

# Collect. Calculate. Dispatch. A Unified System for Ballot Pickups

## Smart Scale & Dispatching Integration

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### Overview



- Snohomish County has **35 ballot drop boxes**.
- There were over **533,000 registered voters** in 2024.
- In 2024, ballot boxes **exceeded capacity 12 times**.

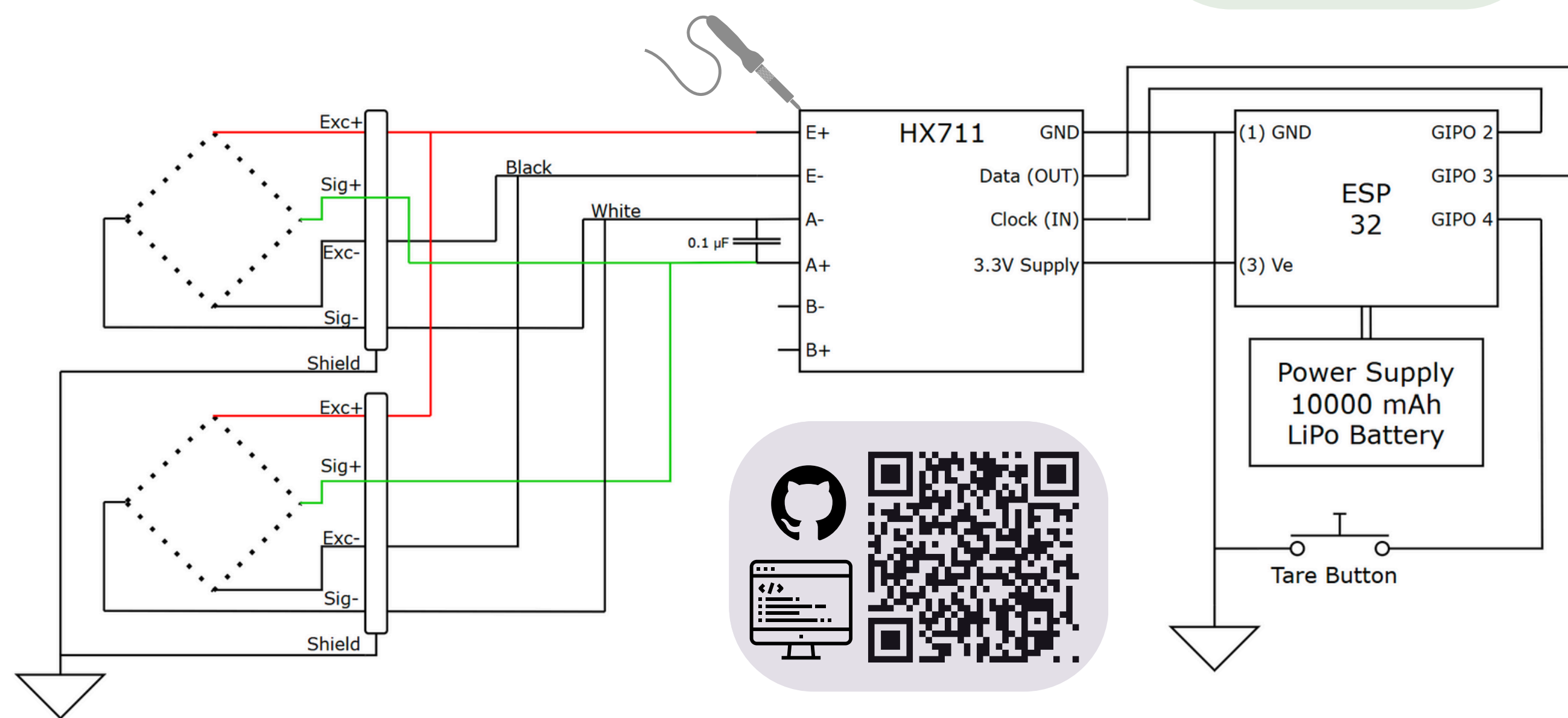
### Goal

Improve **ballot collection** in Snohomish County by using **smart scales** in drop boxes to feed data into a **centralized tool** for creating, dispatching, and monitoring collection teams.

