

TABLE 2

Features of frameworks for mobile Web applications.

Frameworks	Target	Platforms					Hardware						Program- ming languages	License		
		iOS	Android	Windows Phone	Blackberry OS	Others	Camera	Accelerometer	Contacts	Gestures multitouch	Geolocation	Storage		Open source	Commercial	
jQuery Mobile http://jquerymobile.com	Web, hybrid	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	HTML5, CSS, JavaScript	Yes	No
Sencha Touch www.sencha.com/products/touch	Web, hybrid	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	HTML5, CSS, JavaScript	Yes	Yes	
jQT http://jqts.com	Web, hybrid	Yes	Yes	No	No	No	No	No	No	Yes	Yes	No	HTML5, CSS, JavaScript	Yes	No	
Enyo http://enyojs.com	Web, hybrid	Yes	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No	HTML5, CSS, JavaScript	Yes	No	
Lungo http://lungo.tapquo.com	Web, hybrid	Yes	Yes	No	Yes	Yes	No	No	No	No	Yes	No	HTML5, CSS, JavaScript	Yes	No	
PhoneGap http://phonegap.com	Hybrid	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	HTML5, CSS, JavaScript	Yes	No	
Titanium www.appcelerator.com	Native	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	JavaScript	Yes	Yes	
Rhodes www.motorolasolutions.com/US-EN/RhoMobile+Suite/Rhodes	Native	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ruby	Yes	Yes	

these advantages come with a cost: the platform owner gets a significant chunk of the revenue (about 30 percent for iOS), so we need to carefully consider if we're better off outside of the platform.

Frameworks

Although it's possible to develop a mobile Web, hybrid, or native app without a framework,² using frameworks can simplify and reduce the development process effort. There are frameworks

available for just about any development option (see Table 2 for a list).³

Most frameworks are for HTML5 development. However, if we choose to develop for a hybrid or native approach with a cross-platform development frame in mind, we have different options that we should consider.

Native

We can develop a native app using a cross-platform approach but with just

one codebase for all devices. We can select our platform on the basis of our preferred development language—for example, JavaScript (Appcelerator's Titanium; www.appcelerator.com) or Ruby (Rhodes; www.motorolasolutions.com/US-EN/RhoMobile+Suite/Rhodes).

Hybrid

For a hybrid approach, Phonegap (<http://phonegap.com>) is the predominant technology and can be used with HTML5