HCL Volt MX

Beautiful apps. Transformation delivered.

Volt MX is the industry-leading low-code application development platform for building unified digital experiences across all channels with consumer-grade UX for mission critical applications. It combines the speed and ease of low-code development with a comprehensive set of enterprise back-end services and integration capabilities. The platform supports the entire application software development lifecycle (SDLC) and enables organizations to deliver web, native, wearable and other apps in just a few weeks.
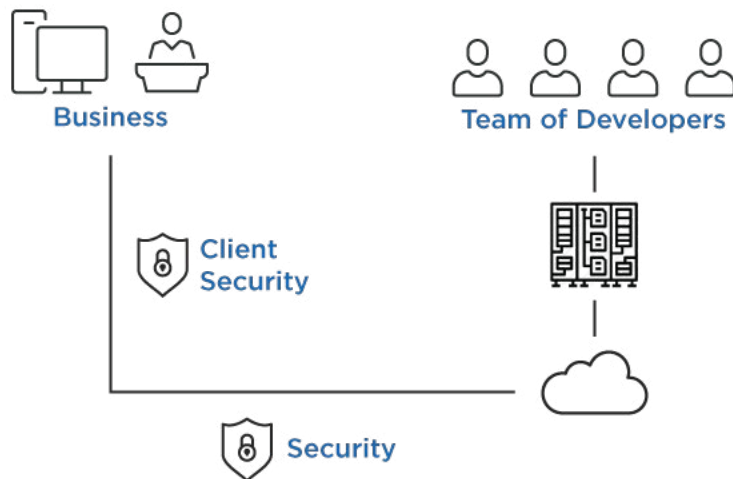
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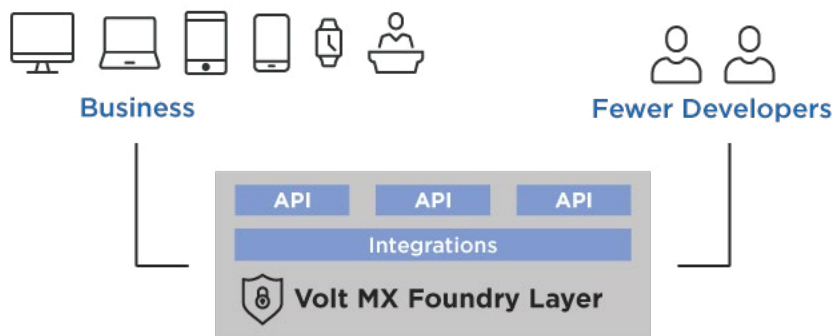
Volt MX helps organizations of all sizes reach digital success. HCL is a recognized industry leader among low code, digital and multiexperience development platform providers.

Volt MX provides the most innovative and secure omni-channel applications, with exceptional user experience and design, empowering organizations to excel at digital. From delighting consumers and partners to supporting employees, Volt MX gives enterprises the efficiency and agility to get ahead and stay ahead, resulting in transformational outcomes.

HCL Volt MX is designed to solve the problem of development organizations not being able to scale to meet the app needs and demands of their customers and employees as their business grows. Volt MX allows development teams to develop more apps more quickly with less effort and with less code. Through the use of a single code base, reusable UI components, point-and-click data integration to ERP and enterprise data systems, AI-assisted tooling, and the ability to integrate into CI/CD processes, customers have seen significant time and cost savings. Customers have seen app development lifecycles shrink 50% and some even by as much as 75% when using Volt MX for their digital development.

HCL Volt MX is an open standards-based, integrated platform that supports the entire application software development lifecycle (SDLC) and empowers enterprises to start fast and stay fast — without compromises. The platform consists of Volt Iris and Volt Foundry.

Volt Iris

Front-End design and development
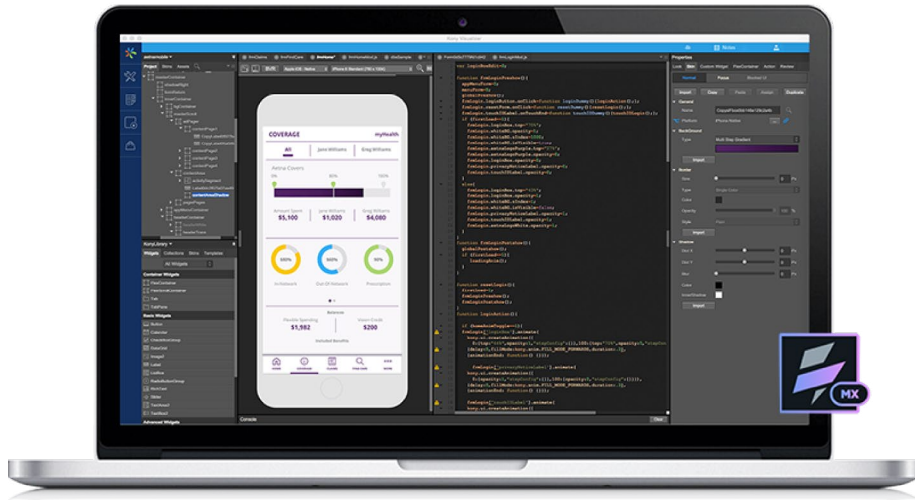
Volt Iris is an integrated, intuitive development environment for prototyping and building responsive and progressive web applications and fully native applications across phones, tablets, and wearables — all from a single code base.

Volt Foundry

Securely build and manage backend integrations, APIs, workflows, and microservices

Volt Foundry provides a set of powerful backend runtime services and capabilities that enable users to use connectors to quickly integrate with data, create new services, orchestrate and transform data, define business rules, and configure backend business workflow

processes that are power client applications. Volt Foundry is a unified, open standards-based omni-channel digital infrastructure service that easily integrates and supports backend systems with best-in-class protection and comprehensive analytics.
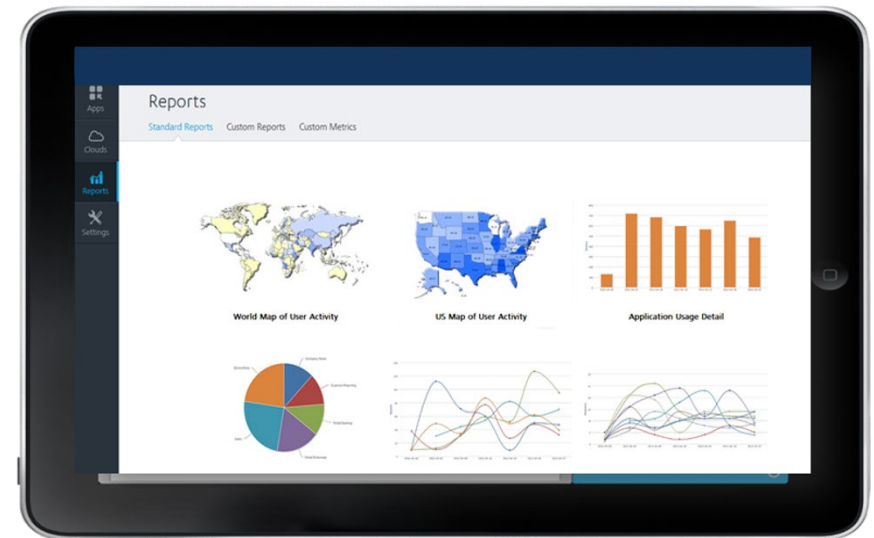
Fastest Development Speed

Enterprises need ways to quickly iterate to maintain business relevance and improve the customer experience. Speed with the highest levels of adoption are the holy grail for any application and this is especially true in any digital transformation. Unlike traditional IT projects, digital applications are never truly "finished." Most organizations find themselves having to update their app

every three to six months and in the case of many B2C apps, even approaching continuous updates. At HCL we believe there are four elements to truly delivering great digital apps:

1. Automation and Prototyping
2. Richest Interaction Design & UX
3. Commonization and Reusability
4. Comprehensive App Services and DevOps

Automation and Prototyping
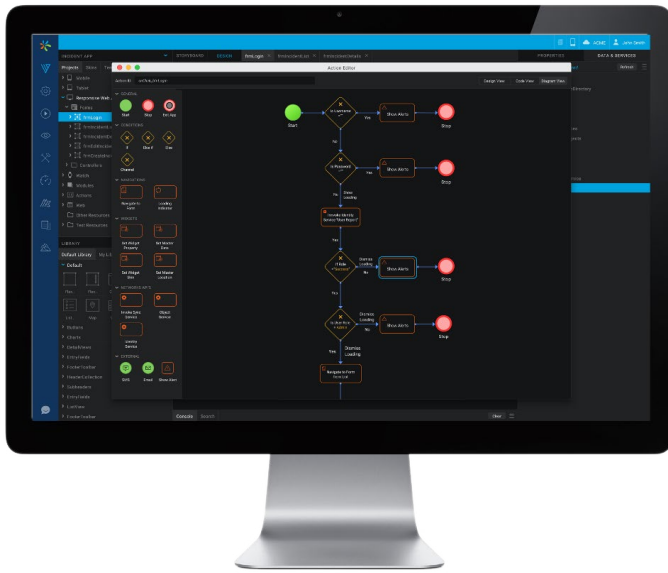
Your organization, like most of the companies that HCL partners with, requires that all user types have a stake in the ideation, prototyping, design, and development of applications. With Volt Iris, the world of multiexperience

application creation is opened to a broad set of users, through Volt Iris's unique approach to development and design. With tools like the WYSIWYG canvas and design toolsets, designers can easily create nuanced application visual designs without compromise. These application designs can then be advanced into highly engaging application interactions using the low code, intuitive flow tools such as Action Workflow Editor, along with App Preview.

