

Enterprise Wireless Special • Where is India's Microsoft?

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Openstream

Leading the Mobile Force Automation

Raj Tumulari, CEO, Openstream



COVER STORY By Jayakishore Bayadi

Shumate Corporation, a leading construction, heating, and air-conditioning company in Duluth, GA, were looking for an integrated mobile solution for their 500 strong field-force to achieve their vision of a paperless office. They selected Openstream, a mobile software company's Mobile Force Automation (MoFA) solution for its modular functionalities that nicely combined the key features they needed in the field. The modular solution provided GPS, camera, email, check and credit card reader, and wireless printer capabilities that integrated very well with our backend software. "Today, the solution gives us the ability to manage work-orders, process payments, and manage inventory on our trucks and warehouses, and pass on any leads with pictures to our sales



Raj Tumuluri, CEO, Openstream

department. The solution also allows us to manage the devices from the central office with its remote management capabilities allowing our field-users the choice of voice and keypad interaction," says Frank Steinocher, CIO, Shumate Corporation.

With over 3.3 billion mobile phone users around the world, it is anybody's guess that enterprises are getting increasingly distributed and virtual, with a lot of them getting outfitted outside the conventional edifices of the enterprise.

Enterprises are fast realizing the need to go beyond email-access to drive the productivity gains through field-force automation. While early field-force solutions relied on proprietary hardware and applications, with the proliferation of the ever-more-powerful mobile devices that combine popular technologies like GPS, RFID sensors, cameras, and media players, the demands on field-access and synchronization of data and information is becoming increasingly important; whether it is a courier company tracking packages or a retail chain monitoring the inventory or a utility services company dispatching and managing work-orders or a media company managing and monetizing content distribution.

Take another instance. Hess Corporation, an energy company headquartered in Woodbridge, NJ, was tasked with finding a solution to track all of its convenience-store orders and inventory data, eliminating duplicate orders and significant delays in inventory-forecast updates, and the order-processing systems. Further, the

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company wanted to cut down the cost of management of the software applications used in the field and also wanted to improve the accuracy and reduce the huge cost of its manual enterprise-wide inventory tracking processes.

Hess implemented Openstream's MoFA inventory application, which provides accurate and real time inventory status of all items in each convenience store. With this solution the store employees could seamlessly upload inventory information to a backend server residing at the company's corporate data center. Today, with MoFA solution,

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Hess Corporation is able to track inventory across 870 stores in the U.S. MoFA streamlines the inventory processes while providing seamless integration with the back-end systems.

Instance three: Robert is a traveling executive with a large investment services company that is a customer of Openstream's SmartBroker solution. While on the move, Robert receives an alert on his mobile phone regarding stock-tip from one of his colleagues. Openstream's SmartMail reads out the content of the alert to him. Robert commands it to call his associate back at his office and in the mean time instructs it to send a copy of the attached document to his office fax number. Robert, after reviewing the market-news on his handheld device, places the order through the trading account and reviews the order history, notifies his back office and emails customer on the well-executed trade. This is how Openstream's mobile solutions can help transform the daily activities of an executive of a brokerage company, on the move.

“ Business users can access more than one type of application data, apart from email or personal information using multiple modes while they are on the move to efficiently transact business ”

However, with over 700 types of mobile devices in use today, developing the user interface that is optimally rendered on most popular devices with varying screen sizes and keypad input schemes becomes a huge challenge for any enterprise not wanting to lock itself to a particular type of device. Further, most field-users

The multi-modal Approach

Hence, with Openstream's solutions, you'll find the multi-modal capability to interact with the enterprise

Openstream at a glance

Founded: 1997
 CEO: Raj Tumuluri
 Headquarters: Somerset, New Jersey, U.S.A
 R&D center: Bangalore, India
 Customers: Thermal Services, Shumate Corporation, Hess, Omnitrade, Peoples Bank, Verizon, and several M&E, pharmaceutical, healthcare and brokerage companies
 Awards/Certifications: ISO 9001 quality certification in March 2005
 Website: www.openstream.com

devices (like cell phone/mobile computer) having tiny screen size and limited input methods. That means, you can interact with the devices in multiple ways such as speech, keyboard, and stylus technologies when you are on the move. This 'multi-modal' approach helps customers use spoken commands to access email, news, or Web information on demand, thus allowing text infor-

mation to be converted to speech output for listening rather than reading. There are other SMP products from Openstream as well, which can make the users' devices to recognize speech so that they can talk to their devices to access the information regarding executed trades, stock quotes, portfolio, and market news and listening to what the system finds.

