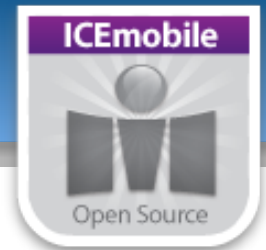# ICEmobile

Hybrid Mobile Applications Platform for Java EE

ICEmobile is an open source project for developing hybrid mobile applications in pure Java, Enterprise Java applications for mobile devices. Core mobile features are packaged in technology-specific bundles to enable mobile development across a wide spectrum of Enterprise Java technologies.

ICEmobile leverages Java EE, HTML5 and Ajax to create web-based applications where the client presentation matches the device's native look and feel, but is delivered via a secure, enterprise-strength, Java backend. The web-based approach ensures seamless cross-platform support for today's most advanced smart phones and tablets. Additionally, ICEmobile delivers real-time collaborative capabilities via the industry-leading ICEpush notification mechanism, which includes extensions for mobile, cloud-based push. And where standard HTML5 capabilities are not enough, ICEmobile offers native device containers that extend browser capabilities, providing seamless integration with native device capabilities such as the camera, camcorder and microphone. This means you can build hybrid mobile applications without doing any native development.

Features & Benefits

Native Look and Feel: Web applications developed with ICEmobile look and feel like native mobile applications. Central to ICEmobile is automatic device detection and theming, so applications automatically adapt their look and feel to match the devices they are being accessed from. ICEmobile provides suites of web controls for both JSF and JSP that inherit the automated theming, so you can easily create your mobile application pages using standard Java EE presentation layer technologies. CSS resources are provided that match the default styles for major smart phone and tablet platforms, so you benefit from zero-effort default styling of your applications, but retain the flexibility to customize themes to match your enterprise branding requirements.

Cross-platform Development: ICEmobile is a write-once, access everywhere technology. Being web-based, ICEmobile adheres to the central deployment model, where a single application deployment handles a wide range of client devices from desktop, to tablets and phones. The automatic device detection and theming adjusts the look and feel to match the device type, and ICEmobile layout controls automatically adjust the layout of the page to match the screen real estate. Seamless cross-platform support extends to native capabilities as well. The ICEmobile Containers provide platform-specific native integration, which is exposed through the ICEmobile web controls. Your web application uses these native controls, and the containers handle the platform-specific aspects, so you benefit from the write-once paradigm even for your most sophisticated hybrid mobile applications.

Hybrid Capabilities: With ICEmobile you benefit from the advantages of building web-based applications, but without the limitations of standard HTML5 markup. ICEmobile Containers deliver hybrid capabilities by combining a browser core with integration to native features like the camera and microphone. When accessed from a container, the ICEmobile web controls provide direct access to these native features from the web application's markup. Just install the ICEmobile Container from the app store for your device, and start taking advantage of native capabilities like taking pictures, shooting video, and capturing audio right from your web application. You benefit from out-of-the-box hybrid capabilities, and completely avoid the need to do platform-specific native development.

Java EE Standards Based: ICEmobile adheres closely to the Java EE standards, and embraces the Java EE ecosystem through various middleware and tools integrations. Java presentations layer technologies like JSF and JSP are central to ICEmobile, but the entire Java EE technology stack can be leveraged from persistence, to data management and security. HTLM5 and CSS3 standards are also leveraged wherever possible, depending on mobile browser support. Adopt ICEmobile with the same confidence that you have adopted Java EE standards, and benefit from the reuse of your existing Java EE resources, tools and development techniques for producing mobile applications.

Real-Time Collaboration: Social collaboration has blossomed on mobile devices, driving expectation in the enterprise for similar features. Asynchronous notification is the key to enabling collaborative features in your mobile web applications, and ICEmobile integrates the industry-proven ICEmobile core for this purpose. Fully-collaborative, mobile applications can be developed in both JSP and JSF using pure Java. The ICEpush notification mechanism has also been augmented with Cloud Push capabilities that leverage existing platform-specific mobile push mechanisms. This ensures that ICEmobile can deliver critical notifications directly to active users, and alter inactive users that some action is required. Your users will benefit from revolutionary collaborative features, and you can ensure critical notification always arrive. Most importantly, these complex features can be easily delivered using standard Java EE development techniques.