Application prototyping does not end with the design and interaction; using Volt Iris's unique low-code integration tools such as mapping editor, the design and interaction can be hooked into data from the enterprise with only a few clicks. Volt Iris allows organizations to ideate quickly throughout the ideation and prototyping process with Volt MX App Preview, the native application preview and collaboration toolset. With Volt MX App Preview, stakeholders around the world can more easily collaborate throughout the entire app software development lifecycle.

Richest Interaction Design & UX

Omni-channel applications put the user at the center of the user experience. Data has shown that a poor user experience will result in high rates of abandonment of applications, and lower rates of value added transactions. Volt MX's next generation Volt Iris application canvas enables designers, business users, and developers to create next generation user experiences that adhere specifically to the human interface guidelines of each

of the supported device platforms. Applications built with Volt Iris can take advantage of all of the low level native drawing capabilities, and can leverage the native hardware capabilities, without compromise.

To assist developers with their design and development approach, included in Volt Iris is Volt IQ, an AI-assisted chatbot interface to help simplify and accelerate app development.
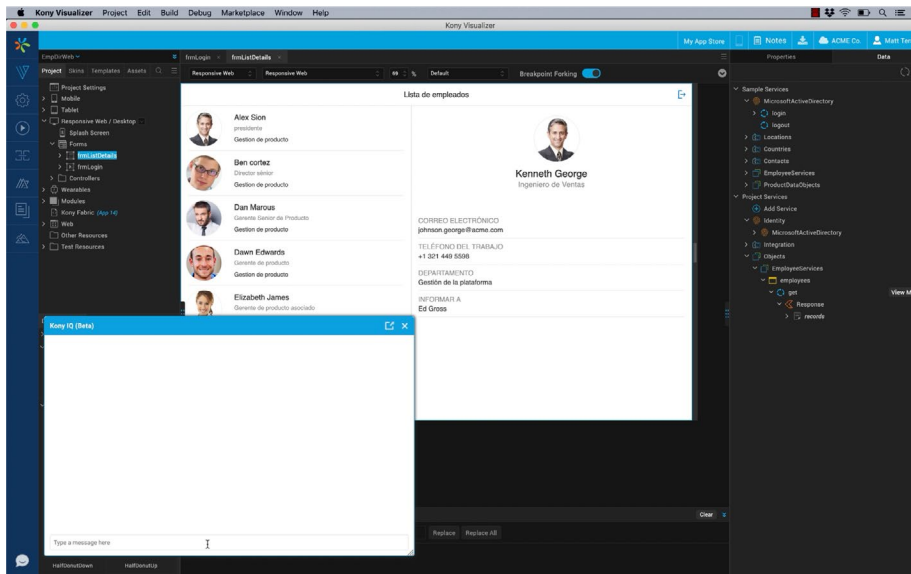
Using machine learning (ML), natural language processing (NLP), it provides a single information access point for developers to access documentation, acquire components, answer questions, and perform development tasks such as performing a build or translating application labels to another language.

Commonization and Reusability
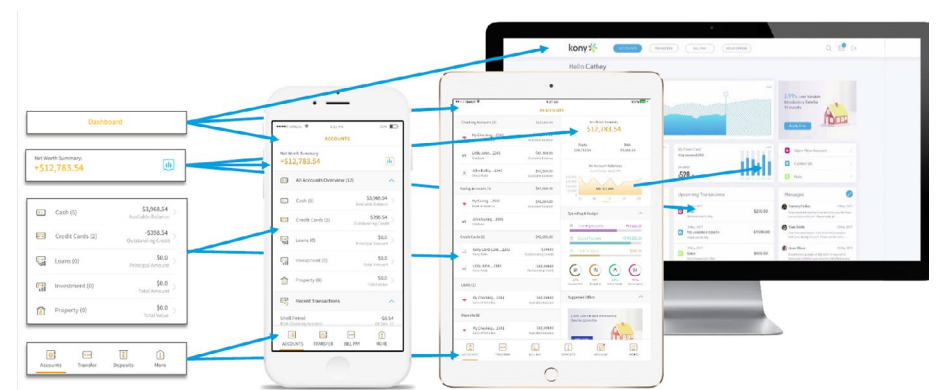
The re-use of common components and assets as well as microservices across channels, applications and platforms is critical to realizing organizational efficiency. Volt Iris provides enterprise-grade capabilities to define such components centrally and use them across any number of applications and device types.

These components can consist of simple UI assets, user interface elements, and application component functionality definitions.

Comprehensive App Services & DevOps

One of the biggest challenges in the creation of any mobile application is gaining access to data from your backend systems, and then being able to transform or optimize that data set for a smaller form factor device. Integration with API management provides a simplified interface to back-end data sources. From the API

interface, mobile and web applications need to be able to take what might be a large data set, and parse through only what is relevant for display on a much smaller form factor and in an environment that is often characterized by limited or intermittent network connectivity.

