Mobile Mapping Applications for Improved Business Results

Make more informed business decisions using location-aware mobile technology

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With the widespread adoption of smartphones, tablets, and other mobile devices, billions of people across the globe have already experienced the power of consumer-grade maps and location-aware applications. But maps and location awareness have much more to offer than this. Business-grade geographic information system (GIS) technology brings even more powerful capabilities to your own organization.

GIS enables you to identify and see the location of your assets (e.g., personnel, customers, infrastructure) and discover patterns and trends based on location analytics. It also enables your enterprise to use, make, and share this knowledge from any device, anywhere. In this newsletter, you will find real-world examples of how organizations like yours are finding success with mobile GIS.

Esri’s mobile offerings include both end-user solutions and developer toolkits that let you create custom mapping applications to meet the specific needs of your business. Esri® technology integrates mobility with cloud, server, and desktop environments, collectively forming a complete enterprise mapping and GIS platform.

I encourage you to use this newsletter as a starting point to learn more about location-aware technology and leveraging spatial analytics on mobile platforms. We at Esri look forward to helping you leverage the power of mobile mapping and GIS across your organization.

Warm regards,
Jack Dangermond
President and Founder
A Roadmap of our Report Brief

The Report Brief begins with four case studies that describe how organizations around the world are benefiting and realizing ROI from their use of mobile application development and location-based analysis.

- **ArcGIS API for Android App Streamlines Field Inspections** describes how an electric cooperative streamlined their field inspection process, saving time, money, and improving service to their 53,000 members.

- **Smartphone App Aids District’s Facilities Maintenance** features the success of Los Angeles Unified School District to improve maintenance of the district’s facilities spread over 710 square miles.

- **New Information Channel** chronicles the use of mobile applications to notify citizens in Hawaii to evacuate the impending tsunami following the 2011 earthquake in Tohoku, Japan.

- **The Power of Location Analytics** focuses on ways retailers can leverage mobile technology to gain insight into critical activities such as site selection, demographic analysis, territory analysis, and merchandising.

**Esri Mobile Solutions at a Glance**

We’ve included the Functionality Matrix for Esri’s Mobile Solutions in this Report Brief to make it easy for you to compare the features and functionality of Esri’s enterprise applications and developer-focused SDKs for Android, iOS, Windows Phone and Windows Mobile platforms.

**Mobile Platform Vendors Assessed by Gartner**

Gartner’s Magic Quadrant for Mobile Application Development Platforms reveals insights to the appropriate use, strengths, and cautions for each mobile application vendor platform identified in the Magic Quadrant. It is based on a strategic planning assumption that by 2015, 80% of all mobile applications developed will be hybrid or web-based.

**Taking the Next Step**

The stories you read in this Report Brief may help clarify where enterprise mobile mapping and location technology solutions can make the most significant impact on your business processes. It is likely that such a determination would require further discussion and exploration, and we invite you to read more about our offerings on our website, or by contacting our mobile experts.

To learn more about Esri mobile technology, visit [esri.com/mobile](http://esri.com/mobile)
ArcGIS API for Android App Streamlines Field Inspections

By Jozef Kaslikowski, Tri-County Electric Membership Corporation

Our electric cooperative developed an app with ArcGIS API for Android that streamlined our field equipment inspections from a paper-based process to GPS-enabled tablets.

Tri-County Electric Membership Corporation (TCEMC) serves more than 53,000 members in central Tennessee and southern Kentucky. For several years, TCEMC has been moving GIS into more and more areas of the cooperative’s operation. One of the last untouched processes was inspections of field equipment.

Everything regarding inspections was being tracked on paper and often in multiple ways, from lists of poles beginning at the substation to the more recent printouts of circuits. The process was inefficient and frustrating to both operations personnel and engineering staff members who had to interpret the field notes. Follow-up trips were often needed to correctly identify facilities with issues. This delayed corrective actions. The large amount of data collected on paper made reporting and tracking impractical.

The paper process had endured for one reason: ease of use. Until recently, mobile devices and software were awkward and cumbersome to use. Training users who might not be familiar with computers was difficult, and equipment was expensive (not to mention problems with battery life and data synchronization). The new iPad and Android tablets were cheaper than laptops and provided a new platform for building easy-to-use solutions that can be operated with two fingers. With ArcGIS API for Android, TCEMC’s entire basemap and data on all equipment to be inspected could be placed on an Android tablet and taken into the field. Each tablet has GPS capabilities so it can show the user’s current location and a camera that can be used to document problem areas.

ArcGIS for Desktop is used to create a basemap, convert it to a tiled map cache by ArcGIS for Server, and automatically downloaded to each tablet each day along with pending inspection requests. Inspections are overlaid onto the basemap using the touchable graphics in the inspection app. The user simply touches the piece of equipment he would like to inspect, and the appropriate form for recording the inspection is displayed. The inspector’s name is logged for each inspection, as well as the last good GPS coordinate, the time the form was submitted, the current known attributes of the equipment, and any issues identified during the inspection. At the end of the day, network connectivity is restored, and the completed inspections are automatically uploaded to the GIS database.

System administration is minimal, because every effort was made to automate tasks. Pending inspections are identified by comparing GIS data to the list of inspections that have been recently completed. Identified problems are automatically routed to the appropriate department.
A web-based application was created to manage the resultant corrective actions for the departments as well as incorporating the information into the engineering staking package. Engineering staff can be assigned individual tasks, or tasks can be assigned in bulk based on territories. Operations supervisors can manage their corrective actions based on service areas. Correction tickets can be printed with an included map provided by the same ArcGIS for Server service that the tablets use. Each assignment is tracked, and additional notes can be added at any point. Finally, each department can separately resolve its own issues without affecting the other.

The completed inspections are stored in a Microsoft SQL Server database that is used for reporting and analysis. Since all information is time stamped, the progress of the inspection cycle can be observed using the new query layer and time-aware layer features of ArcGIS 10. By storing the equipment attributes at the time of inspection, changes in equipment between inspection cycles can be tracked.

TCEMC has taken advantage of newly available hardware and Esri APIs to provide an easy-to-use yet powerful inspection tracking system. By building on common consumer-based devices, TCEMC can choose from among many vendors and different price points. This solution also benefits from custom app deployment and a standard Windows PC development environment.

To learn more about Esri mobile solutions, visit esri.com/mobile.

Source: Esri
Smartphone App Aids District’s Facilities Maintenance

By Jim Baumann, Esri Writer

Students and faculty in the Los Angeles Unified School District (LAUSD) can report graffiti, broken benches, or other repair issues using a smartphone application that is integrated with the district’s GIS.

LAUSD is responsible for educating more than 675,000 K–12 students annually and is the second-largest public school district in the United States. The district manages facilities that include 1,065 K–12 schools; more than 200 education centers, adult schools, and occupational skill and learning centers; and dozens of warehouses and storage yards within the district’s 710 square miles.

The district has used Esri’s GIS software since 1990 for administrative tasks including student enrollment forecasting and analysis, school boundary maintenance, student safety, disaster planning, and facilities operations and management. As additional applications were added, the GIS gradually evolved into an enterprise system.

“GIS has played a big role on the administrative side of our operations,” said Danny Lu, business analyst for LAUSD. “As we continued to expand our use of the technology, we realized that there were some commercial applications that could be easily integrated with ArcGIS and would fit into our existing workflow.”

Upkeep of the numerous LAUSD facilities requires an army of administrative, maintenance, and technical staff members who are continually evaluating and processing the many service requests submitted each day. The district implemented a data collection system that allows campus staff to easily report nonemergency issues. This relieves the operations department from some inspection and reporting responsibilities and lets it concentrate on the repair and maintenance of the school district’s assets.

In 2010, the district contracted with Esri partner CitySourced to implement LAUSD Service Calls, a smartphone application permitting LAUSD students and faculty to report issues related to the repair and maintenance of school facilities, such as graffiti, broken benches, or damaged sprinkler systems.

“We wanted to take advantage of today’s technology and provide our community with an intuitive tool that allows them to easily document maintenance issues and send those reports directly to us so that we can resolve them,” said Lu. “As an added benefit, by using the application, students and faculty members of LAUSD are provided with a sense of ownership while building community pride.”

CitySourced uses Esri’s ArcGIS application programming interface (API) for smartphones in the LAUSD Service Calls application so that the school district can integrate the volunteered data from the incident reports with its authoritative ArcGIS database. This helps the school district keep the GIS database up-to-date for its IBM Maximo asset management system.

Kurt Daradics, director of business development at CitySourced, said, “The LAUSD Service Calls implementation at LAUSD is an end-to-end solution. Incidents are recorded on the mobile devices and sent to the CitySourced servers hosted by Microsoft Azure. Our servers route the issues directly into LAUSD’s IBM Maximo asset management system as service requests, where they are reviewed and subsequently resolved by the district’s maintenance department.”
Daradics indicated that the LAUSD Service Calls application will eventually be able to automatically query the operational asset layers in the ArcGIS database so that the asset ID can be determined. The ID will then be attached to the asset specified in the incident report submitted by the LAUSD community member. This will allow all information related to the asset (maintenance history, age, and replacement costs) in the GIS database to be automatically retrieved so the school district can use its GIS to better manage and maintain its assets.

The LAUSD Service Calls application can be downloaded for free to the user’s smartphone. When reporting an incident, the user is prompted through a series of drop-down lists to specify the incident location, type, required maintenance, and description. This report and accompanying photograph is sent to LAUSD’s asset management system, where it is reviewed by a moderator to determine the required course of action. If maintenance is required, a work order will be generated, prioritized, and routed to the appropriate department for action.

According to Lu, the system also provides feedback to the person or persons reporting the complaint. When a work order is generated as a result of a service call, the asset management system automatically sends a response to the sender, indicating the incident report has been received and assigned. Students and faculty can use the CitySourced application to search for the calls they have placed. Under My Reports, they can view the status of an incident. This feedback loop demonstrates to the community that LAUSD is aware of and is working to resolve their concerns.

To learn more about Esri mobile solutions, visit [esri.com/mobile](http://esri.com/mobile).

Source: Esri
New Information Channel

Android app gets evacuation information to residents
By Matthew DeMeritt, Esri Writer

When the 2011 Tohoku earthquake, one of the strongest ever recorded, struck the coast of Japan, it sent a tsunami Hawaii’s way.

In a sense, Hawaii had dodged a bullet. The March 11, 2011, earthquake transferred most of the tsunami’s energy toward Japan’s coast rather than toward Hawaii. The wave that Hawaii experienced was 1 meter high (compared to Japan’s 10-meter wave) but still caused millions of dollars in damage to docks and seacraft but—fortunately—no deaths.

The tsunami alert sent many Hawaiians scrambling to find out if they were in a tsunami evacuation zone or where the nearest shelter was located. Requests to Honolulu’s government website created a logjam that disabled the site.

During a government meeting to assess the tsunami’s toll, Honolulu technical staff raised the issue of public access to critical evacuation zone maps during times of high demand on the county server.

“One of the GIS analysts mentioned that their site [Honolulu.gov] went down following the alert because too many residents were trying to find information related to the tsunami at once,” said Kyle Shimabukuro, a systems analyst for City and County of Honolulu. “That spurred discussion about why the bottleneck happened and how we could avoid it in the future.”

Staff eventually concluded that the emergency maps in local phone books also were not sufficient to disseminate critical information about tsunami evacuation zones immediately following a seismic event. Because a large percentage of Hawaiians exclusively depend on cell phone service for their telephone needs, many residents simply don’t have phone books.

To avert a similar crisis in the future, systems staff at Honolulu created a tsunami evacuation zone app built with Esri’s ArcGIS Runtime Software Development Kit (SDK) for Android to serve as a critical information channel. “It took an event like this to point out the obvious problem,” said Shimabukuro. “Being an Android phone owner, I knew that a large majority of those seeking information from the web had smartphones and that Esri had already created a variety of mapping solutions for them.”

Theoretically, a large percentage of requests could be transferred to a simple mapping app, similar to the ones Esri had already created, so Shimabukuro went looking for a way to make a custom app for Hawaii’s Android phone owners. Because City and County of Honolulu had already integrated ArcGIS throughout its departments, Shimabukuro was familiar with Esri technology and its online customer support channels. He started his research at Esri’s ArcGIS Resource Center and it immediately paid off. There he saw the beta version of the ArcGIS Runtime SDK for Android available for free download.

