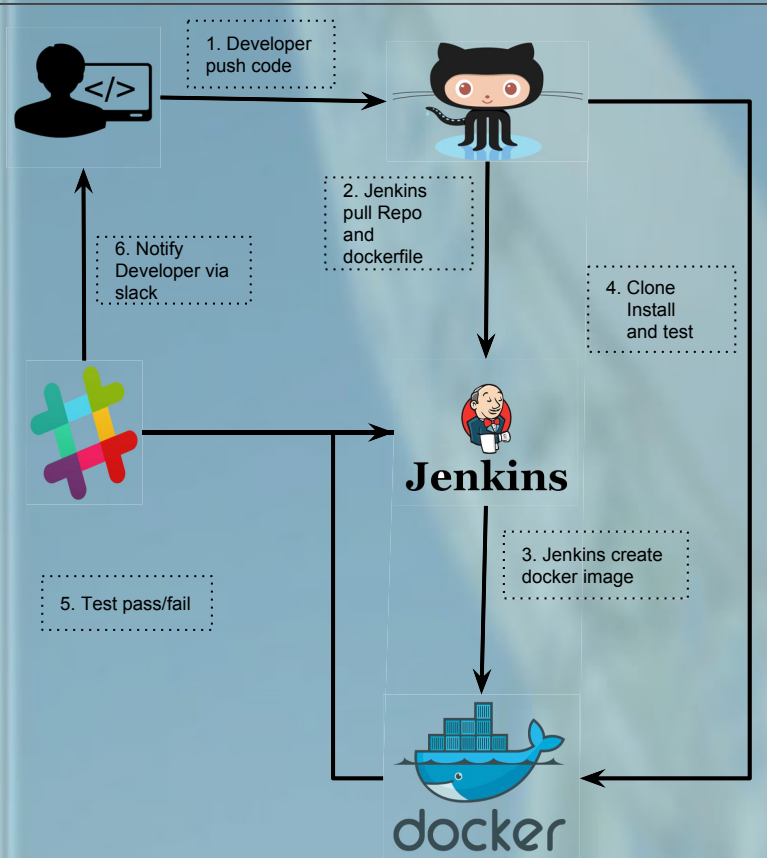


The 64-dish MeerKAT radio telescope, under construction in South Africa, will become the largest and most sensitive radio telescope in the Southern Hemisphere until integrated with the Square Kilometre Array (SKA). Software testing is an integral part of software development that is aimed at evaluating software quality; verifying and validating that the given requirements are met. This poster will present the approach, techniques and tools used to automate the testing of the software that controls and monitors the telescope. Jenkins continuous integration system is the server used to run the automated tests together with Git and Docker as the supporting tools to the process. In addition to the aforementioned tools we also use an Automated Qualification Framework (AQF) which is an in-house developed software that automates as much as possible of the functional testing of the Control and Monitoring (CAM) software. The AQF is invoked from Jenkins by launching a fully simulated CAM system and executing the Integrated CAM Tests against this simulated system as CAM Regression Testing. The advantages and limitations of the automated testing will be elaborated in the paper in detail.