Integration and API Management

Volt Foundry greatly simplifies your backend integration and eliminates maintenance costs by providing an open and extensible framework to integrate seamlessly with your existing IT investments. Volt Foundry makes it easier for application developers to configure the access to their data so they can focus on delivering the best user experience.

Phone, tablet, and web applications often require a number of data-optimized services to ensure security and to maximize performance. Volt Foundry provides the following transformation services out of the box to accelerate development times:

- Identity management
- Data management via integration and orchestration services
- Object services
- Off-line data synchronization
- User engagement (integration to Push, SMS, Email providers)
- Workflow
- Business Rules Engine

Identity and Data Management
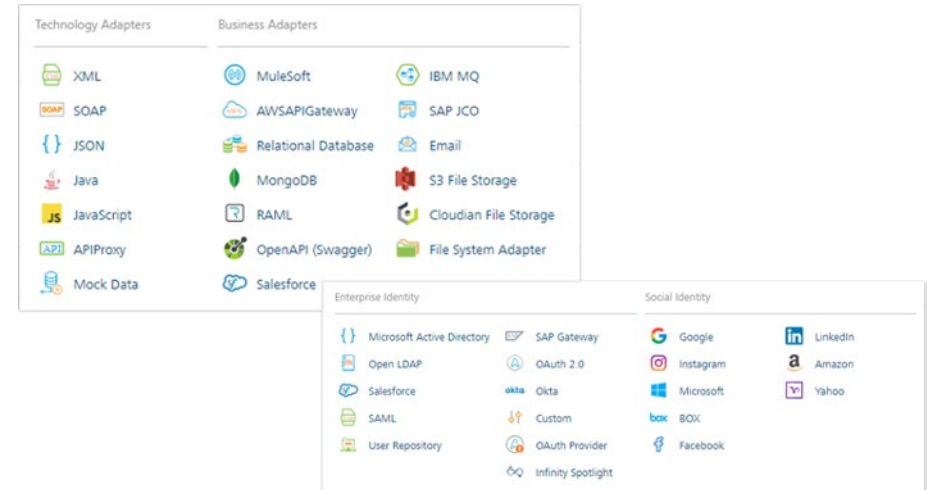
Developers choose from a library of pre-built identity and data connectors, or they can develop their own, to integrate into virtually any enterprise system.

As part of the Volt Foundry Object Services functionality, traditional backend services are enabled via a model-driven application development (MDAD) approach for the accelerating the development of applications, providing:

- 60% improvement in developer productivity
- Effective design, reusability and object level testing
- Controlled extensibility
- Dynamic runtime configuration
- Improved support end-to-end diagnostics/ analytics

These benefits don't just apply to the initial release of the app, subsequent releases are also three to four times faster due to the reuse of assets and integration, and new apps can be delivered more quickly and more efficiently.

Object Services

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Modern Digital Architecture Built to Scale

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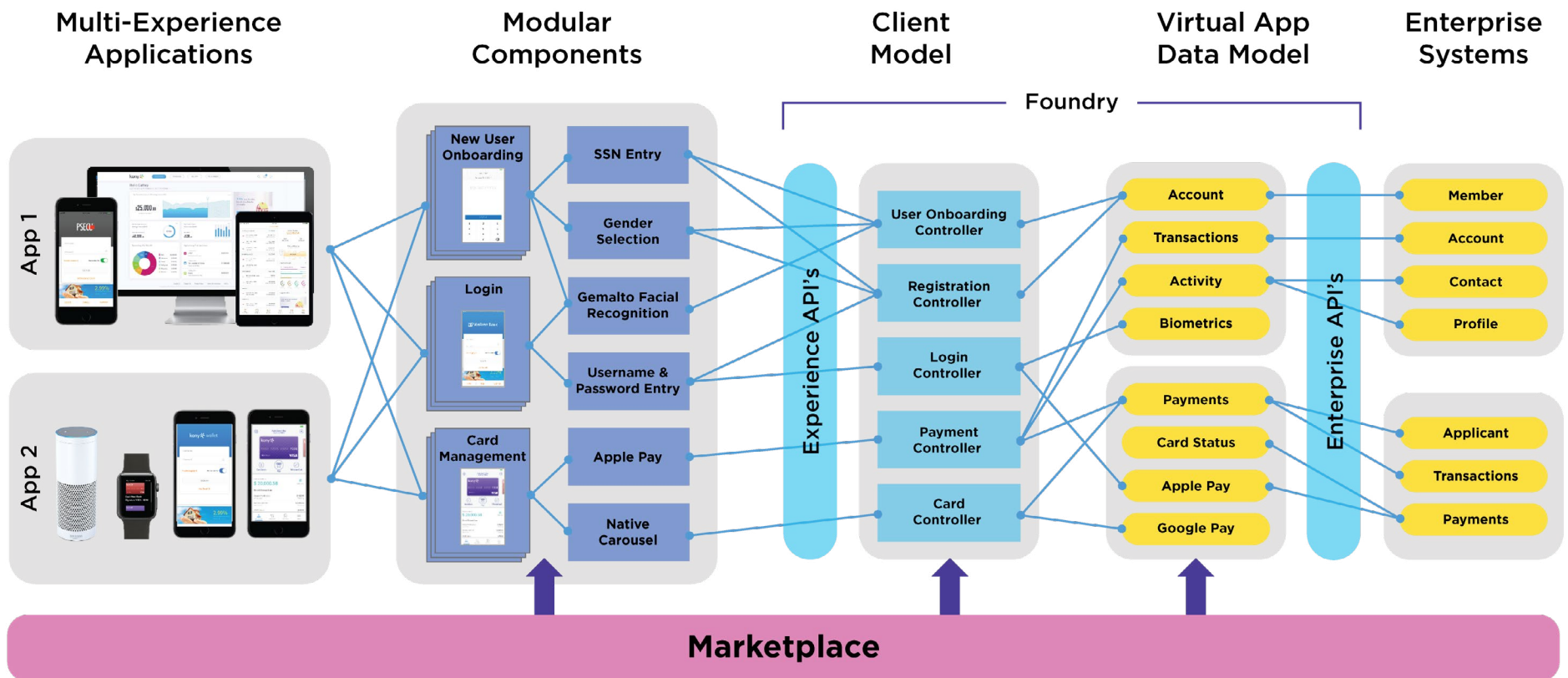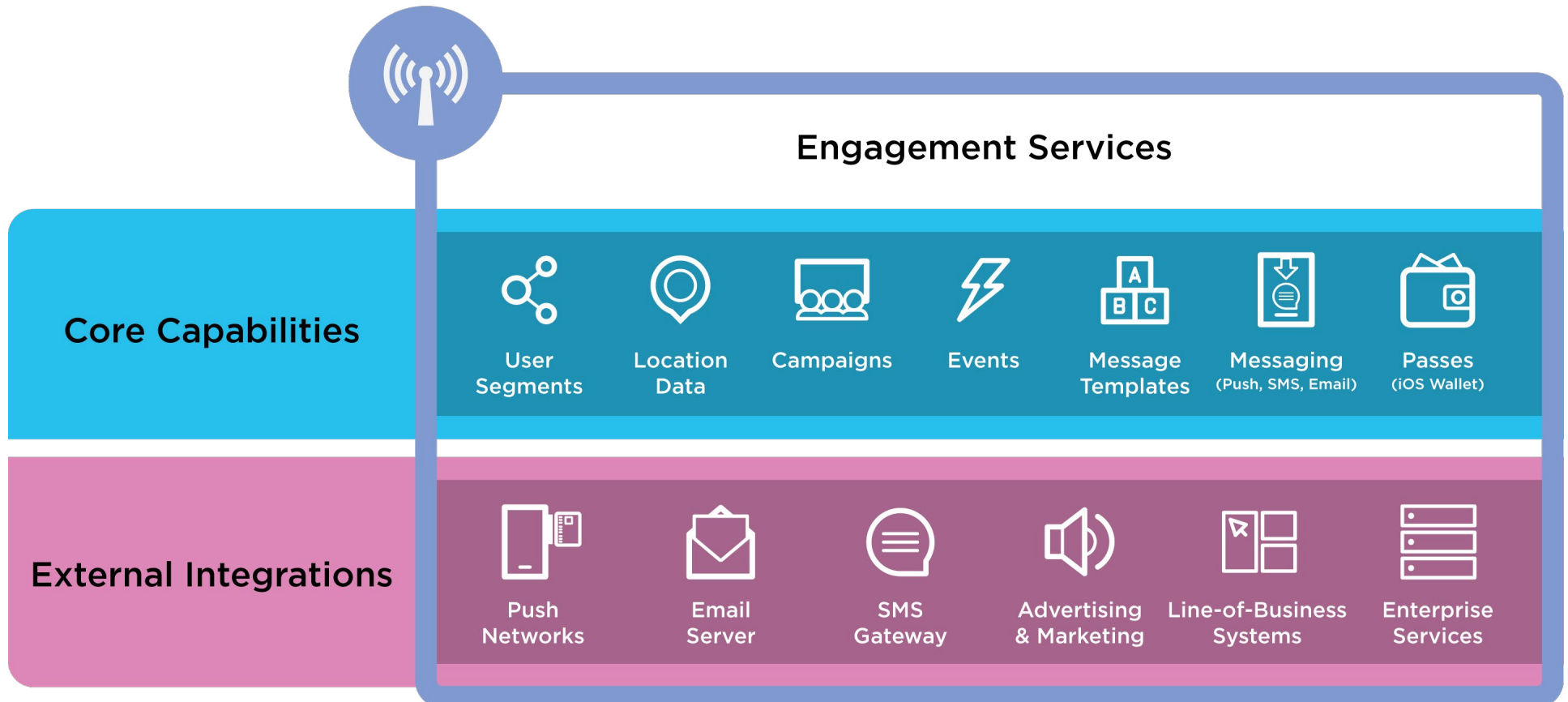
User Engagement

Engagement Services are an enterprise-grade messaging solution with a marketer-oriented approach that seeks to fill a void that traditional campaign management solutions don't address. It brings a unique mobile-first perspective and creates an integrated solution that works well with traditional campaign channels (email, SMS, etc.) as well as more recent campaign channels, including iOS Passbook and desktop PWA for rich and contextual-based push notifications.

