SHASPA

Shaspa

Enabling the Internet of Things for Smarter Environments

Smart is...

improving our lives and the way we work by unlocking the value of data gathered from our connected environment

Intelligent sensors are capturing huge volumes of data on every aspect of our world. By capturing, analyzing and correlating this data, Shaspa is creating smart shared spaces that respond to and adapt to our changing needs – at work and at play. The number of potential scenarios is limited only by our imaginations – from smart cities and electrical grids, to assisted living and e-mobility – and Shaspa is using IBM technologies to make these and other applications a reality.

Enabling smarter living

Driven by the ongoing rapid growth in low-cost, web-enabled smart sensors and mobile broadband communications, the emerging Internet of Things promises to transform our personal and working lives. Imagine a world in which biometric sensors automatically book you a doctor's appointment at the first sign of ill-health, and coordinate your prescriptions. Or a house that knows when your weekly routine changes, and adjusts your thermostat and alarm settings accordingly.

Many of us already carry smartphones with built-in GPS and NFC sensors, and we may also have smart energy meters and thermostats, intelligent lighting and access solutions, and web-enabled home monitoring and security systems. These devices – and a whole universe more in workplaces and public spaces – are already gathering a vast amount of data about our activities and preferences. But are we really tapping into the potential value of that data to improve our insight and automate routine tasks – or is it just slipping through our fingers?

Real-time insight

Shaspa is a leading global vendor of next-generation, smart home and commercial building solutions. When the company was designing a simple, user-friendly way to capture and analyze sensor data in homes, offices, and in the wider environment, it knew that an autonomous solution was vital. Communications links are never 100 percent reliable, so the solution must be able to store and process information locally, rather than depending on a network connection. Equally, the company wanted cloud connectivity to enable more sophisticated analytics and the aggregation of large datasets by service providers.

Oliver Goh, CEO of Shaspa, comments: "To keep things as simple as possible, we built an Internet of Things platform called Shaspa Service Delivery Framework and designed an appliance called the Shaspa Bridge that can connect to and control a huge variety of building automation systems, household appliances and mobile environments from hundreds of global manufacturers."

Business benefits

- Delivers real-time analytics and intelligent automation in a highly instrumented world.

- Optimizes living and working with speed-of-thought insight.

- Smart automation improves efficiency and control, and cuts costs.

Goh continues: "To enable local insight and automation, we needed an intelligent, enterprise-class database capable of providing real-time analytics and actionable insights, and able to run on a small device with limited storage and processing power. IBM® Informix® was the best option, providing an embedded database that supports both ARM and Intel architectures and the ability to run and connect to a full version of the same database on a more powerful infrastructure in the cloud."

The embedded Informix database that powers the Shaspa Bridge gathers structured and unstructured data in real time from an increasing variety of devices and sensors, enabling that data to be queried, analyzed and correlated at high speed, either locally or in the cloud. The Advanced Edition of Informix enables Shaspa to deploy both IBM SPSS® for pattern recognition and data mining and IBM Cognos® Business Intelligence for further analysis and reporting.

"If there is a network failure, all sensors and automation continue to work locally," says Goh. "The moment connectivity is restored the local embedded Informix database synchronizes with the full database in the cloud. In an assisted-living scenario – for example, monitoring the well-being of a senior citizen – you don't want monitoring to stop because there is a network issue.

"Our architecture depends on the ability of IBM Informix to run both as a small-footprint embedded system and as a full system, enabling full control and automation at incredible speed locally, with additional services at the cloud level. Informix allows us to scale up to thousands or millions of embedded systems, all feeding data into the backend, so that service providers can create complex solutions spanning multiple locations and customers. Having the same database at the backend, just with a little more horsepower under the hood, allows more complex pattern recognition and analysis of data over longer time-frames."

Smarter living   Analyzing environmental data to power smart automation
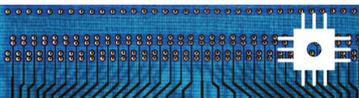
Instrumented

The internet of things is bringing billions of smart sensors into our environment, measuring everything from personal health metrics to traffic flows to global weather patterns.

Interconnected

IBM technologies help Shaspa to capture, analyze and correlate data in real-time, both locally for actionable insight and in the cloud for large-scale aggregation and deeper analysis.

Intelligent

By analyzing and correlating data feeds from multiple sensors, Shaspa solutions intelligently recognize pre-set or even new patterns and automatically take the appropriate action.

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Solution components

Software
- IBM® Informix® Advanced Edition
- IBM Cognos® Business Intelligence
- IBM SPSS®

Services
- IBM Global Technology Services®
- SoftLayer®, an IBM Company

"IBM Informix is helping us tap into the huge potential of all of these devices and sensors."

—Oliver Goh, CEO, Shaspa

Simple solution, unlimited scope

Shaspa offers solutions to companies and service providers, allowing them to choose to run the backend either on their own infrastructure, or in the cloud with SoftLayer®, an IBM Company, and backed by expert operational support from IBM Global Technology Services®. The Shaspa Bridge can talk to a wide variety of sensors and devices and enables service providers to write high-level applications without needing to understand the specific protocol used by each manufacturer. Consumers and businesses can freely mix and match devices, while retaining a single point of control and analysis.

"A key barrier to the public acceptance of the Internet of Things is that it sounds complicated or even scary," says Goh. "We set out to make our solution as simple as possible for the end-consumer. They can configure it with user-friendly tools, seamlessly add new devices and sensors, and use drag-and-drop objects to create rules about what action to take when certain events occur, or when pre-set conditions are met."

