Retail Industry Executive Summary

Business Intelligence (BI) and Mobility Applications are top priorities for today’s retail business. BI is key for retailers increasingly driven to optimize revenue, inventory and profits down to the store and department level. Mobile application access also plays a vital role as managers and other key decision makers are often out of the office moving throughout the region or store assessing, diagnosing and fixing customer problems and operating conditions.

The mobile workforce is often equipped with a smartphone to keep in contact via voice and email while they are away from their desks. However, the information needed to be fully informed and empowered to act on the most up-to-date business data is often not available to them while they are mobile. The investments made in BI and mobility do not reach their full potential until the business brings the BI data to the mobile worker so better decisions can be made wherever the work is being done.
Executive Summary continued

There are three basic approaches to mobile BI:

• Event-based alerts – provide a mobile indication (e.g., text message, email, voice message) of particular situations such as a point-of-sale malfunction or alarm on the property. This approach is useful for communicating that something has happened.

• Static mobile reports – provide mobile access to daily or weekly reports that are viewed on the smartphone. This approach provides some information that the mobile worker can use to determine why a situation has occurred without returning to the office.

• Mobile BI dashboards – connect directly to the backend BI system and allow the user to dynamically access and interact with the data in tables or graphic formats. This approach provides the mobile worker with the ability to analyze current data and determine the best action to take in response to a situation.

The goal of mobile BI is to provide the worker with the contextually relevant information to make the best decisions. The mobile BI dashboard approach provides access to the most up-to-date data and the interface and interaction with that data to effectively analyze the data on mobile devices. The resulting improved decision making can be a significant competitive advantage, enhancing customer satisfaction and business performance.

Mobile BI can be implemented as a point solution that provides narrow capability, or by targeted mobile applications that use a mobile framework, such as Vaultus mobiScaler™, that can access data from BI systems and other key operational databases.

Real world results in the retail industry show that making the best decisions – decisions that properly address the customer experience and the financial impacts in the moment of need wherever the manager is – often requires access to information that is beyond the reach of the point solutions. An application that uses a mobile framework that can access the BI data, the other key data sources, and an interface that provides the best interaction on the mobile device is often the right choice.

For example, while a manager is walking the floor, she can analyze the current shelf stock in the context of recent sales trends – comparing the latest sales information and trends with in-store inventory levels; verifying merchandising placements against plans and sales targets. Combining real world, real-time observations at the store with up-to-date sales, inventory and merchandising information – obtained from the BI system and in other retailer-specific databases – can drive a more efficient operation and more customer sales.

By teaming with AT&T and Vaultus for mobile BI, retailers can access a leading application platform certified on AT&T mobile network, and AT&T retail industry solutions consulting practice, to get the maximum value from investments in business intelligence and mobile workforce.

Mobile Business Intelligence Strategy is Key

BI and Mobility Applications top the list of CIO priorities in today's competitive business environment. But without a strategy to put the wealth of BI data in the hands of mobile workers, even organizations with significant investments in data warehouses, reporting tools, and mobile access to CRM and ERP can fall behind their peers in the industry.

Business Intelligence is key for organizations increasingly driven by metrics to optimize revenue, performance, and profit. Managers can make better strategic and tactical decisions by using advanced analytical tools to slice and dice historical, current and projected data stored in massive data warehouses. However, in today's volatile, fast-paced competitive environment, it is more critical than ever for managers and executives to have this data always at their fingertips, enabling them to address challenges and opportunities in real-time.

Maximizing mobile employees' productivity and customer responsiveness is a top priority, even in times of tight budgets. Understanding the current marketplace and changing business conditions as well as building and maintaining all of the necessary relationships between employees, partners and customers requires that more work be done away from the office than ever before. The number of mobile workers continues to increase since growth and, in some cases, survival depends on work and decisions made on the front line, at the point of customer or partner contact, on the shop floor, on the road and away from the office.

The mobile workforce is growing in every region of the world. And, by 2011, nearly 3 of every 4 people in the U.S. workforce will be mobile.

With rapid advancements in mobile applications as well as data storage and warehousing, business intelligence and mobility have emerged as important IT and business drivers at the same time. However, the need for businesses to take full advantage of their business intelligence investments while simultaneously supporting an increasingly mobile workforce presents some significant challenges. In fact, at times it can appear that business intelligence and mobility exert conflicting forces on the people doing the work in the field, as well as IT organizations supporting them.

If the analytical data and the decision-making tools are locked on the desktop, the business intelligence function acts like a magnetic force pulling the workers back to the office to use it. Conversely, we have seen that the true context of today’s business – on the road, in the field, with the partners and customers – is already acting as an opposing magnetic force, pulling the workers away from the office. However, the real power of a mobile workforce is achieved by allowing people to work remotely without sacrificing access to the tools that have become critical to their success.