Integrated and Comprehensive Engagement Services

Engagement Services

Core Capabilities

| User Segments | Location Data | Campaigns | Events | Message Templates | Messaging (Push, SMS, Email) | Passes (iOS Wallet) |

External Integrations

| Push Networks | Email Server | SMS Gateway | Advertising & Marketing | Line-of-Business Systems | Enterprise Services |

Volt MX Engagement Services Address the Following Enterprise Needs:

- Get users to like the application and provide feedback
- Message users in real time with relevant content
- Identify the right set of users to target
- Incorporate the location of a user to provide relevant content
- Enable back-end systems to trigger event-driven engagements
- Gain insight into message delivery and user actions

Workflow
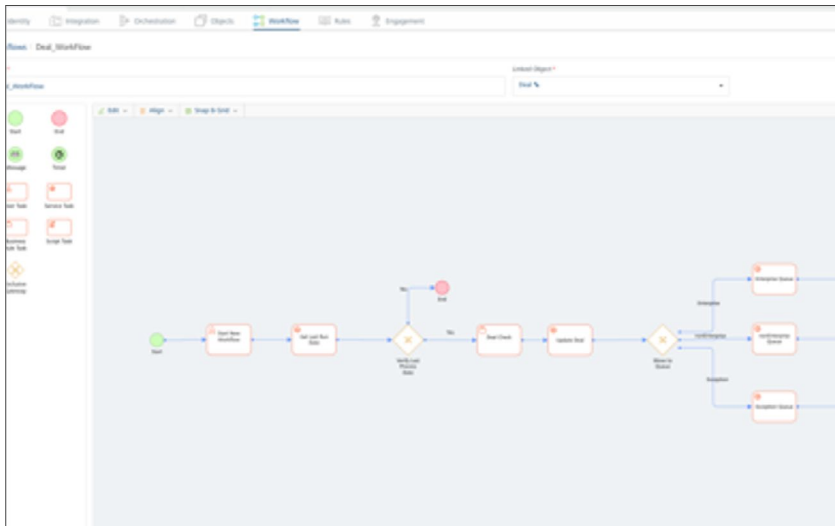
The need for more low-code development features has led to the creation of Workflow services in Volt Foundry, allowing for server-side workflows to be developed as part of an application. Workflows can be used to advance state models, execute business rules,

invoke integration services, and deliver messages or notifications to users and customers.

Using a design that similarly follows a BPMN 2.0 pattern, Volt Foundry's workflow designer is integrated into its administration console.

Business Rules Engine

Volt Foundry provides the ability to write business rules in a simplified text form by using the Rules-as-a-Service feature. The Rules service makes defining business logic closer to human language and rules are written using MVFLEX Expression Language (MVEL). Instead of embedding rules within Volt Foundry integration services, with Rules as a first-class service the business logic and conditions are externalized and can be managed separately.

For example, let's say in an insurance quote app there could be certain business rules defined to control whether a customer is eligible for insurance coverage. However, these business rules for coverage eligibility (like location of residence, marital status) might vary from time to time based on regulatory changes, underwriting rules, and legislation. In such cases, Volt Foundry Rules-as-a-Service provides the ideal design to abstract these business rules from other application logic and manage them separately. This also provides Rules-as-a-Service all the capability of any Volt Foundry service including versioning, export/import across Volt Foundry apps, and API management.

Multiexperience Outcomes

Volt MX enables the creation of digital experiences that supports modern web in the form of responsive and progressive web apps, true native phone, tablet, and wearable apps with best-in class UX, intelligent chatbots, conversational apps, wearables, and immersive experiences that leverage augmented reality. Our unique approach provides a single omni-channel application project that maximizes the reuse of components and backend integration that leads to a unified and seamless experience across channels. Whether you are developing a native application for your phones or tablets or creating a progressive web application that can be used across all of your channels Volt MX has you covered.

Volt Iris Benefits

- Write Once, Run Everywhere automated code generator to instantly compile native apps via "drag and drop" prototyping tool
- Test functionality & provide instant feedback via native iOS & Android prototyping app
- Direct Volt Foundry integration for easier configuration

- Single JavaScript code base for both native and web
- Build and generates native and web apps to every channel at the single-click of a button
- Record unit tests for QA automation
- CI/CD Ready

Volt Foundry Benefits

- Integrates all backend systems and all 3rd-party providers into a single administration console
- Unifies analytics reporting to learn customer behavior & analyze success
- Data transformation without code

- Delivers targeted alerts & notifications with robust messaging component
- Scalable to needs
- Secure access to data using existing IT investment

Modern Web and Progressive Web Apps

The web has significantly evolved over the last several years with the surge in mobile usage changing our way of using the web. This has created a huge opportunity for enterprises to distinguish themselves and provide their users the best web experience.