How did it all begin? In late 2000, mobile services and product companies were hit hard by the slow down in the telecom sector. Many companies that

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find it cumbersome to use the small keypads to input data on these mobile devices, often resulting in partially filled forms and inaccurate data capture in the field. So, a new paradigm of user interaction, called multi-modality, promises to enable enterprises overcome the challenges associated with user input and display on small devices.

Technically, the multi-modal approach or multi-modality refers to integrating graphics, text, and audio output with speech, text, and touch inputs to deliver a superior experience to the user. In essence, multi modal applications give users multiple options for inputting and receiving information.

based their business model on wireless connectivity found it hard to survive. However, Raj Tumuluri, CEO, Openstream, with over 17 years experience in speech, mobile, multi-modal technology development, and network computing believed that all was not lost. Interestingly, till that time many companies provided mere wireless access to the Internet. But because of the size of the screen and complexity of data entry, replication of the Internet experience from the desktop to palm-top or mobile phones was not popular. Openstream sensed that market is moving towards the convergence of technologies that enable the user to use speech recognition, wireless application protocol (WAP), and where

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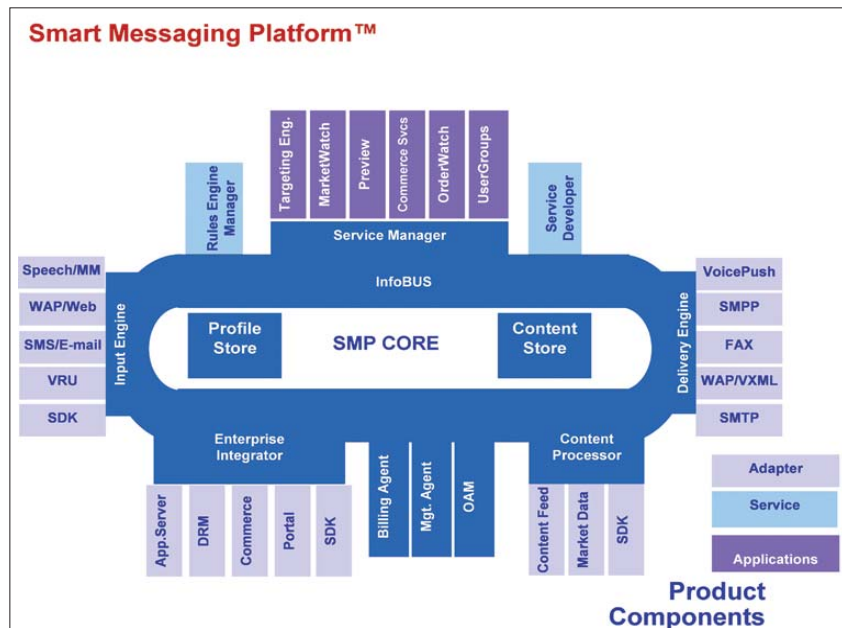
the user could have the opportunity to interact with his palmtop by various means with various data sources.

And thus Openstream, founded in 1997 by Tumuluri, gave a whole new dimension to the interaction with enterprise mobile devices with its 'multi-modal approach', which, he says, is somewhat similar to normal human interaction, with the key focus of Openstream's applications being towards enterprises.

The story behind how the 'multi-modal' product idea struck Openstream is quite interesting. Explains Tumuluri, "Early wireless enablers focused on very narrow mobility applications, such as email and unified messaging. While talking to our customers, we found that business users are looking to access more than one type of application data, other than email or personal information using multiple modes while they are on the move to efficiently transact business." Thus, at that time itself Openstream had foreseen the kind of an interface, which would be efficient to access the data on mobile device while on the move, which would be the key factor in coming years. Also, the prime challenge was to map disparate enterprise application data feeds into one easily accessible virtual data source. "Hence, keeping all this in mind we designed 'Killer App' which provides both the infrastructure software and tools that unify various application data feeds into one data source, with which the customer can interact in a multi-modal manner," avers Tumuluri.

Building the Technology

However, if you look at the mobile landscape there are more than 700 types of mobile phones available, which were built under various platforms or OS versions. But the prime



challenge for Openstream was to build a robust and device agnostic multi modal solution, which should be adaptable even with a new device that may come in the near future.

