

Oracle Mobile Application Framework

Oracle Mobile Application Framework (Oracle MAF) is a hybrid-mobile development framework that enables development teams to rapidly develop single-source applications and deploy to the Apple iOS, Google Android, and Microsoft Windows 10 platforms. Oracle MAF provides a complete MVC development framework - that leverages Java, HTML5 and JavaScript - with declarative user interface definition, device services integration and built-in security. Integrating with development tools, Oracle MAF maximizes code reuse and results in faster development of engaging mobile applications.

Cross Platform Mobile Development Framework

Based on a hybrid architecture, Oracle MAF lets you build application that are portable across devices and operating systems while still leveraging the device specific capabilities and delivering a rich user experience. Applications developed with Oracle MAF can be designed for phone and tablet form factors, and packaged for either Apple iOS, Google Android or Microsoft Windows 10 – from a single code base.

Oracle MAF leverages the power of Java, HTML5, and JavaScript and provides a visual and declarative development approach to provide a faster way to build on-device mobile applications. Oracle MAF applications install on-device, can work in both connected and disconnected mode, and can access device services as well a local SQLite database.

KEY BUSINESS BENEFITS

- Visual and declarative development
- Single source for cross OS application
- Mobile optimized user experience
- Simplified access to device services
- Code in Java and run on multiple mobile OSs
- Offline support using encrypted SQLite
- Built-in security for authentication, authorization and encryption support

KEY FEATURES

- Develop once, deploy to iOS, Android and Windows 10
- Accelerate mobile development
- Protect from technology shifts
- Use industry standards
- Leverage device services and offline capabilities
- Extend existing enterprise applications to mobile
- Leverage existing skillsets in Java and HTML5

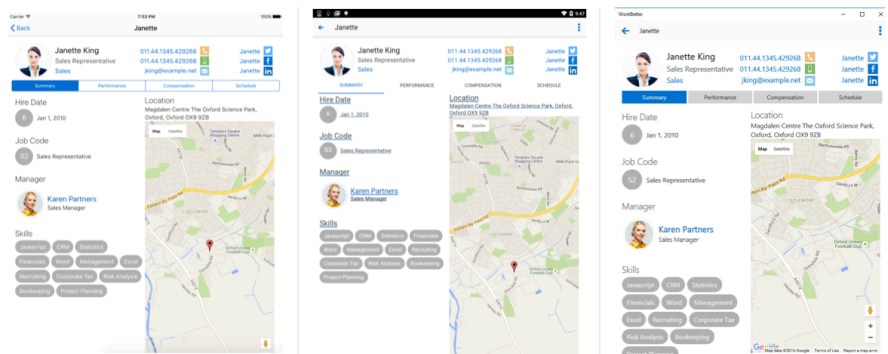


Figure 1: An Oracle MAF Application Running on iOS, Android, Windows 10

Visual and Declarative Development

Oracle MAF focuses on increasing developers' productivity by offering extensive out-of-the-box capabilities along with a visual and declarative development approach provided through integration with both the Oracle JDeveloper and Oracle Enterprise Pack for Eclipse development tools.

Both Oracle JDeveloper and Oracle Enterprise Pack for Eclipse integrate with the iOS, Android, and Windows 10 SDKs to provide direct deployment and test/debug capabilities from inside the development tool to mobile devices and emulators.

Oracle JDeveloper and Oracle Enterprise for Eclipse offer visual and declarative development capabilities for the framework. Beyond support for smart code editing with code insight and helpful coding features, the IDEs provide an accelerated development experience through features such as:

RELATED PRODUCTS

Oracle Mobile Cloud Service

Oracle JDeveloper

Oracle Enterprise Pack for Eclipse

- Visual page and flow editors
- Component palettes supporting drag and drop into the page and flow editors
- Data control palette for simplified access to services, backend logic and device features
- Interactive structure panel for manipulating the structure of pages
- Property inspectors for easy manipulation of attributes and features