Responsive Web has now become a standard for all web applications. Consumer browsing habits have evolved and users are increasingly looking at their web applications to not only work across all platforms but to also have similar experience as native apps. This has led to the evolution of the new generation of web apps called Progressive Web Apps or popularly known as PWA.

Progressive Web Apps combine the features of a traditional web app with the performance and experience of native apps. PWAs work everywhere and provide several features that give them the same user experience advantages as native apps. They can work offline, can be installed on home screens, send Push messages & perform like apps. It's only a matter of time that PWA's will become the norm for web applications the same way as Responsive Web has.

One of the biggest challenges for creating great web and PWA experiences today is finding the right tools. Volt MX was the first Application Development Platform to support modern web experiences and Progressive Web Apps. It follows guidelines set by Google Lighthouse,

Progressive Web Apps

Power of Native

Functions offline

High performance

Push notifications

Installable on home screen

Full screen experience

Flexibility of Web

Indexable by search engines

Shared content

Works across all devices

No download required

Immediate updates

so if developers work with Volt MX to meet the requirements, they should be able to achieve 100/100 score for PWA specifications. Volt Iris provides the following features for PWA development:

- Visual low code platform for building enterprise grade PWAs
- Use a visual canvas for Responsive Design
- Offline app support and increased performance using Service Workers
- Installable to your device home screen using Web App Manifest

- Faster end-user performance with reduced load times using an App Shell
- Smooth animations and scrolling
- Synchronize offline data with support for offline objects
- No App Store Submission

Web is not going away any time soon. The three major app platforms—Microsoft, Google and Apple—are all pushing Progressive Web Apps . With their mobile first approach, PWA's are undoubtedly taking over the web development world and all odds are in favor of PWAs being the new norm for web and mobile usage.

PWAs have immense potential and their usage and adoption are increasing. While organizations will continue to have the need to provide exceptional experiences and improve user engagement, they will need to implement PWA's in their app strategy now.

Security

The security of user and customer data is the number one priority for most organizations and, for a number of years, Fortune 500 companies have relied on our solutions to deliver critical apps and handle sensitive data securely.

In an audit report of the platform by Cigital Security (a leading security consultancy) they commented:

"There are too many layers for an attacker to even begin justifying an attack on this software unless it contained some high value reward. Assuming that this reward existed, it would take an attacker far longer to comprimise the software than the time provided even to make a dent in the armor."

Data and Network Security
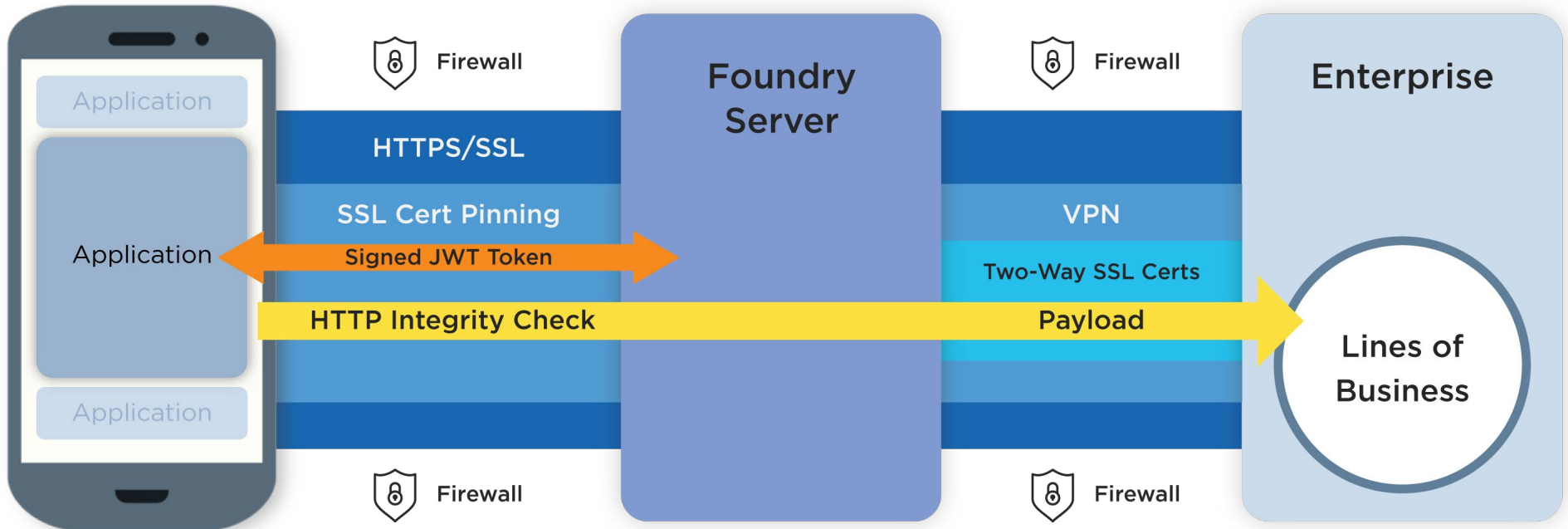
With customers spanning some of the most data-sensitive industries like healthcare and financial services, security is at the core of everything we do.