### Deliverables

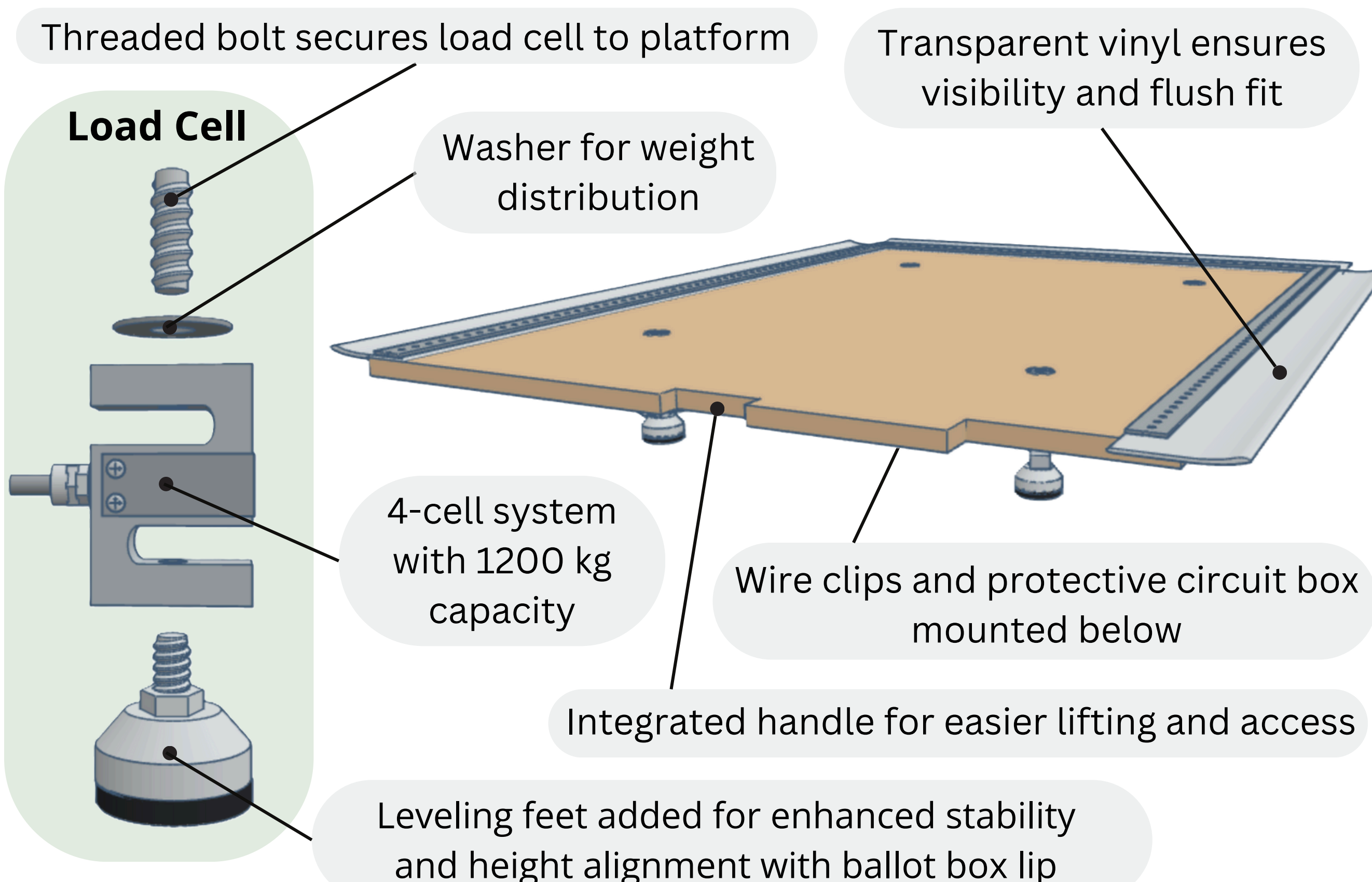
#### Smart Scale

Takes **constant measurements** of the weight of the ballots, transmits **fullness status updates** into the cloud using a tier system in **25% increments** to minimize Super Tag battery use.



#### False Floor

Creates a flush, stable surface for **safer ballot collection** and accurate weight measurement using four load cells. Clear vinyl **prevents slippage** and enables visual checks in a **durable, low-cost** design.



#### ESRI ArcGIS Online

##### Route Tool

Python code within ArcGIS Notebooks to enable user input, **optimized routing solutions**, and automated dispatching.

