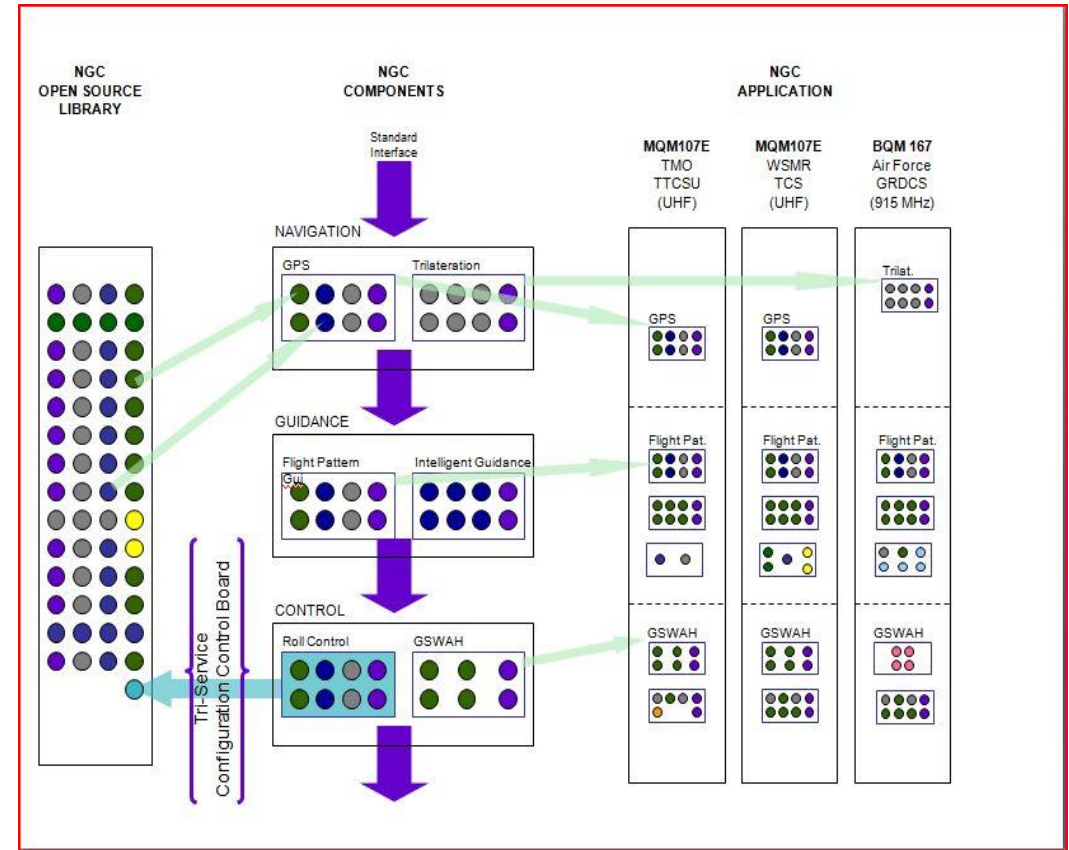


Target Control Framework Proposal

Description: Development of a flexible and universal navigation, guidance and control (NGC) software library (including API) with portable NGC software components that can be utilized across different target control systems. Current DoD target control systems have unique NGC software making new target integration costly and a time consuming task.

Benefit: Having interchangeable and easily interfaced/modified NGC software library that would greatly reduce system development and software maintenance costs. Project will reduce the time it takes to integrate a target into existing systems and vastly improve cross utilization among the services and programs.

Deliverables: A flexible, robust and adaptable NG software library with matching API that can be used and integrated into multiple target control systems for general and specific application by the target community.



Briefing Outline

- Problem Statement
- Test Impact
- Project Description
- Deliverables
- Coordination
- Technical Approach
- Milestones
- Alternatives Considered
- Preliminary Schedule
- Funding Profile
- Obligation and Expenditures
- Life Cycle Plan

Problem Statement

- Present operational DoD target control systems, TTCSU, GRDCS, and DFCS share similar NGC algorithms, however, their existing NGC software is different making target system integration a time consuming and costly task that requires extensive flight testing for target certification.
- This effort is compatible with current DoD efforts to standardize interfaces between major target system components (i.e. Central Processor and Data Link Control Unit, Central processor and Console Subsystem,..)