We have incorporated security enabling technologies as part of the Volt MX platform, including:

- APIs built for security - FIPS 140-2 Level 1 compliant crypto libraries
- Multi-factor authentication (MFA) support
- Biometric authentication support
- TLS/SSL network security

- Authentication, Authorization, User and Session Management, Input Validation, etc. features to prevent man-in-the-middle attacks (MITM), OWASP Top 10 Vulnerabilities
- PCI DSS certified, SSAE 16 SOC 2 Type 2 compliant
- HIPAA compliant
- ISO 27001:2013 certified
- GDPR compliant

All data is encrypted in-transit using the latest TLS/SSL encryption plus any additional security layers desired (e.g. VPN).

Protection

Defend
against
compromise

- Advanced Obfuscation

- Code and Resource

- Encryption

- Pre-Damage

- Metadata Removal

Detect
attacks at
run time

- Checksum

- Debug Detection

- Resource Verification

- Jailbreak/Root Detection

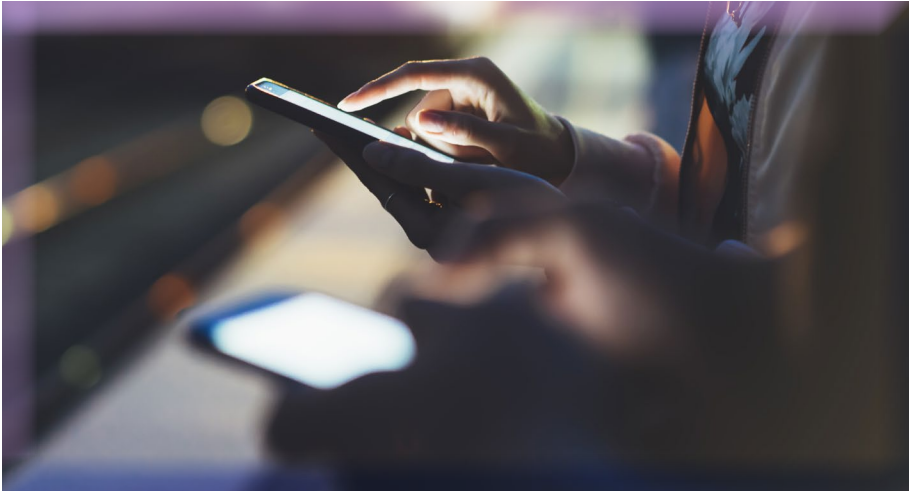- Swizzling Detection

- Hook Detection

React
to ward off
attacks

- Shut Down (Exit, Fail)

- Self-Repair

- Custom Reactions

- Alert / Phone Home

Protected Application

- Self-defending

- Tamper-resistant

- Hardened against hacking
  attacks and malware exploits

Why Volt MX?

Healthy, Diverse Customer List

One of our key differentiators is our customer & partner relationships. Over 400 global enterprises partner with us to become leaders in each respective sector they represent with over 300 million users using over 1600+ app solutions in consumer- and employee-facing scenarios. Industries currently leveraging Volt MX apps include banking, healthcare, energy, oil and gas, travel and hospitality, automotive, government, manufacturing, utilities, CPG, and more.

We know that exceptional experiences begin with extraordinary people. We employ the world's leading digital experts, and partner with technology innovators and proven integrators. Between our extensive ecosystem, committed team, and talented developer community, you're always covered with Volt MX.

Analyst Recognition

All of the industry leading analysts – Forrester, Gartner, Ovum, IDC – believe in Volt MX's true product leadership. digital experience and our foundational platform that powers the world's biggest organizations.

The platform also includes the ability to build a native app in protected mode, providing automated hardening of the app during the build process. The security protections provided include:

- Source Code Protection Library (to protect source code and business logic)
- Tamper Protection /Anti-debugging Protection
- Swizzle/Hook Protection
- Prevent Execution on Rooted/Jailbroken Device
- Code & Control Flow obfuscation
- White Box Cryptography
- Binary Protection against static and runtime attacks

Security is and will always be at the very core of Volt MX solutions. Volt MX allows you to quickly and easily ensure the apps you deploy are protected, adhere to industry regulations, and align to your existing governance policies.