

ADR  
Ian McKee (934-424-206)  
Group 76  
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#### Reformed problem statement (2025/11/16)

Researchers need a local app to use that (1) controls the tint levels for 18 windows and 2 skylights and (2) logs all tint level changes.

Sensors will also be installed to measure indoor and outdoor light levels.

These measurements allow for features like adaptive tinting based on sunlight conditions.

#### Context (reformed from problem statement)

Vendor software is unavailable.

We need software that the employees of window company and grad students of Dr. Pierson can

1) use easily

2) retrieve sensor data

3) control tint levels

Usable at the trailer.

The sensors at the trailer will return unstructured data.

#### Decision

Choose Microsoft SSIS, as an ETL tool to filter unstructured sensor data.

#### Options considered

1. For sensor measurement: use ETL tools to filter unstructured data.
  - a. Talend, an open-source ETL
  - b. Microsoft SSIS (convert to SQL-ETL tool)
2. Manually input sensor data sources into a DB.
3. Do nothing

#### Consequences

Will result in a new data format (likely structured data), and database will need management.

Might have to conduct UX tests later to make sure usage is clear for employees managing windows, and easy to understand for other end users.

- **Rationale:** The sensors will provide base data, and will have to be converted to tables. These sensors are consistent with each of the 20 panels. To structure each datapoint in each panel, will increase ease of use and consistency in application.

Doing nothing will have sensor data go nowhere useful. With just a database framework, it will take manual inputs, which can take a lot of extra work.

- **Tradeoffs:** Will have to collect all sensor data at one time and input into ETL. Microsoft-focused framework might have Microsoft-based pre-reqs.

#### References

[The ETL \(Extract, Transform, Load\) Process in Data Engineering - GeeksforGeeks](#)  
[Microsoft SSIS documentation](#)