Advanced LIGO Engineering Change Request (ECR)

ECR Title: RCG V2.8

DCC No: E1300763-v2

Date: October 31, 2013

Requester: R. Bork   **Impacted Subsystem(s):**
DAQ/CDS

Description of Proposed Change(s):
Changes are to be made to the Real-time Code Generator (RCG) and DAQ software for requested feature additions/modifications and to fix reported code bugs. Details of the code changes are documented in LIGO-T1300868 Real-time Code Generator (RCG) Version 2.8 release notes.

Reason for Change(s): Primary Changes are:

- Synchronous acquisition of EPICS channels at 16Hz. Presently, EPICS channels are acquired asynchronously using EPICS channel access via the CDS network. In the new version of code, EPICS channels are sent along with fast data channels on the DAQ network.

- New RCG components to enhance support for SUS/SEI software watchdog system. Discussion of watchdog system changes can be found at https://awiki.ligo-wa.caltech.edu/aLIGO/SeiSusWatchDogCommissioning
- Addition of a matrix part with ramping capabilities, as requested by ISC staff.

Estimated Cost: Costs covered under INS manpower.

Schedule Impact Estimate: None.

Nature of Change (check all that apply):
☐ **Safety**
☐ **Correct Hardware**
☐ **Correct Documentation**
☐ **Improve Hardware**
☐ **Improve/Clarify Documentation**
☐ **Change Interface**
☐ **Change Requirement**

Importance:
☐ **Desirable for ease of use, maintenance, safety**
☒ **Desirable for improved performance, reliability**
☐ **Essential for performance, reliability**
☐ **Essential for function**
☐ **Essential for safety**

Urgency:
☐ **No urgency**
☒ **Desirable by date/event: 11/5/2013_____**
☐ **Essential by date/event: _____**
☐ **Immediately (ASAP)**

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Impacted Hardware (select all that apply):

☐ **Repair/Modify. List part & SNs:** _____

☐ **Scrap & Replace. List part & SNs:** _____

☐ **Installed units? List IFO, part & SNs:** _____

☐ **Future units to be built**

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):

RCG Developer's Guide T080135

RCG V2.8 Release Notes T1300868

RCG V2.8 Test Results (New,TBD)

Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the "Notes and Changes" metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required**: in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected**: in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s)**: in which case the caveat(s) are listed
- **TRB**: the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer's (or designee's) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB's recommendation. Links to the TRB's documentation (charge, memos, final report, etc.) are to be added to the "Related Documents" field for this ECR.
- **CCB**: a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB's documentation (CR, etc.) are to be added to the "Related Documents" field for this ECR.

Concurrence by Project Management:

Acknowledgement/acceptance/approval of the disposition is to be indicated by the electronic "signature" feature in the DCC entry for this ECR, by one the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer