

Creating smart green innovation with a reliable Internet of Things network

Established in 2005, Flexi Systems provides quality wastewater treatment and waste management solutions. In the era of climate change and a need for green solutions, Flexi Systems is looking for smart ways to provide more innovative solutions in environmental management.

Executive Summary

Industry

Wastewater treatment and waste management

Business challenges

- Litter bins are remotely located and manual waste management methods are highly inefficient, adding to manpower and resource costs.
- Smart litter bin management solutions must be reliable and efficient in determining the level of waste in bins.
- A stable network with extensive coverage is needed.

Singtel solution

Singtel IoTConnect

Business value

- Smart bins allow waste companies to manage their waste collection more effectively, saving a third of the manpower and vehicle costs.
- Singtel IoTConnect is the ideal connectivity solution for smart bins sensors as it meets the requirement of sending small data packets cost effectively.
- With islandwide connectivity 24/7 and real-time management capabilities, the IoT network is an enabler to their development of smart products and services.

Future plans

- Island-wide rollout of smart litter bin management solution and expansion into markets overseas.
- Flexi Systems will continually innovate to develop IoT products and solutions that help their customers run efficient businesses that are green and profitable.

Flexi Systems

Business Needs

Flexi Systems was looking for a more effective way to manage waste collection and the cleaning of litter bins. Manually checking bin levels require extensive manpower and is highly inefficient. Garbage collectors could never be sure how full the bins are; a typical collection route could have bins that are empty, half full or even overflowing.

Additionally, bins might not be located in ideal places. They might be placed in remote locations with little pedestrian traffic. Sending garbage collectors out to these bins, only to find that they are empty, is a huge waste of time and resources especially for a sector that faces a huge manpower crunch.



Flexi Systems developed BrainyBins, a smart litter bin management solution that uses sensors to monitor the level of waste. This innovative IoT solution allows waste companies to manage their bin collection more effectively. Knowing the level of waste in bins allows them to improve collection route efficiency as well as avoid overfills.

What Flexi Systems required was a stable and reliable network to ensure data from the bins could easily flow. "We needed a provider who had stable coverage across Singapore and more popular islands such as Sentosa and Pulau Ubin. Singtel is able to provide this reliable coverage alongside efficient technical support for troubleshooting," said Owen Yeo, Business Development Manager, Flexi Systems.

Solution

Flexi Systems is working with Singtel, utilising the telco's 3G and 4G networks for different projects.

For BrainyBins, Singtel recommended its Narrowband IoT (NB-IoT) network. Covering the entire island, this is the first commercial network dedicated to IoT solutions. Running on a 3GPP low power wide area (LPWA) network, it is perfect for sensors, meters, smoke alarms and devices that only need to send small amounts of data.

"In addition to being perfectly suited for the small data packets we are transmitting, NB-IoT is also highly affordable, thus making it much more competitive than alternative forms of transmission methods," said Mr Yeo.

The IoT Control Centre is a SIM management platform that provides visibility and control of all the network with real-time management capabilities.

Connectivity can be customised depending on needs, including the ability to scale when required. Running 24/7, 365 days a week, it boasts the widest coverage with most reliable connectivity in Singapore.

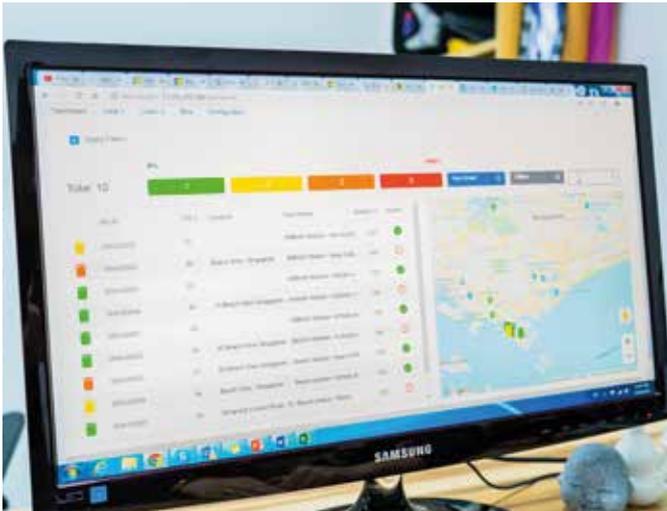
For the BrainyBin's sensor, NB-IoT was the perfect solution. It was able to handle the right data load with the coverage to reach bins scattered across different parts of the island. "If the connection isn't in every area, then why would we build these products?" said Mr Yeo. "We needed a reliable telco provider that could ensure stable coverage across our geographical operating area."

Singtel offered the perfect partnership, going to great lengths to ensure their solution met Flexi System's requirements. "They are a great company to work with. We appreciate the fact they ran many tests and trials. It's this sort of partnership that results in a successful product," said Mr Yeo.



Benefits

Initially, Flexi Systems did a test on Singtel's IoT sandbox to see if BrainyBins were compatible with NB-IoT. After the success of the small scale test, they ran a real trial on an island off Singapore and deployed 10 to 15 BrainyBins around the island.



For waste management, what Flexi Systems is trying to achieve is the efficient use of manpower. The trial proved that manpower can be reduced for routine activities. Bin level data was managed from the control room, offsite, and action was only required when the data indicated waste had reached critical levels.

Results from the trial saved a third of manpower and vehicle costs - a huge saving considering the manpower required to monitor waste.



It's this sort of partnership that results in a successful product.



Mr Owen Yeo, Business Development Manager,
Flexi Systems.

"The power of data is very big," said Mr Yeo. "Especially with the low cost of LPWA connectivity, you can get a lot of insights into your product. Things that you never used to measure can now be monitored offsite, resulting in data that is utilised to manage your business operations cost. Insights that you never thought of are now at your fingertips."

Future Plans

With the trial a success, Flexi Systems plans to roll out BrainyBins across the region in 2019. Powered by NB-IoT, successful coverage is ensured. This product allows Flexi Systems to go beyond their current markets in Singapore, Malaysia, Indonesia, India, and Bangladesh. The company is currently in talks with parties in Europe and USA for widescale deployment in those markets.



Each market has unique needs when it comes to waste management and disposal. Working with Singtel will allow Flexi Systems to continually innovate with IoT and help their customers run efficient businesses that are profitable and green.

"We want to solve our customer's problems reliably and cost-effectively. If they want to monitor and see aspects of their business, we want to provide them with dependable products that help them make the right decisions to increase efficiency," said Mr Yeo.

About Singtel

Singtel is Asia's leading communications technology group, providing a portfolio of services from next-generation communication, technology services to infotainment to both consumers and businesses. For consumers, Singtel delivers a complete and integrated suite of services, including mobile, broadband and TV. For businesses, Singtel offers a complementary array of enterprise mobility solutions, data hosting, cloud, network infrastructure, 5G, IoT, analytics, robotics and cyber-security capabilities. The Group has presence in Asia, Australia and Africa and reaches over 650 million mobile customers. Its infrastructure and technology services for businesses span 21 countries, with more than 428 direct points of presence in 362 cities.