“Seeing the beta of the API confirmed my hunch that an evacuation zone app was within reach,” said Shimabukuro. “After a simple registration, I downloaded the API as well as information on how to build apps and add functionality. It was all well documented and easy to find.”

The app taps into the Android device’s GPS and displays the user’s current location.
Esri’s approach to customer support involves giving users access to example apps and preconfigured templates for developers to build on. Rather than having to start from scratch, the application available with the Android SDK gives developers a starting place for adding code and testing functionality during the development process.

“It’s good to know that documentation could provide the answers I needed, but having the sample apps to immediately reference saved me much time in not having to start from the ground up,” said Shimabukuro. “The examples gave me a logical starting point to pick and choose the kind of functionality our app should have.”

Shimabukuro could easily add and remove code as needed and attach a variety of available map services using the runtime SDK. “I downloaded many libraries to see what each one did and incrementally built the app using that process, which would have been much harder without having access to the example apps and seeing how they operate,” he noted.

During development, Shimabukuro had envisioned using the smartphone’s onboard GPS to verify whether the user was in an evacuation zone and generate driving directions from there. “The idea of exploiting the GPS technology already available on Android devices and producing something more than static maps was exciting,” said Shimabukuro. “In addition to displaying the address of a given point, I was also able to pass that address to Google Navigation, an external navigation app, to give driving directions.”

The final product, which includes full integration with GPS, and a handy navigator, exceeded Honolulu’s original objectives for the app. Honolulu has successfully promoted it to residents with over 1,000 installs. Shimabukuro plans to integrate additional services as they become available. ArcGIS Runtime SDK for Android is available for download from the Esri ArcGIS Resource Center.

For more information or to download the Honolulu Tsunami Evacuation Zones app, visit the Android Market.

To learn more about Esri mobile solutions, visit esri.com/mobile.
The Power of GIS for Location Analysis

New data, mobile apps unleash the multi-disciplinary value of maps and geographic analysis

Most retailers know how GIS (geographic information systems) can help when choosing and developing the best sites for new stores, warehouses, and DCs. Of course, due to the economic downturn, most retailers are out of practice in these areas — there hasn’t been much activity of late in the way of new site development. In the face of an economy that has all but halted new retail construction, why is it that the GIS applications market continues to grow? Retailers are realizing that the value of GIS runs far deeper and wider than simple site selection. Other real estate considerations such as, operations decisions, merchandising efforts, and marketing initiatives are among those profoundly enhanced by rich and well-processed GIS data. The variables of a retail market area are many, including what’s available to that market, what the community can support economically, and the demographics of its inhabitants. GIS technology from Esri helps retailers better understand these nuances by providing visualization of this data in an easily-understood map interface. The presentation of deep and rich market data in map format helps retailers to easily see where particular types of people are located, making their business decisions more accurate.

Today, access to these data rich mapping applications is available in the palm of your hand. The free Esri Business Analyst Online (BAO) for iOS app provides on-the-go access to market and demographic analysis, allowing users to instantly evaluate any area in the United States using an iPhone or iPad. BAO for iOS is a mobile version of the full BAO Web application, a subscription-based solution that combines GIS technology with the latest demographic, consumer spending, and business data to generate market reports and maps. No longer do you have to be at your desk to access the detailed data; you can now pull up reports right on a mobile device, making your business data as mobile as you are.

BAO combines the right knowledge and tools to empower retail leaders to make confident decisions about their sites, forecasts, marketing strategies, and more. The graphic-rich interface is a powerful source of insight into the data you need for the decisions you’re making. Let’s look at some of the discipline-specific applications for GIS data in retail:

GIS Enables Site-Specific Operations Analysis

Even though retail operations are constantly changing, they must remain agile. At the store level, striking the right balance between your supply chain and local customer demands is key to success and longevity. GIS integrates these data to provide a strategic view of the relationships between site specific transactions, assortment optimization, allocation, and logistics.

Localized Merchandising Accuracy

Traditionally, GIS has been viewed as technology that facilitates decisions about brick-and-mortar site selection. But in today’s cross-channel environment, consumers themselves are the most important “site” a retailer can win. Because GIS is rooted in interpreting and analyzing demographic, segmentation, business, and consumer spending data, the insight it provides can help retailers merchandise on a very personal, individualized level.

Selecting merchandise and correctly configuring store assortment to match local demand is proven to grow profit. This is most efficiently accomplished by offering products tailored to the profile and preferences of the people who shop at a given store. Deep, consumer-specific profiles of a trade area are difficult and expensive to achieve without tapping into the rich data repositories provided by Esri.
Marketing To A Community Of Individuals

Creating awareness of your brand and loyal customers at the site level requires a deep knowledge and understanding of the communities you serve. When you understand those communities at the consumer-level, it becomes easy to segment customer groups for extremely targeted marketing activity.

GIS-based analysis gives you that knowledge and understanding, empowering you to create locale-specific marketing campaigns based on demographics and spending trends while building local brand loyalty along the way. By aligning your marketing efforts with behavior profiles of consumers in the specific geographies your stores serve, you ensure that every marketing dollar spent results in a message that resonates with that store’s shoppers.

GIS Powers Real Estate Decisions In Good Times And Bad

Take a look at the brick-and-mortar retail turnover in Manhattan and you’ll have to agree – having the best piece of real estate is no guarantee of success. Many multi-site retailers behaved gluttonously when times were good, overbuilding stores to the point that today, with a volatile economy impacting local consumers, retailers are now overburdened with poorly-performing stores in unsustainable markets. GIS is now more important for helping retailers make the right decisions about reconfiguring the format and size of existing stores, and choosing which stores to cull or relocate based on the needs of local consumers.

Cross-Disciplinary Value To Retailers

Virtually all of the world’s leading retailers understand the power of GIS for real estate decision making, but relatively few understand the cross-disciplinary power of trade area analysis. Esri ensures the most accurate and timely socio-demographic information is available to feed your merchandising, marketing, and operations applications.

Through APIs and toolkits that facilitate connections with leading BI and ERP platforms from Teradata, Netezza, and more, the Esri Business Analyst system will drive better decision-making across your entire organization. Esri unlocks valuable treasure troves of information by making it readily available and clearly understood, giving retail real estate, merchandising, marketing, and operations professionals the hard data they need for wise decision-making.

To learn more about Esri mobile solutions, visit esri.com/mobile.

Source: Esri
**Functionality Matrix for Esri’s Mobile Solutions**

**Esri: A Complete System**
Esri has developed the ArcGIS system to serve organizations’ business needs that are best addressed with location and mapping technology. A spatially enabled enterprise will transform the way your organization operates, increasing efficiencies, revealing opportunities, and empowering more informed decision making. The ArcGIS system integrates with cloud, mobile, server, and desktop environments.

Gartner’s Magic Quadrant for Mobile Application Development Platforms, included in this Report Brief, discusses the relative strengths and appropriate uses of many development platform vendors, including Apple, Google, and Microsoft. Many of the companies featured in Gartner’s Magic Quadrant report have embedded Esri technology into their core products and services. Custom world-class applications have also been developed for nearly every industry and market segment by our valued business partners.

**Benefits of Esri Developer Tools**
Esri offers low to no-cost, comprehensive developer tools to help easily build and deploy custom applications across multiple platforms. From mobile and web mapping SDKs/APIs to configurable viewers and open source projects, Esri provides the resources developers need to create mapping solutions. Developers worldwide take advantage of unlimited access to Esri online forums, blogs, documentation and code galleries which help them get up and running quickly. Esri also provides complimentary web trainings and fee-based instructor-led classroom training sessions. Technical support options are also widely available.

**Mobile Solutions That Fit Your Enterprise**
Esri mobile technology enables organizations to have immediate access to real-time information, regardless of location. ArcGIS for Mobile offers a variety of mapping applications across various platforms to help you streamline field operations and make more informed business decisions.

Esri currently offers free, downloadable, native applications from the Apple App Store, Windows Marketplace, and Google Play/Android Market. Each of these applications allows you to create and access maps from your enterprise data, collect and report information, and publish services using our cloud technology, ArcGIS Online. Esri’s ArcGIS for Windows Mobile application integrates with enterprise line-of-business applications from leading technology companies such as Salesforce, Microsoft, SAP and IBM.

The matrix on the following page identifies the features, functionality, and product capabilities for the mobile platforms for which an Esri solution is currently available. It can serve as a guide to help determine which Esri mobile solution best suits your organization’s business needs and workflows.

For more information about Esri mobile solutions, visit [esri.com/mobile](http://esri.com/mobile).
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<thead>
<tr>
<th>Supported Devices</th>
<th>ArcGIS for Windows Mobile and Windows Tablet</th>
<th>ArcGIS for iOS</th>
<th>ArcGIS for Windows Phone</th>
<th>ArcGIS for Android</th>
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<td>Tablets</td>
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<td>Laptops</td>
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<td>Editing of Layer Display Properties</td>
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<td>ArcGIS Online Services</td>
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<td>Share Maps (SMS, e-mail, social media)</td>
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From the Gartner Files:

Magic Quadrant for Mobile Application Development Platforms

Mobile application development is a very important and strategic IT topic. In 2012, Gartner is making major updates to this research to reflect market convergence. We analyze platforms that allow enterprises to build, support and manage mobile applications for both customers and employees.

Strategic Planning Assumption
By 2015, 80% of all mobile applications developed will be hybrid or mobile-Web-oriented.

Market Definition/Description
Mobile application development has become a top concern for enterprises and their CIOs. According to the 2012 Gartner CIO Survey, 61% of respondents plan to enhance their mobility capability during the next three years, and 48% believe they will become leaders in their industries by fully adopting innovative mobility solutions. This Magic Quadrant assesses the major vendors of application development platforms that enable enterprise developers to design, code, integrate, test, publish and manage business-to-consumer (B2C), B2B and business-to-enterprise (B2E) mobile applications.

In previous years, enterprises tended to evaluate mobile application development platforms (MADPs) based solely on the needs of their current mobile projects. However, increasingly enterprises look for a single MADP that can address most, if not all, of their future projects across all scenarios. As a result, this Magic Quadrant is composed of vendor platforms that can be used to meet requirements for B2C, B2B and/or B2E projects.

Vendors generally deliver one of three different types of technologies to the market: a native toolkit, a Web toolkit or a cross-platform suite. Native toolkits, like Apple’s iOS development toolkit, enable the development of applications for only a single mobile device OS platform. Web toolkits, like jQuery Mobile, enable the development of Web-based applications that perform well in Web browsers for various mobile OSs and devices. These mobile Web applications can often be compiled into OS-specific hybrid applications using wrapper tools, like Adobe’s PhoneGap. Cross-platform suites, like Antenna AMP, enable a single application to execute on multiple mobile devices, using device- and OS-specific client applications. Some cross-platform suites can also generate Web and native applications from the same code. Cross-platform suites tend to address application design, integration, testing and management more extensively than native and Web toolkits. Although these three different technology types require very different investments, skills, etc., enterprises often evaluate them side by side when selecting an MADP.

Magic Quadrant
Vendor Strengths and Cautions
Adobe
Founded in 1982, Adobe is positioned as a large, global, cross-platform software development tool company with a wide variety of tools used in mobile application development. Adobe supports two authoring tool chains; one based on Flash, the other on HTML. In 4Q11, Adobe enhanced its HTML toolchain’s position with open-source developers by announcing that it had acquired Nitobi Software, maker of PhoneGap, a very popular framework used frequently to wrap HTML5 applications in native containers. Adobe retains the positioning of PhoneGap with Web-oriented developers, as Nitobi donated PhoneGap to the Apache Foundation at the time of the acquisition. In April 2012, Adobe announced a partnership with SAP so that SAP customers can utilize PhoneGap to build mobile applications that integrate with SAP’s Sybase Unwired Platform.

Appropriate Use: Media-rich enterprises, with requirements for mobile clients and organizations wishing to leverage PhoneGap to wrap mobile Web applications developed with Sencha, Dojo Mobile, jQuery Mobile and others.