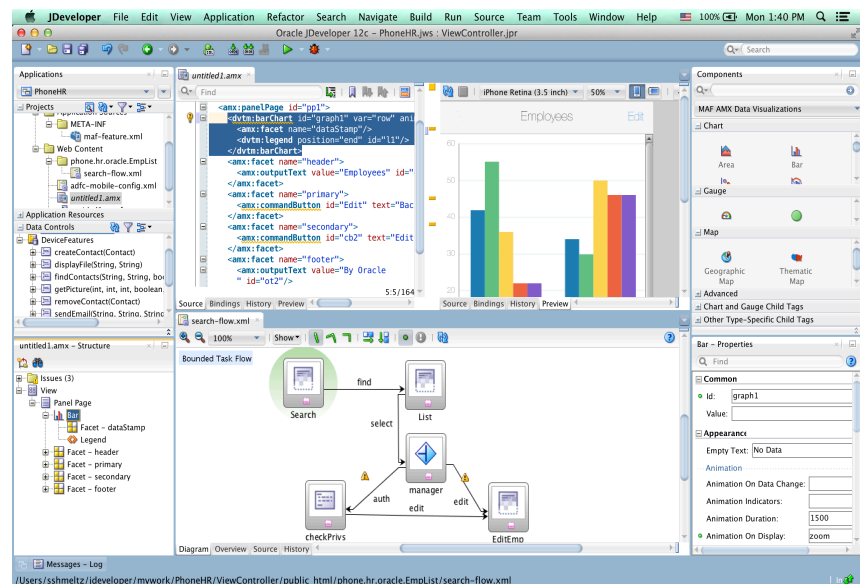


Figure 2: Visual and Declarative Mobile Application Development

Leverage Java Skills

Oracle MAF enables coding of business logic in your mobile application with the Java language, in addition to supporting coding in JavaScript and HTML5. Packaged Oracle MAF application contains a lightweight Java virtual machine (JVM) delivered as a native library for each platform. The JVM executes the business logic, data access and controller layer logic. The JVM passes data to the HTML5 view, which renders the user interface.

By leveraging Java, Oracle MAF offers a smooth transition of skills to millions of Java developers, and enables them to become mobile developers. Developers leverage their existing skills when building mobile applications. For example, access to the SQLite database is coded through JDBC and support for web service requests are available through REST interfaces.

Mobile Optimized User Experience

Oracle MAF includes a library of more than 80 professionally developed components that can be used to create rich mobile application interfaces in a declarative way. Components include layout components, data display components, input and selection components, and operation components. Beyond the basic components - such as checkbox, selection lists and buttons - Oracle MAF offers rich data visualization components including charts, maps, gauges, timelines and more. These components generate mobile optimized HTML5 and JavaScript based user interfaces, and shield developers from the need to code in those low-level technologies.

Underlining the user interface (UI) layer is an advanced controller layer, part of a complete model-view-controller (MVC) architecture, that supports the visual modeling of complete process flows that navigate between pages, functions, and decision points and enable easy creation of complex flows. Application page and process navigations are defined using a task flow diagram that enables developers to visually design the flows of the application.

Oracle MAF also supports the creation of custom declarative UI components by developers. This capability lets developer extend the set of components provided for them as well as encouraging the reusability of UI components across multiple pages.

Oracle MAF components were designed for mobile devices which means they include support for touch and swipe gestures and are “skinned” to look great on mobile form factors. Where appropriate, native component integration is enabled – for example when entering date/time. Components can be further customization through CSS – an industry standard.

An Oracle MAF application can be developed such that it works well on either a tablet or a phone. When the application starts the appropriate form factor will automatically load. Tablet views are often fewer in number, but more complex. Whereas phone views are often greater in number but generally simpler due to smaller screen size. Defining both sets of views within the same application promotes reuse for business logic, data access, service integration, security and other artifacts of the application.

In addition to component based UIs, Oracle MAF can incorporate local HTML pages into the same application. This enables developers who prefer direct coding of the UI to incorporate their expertise along with third-party components and code-libraries to create features in the application. These local HTML pages can then leverage the Oracle MAF container's services such as access to device features.

The Oracle MAF container can also include features that display HTML content that is generated and delivered from remote servers, integrating web applications into the mobile application.



Figure 3: Engaging Mobile Optimized User Interface

Declarative User Interface to Data Binding

Oracle MAF provides a declarative binding layer that simplifies the connection of business services and data services to user interfaces. Developers can expose local Java classes as “data controls” which can then be visually dragged and dropped into the user interface to create forms, lists, charts and other data display formats.