While Shaspa's philosophy values simplicity, the Shaspa Bridge platform offers a practically unlimited set of possibilities. For a facilities management company, that could mean monitoring usage patterns across multiple buildings to optimize heating and cooling, or monitoring wear on lighting and other electrical systems to optimize replacement or maintenance schedules. The company might also share data – on the longevity of light bulbs, for example – with a third-party manufacturer for inventory or quality control purposes. For telcos and cable TV operators, there are opportunities to provide new value-added services that integrate voice, TV, broadband, home security, energy management, telemedicine and assisted living.

After devices are connected to the Shaspa Bridge, the ability to filter, correlate and consolidate the data enables all kinds of interesting applications, including social possibilities. "For example, let's say a sensor informs you that you need more heating oil when 15 percent remains," says Goh. "With the Shaspa Bridge, you could have an application automatically search the web to find the best deal on heating oil. And if you create a private group with several neighbors who also have the solution, it may be possible to negotiate a bulk discount with the supplier."

Innovation in action

A major facilities management company in Europe is running a pilot project with Shaspa to support an entirely new solution for performance contracting, based on household metering. The company pays a home owner rent to install a large battery in the home's basement and solar panels on the roof. Rent is paid in the form of free energy, typically 30 percent of whatever is generated by the solar panels, and the remaining energy is stored in the battery, ready to supply the household as needed or when demand on the grid is high.

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> *"Informix allows us to scale up to thousands or millions of embedded systems, all feeding data into the backend, so that service providers can create complex solutions spanning multiple locations and customers."*

—Oliver Goh, CEO, Shaspa

The Shaspa Bridge monitors energy generation and consumption and controls the solution, making local decisions about when to switch to battery power, and reporting data back to the utility. Goh says, "The battery can also act as a local substation or microgrid, enabling local consumers to exchange energy with each other, independent of the main grid. This approach also reduces the total amount of energy that the utility company must generate."

In another pilot, a Swiss automotive insurer is using Shaspa Bridge devices in a telematics solution. Participating customers are typically those who are subject to higher-than-average premiums, for example, young drivers or drivers who have convictions for speeding. The Shaspa Bridge gathers speed and other metrics from a GPS device installed in driver vehicles and sends this data to various insurer risk management systems, which continuously update the variable risk index for each driver.

"When driver behavior approaches an unacceptable threshold, the insurer warns that premiums will increase," says Goh. "This monitoring helps drivers understand the implications of their driving styles, and teaches them how to save money on their premiums. And for the insurance company, safer drivers translate into lower claims and lower re-insurance costs."

The time-series data gathered by the in-vehicle sensors also provides a rich set of anonymized data on driver behavior, which can be correlated with external data to show how different weather conditions, public events, times of year, times of day and locations impact accident rates.

In a third scenario, a construction company is working with a French city to equip street lighting with Shaspa Bridge devices that provide public Wi-Fi, funded by streamed advertising. As the Wi-Fi access points know the precise location of each user, the Bridge can push highly targeted geo advertising – for example, informing users about local restaurants and shops.

Each smart street light also has a number of sensors that measure air temperature, air quality, humidity and ambient noise, and a built-in video camera for pattern recognition. For example, the camera can be used to identify free parking spaces in the vicinity of the street light, and the Bridge can push this information directly to connected devices. These smart street lights also pull in weather-forecast data that supplements sensor data to intelligently control the public sprinkler system.

"Each smart street light can also act as a public charging station for electric vehicles," comments Goh. "Drivers can present a smartcard provided by their utility company to unlock the charging socket, and they are automatically billed on their home account for the energy that they use."

"The robustness of Informix and the backing of IBM are reassuring factors for enterprises looking to deploy mission-critical applications or to gather sensitive data."

—Oliver Goh, CEO, Shaspa

Goodbye smart… hello smarter

These pilot projects, and dozens of similar ones around the globe, give a tantalizing hint of the rich benefits that the Internet of Things will bring. Individuals, companies and governments can analyze data gathered in real time from potentially billions of global devices and sensors to provide alerts and new insight, to improve planning, and to automatically detect and respond appropriately to various situations.

"The possibilities are limited only by our imagination," comments Goh. "IBM Informix is helping us tap into the huge potential of all of these devices and sensors. The technology is here today, and we have to make sure that we keep it simple and make it secure for the consumer."

Goh adds, "Informix is a mature technology that runs on x86 and ARM architectures to maximize hardware choices and lower costs. Equally, we can have a direct JSON feed to or from the database, and we can also have a relational view on that same TimeSeries database, so we can continue to use legacy tools that require a relational database.

The Shaspa Bridge makes it possible to store, access, query and analyze different types of data seamlessly, both locally and in the cloud, for speed-of-thought insight that optimizes business and personal outcomes. "Sensor technology is at a price-point that is highly scalable and affordable, which will really drive the Internet of Things in the coming years," say Goh.

"However, space and performance are major issues for embedded devices, so application design must be extremely efficient. With Informix, the TimeSeries feature alone provides an improvement of 30 to 35 percent on storage efficiency. And when we fetch data for analysis, it's much faster than in a conventional relational database, where you may need to go through thousands of irrelevant records."

He concludes: "Finally, the robustness of Informix and the backing of IBM are reassuring factors for enterprises looking to deploy mission-critical applications or to gather sensitive data. As we engage with large companies to help them unlock the benefits of insight from sensor data, this is an important benefit."

About Shaspa

Shaspa is a leading vendor of next-generation, smart home and commercial building solutions with the Shaspa Service Framework. Shaspa has partnered with IBM to leverage Informix for an end-to-end solution and service delivery platform for a range of market sectors, starting with a residential gateway platform.

To learn more, visit www.shaspa.com

For more information

To learn more about IBM Informix solutions, contact your IBM sales representative or IBM Business Partner, or visit us at:
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