Strengths
- Strong cross-platform capability bridging desktop with mobile device design studio. Available for Microsoft, Linux and Mac OS platforms.
PhoneGap is very popular globally, with uptake in several developer communities and contributions from large vendors such as IBM, RIM and Nokia.

A huge potential audience of creative developers, with mobile output available from all the creative products (Illustrator, Photoshop, etc.), all of which are the default applications for creative content development.

The Adobe Digital Marketing Suite (formerly known as Omniture) gives Adobe an analytics platform capable of supporting context-aware services — an important area, because Gartner believes that analytics are key to delivering mobile application experiences to consumers.

Cautions

While Adobe’s strategy allows for the transfer of skills between its HTML- and Flash-oriented toolsets, tools such as import/export and the ability to migrate content are not the focus for Adobe. Adobe does not provide tools for translating from Flash to HTML.

Gartner did not observe significant traction in Adobe’s mobile B2E capabilities in 2011.

The lack of support for Adobe Flash Player on iPad and iPhone browsers continues to force many organizations and developers to rethink how they build their mobile websites. While building deeper experiences with Adobe Integrated Runtime (AIR) application support for other platforms (such as Android-based products) is possible, not all services are available on all platforms.

Andanza Technologies

Headquartered in Madrid, Spain, Andanza Technologies was formed in 1997, has traditionally been focused on the service provider market and is now focused exclusively on mobile B2C applications. In terms of revenue, Andanza is one of the largest vendors covered in this Magic Quadrant, but much of that revenue comes from its service provider business. The vendor is strongest in Spain, but has a number of international customers, mainly in Europe and South America. Andanza’s offering is based on nonintrusive Web content transformation, and it relies on Web-services-enabled back ends (e.g., esmero Repository, UAProf and WURFL) for device database repository. Although much of Andanza’s product road map remains focused on service providers and the enablement of additional services attached to those service providers, it has recently expanded into other vertical industries, such as government, oil and gas, and transportation.

Overall activity and client interest in this vendor since last year’s research appears to be flat.

**Appropriate Use:** Use Andanza Technologies primarily for large-scale projects to generate HTML5-oriented smartphone applications targeting consumers.

**Strengths**

- Andanza’s esmero platform enables rapid assimilation of Web content into multiple mobile presentation formats, including mobile Web, text and rich-client applications.

- Limited messaging interfaces with a number of carriers worldwide combine with Web, and email-based messaging within a single platform.
• The vendor has strong analytics and reporting capabilities.

Cautions
• Andanza has a limited geographic reach (Spain and Spanish-speaking Latin America); however, these areas are large potential markets for consumer applications. Andanza has a relatively small number of large customers for its MADP.
• Native and hybrid development and runtime are not on the vendor’s current road map, leaving HTML5 applications taking advantage of local storage as the only option for disconnected mode. Customers have to create their own native clients using other tools.

Antenna
Based in Jersey City, New Jersey, Antenna is one of the longstanding vendors in Gartner’s mobile application development Magic Quadrants, with offices around the world. Over the years, Antenna has expanded its offerings and customer base through a combination of organic growth and acquisitions, including Vettro for its mobile field service business, Dexterra for its customers and channels, Vaultus Mobile Technologies for its B2C-oriented application development platform, and Volantis Systems for mobile Web and application storefront capabilities. Antenna offers the combined technology as the Antenna Mobility Platform (AMP), made up of a best-of-breed development studio, a scalable, cloud runtime service and a set of clients that runs on a very wide variety of mobile devices. In February 2012, Antenna announced AMPchroma, its new mobile software as a service (SaaS) offering that runs on top of the core AMP technology. AMPchroma brings together previous investments in AMP as a cloud offering with additional platform capabilities (including mobile device management [MDM]) derived from integrating the Volantis technology.

Strengths
• Antenna sports one of the more powerful and intuitive application development studios among the MADP vendors. The vendor has achieved a good combination of powerful, flexible development options and an easy-to-use application studio.
• Antenna’s hosted environment is highly stable, with mirrored data centers in multiple locations. Relationships with AT&T, Alcatel-Lucent, HP and IBM strengthen Antenna’s hosting capabilities. Antenna also sells mobile platform components through partners like Alcatel-Lucent.
• Antenna continues to show a strong vision for the evolution of the MADP market, particularly the merging of B2C and B2E requirements for mobile platforms. The vendor recognized this trend and made significant investments to pursue the consolidated platform market.
• Customers like Antenna’s breadth of capabilities, especially for B2E scenarios, and its product vision. This was reflected in Antenna showing strong revenue growth in 2011.

Cautions
• Past evolutions of AMP required customers to recode applications. Further recoding may be necessary as Antenna drives AMP to fully embrace HTML5, thus some legacy Antenna customers may face similar expenses.
• Cloud computing is Antenna’s primary marketing message. If security or certification requirements demand that the MADP be deployed on-premises, then enterprises should ensure that the vendor can meet those requirements.
• Gartner observed a few project management issues with organizations delivering their first applications with Antenna and its partners.

Appcelerator
Founded in 2006, Appcelerator is located in Mountain View, California. The Appcelerator Titanium platform was one of the first of the newer generation of multi-OS development platforms, promising write-once capabilities that support a
range of mobile application architectures across multiple device/OS types. Appcelerator’s approach focuses on exposing the native capabilities of each device; features rapid development cycles; leverages an enterprise’s existing Web skills; is extensible; and allows customers to build native, hybrid or mobile Web applications.

Appcelerator did not meet our revenue criteria of $15 million, but we are covering the vendor with the criteria we apply to zero-revenue, open-source solutions, because 87% of Appcelerator customers are nonpaying and it has gained impressive developer momentum. Appcelerator has 1.6 million Web developers, of which 300,000 are registered for mobile application development. The vendor estimates that 40,000 applications have been deployed via the Titanium platform.

Recent enhancements include Appcelerator Cloud Services from its Cocoafish acquisition. Cloud-based features include user administration, social integration, check-ins, status updates, places, event planning, messages, photos and generic key value storage.

Appcelerator closed more rounds of venture funding in October 2011, and, in early 2012, it aimed at growing products and expanding internationally. In April 2012, the vendor announced a partnership with SAP so that SAP customers can utilize Titanium to build and integrate with SAP Sybase Unwired Platform.

Appropriate Use: Enterprises with requirements for multi-OS application development and Web-based skill sets.

Strengths

• Appcelerator has a very clear vision, market understanding and focus, and financial backing.

• Appcelerator’s development environment is a free download, and it uses Web development skill sets to write mobile applications and mobile websites, keeping time-to-market, startup and trial/pilot costs low. Appcelerator’s integrated development environment (IDE) is Eclipse-based — built on technology acquired through its recent acquisition of Aptana.

• Appcelerator has preintegrated cloud services and an extensive library of application extensions in its module marketplace.

Cautions

• Appcelerator is one of the smaller vendors profiled in this research, so enterprises should ensure that it can meet all their requirements.

• While Appcelerator Titanium offers some limited SAP, Oracle and custom enterprise data connectors, enterprises with B2E requirements need to gauge the amount of incremental support needed to meet more-extensive functions.

• Although the free community tier makes it easy to get started, moving to the enterprise tier development seats can be relatively expensive. As Appcelerator scales its business, it will need to better monetize its efforts, and this will likely cause its relative total cost of ownership (TCO) to rise.

Apple

Since last year’s research, Apple successfully launched iOS 5, new smartphone hardware, and the third version of the iPad. While these upgrades provided incremental functionality from a mobile application and support point of view, the demand for Apple continues to rise significantly. While still very much a narrow provider of development platforms solely focused on its own products, Apple’s support for the enterprise requirements of those products has continued to improve, and the vendor has followed up with more improvements since the opening of APIs for third-party tools for MDM and security in 2010. Additionally, the near-ubiquitous presence of the iPad in many verticals has shown that Apple can stimulate innovation in enterprise applications, and thus stimulate interest in Apple iOS products across nearly every function of the enterprise. iOS application development via iOS Software Development Kit (SDK) is still limited to Apple devices.

Apple does not provide packaged mobile applications, although it does support general-purpose enterprise application integration.

Appropriate Use: The vendor is an appropriate choice for enterprises that exclusively support Apple products for their employees or whose consumer demographics align only with Apple products.
Strengths

- The lack of iOS fragmentation gives advantages to developers who wish to have universal applications that run on both iPhones and iPads.

- Enterprises developing in the iOS SDK can leverage iPhone application investments for the iPad and iPod touch devices, based on shared OS code and tool bases. Apple’s App Store has strong subcategories (such as business and productivity) that can enable the easier discovery of applications.

- Significant adoption of the iOS product in the enterprise, coupled with the strong loyalty of the iPhone and iPad user bases, gives Apple an enviable place among OS and platform vendors. This has translated into many enterprises looking to develop applications for and distribute information to these devices.

- The iOS SDK remains solid, with significant enhancements and loosening of restrictions in the 4.2 release and subsequent releases. Enterprises can develop in-house applications and distribute them through Apple’s over-the-air (OTA) interface.

- The App Store remains the benchmark for application availability and security, and Apple has data protection features (such as AES 256-bit encryption and complex passcodes) built into the iPhone and iPad.

Cautions

- Few organizations and developers have the luxury of focusing solely on Apple support. Apple’s singular focus on iOS devices limits the real addressability of the development environment (SDK) and the applications created within it. Additionally, few other mainstream developers use Objective-C as an application development language. Some C++ or C# programmers find Objective-C to be lacking in capabilities.

- The lack of support for Adobe Flash, Microsoft Silverlight and Java is a major impediment for some enterprises.

- As long as the enterprise agrees to the enterprise application agreement/framework, it may distribute applications to its employees. However, enterprises that do not agree, or that want to distribute to partners and contractors, must submit their applications to the wider Apple App Store. Some enterprises have complained about the rigid design parameters for application design, and a lack of access to some functions on the devices and a fully opaque application testing process for the applications that are submitted to the App Store.

- Apple continues to require iTunes as the primary method for application loading, and this exposes multiple security and management risks. Third-party MDM and application management vendors can load — OTA and via HTML — applications for employees within the enterprise application framework.

- The security and management of applications and data on devices remain the realm of third-party providers, which are subject to the whims of Apple favor and will require additional investments by the enterprise.

Data Systems International (DSI)

DSI may be the largest MADP vendor that you have never heard of. Based in Kansas City, Missouri, DSI quietly built a B2E mobile platform business with more than 1,000 customers during the past decade. DSI’s primary customers are midsize-to-large manufacturing and supply chain companies running Oracle JD Edwards EnterpriseOne, Oracle E-Business Suite (EBS) and Oracle JD Edwards World, with some customers running Infor and SAP ERP.

DSI’s MADP, called dcLINK, is designed for the rapid development of transactional applications integrated with an ERP or similar system, especially as extensions to its data collection platform capabilities. The software supports many different mobile client devices, including the usual smartphone and tablet options, as well as ruggedized mobile devices and PCs, and other types of equipment, like automated scales and conveyor belts. A single application can run on a wide variety of devices without recoding, recompilation or reconfiguration. The vendor offers native clients for Windows, iOS, BlackBerry and Android, as well as a Web user interface (UI) option. DSI also offers a set of prebuilt business process flows for common applications, such as mobile inventory, field service and delivery.
Appropriate Use: DSI dcLINK is best-suited for customers (especially those with Oracle) looking for a fast way to build common manufacturing and supply chain B2E mobile applications suited to their needs.

Strengths

- Customers liked that DSI delivered projects on time and budget, and felt that the platform was solid in production.
- DSI has extensive experience building mobile applications that extend ERP systems, as well as prebuilt templates and built-in platform features that accelerate their development.
- DSI has customers in more than 50 countries, and direct operations and partners around the world.

Cautions

- dcLINK is not suitable for building most B2C applications. The toolset wasn’t designed to support B2C requirements.
- DSI doesn’t have a mature cloud-based offering; most clients deploy and operate the platform themselves.
- DSI has staff worldwide, but most of its staff and business are based in North America, with some presence in the Asia/Pacific region. European- or Latin American-based enterprises will need to assess in-region support capabilities.