The binding layer can also be leveraged to simplify binding controller layer methods to business services. This procedure accelerates development speed and provides a loose coupling between the user interface and the business service layer.

The same declarative binding layer is used to simplify integration of device specific features such as the camera, GPS, SMS etc.

Simplified Device Feature and Services Access

Oracle Mobile Application Framework gives developers the ability to quickly and declaratively integrate with local device services and features, such as camera, phone, SMS, contacts and GPS, through the declarative binding layer. Instead of writing multiple lines of device-specific code, developers simply drag-and-drop device service integration methods and add them to their pages.

The access to the device features is provided through the open source Apache Cordova platform that is integrated into the Oracle MAF container. Java and JavaScript APIs enable developers to programmatically interact with device features from Oracle MAF pages as well as local HTML and remote content that is incorporated as part of an Oracle MAF application.

Developers can also add integration with device features that are not supported out-of-the-box in Oracle MAF by leveraging the Cordova plug-in architecture.

Oracle MAF can leverage push notification events, allowing application to register, receive, and react to notifications sent to the device from both the Apple and Google push servers, as well as local device notifications.

Secure Mobile Applications

Security is a top priority for mobile application development given that mobile devices have higher risks of loss or theft. Oracle Mobile Application Framework comes with built in security that can limit access to your applications and ensure encryption of sensitive data.

Oracle MAF supports authentication and access control for refined security at the feature level in an application. The developer simply specifies the appropriate login server, for example, a server running Oracle Identity Management and/or Oracle WebLogic with basic authentication, or a server supporting OAuth (open standard for authorization) protocols. At runtime users are presented with login screens and the appropriate tokens are accessible for further web service calls. Developers can build single user interfaces that meet the needs of users with different privileges (e.g. show/hide components based on role or privilege) allowing the same application to serve multiple roles in the organization.

Oracle Mobile Application Framework enforces encryption in the following areas:

- Communication Encryption: Encrypted using SSL/TLS (HTTPS)
- On-device Encryption: Credentials can be kept in an encrypted key store and used for validation when supporting offline authentication.
- SQLite Database Encryption: The SQLite Encryption Extension is included with Oracle MAF.

Oracle MAF is certified with various enterprise mobile management solutions to provide further security features such as application tunneling, security policies and access control, and single sign on.

Support for Offline Mode

Oracle MAF applications can work offline as well as online. Applications are self-contained and can run on the mobile device in both connected and disconnected mode. For data access and storage, applications can leverage a local encrypted SQLite database.

Furthermore, applications can be built such that initial access to data is from remote servers through web services, the data is then stored in the encrypted SQLite database for offline access. The data can then be replicated and synchronized to the server when connectivity is available again.

For offline usage scenarios, Oracle MAF provides encrypted storage of user credential enabling offline authentication and authorization to secured applications.

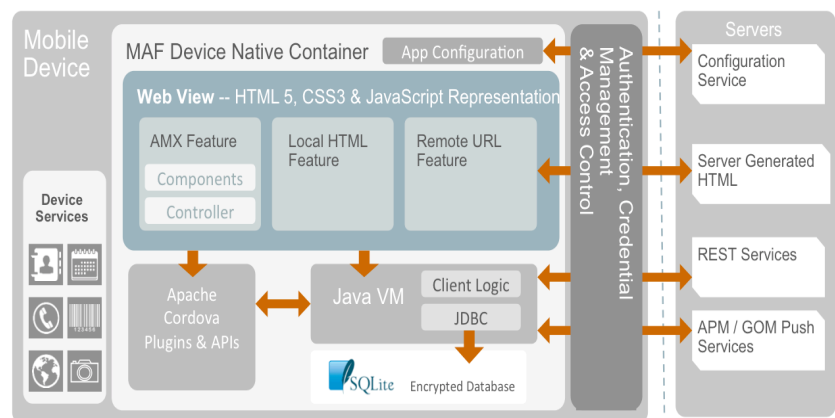


Figure 4: Oracle MAF Architecture

Conclusion





Oracle Mobile Application Framework addresses the needs of development teams looking to deliver cross device mobile applications faster. Leveraging the power of Java, HTML, and JavaScript standards and providing declarative and visual development experience through integration with development tools, Oracle MAF accelerates the creation of on-device mobile applications for phones and tablets.



CONTACT US

For more information about Oracle Mobile Application Framework, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

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