Maximizing BI and Mobility investments means giving mobile workers the data analysis tools otherwise available only in the office, but with the advantage of having on-the-spot insight from real-time observations and discussions in the field.

The End Result: Improved Decision Making
Decisions can be made faster since the decision maker has access to all of the tools and data without having to return to the office. The quality and outcome of the decisions themselves is also improved since the decision maker can focus on the best data from the BI system and use it to analyze the current business conditions while interacting with their peers, partners and customers in context.

Approaches to Mobile Business Intelligence
Realizing that the value of the investments made in business intelligence do not reach their full potential until a business closes the gap between the BI system and their mobile workers is an ‘a ha!’ moment. The next step is getting started. A review of companies who recognize the need to mobilize their investment in business intelligence shows that there are three common approaches to mobile business intelligence: event-based alerts, static mobile reports and mobile BI dashboards.

The Value of Interactive Mobile BI
The real value of mobile BI is achieved as remote workers are given actionable insight into the data that is being viewed and analyzed. Often, this value is realized in a progression from the user learning what has happened, expanding into some understanding of why the situation has happened, and providing the tools necessary to know how to respond and address the situation effectively.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Event-Based Alerts</th>
<th>Static Mobile Reports</th>
<th>Mobile BI Dashboards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Alert/Notification (text message, email or voice mail) sent to workers from an agent that identifies a pre-specified condition has been met. (e.g., Sales in store XYZ have declined more than 5% versus year ago)</td>
<td>Static snapshots generated by the backend BI system, possibly with some formatting to fit the mobile device screen size, and delivered as an email attachment</td>
<td>• A mobile application connected to the backend BI system accesses and presents metrics in near real-time</td>
</tr>
<tr>
<td>Advantage</td>
<td>• Requires little, if any, additional infrastructure to detect an event • Proactively makes users aware of an event or change that may require attention</td>
<td>• Reports are likely already created and available for desktop users • Users can access more details behind events (getting some context of why something happened)</td>
<td>• Does not require a packaged BI system and can easily link directly to a data warehouse or database</td>
</tr>
<tr>
<td>Disadvantage</td>
<td>• Reactionary: Alerts received only after an event has happened • Lack of context and details that led to the alert means the user has little information to determine the best course of action</td>
<td>• Reports are static snapshots that provide some context and detail but lack the interaction necessary to maximize decision making • Users cannot manipulate, sort, or drill into the data • Even if formatted for a mobile screen, the data is not optimized for mobile usage (requires a great deal of scrolling and searching)</td>
<td>• Requires additional tools and infrastructure to roll out and support</td>
</tr>
</tbody>
</table>

### Approaches to Mobile Business Intelligence

- **Event-Based Alerts**
  - **Description:** Alert/Notification (text message, email or voice mail) sent to workers from an agent that identifies a pre-specified condition has been met. (e.g., Sales in store XYZ have declined more than 5% versus year ago)
  - **Advantage:** Requires little, if any, additional infrastructure to detect an event. Proactively makes users aware of an event or change that may require attention.
  - **Disadvantage:** Reactionary: Alerts received only after an event has happened. Lack of context and details that led to the alert means the user has little information to determine the best course of action.

- **Static Mobile Reports**
  - **Description:** Static snapshots generated by the backend BI system, possibly with some formatting to fit the mobile device screen size, and delivered as an email attachment.
  - **Advantage:** Reports are likely already created and available for desktop users. Users can access more details behind events (getting some context of why something happened).
  - **Disadvantage:** Reports are static snapshots that provide some context and detail but lack the interaction necessary to maximize decision making. Users cannot manipulate, sort, or drill into the data. Even if formatted for a mobile screen, the data is not optimized for mobile usage (requires a great deal of scrolling and searching).

- **Mobile BI Dashboards**
  - **Description:** A mobile application connected to the backend BI system accesses and presents metrics in near real-time.
  - **Advantage:** Does not require a packaged BI system and can easily link directly to a data warehouse or database. Application is constantly updated with granular data directly from the backend source giving users access to the most current data available. Easier to use since data is optimized for a mobile device and dashboards are designed to make usage of data as simple and intuitive as possible. Ability to manipulate data allows users to spot trends and opportunities more quickly and take proactive action.
  - **Disadvantage:** Requires additional tools and infrastructure to roll out and support.
Each step in the progression builds on the previous steps to provide more and more power to the user.

What has Happened?
Sending alerts informs remote workers of unexpected or noteworthy events and data. However, this approach only indicates that a situation possibly needs to be assessed. The enterprise has still not solved the central business issue because the user has only been informed of a change; he/she is not equipped with the necessary information and tools to make an informed decision that solves the problem or acts on the opportunity.