Dojo

The Dojo Toolkit is a set of related open-source projects supported by The Dojo Foundation; as such, it does not fully meet our Magic Quadrant financial inclusion criteria. The Dojo kernel is lightweight and modular, with thousands of loosely coupled module plug-ins that can be asynchronously loaded when needed. Dojo Mobile is an HTML5 mobile JavaScript framework. Coupled with Dojo’s Dijit (an extensive collection of UI widgets) and GFX (a native cross-browser, two-dimensional [2D] graphics framework), Dojo provides an extensive collection of UI components for mobile devices. Although not strictly a part of The Dojo Toolkit, Maqetta, a drag-and-drop UI design tool, works with Dojo and Dojo Mobile and is also supported by The Dojo Foundation.

Dojo makes it possible to use HTML, JavaScript and Cascading Style Sheets (CSS) to build interactive mobile Web pages for desktop devices and Webkit-enabled mobile devices, such as the iPhone, iPod touch, iPad, Android and Research In Motion (RIM) smartphones and tablets. Developers can also use PhoneGap with Dojo to create native mobile applications.

The Dojo Toolkit is available either as open source or commercially distributed within IBM’s WebSphere offering. Several organizations, including SitePen, offer commercial support, training and development services. The open-source community provides all code, documentation, enhancements, bug fixes and support. Project sponsors include IBM, RIM and Orange.

Appropriate Use: Dojo is best-suited for development organizations looking for a lightweight, open-source mobile Web framework, especially those with experience using the Dojo Toolkit to build desktop rich Internet applications (RIAs).

Strengths

- The Dojo Toolkit is a very open framework; it is an independent, open-source project based on HTML, JavaScript and CSS standards.
- Because Dojo Mobile extends the popular Dojo Toolkit for desktop applications, many developers will find it easy to learn and use.
- When used with PhoneGap, it is possible to build native mobile applications with the Dojo Toolkit without any licensing costs.

Cautions

- By itself, the Dojo Toolkit doesn’t provide support for native or hybrid applications, application management, legacy system integration, disconnected mode, etc.; therefore, application sophistication is typically low.
- The organization and team are community-based and open source (i.e., mostly volunteers who work for other companies), and the curated aftermarket support is limited, so organizations using Dojo need to budget for higher self-support costs.
**FileMaker**

FileMaker is a wholly owned subsidiary of Apple, providing a database development environment facilitating application development for iOS platforms and the mobile Web. In addition to its mobile application platform, the vendor also facilitates development on Windows and Macintosh systems. Gartner has observed a substantial number of enterprises interested in FileMaker because it supports iOS with its mobile application development framework.

**Appropriate Use:** FileMaker is a particularly strong fit for enterprises that already have databases deployed on the FileMaker platform, and if the mobile platform exclusively targets the iPhone/iPad platforms.

**Strengths**

- FileMaker has a long history in the database development environment, and its deployment of client applications for the iPad and iPhone has extended the platform into the mobile application segment. Its growth in mobile deployments during 2011 was well above that of other vendors in the market, in part due to the simplicity of the applications it targets and its ability to scale up to support complex business logic.

- FileMaker has a strong presence across multiple geographies, including North America, the Asia/Pacific region and Europe, with 1,100 consulting companies that are part of the FileMaker Business Alliance deriving all or part of their revenue from FileMaker deployments.

- FileMaker has a substantial direct sales force and third-party partners. Overall, the majority of FileMaker revenue is direct, but the vendor does not engage in professional services, allowing its partners to address this need. As a subsidiary of Apple, FileMaker enjoys a strong presence in Apple stores, enabling it to address small-business needs via this channel.

**Cautions**

- While FileMaker is flexible and can be used as an integration broker or as a stand-alone back-end system, Gartner’s observation to date is that FileMaker applications are frequently deployed in smaller-scale development and organization environments (e.g., where the FileMaker database has been added as a simple integration broker).

- FileMaker’s desktop and Web application development platform now also supports Apple iPad and iPhone application development.

- Rather than development of completely custom mobile applications, FileMaker has a mobile client application that allow users to run FileMaker database applications. The application is called FileMaker Go and runs on the iPhone and iPad.

**Google**

Google Android’s success as an alternative to Apple iOS for smartphone devices has led to the creation of more than 450,000 Android applications, many built using Google’s MADP. The Google MADP is made up of:

- Android SDKs for each version of Android

- A collection of development tools for developing Android applications in Java

- An Eclipse wrapper to simplify application coding, compilation, testing, etc.

- Google Play, formerly known as Android Market, a cloud-based app store for distributing client applications

The Android SDK, toolset and Eclipse wrapper are available free of charge. Android applications can be freely distributed various ways, but Google charges a percentage of revenue for those purchased through Google’s platform.

**Appropriate Use:** Use Android-oriented development platform(s) primarily for B2C requirements.

**Strengths**

- The Google MADP provides a robust development environment for Java developers.

- There is full access to all Android on-device capabilities.

- There is immediate access to new Android features, allowing developers who invest in Google’s MADP to more quickly take advantage of the considerable hardware and ecosystem.
innovation fueled by Android’s No. 1 global market share for smartphones.

**Cautions**

- The Google MADP is not multiplatform; it is only suitable for Android application development. Gartner is also seeing very little enterprise interest in Android-smartphone-based B2E integration and support.

- There are multiple versions of the SDK and each Android SDK is version-specific. Applications developed with one version of the SDK have limited portability to newer versions of Android, and no portability to older versions. Multiple versions of each application may be required, because three versions of Android have significant market share today and Google introduced yet another version in late 2011.

- The Android Eclipse plug-in is oriented toward individual developers. Teams doing Android development often use other tools in conjunction with Google’s MADP to manage collaboration, source control, build management, etc.

- Android’s fragmentation leads to more testing to ensure that security concerns, software quality and usability standards are met.

**IBM**

IBM focuses its platform on Worklight and offers a number of different products that support mobile application development and management, including IBM Portal Accelerator. Acquired in February 2012, Worklight represents a big step forward in IBM’s ability to provide a complete MADP, as Worklight provides an Eclipse-based, stand-alone IDE; platform-specific SDKs; and runtime components to help developers build, deploy and manage portable Web, hybrid and native mobile applications. Several IBM offerings already provide integration points with Worklight. Worklight integrates with IBM WebSphere Application Server Feature Pack for Web 2.0 and Mobile for application server access, as well as Dojo, jQuery Mobile, Sencha Touch and PhoneGap for mobile client functionality. IBM WebSphere Portal provides multichannel Web experiences. This content can be consumed by Worklight to extend its reach to native and hybrid architectures.

IBM also offers mobile application development capability through Lotus Expeditor, primarily targeting full clients and/or ruggedized devices running Windows Mobile 6.5 and earlier OSs. As a legacy product, Lotus Expeditor is not evaluated in this research.

**Appropriate Use:** Worklight is best-suited for development organizations focused on multiple-device platforms and employing or utilizing an existing skill base in open technologies, such as Eclipse, HTML5 and JavaScript.

**Strengths**

- The acquisition of Worklight and activity in integration indicates a renewed vigor in IBM’s mobile platform strategy. Worklight gives IBM customers a flexible, extensible framework for both B2C and B2E mobile applications.

- Worklight is complemented by IBM’s overall portfolio of Web, cloud and connectivity capabilities.

- IBM has contributed substantially to W3C standards work (including co-chairing the HTML5 Working Group), PhoneGap and Dojo, all frameworks that are accommodated by Worklight.

- IBM is one of the largest SIs for enterprise mobility, with more than $1 billion in service revenue (a Gartner estimate); however, little of that is related to Worklight today. Gartner expects that Worklight will play a central role going forward.

**Cautions**

- IBM’s mobile product strategy continues to be complex and loosely integrated. Four of its major software brands — WebSphere, Lotus, Rational and Tivoli — own execution of parts of the strategy, and Gartner has observed that this segmented approach has proved problematic for customers.

- Worklight customer issues are typical of a platform from a small vendor: IBM will have to invest to bring the product up to the standards of IBM clients.

- Because Worklight was acquired only recently, the product has not been fully integrated into
IBM’s offerings and plans. IBM partners, sales, support and services will need some time to build more extensive Worklight experience.

- While flexible, Worklight’s support for third-party mobile frameworks for Web, hybrid and native applications can make multiplatform development, support and management more complex than some other approaches.

**jQuery Mobile**

jQuery Mobile is the mobile extension to the widely popular JavaScript RIA library. jQuery Mobile makes it possible to use HTML, JavaScript and CSS to build interactive mobile Web pages for a wide range of smartphones. Developers can also use PhoneGap with jQuery Mobile to create native mobile applications.

jQuery Mobile is part of the jQuery open-source project supported by the nonprofit Software Freedom Conservancy, thus it does not meet the financial criteria. jQuery and jQuery Mobile do not have a commercial distributor. The open-source community provides all code, enhancements and bug fixes. Project sponsors include Adobe, RIM BlackBerry and Nokia.

Appropriate Use: jQuery Mobile is best-suited for development organizations looking for a productive, open-source mobile Web framework, especially those with experience using jQuery to build desktop RIA applications.

**Strengths**

- jQuery Mobile is a very open framework; it is an independent open-source project based on HTML, JavaScript and CSS standards.

- Because jQuery Mobile extends the very popular jQuery framework, many developers will find it easy to learn and use.

- When used with PhoneGap, it is possible to build hybrid mobile applications with jQuery Mobile without licensing costs.

**Cautions**

- By itself, jQuery Mobile doesn’t provide support for native or hybrid applications, application management, legacy system integration, disconnected mode, etc.

- jQuery Mobile’s client-side architecture is best-suited for simple application requirements intended for its single-page architecture.

- The organization and team are community-based and open source (i.e., mostly volunteers who work for other companies), and there is no curated aftermarket.

**Kony**

Started in 2007 and based in Orlando, Florida, Kony is an MADP vendor that initially focused on consumer-oriented applications, subsequently growing its B2E capability. It provides a platform for client IT professionals, as well as for third-party SIs (such as Accenture, Cognizant, AT&T and IBM), to build multichannel, multiplatform applications for B2E and B2C. Unlike some of its competitors, Kony has not grown through acquisitions. Kony has shown strong revenue growth and the ability to win customers in a wide range of industries and countries.

The Kony MADP is a “write once, deploy to many” implementation that uses a loosely coupled architecture, which separates UI, business logic and data integration. The core of a Kony application is specified in a device-neutral format and then extended to take advantage of individual platform and device capabilities. Once fully specified, Kony’s MADP generates the final application by assembling the layers appropriate for the target device(s) and generating the appropriate HTML5, mobile Web, mixed-mode or native code.

Customers like Kony’s technical approach and professional services delivery, but want to see the vendor continue to improve the platform’s features and usability, and to build its partnerships with SIs.

Appropriate Use: Kony is well-suited for projects that require the use of native features on a wide range of mobile devices.

**Strengths**

- The vendor’s development environment enables applications to be built for all popular tablets, smartphones and feature phones, as well as for mobile and desktop Web browsers. This gives Kony one of the widest addressable audiences for its applications among vendors profiled in this research.
• Kony’s early focus on specific vertical industries (e.g., banking and travel) has won it a loyal base of clients in those verticals, and a deep understanding of the requirements for customer-facing applications for those enterprises.

• Kony is very committed to keeping up with the high rate of evolution in the mobile space, and provides service-level agreements guaranteeing support for new device and mobile OS releases within a specified period.

Cautions

• Most of Kony’s revenue comes from North America and most of its development and services employees are in India, so be sure to ascertain specific support details. Although there have been occasional support issues, resolutions have happened rapidly.

• In previous years, customers reported some challenges in adapting to Lua, Kony’s initial scripting language choice. The vendor has announced that it is adding JavaScript support to enable a multichannel native or Web application to be created using either Lua or JavaScript. Lua will continue to be supported, and Kony will also provide a Lua-to-JavaScript translator for those who want to migrate their previously written code to JavaScript.

