06 Oct, 2015

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**Progress Report – 1 Sep 2015 – 30 Sep 2015**

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. **Still overhauling, refactoring, and restructuring the code. This is not the current 2.0.3 codebase because that has to be ready all the time. This is the code that has the new optimization method in it.**
2. **Worked the non-optimization part of ESS sensors. This included the read/write, and the computation of PD. Right now, I’m not computing the sweep width because it is only for reporting purposes, and I’m unsure of its interpretation in light of the small wedge that is actually visible. I’m always assuming that the wedge is on the “down-creep” side, and that there is no PD on cross-legs (even-numbered legs). The 5-minute rule still applies.**
3. **Worked through an STR list and wrote reports on those that involve me. This involved two meetings with Jack, and follow-up work after the initial draft was done.**
4. **I think I’ve come up with a way of handing the difficulties involving the POS=POD\*POC approximation used in Planner, but unavailable for ESS. POD\*POC is used only for quick approximations, and I will use, for a quick approximation, a small sample of points. The optimization uses POD\*POC until overlap is cleared, a fairly heavy sampling scheme when there is no overlap, and the full set of particles for reports. I’ll keep the 2nd and 3rd methods, and replace the first one by simply using a sample of 30 for ESS sensors.**
5. **I was wrong about the single particle problem’s cause last month. What actually was happening was possibly not that unusual. Probabilites are stored in single precision and several legs from potent sensors can drive all of the probabilities to zero in single precision (about 10-to-the-minus-45th). When this happens, it can easily happen that there is a time-step for which only one particle has non-zero probability. This actually causes a crash in Simulator, but not until after the Particle File is written and other output files are written. Moreover, the SimWebServer gracefully exits that case and awaits a new one, so we are not noticing this problem. My fix is to log an error message when all but one particle has been zeroed out, and keep the crash from happening. With radar and ESS, there may be more cases like that, especially if the quadratic LRC being used overestimates PD.**
6. **I think that I’ve gotten the Track/Trace issue resolved. It was submitted in the installers of Oct 02.**
7. **My first 2.0.3 installers went up and they seemed to hold up. There’s a new java, some code had to be renamed from “02” to “03.” There’s a little more work to do on this, in particular the JNI libraries are still “02.”**
8. **Am off a week in October and a week in November.**

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| **Name** | **Activity Worked** | **Hours Worked** | **Hourly Cost** | **Total Cost** |
| Kratzke | Coding/Doc/Travel | 169 | 282 | 47658 |
| Vergamini | Coding/Doc/Travel | 4 | 282 | 1128 |
| Stone | Doc | 0 | 223 | 0 |
| L White (Tech Writer) |  | 0 |  | 0 |
|  |  |  |  |  |
| **Totals** |  | 86 |  | 24252 |
|  |  |  |  |  |