2 Jul, 2011

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**Progress Report – 1 Jun 2011 – 30 Jun 2011**

Contract Number: HSHQDC-06-D-00022

Order Number: HSCG23-07-J-TED150

Task Order – Performance Work Statement (PWS) 1.12

Attachments: (1) SAROPS subcontractor financial reports

1. **SAROPS Systems Component Services Tasks**
   1. **Activities completed:**
      1. **Wrote up May's Monthly and attended TWGs.**
      2. **Met with USCG and wrote up tasking and priorities.**
      3. **Worked through a requested change in GetStatus. We now give more information about all of the cases.**
      4. **Worked through some questions about a case that doesn’t seem (to USCG) to recognize improved overlap. The results files from EngineFiles do seem to indicate that planner is working properly.**
      5. **Another case was submitted to me about decreasing overlap, and I can understand that this could be problematic. Of course it wasn’t for me; I just looked at it in the internal gui and waited for it to deconflict and then improve POS. It actually does a very nice job, going from 74% to 88%. I captured the screen from the internal gui to an avi and sent it off to the Coast Guard.**
      6. **Submitted Beta21 and wrote up notes for Jim on the differences between Beta20 and Beta21.**
      7. **Related to “v” above, the avi is 9 minutes long and I tried to speed it up. While looking through the code, I noticed two errors that could have a significant effect on planner cases for which the particles have significantly different priors. This could be looked at as routine re-examination of difficult code, except that errors were found. In particular, the setting of “cums” in line 399 et al of ParticleManager.java, *should have been a clone* instead of a simple assignment. The assignment causes the subsequent telescoping sums to occur in either \_allPriors or \_priorsGivenSelection, and these arrays are potentially used in subsequent processing. This was fixed on June 4th (Saturday after Beta21).**
      8. **There were some misgivings about SWS/64. I examined the complaints, looked at the problems, and concluded that the problems lay elsewhere. Eventually (as of 6/9/2011), that appears to be the case. But it does take time to examine this.**
      9. **There were real bugs. While creating an exclusion area, I accumulate many rectangles and take the union. This involves creating polygons. The points of a polygon are on a Lat/Lng lattice with resolution 0.0000001 degrees (roughly 1.1 cm at the equator). I need to sort the polygons that I create and discard those that are contained within another polygon, and part of this involves finding a point that is interior to each polygon.  
         One of the polygons in the union turned out to be so tiny that it had no interior point in the lattice. This was causing a crash. This took a couple of days to track down and fix.**
      10. **A second bug really wasn’t so much a bug as it was a subtle re-interpretation of a number I produce. The term “Total Overlap” is not a good term. I invented it long ago as part of the optimization process. The idea is to *minimize* the overlap; not eliminate it. From an optimization’s perspective, the overlap between two boxes that are frozen should not count towards the overlap; there’s nothing the optimizer can do about that. But we do need to count that for the (historically ignored, but suddenly important) field in the planner result file. I await something similar happening when the team stars to recognize the importance of the “Track Space Violation” field. Again, it took me 2 days to track this down and fix it. Most of the time, I really *do* want the old interpretation of overlap so an extra argument had to be added to several “overlap computation” routines to indicate whether we wanted to consider “for report” overlap or “for optimization” overlap.**
      11. **Another bug that turned out not to be. The SAROPS gui allowed Overlap Exceptions to specify non-existent SRUs. I did not crash, but I aborted in this situation. It’s probably a non-issue now because ASA has fixed their side, but I now do a better job of logging the bad overlap exception, ignoring it, and completing the run. I’m not sure that’s the best way of handling this. It seems to allow a bad xml file to survive.**
      12. **I discovered two other bugs in the progress step computation for sim. They were easy to fix and resulted in fewer lines of code.**
      13. **Uninstalled and installed Beta22. This took a while, using regedit, etc. with Fred and Young’s help.**
      14. **Briefly looked into a dateline problem. Since I specify a rectangle by simply giving the center point and dimensions, I don’t think this is my problem.**
      15. **Looked into a “POS problem.” Was sent a case where optimize seemed to decrease POS. It does. But that’s because it’s doing a better job on the particles that it’s supposed to be looking at, which decreases the POS overall. As stated before, the easiest way of understanding how we do planning is to think of a coach that is supposed to assemble a good basketball team and then measuring it by how well it plays baseball. In our case, the basketball team got better, but it’s playing baseball more poorly.**
      16. **Another POS problem was the cumulative POS was not changing. Again, this has nothing to do with the optimization (I’m still getting good answers), but some of the extra numbers I’m computing were wrong. When I moved to sampling for the final answer, I lost the connection to already completed searches (within the simulator). I had trouble with this because my first fix did not show any problems in my environment, but Jim was having trouble. I couldn’t turn off the SimWebServer and couldn’t find the port number to turn it off from a browser.**
      17. **I had assumed that the execution directory would always be <AppDir>; the directory where Sim was installed. I had relative path names in my code; especially for log files.  I did this because I thought that that was a directory I’d be guaranteed to be allowed to write to. There are some log files that are “outside of cases;” those that are written before the case is underway, and in SimWebServer’s case, there’s processing done between cases.  Such processing includes reading the JarFile Sim.properties and printing those properties out, reading the number of processors, identifying which port I’m operating on, which case I’m getting, the size of the queue, the number of active cases, etc..  
            
          SimWebServer was written as an APPLICATIO that stands in for a web server.  ASA is burying SWS execution inside of a PROCESS and it is executing from some system directory Windows32. I don’t know that I’ll have write permission on every machine, I’d never be able to find the log files anyway, and I wouldn’t know where to look for the overriding Sim.properties file.  
            
          So now I have a jvm (not program) argument (-Drun.dir=[APPDIR} that is hard coded to <AppDir> in the installer and I’ve gotten rid of the relative path names. I now have routines like SimCaseManager.getLogFilesDir() which return RunDir/LogFiles.  The properties files are in RunDir/data and I no longer have –Ddata.dir=./data.**
   2. **Travel completed:**
      1. **None**
   3. **Upcoming activities scheduled:**
      1. **Respond to bugs for code freeze. I hope I get them soon enough.**
   4. **Travel planned:**
      1. **None planned**
   5. **Concerns or recommendations:**

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| --- | --- | --- | --- | --- |
| **Name** | **Activity Worked** | **Hours Worked** | **Hourly Cost** | **Total Cost** |
| Kratzke | Coding/Doc/Travel | 92 | 230 | 21160 |
| Stone | Doc | 0 | 223 | 0 |
| Vergamini | Meeting/Consulting | 0 | 223 | 0 |
| L White (Tech Writer) |  | 0 |  | 0 |
|  |  |  |  |  |
| **Totals** |  | 79 |  | 21160 |
|  |  |  |  |  |