Microsoft

Dating back to 2010, Microsoft’s launch of Windows Phone 7 broke backward compatibility with Windows Mobile 6.5 and signaled a significant strategy change. From a consumer perspective, this focus on making Windows Phone a great consumer product is critical for Microsoft. Windows Phone is widely considered a very capable OS, but is still in the early stages of penetrating the mass consumer market. Microsoft’s relatively small presence in the consumer tablet market and less activity in promoting Silverlight means that, overall, Gartner has observed a slowdown in interest in Microsoft’s mobile application development platform. On a more positive note, interest in Microsoft’s plans for Windows 8 is high and there is continued promise in its partnership with Nokia with the launch of the new high-end Lumia 900 and the low-end Lumia 610.

For enterprises, moving away from Windows Mobile 6.5 meant that many vertical enterprise applications lost their porting path forward. Windows Phone 7.5 and Windows 8 have added or announced enterprise capabilities, and new Windows 8 hardware concepts scheduled for the end of 2012 may help meet enterprise mobile use cases; however, it is noteworthy that several Microsoft ecosystem ruggedized vendor partners have begun porting to Android and that Motorola Solutions has launched Android-based products.

Appropriate Use: Microsoft is a solid choice for enterprises with a wide number of legacy mobile applications on Windows-based devices and for those that have significant investment in the Microsoft ecosystem, where they can benefit in markets where Microsoft is able to gain traction for Windows Phone 7 and/or Windows 8. For vertical applications, Gartner encourages clients to stick with Windows Mobile Embedded.

Strengths

• Microsoft has long-standing relationships with enterprise IT departments, a huge base of desktops/notebooks, a large installed base for enterprise mobile solutions and a growing base of Windows Phone devices/users in the smartphone market, including continued dominance of Windows Mobile Embedded in the ruggedized handheld market.

• Microsoft remains particularly attractive if an enterprise needs to custom code mobile applications that run on two or more Microsoft-based tablets, desktops, notebooks, smartphones and/or ruggedized devices.

• Microsoft remains very influential, and its Metro tile-based approach is gaining traction across Microsoft’s product line, including on the xBox, which gives leverage to developers wishing to target smartphones and gaming devices. The vendor has a huge .NET developer base, and some skills transfer to the compact .NET framework, lowering the learning curve for mobile support.

Cautions

• Uncertainly around the direction for Windows Phone 7, Windows Embedded Standard 7, Windows Embedded Compact 7 (Windows CE) and Windows Embedded Handheld (Windows
Mobile) has caused a number of OEMs and customers to move to the Android platform and other third parties.

- Microsoft lacks a support strategy for non-Windows-based offerings. Given its extremely small tablet and smartphone OS market share in 2011 and 2012, Gartner continues to observe only a small amount of developer interest in Microsoft tools for mobile application development. We are also observing rising interest in multiplatform tools by Microsoft-oriented enterprises.

- Enterprises are not yet able to embrace Windows Phone 7 fully as an enterprise application target, because this platform still does not meet Gartner’s minimum requirement for enterprise support.

Netbiscuits

Founded in 2000 and headquartered in Kaiserslautern, Germany, Netbiscuits expanded its portfolio to offer a cloud-based platform for the development of Web applications across mobile and connected devices.

The Netbiscuits cloud platform optimizes incoming requests from mobile applications — native and Web alike — according to the capabilities of the requesting device (for example, by supporting push-based couponing through texting, and hybrid applications using HTML5). Netbiscuits provides special Biscuits (similar to widgets) for all common content and functional elements of a website, including such areas as location, banners/ad networks and analytics. Each Biscuit has a special number of degradation levels, which ensures that the content of each individual Biscuit can be optimally adapted to virtually any end device. Netbiscuits provides a framework that groups end-device categories into multiple levels, and then leverages the Biscuits for rendering and customization. The framework supports devices ranging from tablets to touch smartphones to feature phones to Internet Protocol TV (IPTV) and gaming consoles. In 2011, Netbiscuits extended its toolset to take advantage of the local storage capabilities of HTML5, and introduced Tactile, a multitouch framework for smartphones and tablets.

Appropriate Use: Netbiscuits is a good fit to provide mobile media, commerce, advertising and marketing applications ranging from fully interactive and transactional mobile Web presences to one-off campaigns targeting a wide range of platforms, particularly suited for enterprises that prefer cloud-based deployment or delivery solutions.

Strengths

- Netbiscuits’ strong suit is in its B2C vision. Its framework covers multidevice HTML5 mobile Web application development and operation, device management, rich content applications, and rich media ads, as well as simple transcoding requirements and hybrid applications.

- There is flexibility in the choice of development tools, including NetBeans, Eclipse, Microsoft VS and others.

- Overall customer satisfaction on platform performance, customer care and documentation remains strong.

Cautions

- Netbiscuits did not grow as fast as some MADP vendors in 2011, despite significant investment. The company vision is focused on B2C; it is not a good option for mobile B2E applications.

- There is a potential for lock-in to Netbiscuits’ proprietary markup language, BiscuitML — less so when using the native HTML, CSS and JavaScript support from Netbiscuits Tactile.

Research In Motion

In the past year, RIM has repositioned its mobile application capability to further align with HTML5 and to recognize the massive interest in it not only for RIM’s devices, but also for its device OS competitors. Native application developers can choose between the BlackBerry Java Developer Environment plug-in for Eclipse, BlackBerry plug-in for Microsoft VS (Gartner has seen only modest uptake of this plug-in) and BlackBerry Mobile Data System.

RIM is in the process of transitioning its entire product family from BlackBerry OS to its next-generation OS, called BB10, which is based on the QNX OS and also features the new Cascades user experience. Native application developers can choose between the BlackBerry Java Developer Environment plug-in for Eclipse, BlackBerry plug-in for Microsoft VS (Gartner has seen only modest uptake of this plug-in) and BlackBerry Mobile Data System.

RIM’s BlackBerry PlayBook tablet uses the new PlayBook OS, which was updated to version 2
in February 2012 and features a new browser, HTML5/WebWorks support and an Android Player. This OS is based on QNX, and RIM’s plan is to further evolve it to get to the BBX OS. One of the critical elements to be added is the Cascades user experience. RIM positions the PlayBook environment as the best way for its developer ecosystem to begin developing for BBX today. Developing applications for RIM’s BlackBerry PlayBook tablet requires the QNX OS and associated environments.

**Appropriate Use:** RIM’s development SDK is a good choice for enterprises with a large installed base of BlackBerrys, and for applications targeting consumers using RIM’s products.

**Strengths**

- RIM remains an influential vendor for enterprise smartphones among government, financial services and other more-security-minded companies. BlackBerry-OS-based devices are still widely used by SMS-oriented and email-oriented consumer segments.

- RIM remains the gold standard for security, transport and battery life efficiency, as well as push and management on RIM devices, with BlackBerry Enterprise Server (BES) providing this and new features, such as a mobile voice system and collaboration extensions.

- Gartner has seen evidence of progress in RIM’s reports that it is focusing near-term investments on its developer support resources (e.g., its support portals and capabilities).

**Cautions**

- Today’s highly consumerized enterprise landscape makes single-platform application development increasingly unrealistic and will continue to force many BlackBerry-only enterprises toward other options. Mobile Fusion acknowledges this, but the problem remains for mobile application development — why would enterprises build with the single-platform RIM MADP?

- RIM’s platform transition is no small feat and several components have been delayed. The coming release of BB10 will begin to answer three major questions: Will The Astonishing Tribe (TAT)-/QNX-based platform win over consumers for smartphone applications? Will RIM score breakthroughs in tablets? Will BB10 also be adaptable for physical keyboards? All the while, RIM needs to make its IDE and tooling attractive to Web developers while taking advantage of TAT user experience. Clients are encouraged to track progress carefully and to demand a road map for development toolsets and ecosystem support.

  - The Android Player in the PlayBook OS has some API limitations, as applications have to be recompiled and potentially scrubbed for UI changes.

  - There will be a long-term risk to RIM if the new BB10 platform fails to be an economically and technologically interesting platform. RIM’s developer ecosystem will continue to be in transition as Web developers bypass RIM’s BlackBerry platform approach, which requires more-expensive third-generation-language (3GL) Java programming skills.

**salesforce.com**

Based in San Francisco, salesforce.com supports mobile application development through its Force.com application platform as a service (aPaaS) and Force.com APIs. Customers can create Web applications that are compatible with smartphone and tablet browsers using Visualforce, the Force.com Web application development tool. Visualforce applications (which offer capabilities beyond PhoneGap) do not require compilation for business logic changes, as is the case with hybrid architectures. Clients can also use Force.com APIs in applications built with other MADPs. Today, salesforce.com offers native mobile clients for its sales, service and social networking SaaS applications. The vendor announced plans to provide additional mobile applications later this year, and to extend Force.com to support hybrid application development in the future.

**Appropriate Use:** This vendor is best-suited for customers looking to extend their salesforce.com or Force.com applications to mobile users.

**Strengths**

- Basic mobile applications and the Force.com aPaaS and APIs are no-cost options for salesforce.com SaaS customers.

- Force.com provides a high-productivity development/deployment environment with
visual design tools, built-in integration with salesforce.com applications and solid aPaaS.

- The vendor’s customers can use jQuery, Sencha and PhoneGap as complementary tools to integrate with the salesforce.com platform.

Cautions

- The vendor’s approach to mobile development has shifted. Its current mobile clients were built using technology different from its recently announced touch.salesforce.com applications. Clients shouldn’t attribute the capabilities of salesforce.com’s current mobile applications to the planned touch extensions to Force.com.

- While salesforce.com has offered mobile applications since 2005, its mobile application suite and application development platform are limited when compared with its desktop Web offerings.

SAP

Last year was one of transition for Sybase within SAP’s technology portfolio. The early part of 2011 was marked with struggles around the SAP Unwired Platform (SUP) 1.0 release, which was launched in 2010 during Sybase’s transition into SAP. SUP 1.0’s lack of HTML5 support and lack of integration with SAP’s core systems meant that a significant upgrade was needed, and SAP launched SUP 2.0 in May 2011, featuring HTML5 support integrated with its Managed Business Object (MBO) interface. By September 2011, SUP 2.1 was released, and, in 4Q11, SAP launched a wide variety of its own mobile applications based on SUP 2.1. Related to SUP are SAP’s investments in its OData interface, which is an evolution from the Data Orchestration Engine (DOE) that had been a frequent interface used with not only SUP 1.0, but also with prior generations of SAP Mobile Infrastructure. Whereas SAP began 2011 with a relatively weak platform release and myriad mobile applications that were based on a wide variety of platforms, the year ended with improved alignment behind SUP and a move toward support for HTML5.

Sybase 365 experienced strong growth in 2011, particularly in mobile banking. SAP continued to evolve its partnerships in 2011, including an SAP-cobranded offering with Sylo for field service and enterprise asset management (EAM). In April 2012, SAP announced its intent to acquire Sylo, and has indicated that it will focus on Sylo’s applications, porting the Sylo Agentry platform to SUP. SAP also certifies Antenna, Spring Wireless, Neoris (for direct store delivery), Sky Technologies and other mobile partners (such as ClickSoftware). Also in April 2012, SAP announced partnerships with Adobe, Sencha and Appcelerator that will give SAP’s customers additional options for presentation-layer development, with the intent to integrate these application development tools with SUP middleware.

Appropriate Use: Use SUP for broad mobile initiatives, in conjunction with Afaria, in cases where SAP offers packaged mobile application support, and in conjunction with partners and/or presentation-layer frameworks when SUP’s own UI layer does not meet requirements.

Strengths

- SAP’s early bet on mobility (compared with other major independent software vendors [ISVs]) has been reinforced by organizational changes that place it on equal footing with other major SAP initiatives, such as HANA. SAP has one of the largest mobile development efforts, both in terms of devoted internal resources and partner management. Gartner observed partners actively integrating with SUP during 2011, and we anticipate that continuing in the long term.

- The vendor has the most flexible application development environment, offering plug-ins for Eclipse and Visual Studio, as well as a proprietary studio. SUP comes with flexible application connectors (business APIs, Remote Function Calls [RFCs], OData, DOE, partner interfaces) for many mainstream ERP/supply chain management (SCM)/CRM systems and databases, and an ability to create composite applications with input from multiple applications. SAP provides source code for its emerging application offerings.

