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**Progress Report – 1 Jun 2018 – 30 Jun 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. **Lots of Sprints and Points meetings.**
2. **Put a lot of exception catching into my C++ and Java code. Now, in Java, I throw an uncaught exception, which causes the C++ to detect some error. The JNI environment recovers smoothly. I checked this with an intentional error, and built that test in; the “GetEllipse function with a single Boolean argument set to true, will trigger a Java call that throws an uncaught exception. The JNI recovers smoothly. I had hoped to be able to re-set the JNI environment entirely, but that didn’t work; perhaps one can set the JNI environment only once in a thread.  
   It’s still worth noting that we never did know what was causing this problem or even that the problem was within my code. Jim never had in his code lines like “going into JNI” and “coming out of JNI” so we don’t really know that this is solved. As Jim said, this is just a stab that is promising. We never could get this to crash intentionally even when giving it invalid data. So I’m still a bit on pins and needles about this.  
   One other thing that I did along these lines; now I return a SimPattern or an Lob ellipse that indicates that there was some failure. This “indication” is in the form of invalid return data such as latitude=91, longitude = 181, or the like.**
3. **Figured out the planner problem with comparing old and new solutions. Jack had a case that demonstrated that I was computing the POS value on all of the particles instead of just the ones that were being optimized on. Interesting route to this fix. I thought it was harder than it was and wrote between 20 and 50 lines to fix it. Cleaning that up, and re-thinking how to do it, it really did turn into a 3-line fix.**
4. **Worked more on automatic testing of Simulator runs. Melody’s set of cases had huge un-shrinkable names, so I had to devise a new way of shrinking the names (which are based on directory names. The sheets in the spreadsheet carry these names and they are limited to 31 characters. A fair amount of work resulted in the scheme: Take entire relative path, but only, at each level, the minimum number of characters necessary to uniquely identify the directory name. To keep this readable, I used regex in my code to keep the first character, and eliminate all lower-case vowels. Then I kept the first few and last few characters, putting an apostrophe between them. I increased the number of characters kept there was a unique identifier. That could still lead to long names, so I invented a way of truncating and adding a “uniquifying string.” That had to be repeated when I was constructing the sheet names. So a “case” has: 1. Its directory, 2. Its shortened name, and 3. Its sheetName. #3 may be a shortened version of #2.**
5. **Wrote and re-wrote the Sailboat Voyage SailSegment generation code. Demo-ed it and everybody liked it as far as they could understand it. Since the SAROPS display was all they saw, and it doesn’t show what the particles are doing, only that they are “underway,” I will present at the IPR what is really happening. I think it will be more convincing with a more thorough display of the particle states, not just their positions.**
6. **More on sailboats; prior to this month, I had understood that when the wind fell below the polars’ lowest value, we should enter “motoring” and when the wind rose above the polars’ highest value, we should enter “hoveTo.” I assumed that in part, because I had no polars for those values. That changed; below the lowest polars, we now interpolate down to 0, and above the highest polars, we simply use the highest polars. Now we enter and exit motoring and hoveTo strictly based on Sim.properties.**
7. **I had a bug in my code that was reading the sailboat voyage values from Sim.properties. Nobody else noticed it, but I noticed it when I tried to change the environmental interval from 7200 seconds to 3600 seconds. I fixed it, and it has some impact; these values are no longer overridable in the xml on the SAILOR line. There would have to be a separate CRUISER or RACER line in the xml if Judy wants to override them. That hasn’t come up (yet).**
8. **Still revising the Eval compare code.**
9. **My process for building SimLand worked smoothly for Rose Island. Next up is the set of 26 corrections on the west coast. One thing I noticed is that a tweak in the simplification parameters will cause a lot of false positives in Fred’s test if I run the sausage maker with all the data. So I added an “Amend” mode which allows me to take the most recent version and simply “amend” a new change. For example, to do the Rose Island modifications, I started with the result from the Florida modifications and simply added the Rose Island modifications. This is a different process than starting with GSHHS, and adding all of the modifications in Phase 2, Phase 3, and all of the modifications in Phase 4. If I were to do that, Fred would see many false positives. This happened to him when he reported that “Sacramento had changed.” Of course, if GSHHS (our base data) itself ever changes, I will run from scratch and Fred will see all of these false positives.**
10. **Working on presentations for SimLand, Polars, and Sailboat discussions for upcoming IPR.**
11. **John Squires reported a problem in my code and Rob Wilson found that John was mistakenly setting a parameter he should not have been. I missed what Rob found while investigating it. When Rob suggested that that might be the problem, I verified that it was, John undid the accidental adjustment, and the problem disappeared. Closing the barn door after the cow got out, I fixed the problem so that, should John ever *want* to make such a modification, the code would work.**
12. **Spent time explaining SBV and verifying cases. Again, since my display shows what kind of motion the pre-distress craft is doing (motoring, tacking port, …), it’s easier for me to examine what’s going on.**

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| **Name** | **Activity Worked** | **Hours Worked** | **Hourly Cost** | **Total Cost** |
| Kratzke | Coding/Doc/Travel | 194.84 | -- | -- |
|  |  |  |  |  |
| **Totals** |  | 194.84 |  |  |
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