



Business challenge

Many retailers suffer from the same headache. When a shopper enters a store seeking advice, if they cannot find a sales assistant quickly, they leave empty-handed – and the store loses out on a sale.

Transformation

Sensitel SENS analyzes sensor, Wi-Fi, and video data to recognize shoppers' faces and track their in-store locations, helping retailers send staff to serve people who need help, and make personalized offers.



Ray Sikka
CEO
Sensitel

Business benefits:

Recognizes
faces and anonymizes visit patterns, enabling 1-on-1 marketing and service

Accelerates
insight, enabling real-time decision-making while customers are in-store

Increases
sales by an estimated 5% for every 10% increase in staff engaging with customers

Sensitel Harnessing analytics to deliver a smarter shopping experience

Sensitel specializes in leveraging Internet of Things (IoT) and big data technologies to help companies make smarter decisions and deliver excellent customer experiences. The firm is based in Santa Clara, California.

"IBM is helping us develop innovative IoT solutions that will change the face of entire industries."

Ray Sikka
CEO
Sensitel

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Dazzling opportunity

As the online retail sector continues to flourish, traditional retailers are facing intense competition. These retailers know that their future depends on their ability to deliver a shopping experience with features that online channels can't provide: human interaction with in-store employees, and the physical presence of products.

Ray Sikka, CEO of Sensitel, begins: "Many customers choose to visit main-street stores rather than online retailers because they want to discuss the products with a sales assistant before making a purchase. But if a shopper walks into a store seeking help and can't find a staff member within a few minutes, they tend to get frustrated and leave empty-handed, and the store misses out on a sale.

"We wanted to make this scenario a thing of the past by not only helping retailers understand which parts of their store are visited by the largest number of customers, but also alerting them about customers' location and behavior patterns in real time. This will help store managers deploy their sales assistants to the right areas at the right times to provide the best possible service to the largest number of customers."

Developing a disruptive technology

Joining forces with IBM, Sensitel has developed a state-of-the-art Internet of Things (IoT) offering that enables retailers to pinpoint the locations and behaviors of customers in its stores.

Ray Sikka comments: "At Sensitel, we have a very agile, start-up mentality. With its investment in labs for Apache Spark, and its donation of IBM SystemML machine learning technology to the open source community, IBM has become a key player in the Spark ecosystem, and we have been delighted by how willing they have been to engage with start-ups like ours."

Sensitel's new retail IoT solution is built on the Sensitel SENS Platform, which streams data from connected machines, meters, sensors, devices, and cloud services, and uses predictive models to identify patterns and provide insight. The Sensitel offering aims to help retailers provide the kind of next-generation shopping experience that will support brand loyalty and boost customer satisfaction, even in the face of fierce competition from online-only competitors.

The solution detects the signals from shoppers' mobile phones, which are constantly searching for Wi-Fi access points as customers walk around a store. By anonymizing, analyzing, and triangulating the strength of the signal that each access point receives from each phone, it is possible to determine the shopper's precise in-store location, and track their movements over time.

To capture, analyze, and present this information fast enough for store managers to act on it, Sensitel needed a big data platform that could support real-time analytics. The company wanted to find a managed service that would help it leverage Apache Spark, a powerful open-source technology that can process huge amounts of data in-memory, many times faster than first-generation big data platforms such as Hadoop.

By choosing IBM Analytics for Apache Spark, a software-as-a-service offering from IBM, Sensitel will be able to avoid the time and cost of setting up its own Spark cluster on-premise, and will be able to provision, deploy, and expand Spark environments in a matter of minutes. Additionally, Sensitel will benefit from the same SLAs and 24/7 availability that a global enterprise would enjoy, with none of the maintenance effort.

Further innovative technologies in the pipeline

Building on its success with Wi-Fi analytics, Sensitel is now fine-tuning a facial recognition system based on the same leading-edge IBM technologies. The solution works by comparing millions of photos of shoppers taken by security cameras against an image library of existing customers. Performing this type of analysis at a high enough speed to enable real-time, in-store decision-making is only possible because of the performance of Apache Spark; additionally a managed Spark service will free up Sensitel's developers and data scientists to focus on analytics and deployment tasks.

"We are developing a system that can recognize regular shoppers, and reward their loyalty by making their shopping experience a pleasant one," explains Ray Sikka. "We can tailor the offers according to context; for instance, customers interacting with TV displays in an electronics store could see their favorite TV programs and music pop up on TV displays. The key is to do it seamlessly so it does not intrude upon the shopper's experience; and to do it in such a way that the store's physical environment responds to each shopper's needs in real time.

