1 Sep, 2016

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**Progress Report – 1 Aug 2016 – Aug 31 2016**

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. **Fixed a minor glitch in anchoring in Great Lakes; the regions where one has to adjust for the surface levels of the Great Lakes, were not being registered. Hence everything in the Great Lakes wasn’t working. This was strictly 2.1**
2. **Attended and participated in CGTRK scrub meeting and TWG’s.**
3. **Re-did the rounding and clearing of overlap. The rounding had been turned off while the rest of the planner was updated. There is still a glitch in this, but it is returning rounded solutions. The glitch is the following: We round, which could create overlap, clear that overlap, and then round again. The “clear overlap” part of this algorithm is not clearing it very intelligently.**
4. **Cleaned up and updated CGTRK for all entries related to Metron. Involved a mini-scrub with Jim.**
5. **Cleared out some dead code in SimLib. There are 2 C++ libraries. The first, called MathLib, I’ll discuss later. The second, called SimLib is strictly a C++ wrapper that executes by going back to my Java code, and Jim uses this library. Hence, I have to be very careful to not change the interface that Jim is expecting. This one has to be checked after I build and run an installer so that I have an environment similar to the one that Jim uses.**
6. **Re-worked a problem that had plagued me in one form or another. The simple explanation is that Planner doesn’t handle useless or nearly useless SRUs very well. Now it does. The latest incarnation of this problem occurred when the particle types for an SRU were present in the particle file, but had extremely low weights due to completed searches from the Simulator. Fixing this meant that I had to invent a new characteristic for an SRU in my answer to indicate that “this SRU is simply in the way and I will not use him.” To keep the gui happy, I still needed to produce a box for such an SRU; the box that planner produces is beyond the edge of the AOI and in addition, there is a new attribute for such SRU’s. I *should* have done this a long time ago and it would have fixed other problem such as mismatched object types between simulator and planner. Such an SRU would have been classified as useless and planner would have happily returned POS values of zero all around.**
7. **Went over with Jack how POS is computed across near legs, and how the stack of POS values is created and used.**
8. **Went over with Art Allen some Sim.properties environmental values are used, and also how Rayleigh distributions are used.**
9. **Found and fixed several bugs. The first was when two LOBs were collocated but had different bearing calls, and that resulted in an illegal ellipse but the fix that was created was the same as the origin (of both the bearing calls). That caused a crash. Email discussions lead me to believe that it might be an upstream error, but it won’t cause a crash in my code anymore.**
10. **There is apparently a glitch in my MathLib for 2.03/4. Jim explained it well; For some real down-in-the-weeds and oft-used calculations such as sin, cos, acos, and atan2, I can use C++, which is faster but slightly less accurate, or pure Java, which is slower, but more accurate. John Squires has reported a case that I fixed by simply flipping back to Java. I had tested with thousands of randomly generated angles, the C++ version, but hadn’t found one where they differed, printed to 10 digits. I switched to scientific notation and I now see that there are some differences as big as 0.000000000001 (10-12).**
11. **Advised some on where to find some numbers related to out-of-area incidents. I’m supposed to clean up my output from that, but it’s not urgent.**
12. **Cleaned up a SimWebServer/GetStatus problem. When GetStatus was called many times, SimWebServer could start creating its response while the case wasn’t finished, but because of multi-threading, not finish it until after the case was finished and some variables were set to null. This caused a null pointer exception. They are decreasing the frequency that they are calling GetStatus now, and I am checking for the null pointer where it was crashing. Since GetInitial is relatively short, this is more likely to happen with GetInitial.**
13. **Started organizing the input data for modifying land data, but haven’t had a chance to get at this because of the planner issues.**
14. **Went over all of the fixes with Jack and later with Jim and Rob on Aug 31. There are no outstanding planner issues with cases as of this writing. BTW, old planner cases have been checked and the answers are better and faster.**

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| **Name** | **Activity Worked** | **Hours Worked** | **Hourly Cost** | **Total Cost** |
| Kratzke | Coding/Doc/Travel | 223.4 | 282 | 62998 |
| Vergamini | Coding/Doc/Travel | 0 | 282 |  |
| Stone | Doc | 0 | 223 | 0 |
| L White (Tech Writer) |  | 0 |  | 0 |
|  |  |  |  |  |
| **Totals** |  | 143.5 |  | 62998 |
|  |  |  |  |  |