- Sybase continues to have the broadest device support among all the multichannel vendors, and the strongest MDM offering, Afaria. While device management as an attribute of the MADP capability is fading, compared with multichannel and Web support, it remains a key differentiator for SAP, because it gives the vendor an additional touchpoint into an increasing number of IT organizations, as it tries to address the growing issues around MDM.
• SUP has a widening support base. SAP’s sales and consulting channel provides SUP and Afaria products with significant market traction and a consulting force to support it. Several partners, such as Syclo and Sky Technologies, are now integrating their mobile platform offerings with that of SUP.

• The Sybase 365 platform is scaling well in mobile banking, especially in emerging economies. It has a large global reach, touching 140 mobile operators directly and an additional 850 operators through its reciprocal agreements. SAP’s mobile messaging offering is best-of-breed, with strong database/interface support, global reach, campaign management and prebuilt application modules.

Cautions

• SAP’s strategy is complex and its ambition for driving SUP across all of its product lines and to its partners is a multiyear project. There remains confusion in product and platform positioning: Gartner has observed active projects dating back to SAP’s prior NetWeaver-based mobile platforms as SAP sells both platforms, depending on the customers’ needs and environments.

• Overall customer feedback on SUP is that it still has a higher-than-average industry learning curve and that SUP 2.1 is still maturing (for example, in the area of testing capabilities).

• Because many of the product sets are in flux, enterprises should examine each mobile offering’s heritage (for example, the SAP Mobile Defense and Security [MDS] 1.6 and Mobile Direct Store Delivery applications are based on SAP’s legacy Mobile Infrastructure [MI] platform), and ask for integration road maps and guarantees of support.

• SAP’s mobile pricing is often high, so be prepared to negotiate.

• The integration of Syclo will take at least one to two years, and the partnerships with Appcelerator, Sencha and Adobe are nascent. Expect that platform road maps will experience significant modification as SAP begins to execute the next phase of its mobile strategy.

Sencha
Located in Redwood City, California, Sencha’s approach to application development is a leading example of a Web-centric approach to mobile application development. In contrast with native code cross-compilers, such as Kony and Appcelerator, the Sencha Touch application development framework is based on HTML5. It includes its own implementations for geolocation and storage. Sencha Touch is separate from Sencha’s Ext JS, a cross-browser framework for desktop application development. In April 2012, the vendor announced a partnership with SAP so that SAP customers can use Sencha Touch to build and integrate with SUP.

Appropriate Use: Sencha will be attractive to IT organizations and ISVs that have a lot of Web application and JavaScript development expertise, and little native development expertise.

Strengths

• Sencha fits best with developers whose predominant mobile application needs are for mobile Web architectures, as opposed to native (e.g., app store), as well as applications that need more complex integration with the OS.

• There is large amount of interest and activity around Sencha among enterprises (including retail brands) that prefer to control the user experience.

Cautions

• Sencha’s fortunes will be tied tightly to the adoption and further maturation of HTML5. Using Sencha does not eliminate the need for extensive testing across the technology stacks of browser and device manufacturers.

• For hybrid applications, Sencha developers will now need to decide between Sencha Touch 2, writing native wrappers or using other tools, such as PhoneGap.

• Sencha is one of the smallest vendors evaluated for this Magic Quadrant, in terms of the number of employees and revenue.

Spring Wireless
Spring Wireless has become one of the world’s largest mobile software providers. It has more
than 400 customers and data centers on three continents that serve more than 400,000 B2E users and 2 million B2C users. The vendor hopes to accelerate its expansion into North America and Europe in 2012, with new headquarters in Reston, Virginia, a new American CEO, and increased investments in sales and marketing.

Most of the vendor’s revenue is derived from the sale of vertically oriented mobile SaaS applications. The primary users of the Spring Wireless MADP are its own personnel, developing standard and custom applications for clients; however, the vendor is expanding relationships with third-party SIs and is seeing more customers use the MADP for their development projects. To create an application migration path, Spring Wireless plans to add JavaScript support to its MADP in 2012.

**Appropriate Use:** The vendor’s mix of prebuilt applications and broad support of mobile devices, along with its ability to stretch to meet B2C requirements, makes it an attractive option, especially for companies in the consumer products, life sciences and financial services industries.

**Strengths**

- Spring Wireless has a strong hosted technology platform with a robust application development platform and decent management/security tools. However, it remains to be seen whether the planned JavaScript support will be disruptive for clients.

- The vendor offers prebuilt applications for a range of vertical industries and a development environment for customizing them to fit an organization’s needs.

- Spring Wireless has extensive experience with the intricacies of building and supporting mobile applications in South America.

**Cautions**

- Customer reference scores are mixed, with some reports of delays in projects and a lack of product documentation.

- Spring Wireless remains in the early stages of geographic expansion beyond its current geographic base — enterprises need to scrutinize further as the vendor ramps up its partners and support in new geographies.

- Spring Wireless is currently primarily a mobile SaaS application vendor. Customers looking for an application development platform, rather than applications, should carefully evaluate how the vendor will support their needs.

**Syclo**

Syclo is one of the long-standing vendors in Gartner’s MADP Magic Quadrants. The vendor has long specialized in field service and EAM applications deployed on ruggedized devices and laptops; however, during the past few years, the vendor has broadened its Agentry MADP to reach all the popular mobile OSs, and it is now used in a much broader set of applications and deployed to a much wider set of devices. Designed as a write-once, deploy-many hybrid client-style solution, the platform provides a rich set of development, integration and management tools. The MADP is sold as licensed software for on-premises or hosted deployment.

Syclo’s customer references remain strong. Customers liked the cross-platform support and integration with SAP ERP, but noted some issues with coordinating the two vendors and some confusion on their future relationship. Syclo continued to show good revenue growth in 2011.

In April 2012, SAP announced its intention to acquire Syclo. This transaction is scheduled to close after the publication of this research. Gartner advises its clients to use client inquiries in addition to this research to receive the most up-to-date information regarding the status of the acquisition and integration.

**Appropriate Use:** Syclo is strongest for enterprises with EAM and field-service-based users, particularly SAP or IBM Maximo EAM customers with short deployment time frames, and also when prebuilt templates are available.

**Strengths**

- Syclo has strong applications for EAM and field services, as well deep integration with SAP and other packages. Time to production for Syclo-based implementation remains very fast relative to its competitors.

- Agentry, Syclo’s MADP, is a proven, scalable platform for B2E applications that now includes support for many B2C requirements. Agentry’s strength is in supporting hybrid applications.
that behave much like native applications as well as Web-oriented implementations.

- Syclo has very strong channel partnerships, including SAP, IBM, and numerous smaller system integration and software companies.

- Syclo was one of the first vendors to align with SAP’s future road map for application partners. This has helped Syclo maintain momentum, even in the face of changes within SAP’s road map.

Cautions

- For SAP customers, the Syclo/SAP cobranding gives them “one throat to choke,” and gives Syclo an advantage in remaining aligned with SAP’s product road map. The announced acquisition by SAP is the first step in reconciling its investment in Sybase with the Syclo relationship. Enterprises investing in the Syclo MADP for SAP installations need to ask for integration and migration plans, because SAP indicated in its announcement that Syclo’s applications and platform will be migrated to SUP.

- Despite lower integration costs, Syclo license costs are significantly more expensive than the lighter-weight, more-rich-client-focused vendors.

- While Syclo has improved the presentation layer generated by Agentry, that layer is still best-suited for B2E. This, coupled with the fourth-generation-language (4GL) nature of the toolset, may not give some native and Web programmers enough flexibility to select Syclo as a primary tool. Syclo has expanded its support of B2C scenarios, but most of its revenue continues to be related to B2E applications. Be sure to ask for references in these new areas.

Usablenet

Usablenet was founded in 2000 and is located in New York, with additional offices in Italy, London, Los Angeles and Brazil. The vendor’s focus is to provide a platform that allows its clients to use current content and websites to deliver a mobile Web experience. In 2011, Usablenet opened its Web services for integration with third-party native clients or with native clients developed by Usablenet professionals using native toolkits. Usablenet’s platform is cloud-based and supports several content inputs (including HTML4, HTML5, JavaScript, Ajax and Dojo), websites, Web services (SOAP, representational state transfer [REST] interfaces, JavaScript Object Notation [JSON]), APIs and XML. Output from the Usablenet cloud development platform includes mobile websites and mobile Web applications. The vendor provides Web application frameworks for Facebook, kiosks, tablets and smartphones.

Appropriate Use: Usablenet is strongest when there are predominantly mobile Web requirements for B2C applications and a preference for outsourcing to a cloud-based platform.

Strengths

- The vendor has a strong client base in the retail and travel industries, and had very strong growth in revenue in 2011.

- Usablenet has partner arrangements with companies such as PayPal and Google.

- Usablenet clients can do their own development on the Usablenet development cloud or can have Usablenet develop applications for them via its professional services, and/or a mix of both.

Cautions

- Usablenet caters more to situations in which developers are attempting to leverage existing Web content, Web services, APIs and XML feeds, rather than building new mobile business logic from scratch.

- Usablenet’s platform does not generate native mobile applications automatically.

- The vendor’s business model is based on pages served, even for native mobile application support, and will require an ongoing operating budget.

Verivo Software

Verivo Software started as a provider of mobile applications to financial services companies and expanded its offerings via a broad platform approach, specializing in lightweight, native
client-side applications. The vendor has devoted significant resources to building support for the popular smartphone OSs, including Android, RIM, iOS and Windows Mobile, using 4GL tools and cross-platform scripting. Additionally, Verivo enables visual/functional elements to be shared across platforms (such as cover flow), which helps provide consistent, but native, user experiences across platforms.

**Appropriate Use:** Verivo is a good choice for enterprises with requirements for a large number of device types and platforms, rapid business changes, and limited development resources.

**Strengths**

- Verivo has an innovative graphic application generation studio and HTML data integration capabilities, coupled with iPhone, Android, Windows Mobile and RIM client support that customers find very productive.

- Rich-client user experience and support remain best in class. This has enabled the vendor to win B2E and B2C clients, and its vision for enterprise-wide use of the platform for customer-facing and employee-facing applications remains strong.

- Verivo has expanded its platform to include a full data synchronization engine, filling a key need for customers building thick-client applications that require significant offline functionality (e.g., field service applications).

- Verivo continues to price aggressively, with a per-CPU, not user- or session-based, pricing model.

**Cautions**

- Although the vendor recently raised $17 million of venture capital and is expanding its staff, it remains one of the smaller commercial mobile application development vendors covered in this Magic Quadrant. As a result, its support for customers outside North America may be less established than other vendors.

- Customer reviews are mixed. Customers appreciate how quickly they can build compelling applications for multiple smartphone platforms, but some have encountered issues with architectural limitations and quality. As always, checking references is important before committing.

**Vendors Added or Dropped**

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor appearing in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. This may be a reflection of a change in the market and, therefore, changed evaluation criteria, or a change of focus by a vendor.

**Added**

As this is the first year of the combined Magic Quadrant for MADPs, all of the vendors are new to the Magic Quadrant. However, most of the vendors in this Magic Quadrant were previously profiled in at least one of the four predecessors to this research:

- “Magic Quadrant for Mobile Enterprise Application Platforms”
- “Magic Quadrant for Mobile Consumer Application Platforms”
- “MarketScope for Ajax Technologies and RIA Platforms”
- “MarketScope for Packaged Mobile Application Platforms”

**Dropped**

- Motorola Solutions acquired RhoMobile and was included in the mobile enterprise application platform (MEAP) Magic Quadrant, but didn’t meet our inclusion requirements for this Magic Quadrant. Two vendors from earlier Magic Quadrants, Pyxis Mobile and Nitobi Software, have been included in this Magic Quadrant with some changes: Pyxis Mobile changed its name to Verivo Software, and Nitobi was acquired by Adobe.

- Airclic, Blackbay, Blue Dot, ClickSoftware, Cognito, HP-Palm, InfoGin, mBlox, Nokia, , Service2Media, Sky Technologies, Tensing, TotalMobile, Trimble, TrueContext, Velti (formerly Air2Web), Wonderware and Xora were included in either the 2011 mobile consumer
application platform (MCAP) Magic Quadrant, or the packaged mobile application platform MarketScope, but didn’t meet our requirements for this Magic Quadrant.