“What’s more, facial recognition could potentially allow us to identify emotions, so retailers could be alerted automatically when a customer seems angry, unhappy, or lost. Or in a healthcare context, a similar solution could alert nurses when a patient seems to be in pain.”

Develop and deploy in one weekend

Sensitel built the facial recognition capability in a single weekend, during a hackathon. By leveraging the IBM Data Scientist Workbench – a set of data science tools that facilitate rapid prototyping and enable developers to submit jobs to Spark clusters for high-speed analysis – Sensitel’s hackathon team was able to share code and divide development tasks easily. The IBM solution made it easy for the Sensitel team to write code in Scala (the same language that Spark itself is written in), and to use the open-source SystemML machine learning libraries that IBM has released for the Spark community. The interactive development environment within the Data Scientist Workbench was an advantage too, showing developers the results of queries as they wrote them, and helping them immediately spot and rectify problems.



Sensitel was able to build the system so quickly because both the Data Scientist Workbench and Apache Spark support multiple high-level programming languages that make it easy to focus on developing applications and algorithms, without worrying about the complexity of the underlying big data infrastructure.

Spark also helps to unify data, making it easier to analyze, and its coding requirements are much simpler compared to other big data technologies. This empowers data scientists and developers to work faster, and achieve business value more quickly.

Directing staff to shoppers

The state-of-the-art Sensitel SENS Platform offers a golden opportunity for retailers to position staff in their stores more strategically.

“Tapping into the power of the Internet of Things, retailers can now monitor customers’ locations in real time, and direct staff around the store accordingly,” continues Ray Sikka. “For example, if a store manager sees that there are hundreds of shoppers but only three staff members in one particular section, they can summon more assistants.

“The potential applications for this technology extend way beyond the retail industry. The same methodology can be used to achieve smarter distribution of security personnel at major sports events, service staff at airports, and medical staff in hospitals. The possibilities are almost endless.”

Revolutionizing the retail business

The SENS solution also enables retailers to make additional improvements to the way they run their businesses. For example, because the solution integrates seamlessly with IBM® Campaign software, store managers can use it to send targeted offers to specific customers in real time.

“If a customer has been browsing a selection of laptops for a certain period of time, the manager can send them a discount for a particular model to encourage them to make a purchase,” comments Ray Sikka. “In general, by automatically detecting when a customer needs help, we can help retailers dispatch staff to their location and convert shoppers into buyers. We estimate that for every ten-percent increase in the frequency of staff engaging with shoppers who are looking for help, retailers can expect a five-percent rise in sales. As such, companies can expect a rapid return on their investments in these technologies.”

Sensitel is now working with a shoe store chain to assess how many minutes the sales staff should wait before approaching customers to offer assistance. By experimenting with different policies in different stores, the chain can work out which approach is most effective, and establish best practices.

“We can also help identify improvements to store designs,” remarks Ray Sikka. “For example, we worked with a retailer’s large multi-story store, and discovered that very few customers were visiting the third floor of the building. By remodeling the store to make the third floor more visible from below, the chain encouraged more people to browse the upstairs sections.”

Asking new and different questions

Furthermore, Sensitel’s innovative offerings enable companies to ask and answer new and critical questions about their businesses.

Ray Sikka explains: “At the moment, high-street retailers are in the dark. They often can’t answer basic questions such as: Why did this specific customer enter or leave the store? Did they make a purchase? How long did they stay? Why didn’t they buy anything?”

“Currently, most retailers only analyze point-of-sale data, which can’t help you answer these questions. By taking advantage of data that is already available from other sources—such as security cameras and Wi-Fi—they can gain eye-opening insights into their operations.”

He continues: “Insight into these new types of data will enable high-street retailers to offer personalized customer service and a superior shopping experience, helping them compete more effectively against online giants.”

Ray Sikka concludes: “IBM is investing in cutting-edge open big data technologies like Apache Spark. That gives us confidence that IBM is the kind of company that innovative start-ups like us can do business with.

“With IBM’s help, we can develop innovative IoT solutions that will change the face of entire industries. We look forward to working with them to find more and more use cases for this revolutionary technology.”

Solution components

- IBM® Analytics for Apache Spark
- IBM Data Scientist Workbench

Take the next step

To learn more about SENS and other products, services and solutions from Sensitel, please visit sensitel.com

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