Findings from the review panel: ICM Golden Image Firmware Review

Reviewers: John Jacobsen, Karl-Heinz Sulanke, Thorsten Stezelberger
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The team is to be congratulated for excellent progress since the last meeting. Several improvements directly addressed questions raised at the last review, and testing has progressed substantially. From what we could tell from this short review, no major obstacles are apparent that would stand in the way of delivery of a final Golden Image for the Upgrade.

The reviewers do feel it may be worth building on the experience from IceCube Gen1 in regards to long-running, randomly-ordered asynchronous tests running in parallel on as many devices as possible, at a variety of cold temperatures. Echo tests of varying message length, and changing the power state on some modules while others are communicating, are examples of tests to include. We also agree that tests similar to physics data-taking are also recommended. These approaches, taken together, found multiple defects of Gen1 software, firmware and hardware early in that project, and also formed the basis of burn-in module tests up to and through detector completion (2011).

The reviewers see the benefits to using a well-tested golden image which contains optional features not strictly necessary (e.g. token passing and RAPCal). We suggest writing a note documenting the tradeoffs associated with this approach; also include an evaluation of potential issues in a "mixed environment" (where, for example, the surface hardware is running a more recent communications firmware revision than the in-ice firmware has).