Openstream's SMP platform is based on asynchronous event driven architecture with its design principles analogous to those of the 'World Wide Web consortium Multimodal Interaction Framework (W3C MMI)' architecture, viz.,

“The key thing to do is to establish credibility with the partner to make them understand the solution's potential. And the core technology we have built helped us to establish trust with them to gain a win-win relationship”

modularity, extensibility, encapsulation, distribution, and recursiveness. Tumuluri is also one of the co-authors of the standard. He was associated with W3C's Multimodal Interaction and Voice Browser working groups, with its key research focusing on improving accuracy and usability of mobile applications using multimodality.

The platform enables single

authoring multimodal applications for multi modality and device independence ensuring that the company stays current with the interoperability requirements and offers solutions based on open standards. "It uses standards such as XHTML, VoiceXML, OSGi, and others, which allow enterprises to leverage existing methods to develop the seamless interactions that customers will demand from these advancements,"

explains Gerald McCobb, Technical Director of Openstream.

Enhanced Productivity

According to Tumuluri, Openstream is the first company to deploy multimodal field-force application in the world. After deploying the Openstream solution, which normally takes four to eight weeks with minimal impact on enterprises or

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employees, their customers saw 27 percent improvement in the workers productivity, 19 percent increase in customer satisfaction, and 13 percent increase in service revenues.

With regard to the overall productivity improvement, according to published results of a study conducted by Openstream, mixed mode and mixed method of interaction reduced the average time to complete the user I/O for transaction by eight percent and increased the accuracy of data collected by upto 6.4 percent for most field applications deployed.

The company adopted the user centric approach that would take user experience, task-completion time, and accuracy of the data captured as parameters in determining the efficacy of the application interaction modes. With regard to user friendliness, "Customers want our products to be grandmother friendly. And what is the most natural way to use a device? Of course, by touching and speaking to it," quips Bobby Mathew, Director of Sales at Openstream.

Partnership to Excel

For startup companies, partnership with big names helps to build the brand and to reach customers. This is true in the case of Openstream as well. It has a strategic partnership with IBM to re-sell its product through its channels. In fact, it's a tough challenge for any small organization to get into a partnership with large organizations like IBM or Motorola to excel in the market.

But, Openstream's belief is that, if you have a real cutting edge technology with you, a niche solution or first-mover product which could prove as a 'Killer App' in near future, it's actually not such a difficult task. "Hence, the key thing to do is to establish credibility with the partner to make them understand the solution's potential. And the core technology we have built helped us to establish trust with them to gain a win-win relationship," expounds Tumuluri. While Openstream has several patents related to technology pending, its commitment to open standards through its participation with apex standards bodies like W3C gave the company an instant opportunity to collaborate with leading research organizations and to clinch the partnership deals with them.

Today, the company has a partnership with IBM in terms of using IBM Middleware and Embedded Technologies to develop the products and to resell the same. Openstream also has diverse strategic partnerships with giants like Intel, Motorola, Dialogic, Motioncomputing, and several leading carriers around the world.

Openstream Products and Solutions

SMP-SmartBroker – A solution for brokerage houses that offers the customers the accurate information that they need and provides them with the ability to take control of their portfolio even while they are on the move.

SMP-Pharma – Enables Field Reps to review and interact with their schedule, client data, and information as well as transactional details via mobile devices. Field Rep productivity is enhanced with the ability to update opportunities, review account information, real time monitoring of the progress of new competitive drugs through the clinical trials and approvals process, and furnishing information on any developments that would threaten competitive position.

SMP-SmartMail– SmartMail provides intelligent mobile access to email, contacts directory, and calendar. Interaction with SmartMail is multi-modal, providing hassle free access to the user. SmartMail alerts the users based on their alert rules. Users can access SmartMail through any mode or device of their choice to read, reply, compose, and forward emails and attachments.

SMP-FraudWatch–A solution for Credit Card issuers to help check the increasing concerns about credit card fraud and increase customer confidence in the card offering.

D-CMS- Digital Content Monetization Server–At the recently concluded premier Media & Entertainment Industry conference (NAB Show) in Las Vegas, Openstream enhanced its product-portfolio through a joint launch of its multi-modal digital-content monetization server (d-CMS) with IBM. By the induction of d-CMS, content-service-providers can simplify the introduction and modification of content, applications and services to newer target-platforms; attract new customers with personalized, tailored offerings; increase competitive advantage with rapid access to new content and applications using open interfaces; deliver services that drive revenue, lower cost for the deployment and operations; increase stickiness and capture event-driven market opportunities; enhance the quality of customer experience through personalized, customized content by mining customer use and offering services and packages that adapt to their changing needs and devices.

