

Full Speed Dorado Sim Project Meeting Notes

Project generated **Wed Jan 21 12:17:45 2015**

1. Project Objectives

1. Description: Make the simulator, which executes the actual GNC flight code, run as fast as possible. The simulator speed will be limited only by the speed of the processor, and will scale up on a faster processor Do this with the least amount of code change possible. As much as possible, run the same code in the simulator that runs on the vehicle.
2. Created : 2015-01-02T23:58:50.198Z
3. Modified : 2015-01-09T01:24:27.834Z
4. Completed : 2015-01-09T00:48:19.653Z
5. Comment: Only one process out of sequence (Layered Control)
 1. Created : 2015-01-07 18:16
 2. Created by: Rich

2. Design Approach

1. Description: Get something simple working end-to-end first, then iteratively improve it.
2. Created : 2015-01-07T00:50:14.974Z
3. Modified : 2015-01-09T00:48:49.279Z
4. Completed : 2015-01-09T00:48:49.114Z

3. Tasks

1. Description:
2. Created : 2015-01-07T00:55:16.853Z
3. Modified : 2015-01-09T17:36:00.460Z
4. Completed : 2015-01-09T00:48:50.168Z
5. Comment: QNX VM - Rob Sync GNC processes Non-block
 1. Created : 2015-01-09 17:36
 2. Created by: Rich

4. Schedule

1. Description:
2. Created : 2015-01-07T00:55:18.945Z
3. Modified : 2015-01-09T00:48:51.188Z
4. Completed : 2015-01-09T00:48:51.114Z

5. Code repository

1. Description: How will we manage and share the code? CVS vs. Git.
2. Created : 2015-01-02T23:58:50.215Z
3. Modified : 2015-01-09T00:48:52.430Z
4. Completed : 2015-01-09T00:48:52.336Z

6. Reviews

1. Description:
2. Created : 2015-01-07T00:55:43.030Z
3. Modified : 2015-01-09T00:48:53.470Z
4. Completed : 2015-01-09T00:48:53.394Z

7. Requirements:

1. Description:
2. Created : 2015-01-09T00:57:36.778Z
3. Modified : 2015-01-09T00:57:42.558Z
4. Get input from other stakeholders - Rob McEwen
 1. Description: Steve Rock. Yanwu Zhang. Dave Caress. Brett Hobson.
 2. Created : 2015-01-09T00:57:42.271Z
 3. Modified : 2015-01-16T08:11:39.714Z
 4. Assigned to: Rob McEwen

8. Synchronize Control Processes:

1. Description: Synchronize Control Processes. Ensure the GNC processes always run in the following sequence: Navigation Layered Control Dynamic Control Tailcone Simulator
2. Created : 2015-01-07T00:51:26.577Z
3. Modified : 2015-01-21T19:08:37.853Z
4. Architecture prototypes and diagrams - Rob McEwen
 1. Description: Diagram alternative synchronization designs. Also for Hans and Rob.
 2. Created : 2015-01-07T19:33:49.468Z
 3. Modified : 2015-01-21T19:18:47.827Z
 4. Assigned to: Rob McEwen
5. Comment: Hans points out that if Simulator exceeds 200 ms it will overrun Navigation. We need to synchronize entire loop to simulator finishing. This moves the dotted line in slide 3 (see 15Jan2015.pptx) to the end of simulator. We can do this with by either passing a message back or using a semaphore.

1. Created : 2015-01-21 18:55
2. Created by: Rich

5. Hans to mock-up proposed IPC simplification concept

1. Description: Goals: Simple single thread GNC simulation
2. Created : 2015-01-07T18:48:15.585Z
3. Modified : 2015-01-21T19:05:58.545Z
4. Completed : 2015-01-21T19:06:01.812Z
5. Comment: No mock-up at the meeting, per se. However, Hans explained concept as replacing the CORBA message passing layer (implemented in the IF_SK source code) with simple calls to the message handling code in the servers. Thus bypassing the QNX messaging layer, quickening the whole process, and simplifying the system to boot. Going to mark this task as complete.
 1. Created : 2015-01-21 19:04
 2. Created by: Rich

6. Minimal Synchronization - Rich

1. Description: In the meantime, sync LayeredControl by subscribing to the NewOutput event from Nav. After running the existing periodic callback code, trigger DynamicControl with a NewOutput event from LayeredControl.
2. Created : 2015-01-07T18:55:35.458Z
3. Modified : 2015-01-13T23:05:23.998Z
4. Assigned to: Rich
5. Completed : 2015-01-09T00:38:48.255Z
6. Comment: LayeredControlIF.idl - create NewOutput event LayeredControl.cc - subscribe to Nav::NewOutput, no periodic callback; trigger NewOutput event after running update DynamicControl.cc - replace subscription to Nav::NewOutput with LayeredControl::NewOutput
 1. Created : 2015-01-09 00:38
 2. Created by: Rich
7. Comment: Rob and Rich debugged. LC and DC were blocking the other. Remove DyanmicControl::Ready dependency from LC.
 1. Created : 2015-01-13 23:05
 2. Created by: Rich

7. Compare synced sim to non-synced sim - Rob McEwen

1. Description:
2. Created : 2015-01-09T00:38:50.137Z
3. Modified : 2015-01-14T23:40:17.537Z
4. Assigned to: Rob McEwen
5. Completed : 2015-01-14T23:40:16.862Z

8. Kent to take a look at the IPC architecture (with Rob, perhaps) - Kent

1. Description:
2. Created : 2015-01-09T01:03:56.810Z
3. Modified : 2015-01-21T20:16:36.795Z
4. Assigned to: Kent
5. Comment: Kent described how he quickly examined the code. From discussions, Kent seems to have an adequate understanding of the issues. Going to mark this as complete.
 1. Created : 2015-01-21 19:11
 2. Created by: Rich

9. Non-blocking (Unclocked) Operation:

1. Description:
2. Created : 2015-01-07T00:53:41.604Z
3. Modified : 2015-01-07T00:54:25.521Z
4. Audit GNC code for all time references - Rich
 1. Description: Also Rob, Hans. Should include DataLog, utils, framework, you name it.
 2. Created : 2015-01-09T01:04:57.205Z
 3. Modified : 2015-01-13T17:28:07.792Z
 4. Assigned to: Rich
 5. Completed : 2015-01-13T17:28:07.538Z
 6. Comment: Navigation.cc (2) clock_gettime() (5) Time::milliseconds() EchoSounder.cc (4) Time::milliseconds() Lbl.cc (4) Time::seconds() Multibeam.cc (5) Time::milliseconds()
 1. Created : 2015-01-13 00:14
 2. Created by: Rich
 7. Comment: LayeredControl.cc (2) time(&now) Behavior.cc (and many others) (1) missionClock->seconds() MissionClock.cc (2) clock_gettime() Undock.cc (2) Time::getTime() (1) Time::seconds() WaypointBottom.cc (2) Time::getTime() (1) Time::seconds() WaypointWall.cc (2) Time::getTime() (2) Time::seconds()
 1. Created : 2015-01-13 00:15
 2. Created by: Rich
 8. Comment: DynamicControlServer.cc â”ˆ”Ã¡ (5) clock_gettime()
 1. Created : 2015-01-13 00:15
 2. Created by: Rich
 9. Comment: Simulator.cc (2) clock_gettime() SimulatedAhrs.cc (1) time() SimulatedCompass.cc (2) time() SimulatedCrossbow.cc (4) time() SimulatedDeltaT.cc (4) Time::milliseconds() (1) Time::getTime() SimulatedDepthSensor.cc (3) time() SimulatedEchoSounder.cc (4) Time::milliseconds() (1) Time::getTime() SimulatedGps.cc (1) time() SimulatedInclinometer.cc (1) time() SimulatedKearfott.cc (1) Time::getTime()

SimulatedLbl.cc (2) clock_gettime() SimulatedRangeFinder.cc (1) time() SimulatedTailcone.cc (4) clock_gettime()
SimulatedUsbl.cc (1) time()

1. Created : 2015-01-13 00:28
2. Created by: Rich

10. Comment: DataLogWriter.cc (1) clock_gettime()

1. Created : 2015-01-13 00:28
2. Created by: Rich

11. Comment: Supervisor.cc (1) time()

1. Created : 2015-01-13 00:30
2. Created by: Rich

5. Nav pending on Simulation event rather than 5Hz callback - Rich

1. Description: Change Navigation so that, when in simulation mode, rather than pending on the next 200 ms tick (Periodic Task), it pends on DynamicControl/Simulator finishing. We expect it will start ripping through. We won't yet have replaced clock_gettime with simulator time, but this will prove the triggering concept. We should start to get an inkling of how fast it will go. (Rich, Rob).
2. Created : 2015-01-21T19:13:42.588Z
3. Modified : 2015-01-21T19:17:41.609Z
4. Assigned to: Rich

6. Modify TimeP class to manage references to time (TimeServer?) - Rich

1. Description:
2. Created : 2015-01-09T01:05:24.308Z
3. Modified : 2015-01-14T23:15:19.232Z
4. Assigned to: Rich
5. Comment: Rob and Rich discussed issue Jan 14. Seems there may be a straightforward way to accomplish this without touching everything.
 1. Created : 2015-01-14 23:15
 2. Created by: Rich

7. Modify PeriodicTask class - alternative to setTimer()

1. Description:
2. Created : 2015-01-09T01:07:29.292Z
3. Modified : 2015-01-13T01:08:04.581Z

10. PDR:

1. Description: Review with interested folks (stakeholders).
2. Created : 2015-01-09T00:57:29.008Z
3. Modified : 2015-01-13T01:11:06.713Z
4. Set a target date for PDR - Rob McEwen
 1. Description: Setting the date will get everyone motivated to start doing stuff.
 2. Created : 2015-01-15T00:52:14.005Z
 3. Modified : 2015-01-21T19:20:02.425Z
 4. Assigned to: Rob McEwen

11. TRN Integration:

1. Description:
2. Created : 2015-01-07T00:54:28.330Z
3. Modified : 2015-01-21T18:58:18.438Z

12. Other:

1. Description:
2. Created : 2015-01-02T23:58:50.287Z
3. Modified : 2015-01-02T23:58:50.287Z
4. Set-up the FastSim host Mac and QNX vm - Rob McEwen
 1. Description: Configure project Mac and QNX virtual machine. This will be our target run-time environment.
 2. Created : 2015-01-02T23:58:50.308Z
 3. Modified : 2015-01-14T23:41:59.882Z
 4. Assigned to: Rob McEwen
 5. Comment: Got Virtual Box running on the desktop computer, along with Vmware. Virtual Box/QNX doesn't yet see the network.
 1. Created : 2015-01-14 23:41
 2. Created by: Rob McEwen
 6. Configure host with VMWare equivalent
 1. Description:
 2. Created : 2015-01-03T00:01:49.655Z
 3. Modified : 2015-01-03T00:02:19.499Z
 7. Set-up QNX VM
 1. Description:
 2. Created : 2015-01-03T00:02:36.392Z
 3. Modified : 2015-01-03T00:02:40.081Z

5. Be able to display ship schedules and resource allocations (hours) - Rob McEwen

1. Description:

2. Created : 2015-01-09T01:15:13.860Z
3. Modified : 2015-01-16T08:11:53.388Z
4. Assigned to: Rob McEwen

6. Asana to document toolchain - Rich

1. Description: Make a toolchain that will produce a standard document (e.g., HTML, PDF) from the current Asana FastSim project database. Creates standard project meeting artifacts in Project Library.
2. Created : 2015-01-02T23:58:50.360Z
3. Modified : 2015-01-21T19:23:14.064Z
4. Assigned to: Rich
5. Comment: I have a basic one set up. Will test it after Jan 15 meeting.
 1. Created : 2015-01-15 00:53
 2. Created by: Rich
6. Comment: Seems to work well. However, very much a hack. Need to improve and make it a bit more user friendly. \$ projecto.rb "Full Speed Dorado Sim" > fastsim.html \$ html2pdf fastsim.html
 1. Created : 2015-01-21 19:23
 2. Created by: Rich