Why has the Situation Occurred?
Static Mobile Reports take a step toward solving the central business issue by providing the user some insight into an event via access to their BI/Reporting data. However, the inability of a user to manipulate and drill into the data severely limits the value a user can extract from the information. Even if the report is formatted for a mobile screen, it is often difficult and time consuming for the user to actually mine the information from the mobile device.

Mobile: Stepping up the Value of Your Business Intelligence

How Should the Situation be Addressed?
Mobile BI Dashboards help companies move beyond just ‘informing’ mobile workers by providing true interaction with the underlying BI data that actively supports the decision maker and the decision making process. Extracting the highest possible value from the BI infrastructure – as well as your backend data – requires a mobile solution that can do more than display alerts and two-dimensional data tables. It must provide the user with the ability to drill into the data and refine the data to identify the root cause of a problem or opportunity. Only with this deep level of interaction with the data and in the context of the problem or opportunity – in the store, on the road, or at the job site – can the decision maker make the best decisions and choose the best course of action.

As companies move from simple alerting to actually informing and arming the mobile worker with actionable intelligence on the business, the market and their competition, the gap between factual data and actionable data closes and presents a significant competitive advantage to the user and their company.

Mobile Middleware: Point Solution vs. Platform

Point Solutions
As a business chooses an approach to mobile BI, it is common to begin by looking at the mobile solutions that their BI or ERP provider can deliver. These point solutions have a narrow focus – to get information from the BI system to remote workers and present it on mobile devices.

However, the ease with which these point solutions can be deployed brings along some limitations. Since these solutions are designed and built to provide specific kinds of access to the specific kinds of data that are known to be in the BI system, they are constrained from providing access to data that is beyond the boundaries of the BI system.

Companies that begin their mobilization efforts by adopting a point BI solution often use the experience from their initial mobile BI deployment to identify other areas in the business where a mobilization effort could yield tangible business value. They soon realize that mobilizing these other areas cannot be accomplished with the point solution. If they adopt yet another vendor’s mobility application, they quickly build up a portfolio of disparate point solutions that can’t be integrated with each other and that are subject to different implementation and deployment constraints.

Choosing this path can quickly lead to dissatisfied users who need to use separate (and often dissimilar) user interfaces for all their mobility needs and a dissatisfied data center staff who must maintain and support the large number of point solutions that the business chooses.

Mobile Middleware Platforms
Recognizing the value of mobilizing multiple backend applications (such as CRM, SFA, Supply Chain, Help Desk, Store Service Operations, etc.), many organizations look at mobile BI as just one aspect of a larger mobile strategy. Each new point solution (i.e. Mobile CRM, Mobile Supply Chain, etc.) can create additional support, management, and cost burdens on the business.

Mobilizing BI with a true mobile middleware platform, on the other hand, can provide the company with a leverage-able mobile foundation that can readily mobilize new applications and new groups of users.

Forward looking businesses put mobilizing BI systems within the context of an enterprise-wide mobilization strategy – and have looked to leading mobile middleware platforms, such as Vaultus mobiScaler™.

By leveraging the core facilities, expertise and support capabilities of a true mobile middleware platform, companies can create a single foundation that is capable of addressing an extremely broad range of mobile workforce needs. As the mobile middleware platform is used across more and more applications and processes, the platform provides leverage and integration that makes a business’ mobilization effort more than a set of mobilized applications. Instead, it orchestrates a suite of interconnected mobilized applications that can take advantage of economies of scale and allow interdisciplinary data analysis and decision making. In effect, this gives mobile users the ability to analyze the data and
make better decisions in the store, in the field, or on the road while working with the staff, the partners, or the customers – without needing to return to the office.

**Key Considerations in Selecting a Mobile Technology**

Obtaining the full value from your investment in business intelligence requires that the BI system be accessible and useful for the mobile workforce. Regardless of whether a BI point solution or mobile middleware approach is selected, it is important to consider other major factors in the solution. Your choices of software vendor, hardware partner and carrier network are key considerations and below are some critical things to keep in mind:

**User Interface and User Experience**

Getting the best decisions from the mobile workforce requires that the mobile BI application meets the workers’ needs. The right data needs to be presented at the right time whenever possible and it needs to be in a usable format that can be easily manipulated, regardless of location or environment. The UI and user experience challenge is even greater for mobile applications than it is for desktop applications. Limited screen space, network speed and device processing capabilities amplify usability issues, especially with data intensive applications like BI. Additionally, gaining full advantage from a mobile BI solution requires complex interactions with the data that let the user drill into, sort and refine the data. This often requires a mobile application rather than a browser-based approach since many mobile browsers do not yet effectively provide the rendering and processing capabilities needed to support interactions. How usable is your solution when real people use it to solve real problems? Can the users perform all the tasks they need to perform effectively on the mobile device(s)?

