ORACLE ADF MOBILE DATA SHEET

PRODUCTIVE ENTERPRISE MOBILE
APPLICATIONS DEVELOPMENT

KEY FEATURES

- Visual and declarative development
- Java technology enables cross-platform business logic
- Mobile optimized user experience
- Simplified access to device services
- Offline support using encrypted SQLite
- Built-in security for authentication and authorization support

KEY BENEFITS

- Develop once deploy to both iOS and Android
- Simplify mobile development
- Protect from technology shifts
- Use industry standards
- Leverage device services and offline capabilities
- Extend existing enterprise applications to mobile

Oracle Application Development Framework Mobile (Oracle ADF Mobile) enables developers to rapidly develop single-source applications that leverage Java and HTML5and deploy to both the Apple iOS and Google Android platforms. Oracle ADF Mobile provides a complete MVC development framework with declarative user interface definition, device services integration and built-in security. Oracle ADF Mobile maximizes code reuse and results in compelling mobile applications while offering an optimal path for mobile enabling enterprise applications.

Cross Device Development Framework

Based on a hybrid architecture, Oracle ADF Mobile lets you build application that are portable across devices and operating systems while still leveraging the device specific capabilities and delivering excellent user experience. Applications developed with Oracle ADF Mobile can be designed for phone and/or tablet form factors and can be packaged for either Apple iOS or Google Android – from a single code base. Oracle ADF Mobile leverages the power of the Java and HTML5 technologies along with visual and declarative development approach to provide a faster way to build on-device mobile applications. Oracle ADF Mobile applications install on-device, can work in both connected and disconnected mode and can access device services as well a local SQLite database.

Figure 1: Same application running on Android and iOS

Visual and Declarative Development

Oracle ADF Mobile focuses on increasing developers' productivity by offering a visual and declarative development approach. A set of over 50 user interface components simplify UI definition providing native like user experience, touch gestures and animation out of the box. Pages of the applications are constructed using the Oracle ADF Mobile components to define layouts and data forms structure with XML syntax. To create the pages developers use a visual page viewer, interactive structure panel and a component palette – all providing visual help constructing the page in addition to the advanced code editor. Further definition of components' behavior is controlled through property setting in a property inspector.

Connecting user interfaces to server based services, local Java classes and device services is done in a declarative way using the Oracle ADF binding layer to abstract low level communication protocols.

Applications' page and process navigations are defined using a task flow diagram that enables developers to visually design the flow of control in the application.
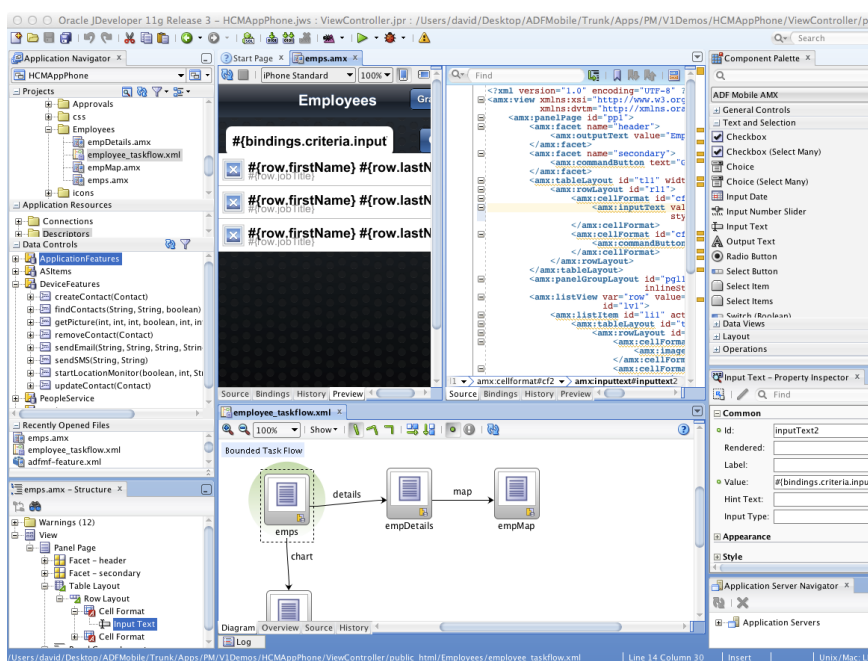

Figure 2. Visual and declarative mobile application development

Oracle ADF Mobile is delivered as an extension to the Oracle JDeveloper IDE providing visual tools and pattern consistency with other Oracle development technologies. This extension increases developers productive as they develop mobile user interfaces, work with data and business services , access device features and define applications' flows.

The Oracle ADF Mobile Extension integrates with both the iOS and Android SDKs to enable direct deployment and test/debug capabilities from inside JDeveloper to devices and emulators.