7. Hans to setup a Git repository in BitBucket

1. Description: Hans said he would set up a git repository based on the latest CVS head
2. Created : 2015-01-09T00:52:26.566Z
3. Modified : 2015-01-21T17:19:17.402Z
4. Comment: Informed Hans that he had already done that locally with git-cvsmimport.
 1. Created : 2015-01-09 00:55
 2. Created by: Rich

8. Develop in a Git branch if available, otherwise CVS - Rich

1. Description:
2. Created : 2015-01-09T01:18:58.275Z
3. Modified : 2015-01-21T17:18:36.271Z
4. Assigned to: Rich
5. Comment: Branching in git is so much easier because merging is a git strong suit. We have a git repository already - just need to move it to some "central" place.
 1. Created : 2015-01-09 01:21
 2. Created by: Rich

9. Create git repository from CVS - Rich

1. Description: Research how to convert the CVS repository to git. Try a few test commits.
2. Created : 2015-01-06T17:39:35.897Z
3. Modified : 2015-01-07T00:47:52.343Z
4. Assigned to: Rich
5. Completed : 2015-01-07T00:47:52.189Z
6. Comment: Found dox on git-cvsmimport. Seemed to work.
http://www.gromacs.org/Developer_Zone/Git/Migrating_a_CVS_repository_to_GIT
 1. Created : 2015-01-06 17:43
 2. Created by: Rich
7. Comment: did something like this... \$ cd /Engineering/henthorn/AUV/fresh/git \$ git init --bare \$ git cvsmimport -v -a -i -k -d :pserver:henthorn@moonjelly:/home/cvs auv-qnx \$ cd .. && mkdir auv-git && cd auv-git && git init \$ git clone ../git/ master:master
 1. Created : 2015-01-06 17:47
 2. Created by: Rich
8. Comment: \$ git clone --bare git git.bare # Clone the converted non-bare repo \$ git clone git.bare my-copy.git # Use the bare repo as master \$ # Make some changes \$ git add files.cc ... # Stage \$ git commit # Check-in changes locally \$ git push origin # Push my changes to the master
 1. Created : 2015-01-06 22:15
 2. Created by: Rich

13. Tasks for Extra Time:

1. Description: Could also be the basis for a follow-on proposal.
2. Created : 2015-01-09T01:16:10.266Z
3. Modified : 2015-01-09T01:23:08.382Z
4. Prototype CORBA bypassing concept as per Hans description
 1. Description: Hans explained concept as replacing the CORBA message passing layer (implemented in the IF_SK source code) with simple calls to the message handling code in the servers. Thus bypassing the QNX messaging layer, quickening the whole process, and simplifying the system to boot.
 2. Created : 2015-01-21T19:03:46.996Z
 3. Modified : 2015-01-21T19:06:30.346Z
5. Cleaner simulator initial conditions
 1. Description:
 2. Created : 2015-01-07T19:41:11.211Z
 3. Modified : 2015-01-07T19:42:08.819Z
6. Device configuration
 1. Description:

2. Created : 2015-01-07T19:41:21.152Z
3. Modified : 2015-01-07T19:41:54.243Z

7. DEM to Octree Conversion

1. Description: If necessary, modify the simulator so that it can easily switch between octree maps of different locations.
2. Created : 2015-01-07T00:54:49.974Z
3. Modified : 2015-01-09T01:17:11.356Z

8. Create a regression test suite

1. Description: Exercise tricky aspects of flight code.
2. Created : 2015-01-09T01:17:12.857Z
3. Modified : 2015-01-09T01:18:32.779Z

9. Water-column modeling

1. Description:
2. Created : 2015-01-09T01:23:24.259Z
3. Modified : 2015-01-09T01:23:41.110Z