##### Inputs

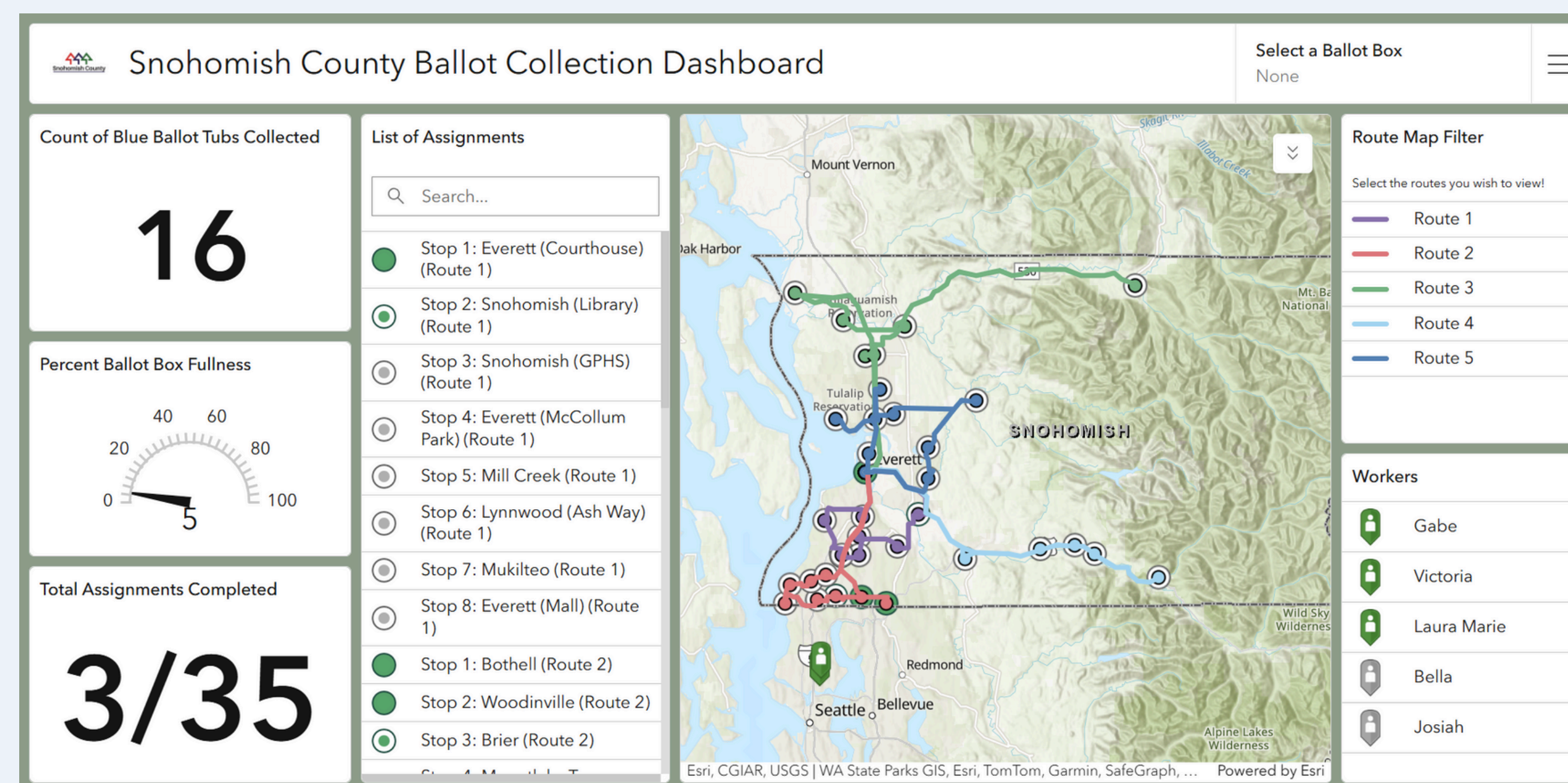
- Connection to Workforce
- Ballot boxes scheduled for pickup
- Workers available for assignment
- Routing parameters
  - Constraints for number of stops, number of routes, route duration, etc.