Portability through the Java Language

The Java language is used for coding business logic in Oracle ADF Mobile applications. Packaged Oracle ADF Mobile application contains a lightweight Java virtual machine (JVM) delivered as a native library on 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 ADF Mobile offers a smooth transition of skills to millions of Java developers, and enables them to become mobile developers. Developers can leverage existing skills and techniques they are familiar with when building mobile applications. For example, access to the SQLite database is coded through JDBC and support for web service requests are available through SOAP or REST interfaces.

Mobile Optimized User Experience

Oracle ADF Mobile offers a set of over 50 components that are used to define the interface of the application in a declarative way. Components include layout components, date display components, input and selection components, and operation components. Beyond the basic components - such as checkbox, selection lists and buttons - Oracle ADF Mobile offers rich data visualization components including charts, maps, gauges and more. The components generate mobile optimized HTML5 and JavaScript based user interfaces, and shield the developers from the need to code in those low level technologies.

Oracle ADF Mobile components were designed for mobile devices. They include support for touch gestures and they were "skinned" to look great on mobile form factors. The components also allow for additional customization through CSS3 – an industry standard. Where appropriate, native component integration is enabled – for example when entering date/time.

An Oracle ADF Mobile application can be developed such that it can work well on either a tablet or a phone. When the application starts the appropriate form factor will load. Tablet views are often fewer in number, but more complex, including patterns such as list-details and so one. Whereas phone views are often greater in number but generally simpler due to screen size constraints. Defining both sets of views within the same application promotes reuse for business logic, data access, web service integration and so on.

Figure 3. Visually attractive mobile user interfaces

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In addition to the component based user interfaces, Oracle ADF Mobile can incorporate remotely served HTML pages, as well as local HTML5 pages into the same application. This enables developers to further extend their UI possibilities.

Declarative UI to Data Binding

Oracle ADF Mobile provide a declarative binding layer that simplify the connection of business services and data services to user interfaces. Developers can expose local Java classes and remote SOAP and REST services as "data controls" which can then be 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 provide loose coupling between the user interface and the business service layer.

Simplified Device Services Access

ADF Mobile gives developers the ability to quickly and declaratively integrate with local device services and features, such as camera, phone, SMS, contacts and GPS, through a common binding layer. Instead of writing multiple lines of device-specific code, developers simply drag-and-drop device service controls with the Oracle JDeveloper design time. The access to the device features is provided through the open source Apache Cordova platform which is also accessible to local HTML5 and remote content that is incorporated as part of an Oracle ADF Mobile application.

Oracle ADF Mobile supports device native push notification, allowing application to register to receive and react to notifications sent from servers to both iOS and Android.

Secure Mobile Applications

Oracle ADF Mobile 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 enabled. 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).

Security is a priority for mobile application development given that mobile devices have higher risks of loss or theft. ADF Mobile 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 ADF Mobile. This means encrypting a SQLite database for an application built with Oracle ADF Mobile is simply a configuration option when the application is developed. No additional license for SQLite Encryption Extension is required for deploying the application into production.

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Support for Disconnected Mode

Oracle ADF Mobile supports the development of applications that 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 in such a way that initial access to data is done from remote servers through web services, the data is then stores in the local SQLite database for offline access. The data can then be replicated to the server when connectivity is available again.

Oracle ADF Mobile also supports local storage of user authentication credential to enable offline authentication and authorization to secured applications.
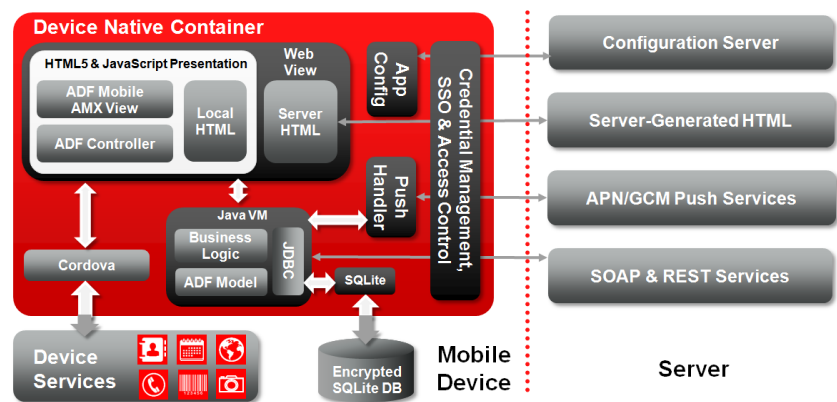
Figure 4: Oracle ADF Mobile Architecture

Conclusion

Oracle ADF Mobile answers the needs of organizations looking to develop cross device mobile applications faster. Leveraging the power of Java, HTML5 and declarative and visual development environment Oracle ADF Mobile accelerates the creation of on-device mobile applications for phones and tablets.

Contact Us

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

Hardware and Software, Engineered to Work Together

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