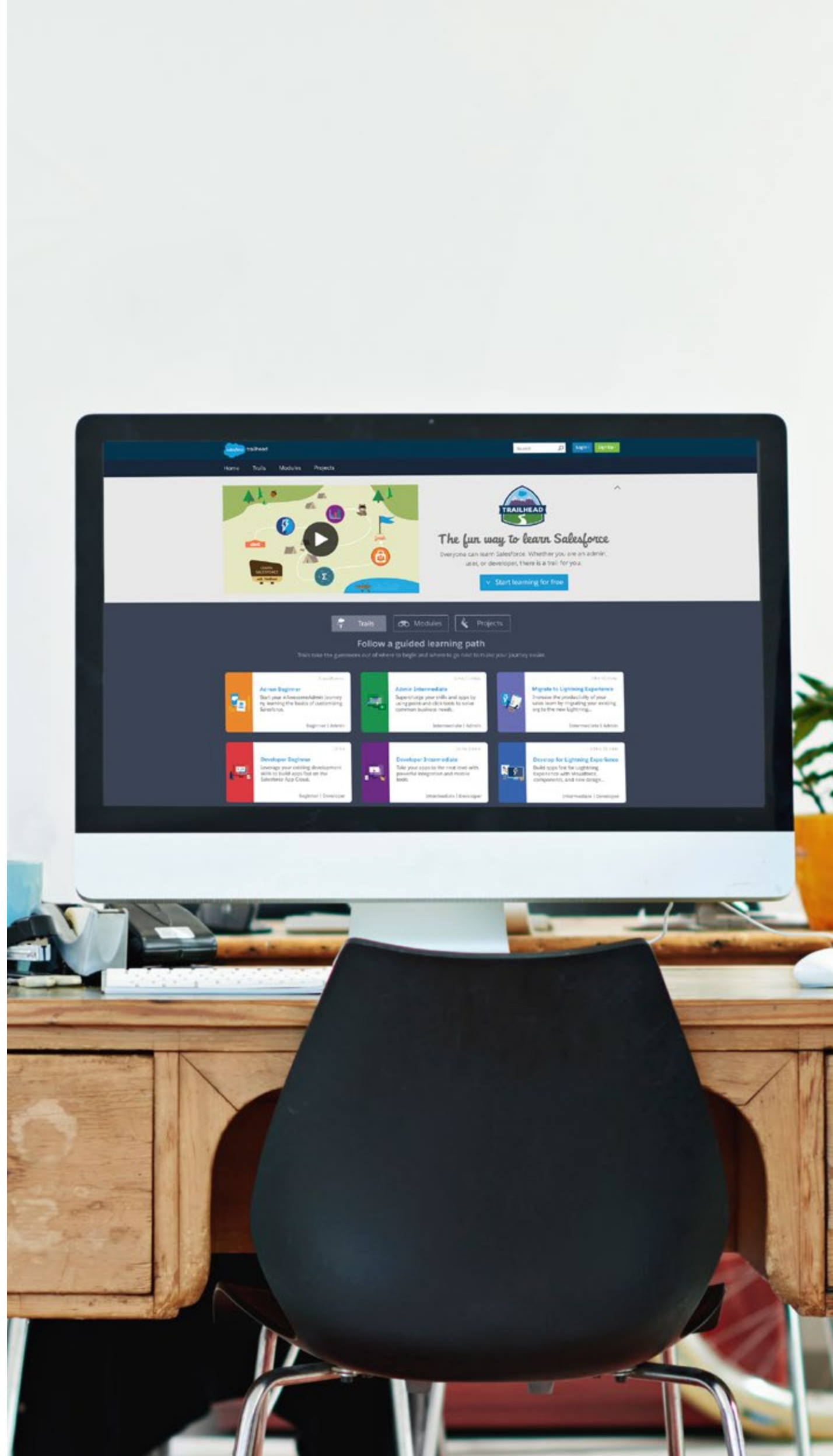


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CHERYL FELDMAN
Manager, Systems Administration
Namely



“I wish there had been something like Trailhead when I started out with the platform 6+ years ago.”