- Backbase, Canoo Engineering, DevExpress, ICESoft Technologies, Infragistics, Isomorphic Software, Oracle, Prototype/script.aculo.us, Telerik, Tibco Software, Vaadin, and Yahoo were included in the 2011 RIA/Ajax MarketScope, but didn’t meet our revised scope and inclusion requirements for this Magic Quadrant.

Inclusion and Exclusion Criteria
This year, we updated our criteria to reflect the growth, convergence and consolidation of the market. Included vendors met minimum criteria for:

- Market traction. With the exception of open source projects, 2011 revenue must be greater than $15 million (€12 million). Open-source projects must demonstrate broad industry adoption and Gartner inquiry volume on par with the commercial vendors included in the Magic Quadrant.

- Organizational scale. Commercial vendors must have 125 direct employees.

- Financial viability. Commercial vendors must be profitable or have sufficient sales in their pipelines and cash reserves to guarantee viability for 12 months.

- Global. Commercial vendors must have significant revenue in at least two regions of the world. Open-source projects must have significant installed bases in more than one region.

- Intellectual property. The vendor must have dedicated research and development resources, and thus control of product direction for the mobile development environment. Open-source projects are considered based on the amount of independent developer activity. Firms that don’t own the intellectual property rights to their MADPs are excluded.

- Enterprise use. Only MADPs used by enterprise customers for custom development are included. Platforms used solely by consulting or packaged application vendor employees are excluded.

- Multidevice support. Products must support a range of devices, preferably in at least two of the following categories: smartphones, PDAs, media tablets, tablet PCs, notebook PCs, kiosks, ruggedized mobile devices.

- IDE. Vendors must offer a mobile-oriented IDE or mobile plug-in to a standard IDE, like Eclipse.

- Demonstrated fielded support for disconnected application usage; at a minimum, through HTML5 local storage.

Evaluation Criteria
Ability to Execute
Product/Service: Do the vendor’s mobile server software, client software, application development toolkits, application management capabilities, and device security and management capabilities meet the buying requirements of enterprises? Does the vendor include a cross-platform capability to support OS/device diversification? What is the quality of the toolset, range of devices and quality of user experience? How well does the vendor support both consumer-oriented and enterprise-oriented mobile applications? Does the vendor also supply packaged mobile applications? If so, are they well-integrated and supported by the MADP’s integration and debugging capability? How does the vendor address software requirements it does not directly supply?

Overall Viability: To qualify, small vendors need to be profitable or nearly profitable, and/or need to have cash on hand to finance one year of operation. For large vendors, continued commitment from upper management for mobile capabilities and overall company financial well-being are considered. For open-source projects, we considered the strength of the community responsible for developing and supporting the project, the project sponsor relationships, and the number of enterprises and developers using the software.

Sales Execution/Pricing: Factors include numbers and geographic dispersion of inside/outside sales, partnering and the level of local sales support for resolving issues. Also important are value-added reseller (VAR) and SI relationships, carrier partnerships, and ongoing application developer relations. Vertical strategies and customers play a role in this criterion, as do pricing models and TCO.
Market Responsiveness and Track Record: How long has the company been in the mobile enterprise application market, and, in particular, how has it innovated? How has the company responded to the maturation of the market and its changing requirements? Is the company growing at, or faster than, the market rate?

Marketing Execution: Has the company successfully marketed mobile tools or capabilities to specific vertical industries, locations and IT buyers? What is the strategy based on — device, software or SI channels? What is the level of market awareness of the company’s mobile enterprise offering? How does the company work with its partners to create a healthy ecosystem?

Customer Experience: Along with the core product category, this category carries the highest weight and requires actual customer and partner experience (for example, from IT organizations, lines of business and end users) for the entire engagement life cycle of mobile applications — from initial contact through to sales, procurement, development, integration, deployment and support. Given that many customers interact more with the VAR and/or the SI than with the software vendor, this category also takes into account the vendor’s choice of partners and any ongoing partner evaluation/certifications.

Operations: Has the company successfully scaled its business geographically? In many cases, MADPs need to be able to support multinational deployments. How does the company support vendor partners, training centers and developer relations? How well-run are the sales, marketing, finance, research and development, testing, system integration, help desk, and other key functions? Are proper quality assurance processes in place? (See Table 1.)

### Table 1. Ability to Execute Evaluation Criteria

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/Service</td>
<td>high</td>
</tr>
<tr>
<td>Overall Viability (Business Unit, Financial, Strategy, Organization)</td>
<td>high</td>
</tr>
<tr>
<td>Sales Execution/Pricing</td>
<td>standard</td>
</tr>
<tr>
<td>Market Responsiveness and Track Record</td>
<td>standard</td>
</tr>
<tr>
<td>Marketing Execution</td>
<td>low</td>
</tr>
<tr>
<td>Customer Experience</td>
<td>high</td>
</tr>
<tr>
<td>Operations</td>
<td>low</td>
</tr>
</tbody>
</table>

Source: Gartner (April 2012)

Completeness of Vision

Market Understanding: Does the vendor understand both consumer and enterprise ecosystems? A longer-term vision of mobile application development functionality, including vertical industry understanding, unified communications (UC), location and presence, are also important factors. Service provider relationships are factored in as well.

Marketing Strategy: This entails a market understanding of the requirements for B2C and B2E scenarios, and customer, mobile and application development trends. It also entails the company’s ability to create broad awareness and differentiation for its offerings.

Sales Strategy: This involves the sales approach, including sales process, the number and type of sales professionals, their geographic spread, and vertical markets focus. For this criterion, we also evaluate the sophistication of the sales teams and the scalability of the sales model. This category seeks to take into account partner strategies and how they will relate to future sales efforts. For open-source projects, we evaluate the project’s viral approach.
**Offering (Product) Strategy:** Does the road map for the product reflect the market’s direction and the likely requirements of buyers in 18 to 24 months? Does the history of the product reflect steady improvements and growth in functionality? Has the company built or acquired the pieces necessary to maintain product relevance/leadership? Does the company seek to address additional client requirements? How well does the platform support the full application life cycle?

**Business Model:** This criterion evaluates the vendor on its ability to balance the need for company and product agility with the need for leadership in the market. How does the vendor’s focus reflect future market conditions and requirements? How will hosting, partnerships and services affect growth? Does the company’s business model prevent it from being a Leader in the future?

**Vertical/Industry Strategy:** Does the vendor add extra value through focused packaged mobile applications in growth vertical industries? Is the vendor able to articulate a strategy for vertical differentiation, and can it maintain that position? Has it identified horizontal applications that span multiple vertical industries, and can it capitalize on those applications across the customer base?

**Innovation:** Does the company have a compelling technical story that supports a compelling business proposition? Is the company a trendsetter in mobile applications, or a follower? Does it have an ambitious technical direction that will enable it to deliver ongoing product enhancements faster than its competitors? Does the company provide input for or participate in standards bodies? We also consider intellectual property positions; however, Gartner does not give legal advice.

**Geographic Strategy:** Does the company have a strong plan for supporting customers and growing business worldwide? Is the company strong in marketing and sales activities in at least two regions? What is its track record for multilingual support, including products, sales and partners? What are its international expansion plans, and do those plans mirror the regional market maturity rates that Gartner expects? For open-source projects, we evaluate the international distribution of project users. (See Table 2.)

### Table 2. Completeness of Vision Evaluation Criteria

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
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</thead>
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<tr>
<td>Market Understanding</td>
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<td>Marketing Strategy</td>
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<td>Sales Strategy</td>
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<td>Offering (Product) Strategy</td>
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<td>Business Model</td>
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<td>Vertical/Industry Strategy</td>
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<tr>
<td>Innovation</td>
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</tr>
<tr>
<td>Geographic Strategy</td>
<td>low</td>
</tr>
</tbody>
</table>

Source: Gartner (April 2012)

#### Quadrant Descriptions

**Leaders**
As this market reaches early mainstream, Gartner expects Leaders to be profitable, and must present lower risk and consistently high project results as the market begins to consolidate and competition grows. Leaders must not only be good at cross-platform development/deployment, but also must have a good vision of the multichannel enterprise, support for standards, a solid understanding of IT requirements, and scalable channels and partnerships to market. Leaders also must provide platforms that are easy to purchase, program, deploy and upgrade. Leaders can focus primarily on either B2C or B2E, but vision and execution scores are higher for vendors that can cover both use cases today.

**Challengers**
Challengers in this market must have high numbers of enterprise clients; a large, growing base of seats in deployment; and the ability to meet the needs of all departments in global rollouts. Challengers offer a complete software suite that has all the required functionality and is scalable for large numbers of users. They are vendors with a history of execution in the market. Challengers may lack in marketing, or in strong technical or business vision — especially in the areas of diversity, future convergence with Web technologies and multichannel support — or may have lingering gaps or confusing overlaps in products or channels to market.
Visionaries
Visionaries in this market have a compelling vision of their products’ and the market’s future, as well as the technical direction to take them there. However, they have not backed up that vision in one of these areas: history of execution (especially long-term customer satisfaction), size of client base, extensiveness of production installations, low TCO (which may indicate immaturity in parts of their offerings) or strong financial results.

Niche Players
Niche Players in this market are not as strong in one or more of these criteria: product breadth/completeness or focus, geography, number of customers. Although they may be a good choice for a particular project, they are not well-suited as a broad platform for all types of projects. Gartner suggests pairing some Niche Players (such as single-platform-focused vendors) with hybrid or Web-oriented approaches to assemble a more complete solution. Enterprises need to ask Niche Players in this market to show how they will remedy their shortcomings through partnering or integration, and investment in Niche Players should be considered on a project-by-project basis.

Context
This year is one of significant change for Gartner’s coverage of mobile application development. As a result of the evolution of the market, we combined the overlapping Magic Quadrants and MarketScopes for four areas into this consolidated Magic Quadrant. From 2007 through 2011, Gartner observed four distinct buying patterns and organized our research around them:

- MEAPs for custom B2E applications
- Packaged mobile application platforms for packaged B2E applications
- MCAPs for B2C applications
- Ajax/RIA platforms with mobile application support for all types of applications

During 2010 and 2011, we observed convergence in user requirements and vendor approaches. Many clients were looking for a single platform that would address all their mobile needs. Many MCAP and packaged mobile application platform vendors began claiming to provide MEAPs, and vice versa. RIA development tools made significant inroads into mobile application development, showing up on a large number of client shortlists. Vendor technology approaches also began to converge, especially the use of HTML5, JavaScript, CSS3, and cross-compilers. Finally, some vendors began to make acquisitions to enter adjacent markets and reposition themselves as general-purpose MADPs. Hence, in 2012, we reoriented our research around the converged set of requirements, and produced this single, consolidated Magic Quadrant for MADPs.

This Magic Quadrant is scoped to address the needs of Gartner clients and to augment the advice given during our client inquiries. Some typical inquiries that this Magic Quadrant is designed to support include:

- Can you help us understand the platforms available for building, deploying and managing mobile applications to consumers? Business customers? Employees?
- Are there options for creating media tablet applications besides native development?
- Which vendors can help us create native and Web-based experiences on smartphones and tablets?
- What role will HTML5 and rich (hybrid) application support play in the future of mobile application development?
- Why shouldn’t we just undertake separate development projects, each aimed at mobile Web, Apple iOS, Android, RIM BlackBerry, Windows Phone, Samsung bada or other OSs?
- Are cross-compilers that generate mobile-OS-specific code a viable platform choice?
- Are there tools that will enable us to build both mobile Web and native applications?
- Must our organization continue to treat mobile development for ruggedized devices as a separate skill set? Why can’t consumer-grade platforms be used instead?
- How do mobile application development tools integrate with other application infrastructure and applications during development, in server environments and on client devices?
• How do mobile application development tools and platforms relate to previous investments in e-commerce, portals and websites?

Gartner’s Approach

The market for MADPs is complex. A team of analysts conducted a rigorous market evaluation, beginning with a pool of approximately 110 vendors, and we then sent surveys to the 61 vendors that looked most promising and found that 22 met our inclusion criteria. We opted to include vendors supporting different mobile application development approaches, because Gartner client inquiries show that enterprise buyers consider them as alternatives.

