3 Jan, 2019

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**Progress Report – 1 Dec 2018 – 31 Dec 2018**

Contract Number: HSHQDC-06-D-00022

Contract Number 7500097279

Order Number: HSCG23-07-J-TED150

Task Order – Performance Work Statement (PWS) 1.12

Attachments: (1) SAROPS subcontractor financial reports.

1. **Discovered a few flaws and very old bugs in Planner; obviously they didn’t show up that often, but with the move towards requiring track spacings in trackline pattern variables, there were a few that did.**
2. **Miscellaneous maintenance, eg:**
   1. **Responded to some test questions on SBV.**
   2. **Found a crossing in an area that others didn’t find.**
   3. **Fixed zero-winds problem in SBV; note that with standard deviations set to anything but 0, it’s all but impossible to really have zero winds, so this was only a test issue, not a production issue.**
   4. **There were some problems with a code version, which I cleared up by looking at output files and the version.name flag in resources/com/skagit/sarops/util/SimGlobalStrings.properties.**
3. **Installed new motoring logic for SBV, introducing “zeroZero particles.”**
4. **Worked on rounding. Will discuss at IPR, but the old way of doing business was to optimize non-rounded boxes and try to round the result and clear overlap. The new way is that dimensions that are tried (eg during the minor moves) that produce unrounded boxes, are transformed into rounded boxes immediately. In other words, the operator only deals with rounded boxes even if the given dimensions are unrounded. Then at the end, there is no rounding and hence no clearing of overlap that is introduced by the final rounding.**
5. **Related to this is VS; Suppose the effective path length for a VS is 17.9. The optimizer does not take a radius of 17.9/9, but rather 17.1/9. Here’s how it does that; the total used epl must be a multiple of 0.9 because the radius must be a multiple of 0.1 and there are 9 radii in the used epl. Hence, we take 17.9/0.9, take the floor (which is 19), and multiply it by 0.9 (to get 17.1). For VS, this seemed natural and so I applied this idea to LP above (and soon SS); always work with rounded so we don’t have to round later on.**
6. **During the last week of December, all of this fell into place so rounding, as an issue, disappeared, and preliminary VS was done. “Preliminary” because I’m treating VS during the BirdsNest algorithm, as a frozen; probably can get away with that. During the BirdsNest algorithm, I shift and re-align only the LadderPattern PatternVariables.**
7. **The rounding algorithm was revamped for LP and SS so the following important criteria is solved:**
   1. **I must report the rounded values for length and width (which are derived from search-leg-length and track-spacing) in the xml, and they turn around and give those back to me for subsequent optimizations. Unfortunately, they also give me the original effective-path-length and, as Rob noticed, the resulting boxes in the subsequent optimization can have overlap, resulting in POS going down.**
   2. **Based on the way I now do rounding, I can, given the original effective-path-length, and the rounded length and width that I read in the subsequent optimizations, create a length/width combination that, when rounding is applied, results in the rounded length and width.**

**This was an important step, and also fell into place the last week of December. It looks as if the bulk of my work was in the last week of December, but it’s really just when everything fell into place.**

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| **Name** | **Activity Worked** | **Hours Worked** | **Hourly Cost** | **Total Cost** |
| Kratzke | Coding/Doc/Travel | 181.73 | -- | -- |
|  |  |  |  |  |
| **Totals** |  | 181.73 |  |  |
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