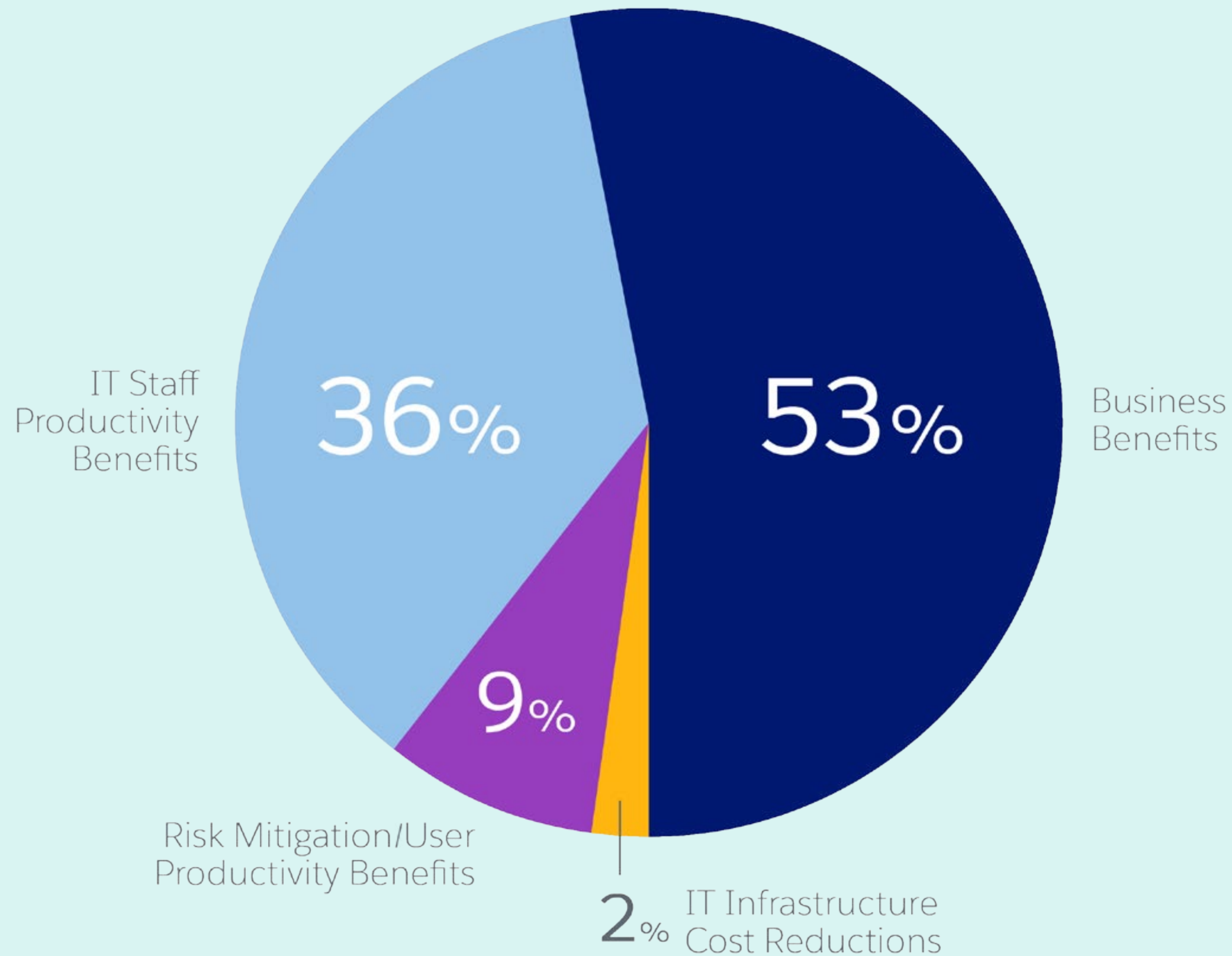
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