Java EE Presentation Technologies Integration

Java EE standards are at the heart of ICEmobile, so Enterprise Java developers can leverage existing core competencies, development tools, and best practices to deliver solutions that span the entire spectrum from desktop to mobile devices. In particular, ICEmobile provides direct integration with JSF/ICEfaces and JSP/Spring MVC:

JSF/ICEfaces Integration

ICEmobile is based on JSF and has the ICEfaces framework at the core of its architecture, as illustrated in the diagram below.
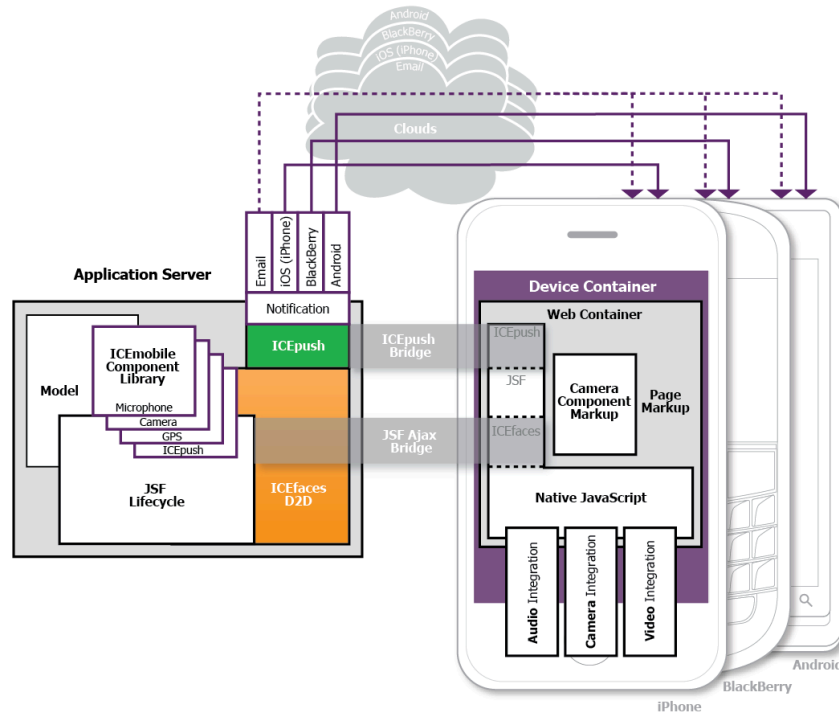

- **JSF 2:** The JSF 2 core framework provides the standards-based foundation.

- **ICEfaces:** The core ICEfaces framework extends JSF 2 in key ways that improve developer efficiency, and extend the JSF feature set. In particular, Direct-2-DOM Rendering, and Automatic Ajax simplify application development for both mobile and desktop application variants.

- **ICEpush:** Ajax Push capabilities in ICEfaces are based on the notification mechanism provided by the ICEpush core. ICEpush has been augmented with cloud-based notifications, where priority notifications can be delivered by alternate cloud- based mechanisms when the normal ICEpush connection to a client device is interrupted for any reason. Different cloud connectors are provided including generic connectors like email, and device-specific connectors for each supported platform.

- **ICEmobile Components:** The ICEmobile web controls are packaged in a suite of JSF components. The ICEmobile components leverage automatic device detection and theming to ensure they match the look, feel and capabilities of the client device. A wide range of components are available including:

  - Layout and Navigation Controls for page layout, navigation, and theming
  - Input and selection Controls for handling user input
  - Media Controls for presenting audio, video and images
  - Native Controls for accessing device capabilities like camera, camcorder, and microphone.

Check out the ICEmobile Components demo.

- **Device Containers:** The ICEmobile Containers extend the capabilities of the mobile browser to include native features not available through standard HTML5 page markup. The native controls in the ICEmobile component suite detect the presence of a container, and leverage the container's JavaScript to native interfaces to expose native device capabilities within the JSF application.

