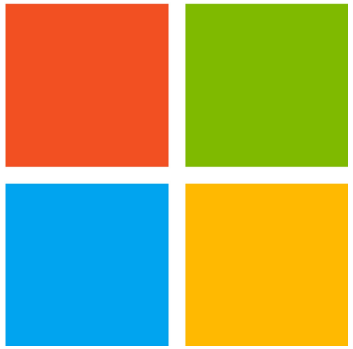
TOUCH TOMORROW

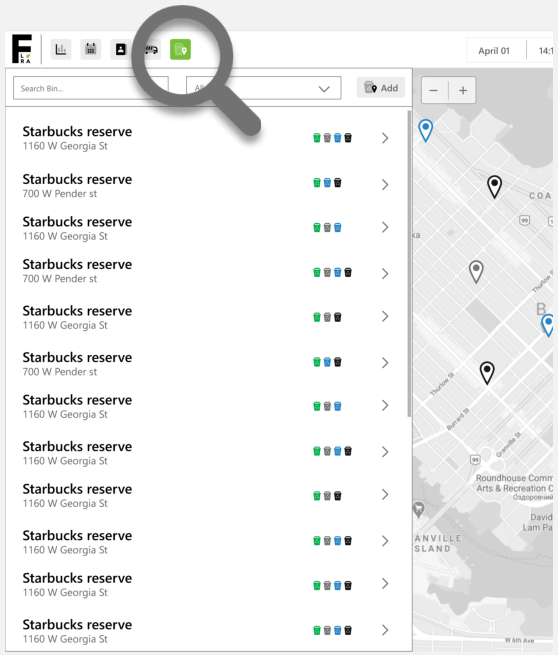
MICROSOFT TOOLS AND TECHNOLOGIES



Azure IoT

Azure IoT Hub

Azure IoT Hub offers a managed service to enable bi-directional communication between IoT devices and Azure. For FLORA, utilizing Azure helps manage the monitoring devices placed within waste stations.



Authenticate every device for enhanced security

Automate device provisioning to accelerate IoT deployment

Extend the power of the cloud to edge devices

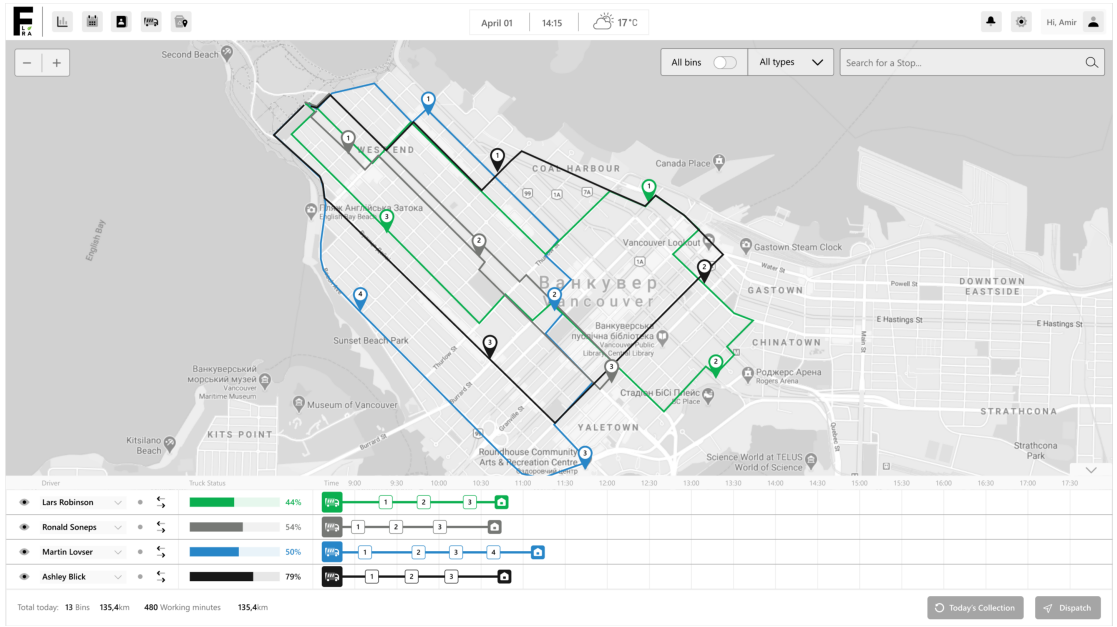
Azure IoT Hub will enable highly secure and reliable communication between the IoT application, and the monitoring devices placed inside waste stations.