##### Outputs

- Batch assigns to Workforce
- Sends routes to Dashboard
- Creates optimal routes
  - ArcGIS Plan Routes
- CSV export of routes

##### Dashboard

##### Workforce & Survey

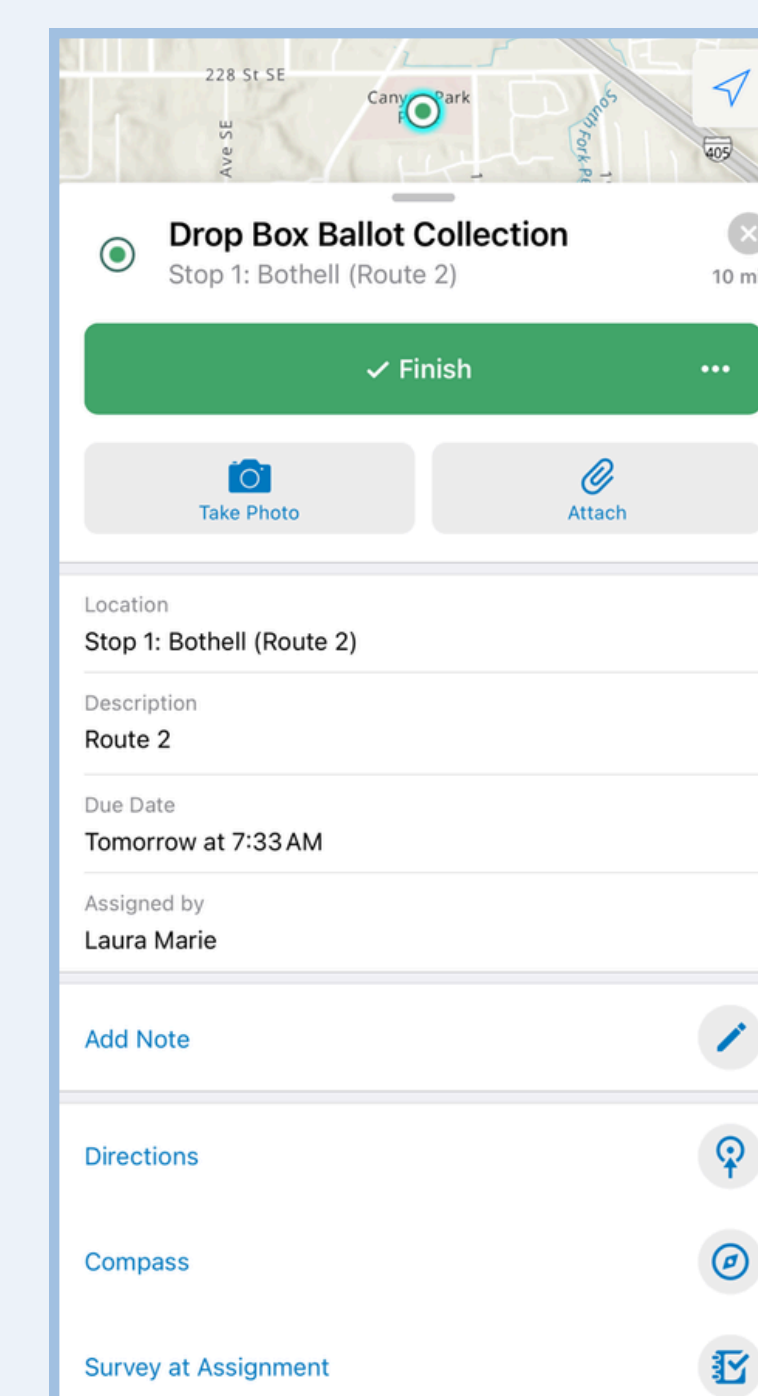


##### Collection Lead - Workforce & Dashboards

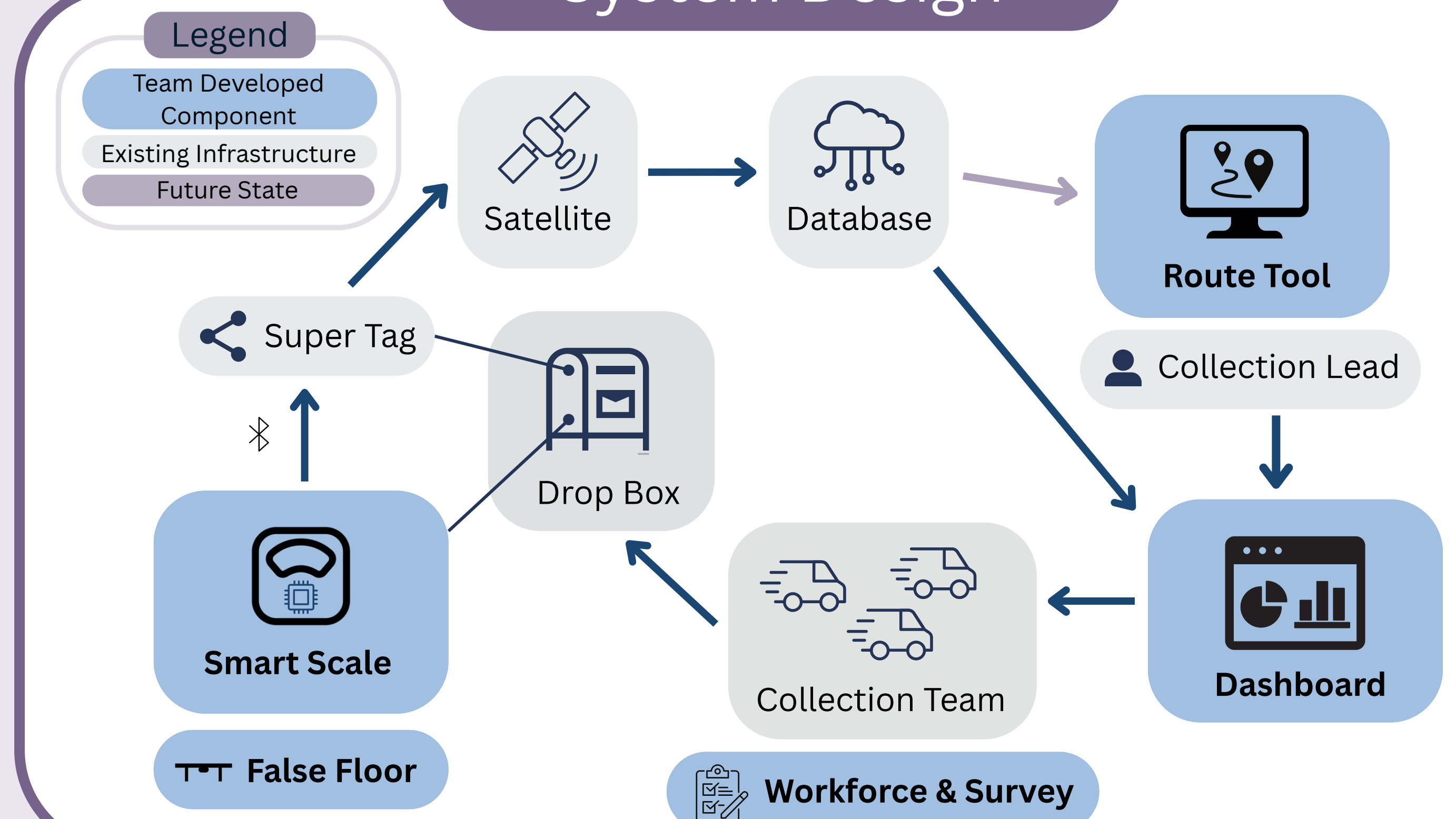
- Tracks the total blue ballot tubs collected
- Displays a comprehensive **list of assignments**
- Supports filtering** by route, worker, or ballot boxes
- Will visualize ballot box fullness (via smart scale)

##### Collection Team - ArcGIS Mobile Apps

- Lists assigned routes and due dates
- Provides options to **start and complete assignments**
- Launches directions (Apple/Google Maps)
- Allows **survey completion** through Survey123



### System Design



### Impact

#### Qualitative

- One Integrated System** → End-to-end transparency with a **unified platform** for **route tracking**, survey results, and workforce assignments.
- Real-Time Visibility** → Live dashboards support faster, **informed decision-making**.
- Human Centered Design** → False floors reduce strain and **improve staff safety**.
- Future Scalability** → Modular, **low-cost system** built to grow with county needs.

#### Quantitative

- 122 miles saved** per general election
- 6 gallons of fuel saved** per general election
- \$1000 cheaper** than using a pre-built scale

### Next Steps

- Complete **connection between Smart Scale and ArcGIS**
  - Via Super tag and GeoEvent Server to display on dashboard
- Implement **priority based routing** based on **ballot box fullness**
  - Requires a complete connection with the Smart Scale
- Usability testing** and further improvements of the **Dashboard, Route Tool, and Workforce integration**.
- Pilot testing** of Smart Scale and ArcGIS ecosystem in a **real election**.