JSP/Spring MVC Integration

While not part of the Java EE standards, Spring MVC is an industry-leading presentation layer technology that augments basic JSP development in a variety of ways. JSP and Spring MVC work naturally together, so ICEmobile capabilities can be added to a Spring MVC application by simply adding the ICEmobile JSP tag library. ICEmobile provides a JSP Tag Library with all the web controls required to build mobile applications using JSP. ICEmobile automatic device detection and theming ensures that your JSP application adopts the expected look and feel of the devices that it is being accessed from. When combined with the ICEmobile Containers, certain tags provide access to native device capabilities, enabling hybrid applications. Popular third party middleware technologies like Spring MVC can be added to the mix to further simplify and fortify application development, and various Ajax techniques can be overlaid to enhance the mobile user experience. The basic architecture of an ICEmobile JSP application is illustrated below.
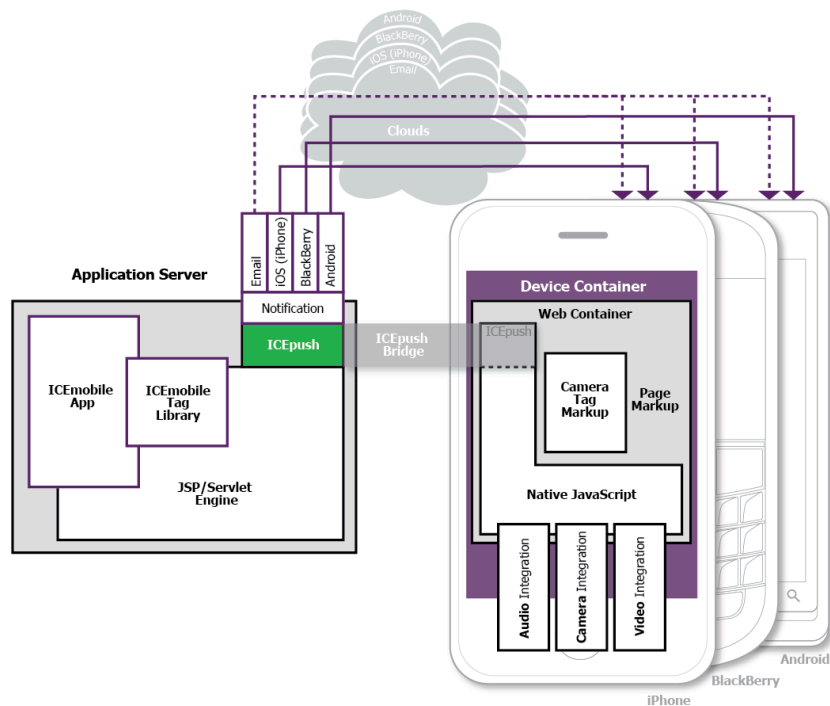
- **JSP/Servlet:** JSP 2.1 and underlying Servlet 3.0 engine provide the Java EE standards-based foundation.

- **ICEmobile JSP Tag Library:** The ICEmobile web controls are packaged in a JSP tag library. The tags leverage automatic device detection and theming to ensure they match the look, feel and capabilities of the client device. A wide range of tags are available including:

  - Layout and Navigation Controls for page layout, navigation, and theming
  - Input and Selection Controls for handling user input
  - Media Controls for presenting audio, video and images
  - Native Controls for accessing device capabilities like camera, camcorder, and microphone

  Check out the ICEmobile Spring MVC demo.

- **ICEpush:** Ajax Push capabilities are based on the notification mechanism provided by the ICEpush core, which has been augmented with mobile-specific capabilities, including:

  - Adaptive connection management ensures Ajax Push continues to function reliably and efficiently within a mobile network, under dynamically changing conditions.
  - Cloud Push notification ensures critical user notifications can be delivered to the device even when the application is not actively being used, or connectivity has been disrupted.

- **Device Containers:** The ICEmobile Containers extend the capabilities of the mobile browser to include native features not available through standard HTML5 page markup. The native tags in the ICEmobile tag library detect the presence of a container, and leverage the container's JavaScript to native interfaces to expose native device capabilities within the JSP application.