The various features will help ease installation, calibration and device maintenance. A concern found within the User/Customer Testing and Feedback.

Collectively, this helps FLORA manage devices and allows for flexibility when registering and routing devices to IoT hubs.

Azure IoT for Transportation and Logistics

Evidently, leading companies are leveraging Azure IoT to build next generation mobility solutions. Tools offered by Azure can help enhance FLORA's dashboard and operations for a lasting impact.



Smart city and urban mobility management

Manage smart transportation infrastructure, assess road conditions, and ease congestion with real-time and historic traffic intelligence.

Fleet operations

Streamline smart logistics using real-time data and alerts powered by Azure Maps to optimize delivery routes, monitor performance, and respond to delays or issues as they happen.

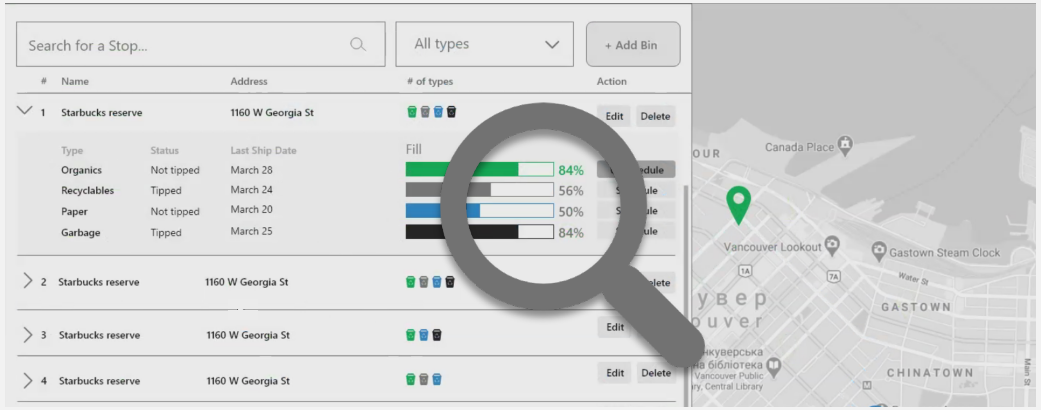
Using Azure Maps, active directory, and fleet management, can help enrich the user experience.

Managing smart transportation infrastructure helps FLORA generate the best and most efficient predictions for routing.

Azure AI

Azure Machine Learning

Advanced Machine Learning can be utilized in many areas of FLORA's dashboard. Ultimately used to heighten levels of certainty when optimizing collection routes and schedules.



With Machine learning, FLORA can make more accurate recommendations through the following:

- Analysis of daily (M-F vs Weekend) and seasonal variations across the year to spot trends in fill level rate.
- Prediction of appropriate threshold fill values for waste stations to avoid the overflow of any bins.
- Identification of bins that may not be used as well as possible (in areas with little to no waste disposal) to help manage resources more efficiently.
- Machine Learning can intelligently track trends in bin fill levels and find patterns in order to predict future levels.

Knowledge Mining

The knowledge mining part of Azure AI helps uncover latent insights from different types of content. The knowledge would consist of external factors beyond the fill level of the bins in order to increase efficiency.

Collection Staff

As indicated in the video, the user can add his or her staff to the dashboard. The lengthy process of adding staff can be shortened using knowledge mining from existing documents.

Event/Holiday Awareness

Through knowledge mining, FLORA can integrate the calendar in the dashboard with events and holidays. Alongside fill level information, we can analyze trends to predict how events can impact waste accumulation.