After understanding how your mobile BI approach maps to the capabilities of the mobile device, it is equally important to understand how the solution will work in the field. Even the best networks can have coverage gaps and sub-optimal speeds, meaning the mobile BI solution must be designed with the recognition that users may occasionally need to use the solution in less-than-perfect conditions. Failure to adequately address these needs in the selection of a mobilization approach will limit the effectiveness and lower the return derived from the solution. How well does your solution provide optimal and effective use of the network bandwidth that is available?

**Ability to Enable Real-Time Collaboration**

The goal of the mobile BI effort is to close the gaps between your mobile workforce and their connections to people, applications and data. BI in the mobile workforce will undoubtedly exist in an environment where the remote data analysis and decision making is taking place in the context of a phone call or conference call with other people. Therefore, your mobile solution should plan for BI and other application usage that can occur simultaneously with a voice conversation, or even a video sharing session on a mobile handset. Speakerphones and headsets can make this sort of activity feel as normal as speaking on the phone while on a desktop computer. Can you effectively navigate and use your mobile BI solution while you’re talking on your phone?

**Support for Multiple Mobile Device Types**

As mobile devices have penetrated business and consumer markets, businesses are less able to impose standardization of devices to a single device or class. Therefore, the carrier network and BI solution you choose should be capable of supporting a variety of devices and mobile computing platforms such as BlackBerry®, Windows Mobile®, and iPhone. Selection of handsets and platforms are something to keep in mind when selecting your telecom partner. Even if your business can standardize on a particular device type (e.g., BlackBerry®), there are still a number of variations in that device class with a variety of screen sizes and interface types (keyboard vs. touchscreen). Is your organization committed to a single device type? Does your solution (software, hardware and network) accommodate the devices that your users can use and want to use?

**Access to Multiple Back-End Databases**

Mobilizing your BI resources requires that the mobile solution you choose be able to access the data in the BI system. The BI vendor point solutions provide excellent access to the data that is already in the BI system. However, they may not offer access to data that reside in other corporate databases or ERP systems which you may want to combine into your mobile solution. Mobile middleware platforms often provide access to BI data as well as other corporate data that exists in a number of other backend databases. When choosing a BI mobilization solution, you should consider your long-term data access needs in addition to the short-term ones. Can your selected solution accommodate multiple data sources or is it limited to a single data store stovepipe?

**Ability to Drive the Business Process**

A successful mobile BI deployment results in processes and application(s) that enable business managers to make more informed decisions, perhaps in different places and times than today. Line of business managers know the data they need and how they want to view it to understand, and act on, a particular situation. When choosing a mobile BI solution, ensure that your solution presents the right information in a format that is useful for decision making. Simply mobilizing data that is easy to mobilize may provide little value to users, since they may not have valid comparisons or contextually relevant data grouped together. Decisions on which data to mobilize should be driven by the needs of the business user, rather than which data is easiest to mobilize.

**Next Steps**

Your business has already made a significant investment in Business Intelligence and Mobility. If your business intelligence system requires that your mobile workers return to an office to perform analysis, your business is losing productivity, reducing the return on your BI investment, and – perhaps more importantly – being less agile than your competitors. Your mobile workforce is growing and your mobile workforce needs to make decisions quickly in the context of where your business actually happens – at the storefront, in the field, with the partner, or with the customer. In this operating environment, businesses need to make smarter decisions and make them faster than ever to keep costs down and margins optimized. Here’s how you can get started now.
Adopt an Approach
Getting alerts or static reports to your mobile workers can get you started quickly and keep your mobile workers informed. However, your initial successes may not be able to scale and more decision making into the field. A mobile BI dashboard approach will provide the BI data and many of the business analysis tools to your mobile workers on their smartphone. Do you want your mobile workers to be informed? Or do you want your mobile workers equipped to take action?

Point Solution or Mobile Middleware Platform?
A point solution will give you mobile access to the data that’s already in your BI system. Using a mobile middleware platform will support your BI system and let your mobile strategy grow to support multiple business functions. Using a common mobile middleware platform provides robust application acceleration, data security, synchronization, and network optimization techniques across all of your mobilization efforts.

Choose Your Network and Mobile BI Solution
Mobilizing Business Intelligence applications requires a high degree of coordination between your project team, mobile network operator and mobile BI application provider. Whether you are developing requirements and business case for the project, running a pilot or planning full deployment, working with solutions that are pre-tested and certified on a leading mobile network can reduce deployment risk and maximize ROI. Vaultus can provide an AT&T-certified suite of mobile applications, in collaboration with AT&T mobility and industry application consulting and deployment services, to put you on the road to mobile BI success.

Looking at your own business needs and investigating your options can get you started with mobile BI today. Waiting is not an option in getting the maximum value from your investment in either business intelligence or your mobile workforce.

For more information contact an AT&T Representative or visit www.att.com/business.