SMP CRM – The applications seamlessly provide employees and customers with real time access to comprehensive and critical data through a variety of handheld devices as well as through speech and voice recognition technology.

SMP Finance – This application enables financial institutions to implement personalized services in a multi-modal environment, using wireless and speech technologies.

SMP SmartCare – The application caters to the diverse and demanding needs of all the constituent parties including physicians, caregivers, patients, hospitals, and pharmacies among others.

Mobile Force Automation– MoFA enables enterprises to assign jobs based on customer needs, and field workers to send, receive, and collaborate on data and information as they move through the work hours, wherever they may be in the given territory or facility.

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Revenue Model

Initially, the company started 'Technology License' as a revenue model. Tumuluri notes, "Being a small company it's very difficult to sell a technology and expect IT companies to develop the solutions with your platform. So, it's important to gain critical customer base before you start licensing your technology." This has been one of the key entrepreneurial lessons Openstream learnt since its inception. However, eventually strategic partnerships helped the company to gain the prominent customers it has today.

Today, Openstream also earns from subscription licenses i.e., Software as a Service (SaaS) model. Apart from the enterprise licenses and software maintenance contracts, professional services are the other modes of revenue generation for Openstream.

The Differentiating Factor

Most of the existing Customer Relationship Management (CRM) or Sales Force Automation (SFA) companies provide solutions, which work only on a particular device. Also, most enterprises find it daunting to develop applications that are device-independent, to enable enterprise application access through multimodal interaction. But, the key difference here is that Openstream provides device independent solutions. It supports multiple phones/form-factors. "This is our key differentiating factor," states Tumuluri.

Also, for its media solutions, Openstream's Digital Content Monetization Server (d-CMS) provides on-the-fly transcoding of media to suit the target device format and unlike solutions built using on-device-portals; no software needs to be pre-installed on a device. Also there is no need to point to third party sites losing vital user-access information, which is totally different compared to other competing offerings. Openstream Media solutions are already available on all popular mobile devices including Apple's iPhone and RIM Blackberry.

With regard to the benefits the Openstream technology offers to the end users, carriers, and enterprises, it allows end users to access useful data without having to understand how it is structured. And this is suitable for small form factor and limited input and display devices. More importantly, advanced services like 3G and dual channel mobile phones are not required to deploy Openstream solutions. Also, content providers will be able to deliver enhanced web services to derive incremental voice and data revenues.

Openstream eliminates the need to maintain multiple versions of websites as the company's SMP platform automatically detects the device type and provides access to the websites optimized for the user device. Openstream solutions work with many popular speech recognition and text-to-speech products for an embedded application, which is another key differentiating factor.



Gerald McCobb, Technical Director

Krish Sripada, Senior Architect

The Road Ahead

The interesting learning part is that Openstream's strategy is to take on biggies in the industry to establish itself in the market. Normally, despite having built a solid technology, startups fail to survive in the dynamic market conditions. But Openstream handled the initial challenges and hurdles exceptionally well by blending the solid strategy of joining hands with large organizations in the field with cutting edge technology having a sound potential to revolutionize the future mode of communication. "That's why", asserts Tumuluri, "there is nobody to stop you from loving your technology or loving your product. But you will not be able to realize your full potential on your own when you are small."

Nevertheless, now, Openstream is a profit making company with prominent satisfied customers like Hess, Thermal Services, Shumate Corporation, Omnitrade, Peoples Bank, Verizon Wireless, and several pharma companies. With management team drawn from Nortel, Infosys, IBM, Intel, HP, Alcatel and Verizon, the work environment at Openstream drives the spirit of innovation. In the near mid-term the company plans to continue its focus on three main industry sectors — Healthcare, Financial services, and Media and Entertainment. It's all set to launch its solutions, suitable for some of the key media and entertainment businesses, energy and utility companies, and stock exchanges.

The current market size for MoFA is at 200 million mobile users in the U.S. and over 3 billion mobile users throughout the world. So, in terms of market expansion, Openstream intends to continue its focus in the U.S. and Indian markets to source customers, keeping the U.S. as the primary and significant near term revenue market. In India the company plans to particularly focus on the MNCs to test new products and services for future. 