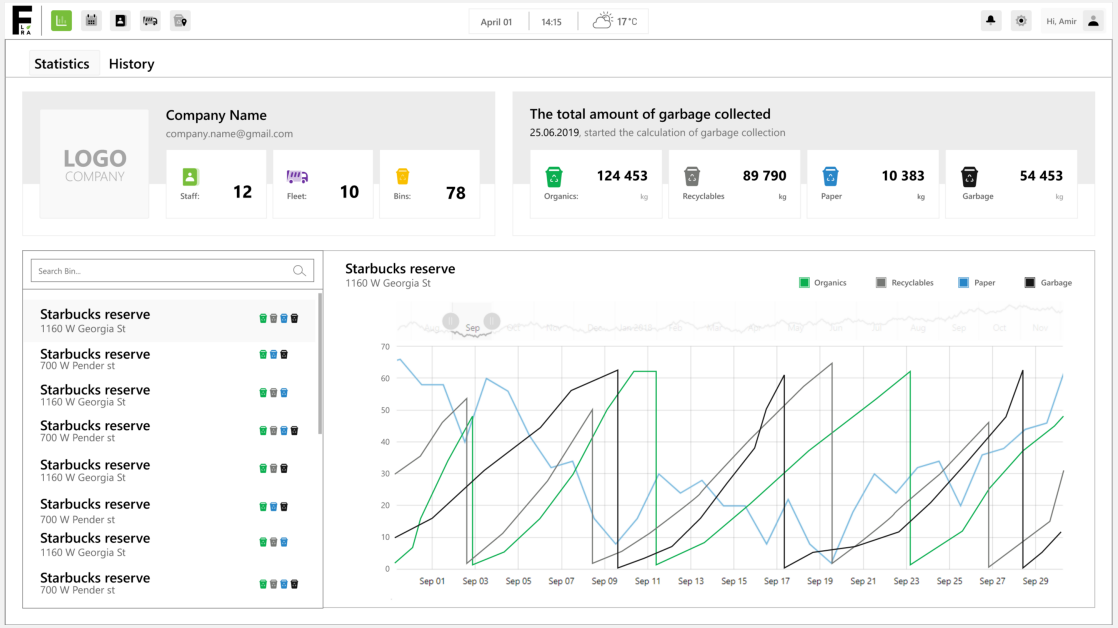
Weather Forecast

The weather conditions can often affect the general foot traffic of the public. This is more prevalent during winter seasons in cities with snow. The natural conditions can be used to schedule waste collection accordingly. Moreover, attendance in an amusement park is largely dependent on weather conditions, and information about this correlation can be useful for planning staff schedules.

Data

Big Data and Analytics

By analyzing a diverse dataset from the start, FLORA can make more informed decisions that are predictive and holistic rather than reactive and disconnected.



Part of Azure's Solutions, Big Data and analytics provide the following benefits for FLORA:

- Keep FLORA's data indefinitely, no matter the size. This includes valuable data on historic trends.
- Considering FLORA's relationship with clients extends over years, Azure's global infrastructure helps maintain a reliable basis to store data.

Azure SQL Database

Azure SQL is the intelligent, scalable cloud database service that can augment FLORA's data management and security.

Frictionless database migration with no code changes at an industry leading TCO

Built-in machine learning for peak database performance and durability that optimizes performance and security for

Unmatched scale and high availability for compute and storage without sacrificing performance

Advanced data security including data discovery and classification, vulnerability assessment, and advanced threat detection all in a single pane of glass

Considering the cutting edge features Azure SQL is equipped with, the following points outline how FLORA intends to utilize the service:

- Data storage associated with waste collection that could be useful for feature enhancements. This data can include date, time and the last time the bin was tipped (collected).
- To securely manage personal details about employees (phone numbers, name, etc.)
- To securely manage information regarding fleet and vehicle maintenance.
- With the flexibility of Azure SQL, FLORA can introduce the option to automate the billing system for waste collection. Previous interviews with stakeholders indicated this as tedious and in need of improvement.

References

All icons and information in the previous slides have been adapted from the sources below to clarify the use of Microsoft's Tools and Technology for the Discover AI Challenge, with relevance to the FLORA project. The FLORA team claims no ownership of the graphical icons used in slides 4 and 8.

Sources:

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https://azure.microsoft.com/en-us/solutions/big-data/
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