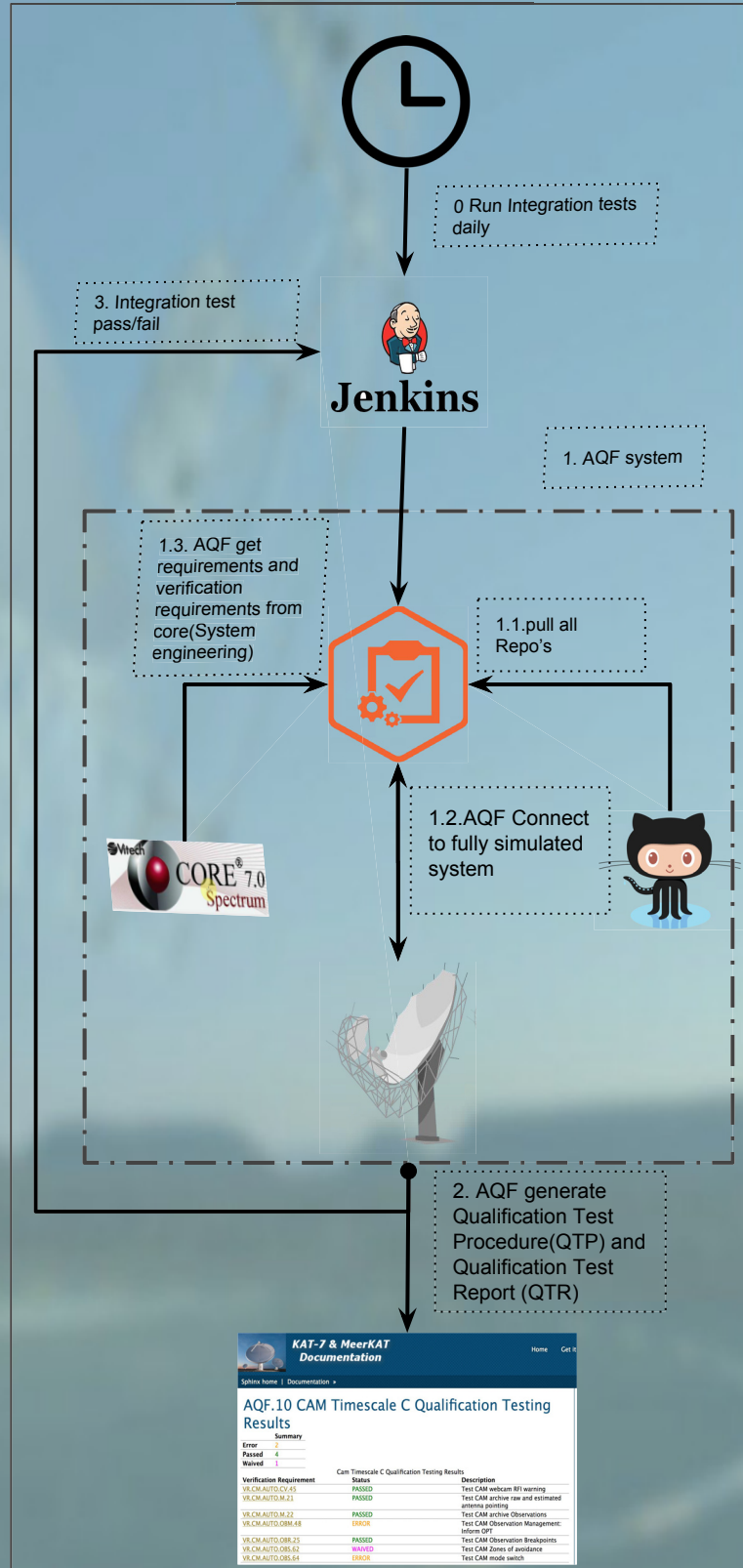
Unit Test



Summary

- An AQF allows for efficient testing and engineering requirements verification.
- The AQF generates test results and qualification reports.
- Automated testing allows for repeatable, reliable and accurate testing, which is less prone to human error.
- Automated testing enables seamless verification of new features and bug fixes before merging changes to the master branch. This improves communication among developers and results in fewer breaking changes.
- Automated testing increases the development team's efficiency.
- Automated testing saves on development time, but requires dedicated hardware.

Integration Test



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AQF.10 CAM Timescale C Qualification Testing Results

Verification Requirement	Status	Description
VL_CAM_AUTO_CV_45	PASSED	Test CAM webcam still warning
VL_CAM_AUTO_08_23	PASSED	Test CAM archive raw and estimated antenna pointing
VL_CAM_AUTO_M_21	PASSED	Test CAM archive Observations
VL_CAM_AUTO_OBR_48	ERROR	Test CAM Observation Management: Inform OFF
VL_CAM_AUTO_OBR_25	PASSED	Test CAM Observation Breakpoints
VL_CAM_AUTO_OBS_62	WARNING	Test CAM Zones of avoidance
VL_CAM_AUTO_OBS_64	ERROR	Test CAM mode switch