**PIERCE COUNTY PUBLIC WORKS**

**TRAFFIC SECTION**

**DATE:** June 9, 2015

**PROJECT TEAM**

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**INTRODUCTION**

The Pierce County Public Works Traffic Section utilizes count stations around the County to gather count information. This count information is adjusted for daily and seasonal variations. The resulting adjusted counts are used in decision making and in modeling for future projects. The count information gathered needs to be accurate and timely. The Traffic Section saw the need to improve the method of processing the count information and this is a report of that method.

**BASELINE SYSTEM**

The past method of managing the count information required importing and processing the raw data files into Microsoft Excel. For multiple raw data files with large disk space needs, such as the puck count data which is collected from the 94 Av E and 144 St E intersection, the import time can be very long. The other data format is produced from the loop counts which store hourly counts for each lane at each location. The baseline system utilized Microsoft Visual Basic (VB) scripting to process the aggregation of counts from its hourly or 10-second interval, to structured daily and weekly summations. Each weekly summation required up to 10 minutes of processing time in the Excel/VB baseline method, and also required that the engineer initialize the file before running the script. This method is inefficient and time consuming.

When errata in the count information were discovered or the baseline method required revisions to fit a different format of raw data being output by the count stations, the engineers had to invest additional time in further VB scripting. Despite optimizations implemented in the VB scripting, they were unable to remove the overhead of processing time in the Excel/VB method. Long processing times remained and it was also difficult to reprogram and rerun because the turn around on intermediate results was not timely.

**IMPROVED SYSTEM**

The improved system was developed with the open source scripting language Python; the preferred scripting language for Pierce County GIS. Two scripts have been developed. One script is called “counts.py”, which aggregates count information for pucks and is able to process files from each of the puck stations. No manual work of importing files is required and the results appear in approximately one second. The second script is called “count\_location.py” which aggregates count location data stored in hourly increments. It has the intelligence to correct errors in the recording of hours and has data structures established that could learn from the data to automatically correct counts. It builds its structures in approximately one second and can export several files in milliseconds. Both scripts were developed with Object Oriented Programming (OOP) frameworks in mind, to allow very specific data querying and addressing.

**COMPARISON**

We spent time manually reviewing the results for error analysis. We noted that the data itself errs every Sunday at 1:00 AM, but nothing that the script from the improved system cannot handle. The scripts consistently produce accurate results with perfect precision and recall.

Table 1: Compare Baseline and Improved Systems

|  |  |
| --- | --- |
| **Baseline** | **Improved** |
| 10 minutes per week processing time | < 1 second per week processing time |
| Store all data in files with ~14MB per day | Store data in class structures with ~20KB per day |
| Manually process each period | Automatically process each period |