ICEmobile Containers

All the benefits of a hybrid mobile app, without having to write one!

ICEmobile Containers are native mobile applications that install directly on a mobile device or device emulator, and provide a web container with integration to device capabilities that are not available through standard mobile HTML 5 markup. The containers enable hybrid mobile application development using pure web-based techniques, and eliminate the need for native mobile applications development. You write a mobile rich Internet application, which accesses device capabilities, such as Camera and Microphone, through standard JavaScript APIs provided by the containers. All the device-specific integration is hidden in the container implementations, allowing you to focus on web-based development. ICEmobile Containers are available for the following mobile platforms:

- Apple iOS
- Google Android
- RIM Blackberry

Cloud Push

Cloud Push delivers real time notifications to mobile devices, alerting the user of some state change of interest that has occurred in the network cloud.

A user notification delivers the results of a Cloud Push to the user, alerting him by some means available on the device. While user notification mechanisms are platform specific, the concept of user notification is universal across mobile device platforms. User notifications can be associated with any capability present on the device, so a common mechanism can be used to notify a user about a new email or SMS message arriving, a stock price reaching some buy/sell threshold, or just about anything else of interest.

User notifications can be delivered in a variety of ways including on-screen indicators, audible sounds, or device vibrations. For instance the Android platform provides a status bar at the top of the screen where notification symbols can be placed.
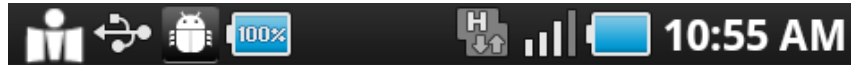
In this case, the leftmost symbol is the ICEmobile notification icon. The user can drag down the status bar and get more detailed information about any active notification, and ultimately reactivate the application to deal with the notification.

Learn more about the Cloud Push mechanism and how push notifications are handled with ICEmobile.

Supported Platforms

ICEmobile supports the following platforms:

Mobile Devices	Application Servers	Supported Browsers	Java EE Middleware	IDE Integration
Android Phones 2.2+, 4.0+	Tomcat 7	Mobile WebKit	JDK 1.5/1.6	Eclipse 3.6/3.7
Android Tablet 3.1+	JBoss 7	Android 2.2+, 4.0+	JSF 2 Mojarra	NetBeans 7
iOS 4/5		iOS 4/5	Spring MVC	
Blackberry Platform 6		Blackberry Platform 6		
		IE 8/9		
		Firefox 5		
		Safari 5		
		Chrome 10/11		

Get Started with ICEmobile

1) Check out the ICEmobile demos to see all the components in action.
2) Download the latest version of ICEmobile.
3) Review the ICEmobile Tutorials & Sample Applications.
4) Learn about available ICEmobile EE Subscriptions & Support options.

About ICEsoft Technologies

ICEsoft Technologies Inc. is a commercial open source company and a leading global provider of rich Internet application solutions for desktop and mobile enterprise. Founded in 2001, ICEsoft products are used by over 10,000 enterprises and 150,000 developers worldwide.

ICEsoft is the proud sponsor of ICEfaces, ICEmobile and ICEpdf:

ICEfaces – is the most advanced JSF framework for enterprise application development. ICEfaces now offers over 125 rich JSF / Ajax components, including the most advance JSF data table in the industry. ICEfaces also supports the widest array of third party and legacy technologies making it one of the most successful and widely deployed Java RIA technologies on the market today.

ICEmobile – is a revolutionary new product for the development and deployment of rich Internet applications for the mobile enterprise. ICEmobile is a hybrid solution that combines the best of native and web-based application development. With ICEmobile, developers can achieve the richness and responsiveness of native mobile applications, while reaping the cost benefits of web-based applications.

ICEpdf – is an open source, Java-based PDF engine for viewing, printing, and manipulating PDF documents. The ICEpdf API is 100% Java-based, lightweight, fast, efficient, and very easy to use. ICEpdf can be used as a standalone PDF viewer, or can be easily embedded in any Java application.

Visit www.ICEsoft.org to learn more.

Take The Next Steps

Speak to us about which ICEmobile Support Subscription is right for you. Contact us at:

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