Given the wide range of vendor technologies, business models, histories, etc., it’s not surprising that vendors have widely differing strengths, weaknesses and visions for this market. Our evaluation is based on the converging enterprise requirements for a single platform capable of supporting B2C, B2B and B2E scenarios, today and in the future.

When using this research, there are a number of important points to keep in mind:

• As with all Magic Quadrants, vendors in the Leader’s quadrant are not necessarily the “best” for all purposes. Depending on your needs, a vendor in any quadrant could be the best for your enterprise. For example, if you only need to build applications for the Apple iPad, a Niche Vendor, such as Apple, may be your best choice. Our rating is based upon a specific set of criteria, and may not match those of your organization.

• There are many vendors that have mobile application development offerings, but did not meet our inclusion requirements. This does not mean they shouldn’t be selected. Depending on your requirements, some of these vendors may be good candidates for your mobile application development needs: 3Cinteractive, Airclic, Akamai, Amazon, Ansca Mobile, appMobi, Augme Technologies-Hipcricket, Backbase, Blackbay, Blue Dot, Canoo Engineering, Catavolt, ClickSoftware, Cognito, DevExpress, Digby, Genuitec, HP-Palm, ICESoft Technologies, Infogin, Infragistics, Isomorphic Software, Jade Software, July Systems, Magic Software, mBlax, mobc3, Modo Labs, Motorola Solutions, Nokia, Openstream, Oracle, PocketMobile, Prototype/script.aculo.us, Retriever Communications, Samsung, Service2Media, SK C&C, Sky Technologies, Synactive, Telerik, Tensing, Tibco Software, TotalMobile, Trimble, TrueContext, Vaadin, Wonderware, Xora, Yahoo.

• Some platforms may be more suitable based on what is a better fit with your organization’s skill sets. Consider the match between the skills you have on hand and those required by each MADP you evaluate. Enterprise customers typically have one or more of the following in good supply:

  • Traditional developers familiar with Java or .NET programming languages
  • Technical business analysts who prefer high-level 4GLs and form builders
  • Web developers and designers who are proficient with JavaScript, HTML and CSS

• Despite market consolidation, the MADP market continues to evolve rapidly. In addition, the evolving nature of mobile applications and infrastructure makes it difficult for an enterprise to select a strategic MADP vendor. Concentrate on finding a development platform that will satisfy most, if not all, of your short term needs and be prepared to re-examine your choice every few years.

Gartner expects that many enterprises will need to use more than one MADP during the next three years to meet all their requirements, so look for platforms that work together and/or have healthy ecosystems. In our evaluations, we only considered what the vendor could directly offer, but outside tools could greatly enhance the value of a vendor’s MADP.

How Enterprises Evaluate MADPs

Enterprises consider the following when evaluating MADPs:

• **Device/OS platform support** — The range of target devices, OSs and peripherals supported by the MADP, especially smartphone and tablet support.

• **Platform TCO** — The total cost of building, deploying, managing and enhancing applications, including the cost of the platform,
required infrastructure, professional services and staff time, plus any associated client or network costs.

- **Application sophistication** — Clients often look to match the look, feel and capabilities of the best commercially developed applications on each platform.

- **IDE and tooling** — Requirements management, “what you see is what you get” (WYSIWYG) UI editors, code authoring and debugging, source code control, configuration management, quality and testing tools. Many clients look for Eclipse IDE integration.

- **Management and security** — The ability to manage and secure applications and data on mobile devices, including private app store support.

- **Application integration** — Integration to enterprise back ends for data, content and transactions, and integration with external services for in-application billing, advertising services, etc.

- **Native client** — The ability to publish applications to app stores, run in disconnected mode and access native device capabilities, such as cameras.

- **Cloud and hosting** — Whether the solution can be deployed in a hosted or cloud model.

- **Packaged mobile applications and templates** — Prepackaged software or code that cuts the time to deploy typical applications customized for the client’s needs.

- **Architectural flexibility** — The ability to support Web, hybrid and native application deployment models, because no single model is ideal for all applications.

We rated vendors based on these requirements in the context of B2C and B2E scenarios in this Magic Quadrant.

**Stakeholder Perspective**

CIOs and senior leadership, enterprise architects, and application developers see mobile application development from different perspectives, and tend to favor different MADPs as a result:

- Mobile application development can be a boon or a curse for CIOs. Successful mobile application projects can demonstrate the business value of IT by creating new business opportunities, enhancing customer intimacy and improving employee productivity. However, mobile application development poses unique technology, skill and process challenges that can lead to failure.

- Mobile application development challenges enterprise architects to balance the strategic appeal of emerging mobile technology standards, such as HTML5, against their incomplete support “in the wild” and the tactical needs of today’s mobile projects.

- Mobile application development challenges application developers to learn new skills and take on new challenges. Some Web-oriented developers struggle to see mobile application development as anything but an incremental bolt-on to desktop Web application development. Developers with deep skills in more-traditional development platforms (notably Microsoft and Adobe), often prefer to work within the mobile limitations of their current tools; rather than to learn new ones.

- This Magic Quadrant is weighted most heavily toward the concerns of CIOs. They are ultimately responsible for supporting business innovation through mobile applications and will be judged on the success or failure of their mobile strategy. That said, CIOs should not choose a MADP in a vacuum. Enterprise architects, application developers and others must buy in to the decision at a visceral and career level if the effort is to succeed.

**Market Overview**

The MADP market continues to be largely distinct from the larger application development tools market, because developing mobile applications for enterprises presents unique challenges. Specifically:

- Each mobile OS has a unique presentation style, interaction style and software stack.

- Devices have different screen sizes, input modes and hardware capabilities.

- New devices and OS versions are introduced multiple times per year.
• Network connectivity and power levels fluctuate widely in typical usage scenarios.

• New consumer applications regularly extend and revise the standards for good mobile applications.

Designers have to make complex trade-offs between native, hybrid and Web-oriented mobile architectures. From 2003 through 2009, Gartner observed that the majority of high-value mobile applications were written as native, but that began to change around 2009 as techniques for wrapping Web technologies emerged. These techniques create hybrid mobile applications (wrapped applications, where the container is native code, but the experience leverages the WebView capability of the OS) or as mobile Web applications. In addition, some Web-oriented applications began to offer HTML5 features, such as advanced rendering and local storage, that previously were only available within the native style.

This caused a rapid shift of focus for many enterprises toward Web-oriented techniques — so much so that, based on our surveys conducted in 2011, 40% of enterprise application developers were still targeting native first for a variety of reasons (such as performance and disconnected mode). This migration will continue for two to three more years, and we predict that, by 2015, 80% of all mobile applications developed will be hybrid or mobile-Web-oriented. MADPs are chosen based on the capabilities they bring in supporting one or more of these modes.

These complexities drive higher costs in every phase of the application life cycle:

• Designers must design applications flexible enough to adapt to multiple device types as well as network and power conditions.

• Developers often must write OS- and device-specific code to meet business requirements. Worst case, they write entirely separate code with different programming languages and unique device, OS, database and middleware calls for each target mobile device.

• Quality engineers typically have to test a wider set of use cases than for Web and traditional applications. Worst case, they certify an application for thousands of mobile devices, on multiple networks, in a wide variety of conditions.

• Operations managers must often use multiple, nascent tools to deploy and manage mobile applications.

• Security managers must cope with a wide variety of mobile OSs, devices and networks, as well as the frequent theft and loss of devices.

MADPs can significantly reduce the cost and complexity of mobile application development by:

• Providing designers with flexible frameworks that automatically adjust to multiple device formats and OS-specific presentation and interaction styles. Some MADPs also make it easier to build applications that adjust to different network and power conditions.

• Providing developers with write-once, deploy-many tools to boost code reuse across multiple devices and OSs. Many MADPs also provide tools that simplify integration of mobile applications with enterprise applications. Some MADPs even provide specialized 4GLs and prebuilt applications and templates to further reduce development costs.

• Pretesting clients and components for a wide range of deployment scenarios to eliminate the need to test different scenarios.

• Providing integrated software asset management tools for deploying and managing applications.

• Providing built-in security components for authentication and encryption, as well as integrated tools for controlling application and data access.

MADP vendors generally deliver one of three types of technologies to the market:

• Native toolkits, like Apple’s iOS development toolkit, enable the development of native applications for a single mobile OS platform.

• Web toolkits, like jQuery Mobile, enable the development of Web-based applications that perform well in Web browsers for various mobile OSs and devices.

• Cross-platform suites, like Antenna AMP, enable a single application to execute on multiple mobile devices, using device- and OS-specific client applications.
While these three different types of technologies require very different investment, skills, etc., enterprise’s often evaluate them side by side when selecting their MADP, because each has its own strengths and weaknesses:

- Native toolkits provide the most capability for a particular OS platform, but they are limited to only one OS platform.

- Web toolkits are inherently multiplatform and leverage standard Web skill sets, but have performance and interaction style limitations, lack feature phone support, and require a strong network connection. By using wrapper tools, like Adobe’s PhoneGap, Web toolkit applications can be compiled into OS-specific hybrid applications for high-end smartphones and tablets; can access OS-specific functions; and can run in a degraded mode when no network connection is available.

- Cross-platform suites are optimized for quickly developing applications that run on a wide variety of mobile OSs and devices, but without the limitations of Web toolkits. Some can even generate mobile Web, native and hybrid applications from a single set of code. Cross-platform suites tend to address application design, integration, testing and management more extensively than native and Web toolkits. However, cross-platform suite software is typically much more expensive and requires that application development staff learn more proprietary skills than for native and Web toolkits.

Many enterprises start out developing customer-facing mobile applications, using a native or Web toolkit as their development platform. Others have long histories building employee-facing applications with an MADP from pure-play vendors. As the demand for mobile applications grows and requirements emerge for both customer-facing and employee-facing applications on all types and brands of mobile devices, enterprises often move to more-comprehensive MADPs that promise “write once, run anywhere” development and efficient application management.

MADP vendors fall into five somewhat overlapping categories, each of which has advantages and disadvantages:

- OS platform and device vendors, like Google and RIM, look to encourage application development for their products.

- Pure-play MADP vendors, like Syclo, primarily provide mobile application development tools, services, applications and templates.

- Mobile application vendors, like Spring Wireless, primarily provide mobile applications, but make the underlying platform available to customers.

- Enterprise software vendors, like SAP, provide MADPs that are integrated with their broad product portfolios, extensible to competitor products and for independent applications.

- Open-source projects, like the Dojo Toolkit, provide basic frameworks augmented by community intellectual property and support.

Competition is driving most vendors toward providing the enterprise ideal for an MADP, namely one that is comprehensive, standards-based, and write-once, deploy-many. For enterprise software vendors, mobile application vendors and open-source projects, that means expanding their product offerings to provide a more complete package for enterprises. For pure-play vendors, it means supporting Web deployment and incorporating standard languages, like JavaScript, in their platforms. Perhaps not surprisingly, OS platform and device vendors are less interested in providing developers with a multiplatform escape route. With the exception of the OS platform and device vendors, we expect vendor MADP offerings to look increasing alike, over time, as they pursue a converged set of enterprise requirements.

Additional analysis provided by Van Baker and Gordon Van Huizen

Evaluation Criteria Definitions
Ability to Execute
Product/Service: Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets, skills, etc., whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.
Overall Viability (Business Unit, Financial, Strategy, Organization): Viability includes an assessment of the overall organization’s financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue investing in the product, to continue offering the product and to advance the state of the art within the organization’s portfolio of products.

Sales Execution/Pricing: The vendor’s capabilities in all pre-sales activities and the structure that supports them. This includes deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel.

Market Responsiveness and Track Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor’s history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization’s message in order to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This “mind share” can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements, etc.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers’ wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen and understand buyers’ wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling product that uses the appropriate network of direct and indirect sales, marketing, service and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor’s approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements.

Business Model: The soundness and logic of the vendor’s underlying business proposition.

Vertical/Industry Strategy: The vendor’s strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including verticals.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor’s strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the “home” or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

Gartner RAS core Research Note G00230529, W. Clark, I. Finley, S. Chuang, 26 April 2012
About Esri

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