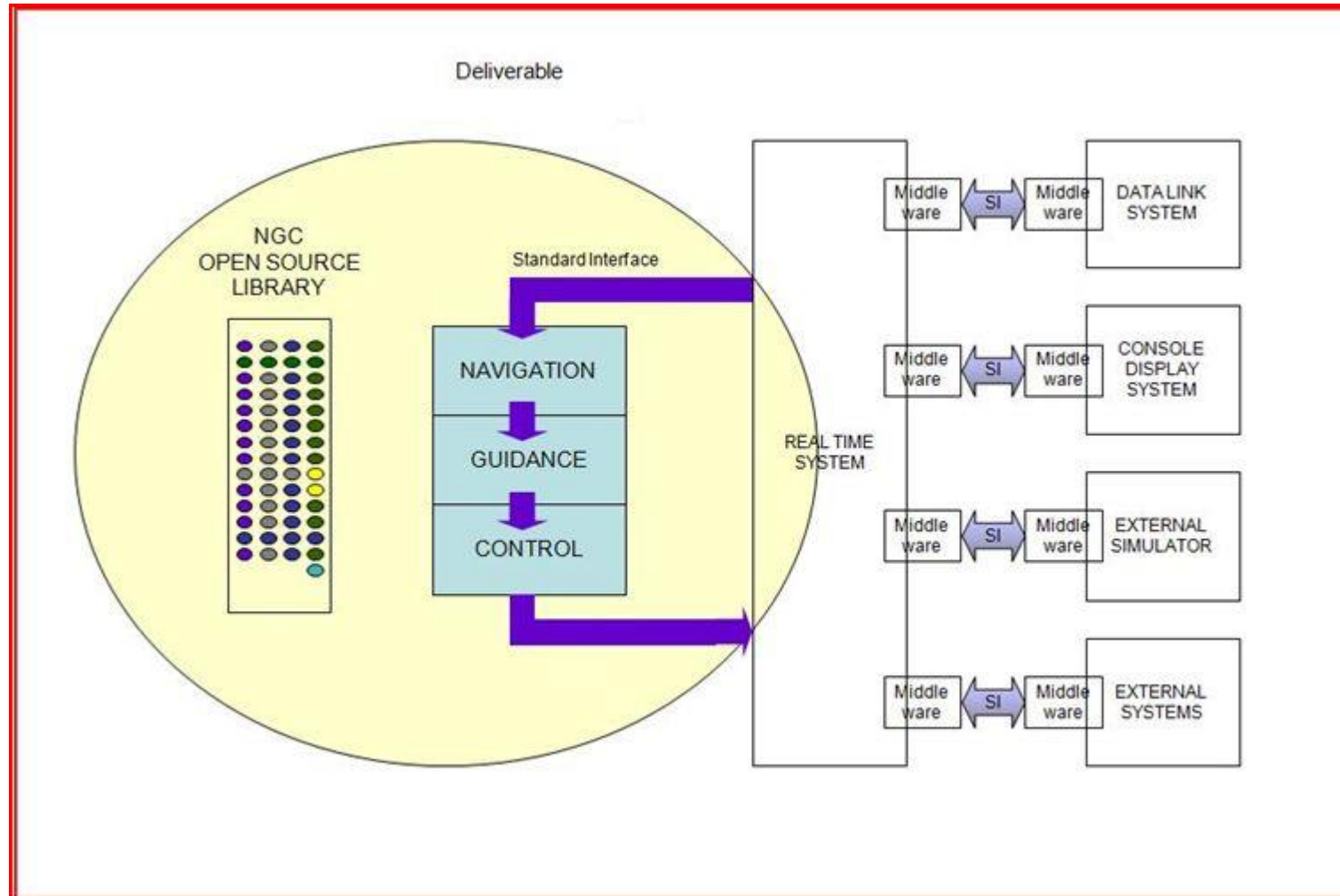
Test Impact

- Reduces significantly the cost of integrating existing targets into different DoD target control systems.
 - It cost a lot of money to integrate and certify the QF-4 targets at WSMR with “similar” NGC software between GRDCS and DFCS.
 - TMO/ARI spent a considerably amount of time (>1 year) to incorporate the DFCS NGC into the TTCSU for the IAP target.
 - The question is how much is going to cost DoD to integrate the QF-16 or other targets into different control systems if we continue operating in this manner?
- Maintain the Integrity of the NGC software
 - DFCS received a copy of the QF-4 software in 1990. Since then all the upgrades have been made by manually inserting the code that was modified at GRDCS into DFCS. During this process variable names change and sometimes the way the algorithms are coded. The variables may also reside in different commons. Sometimes key control algorithms like the one preventing the pitch glitch problem reside in different programs.

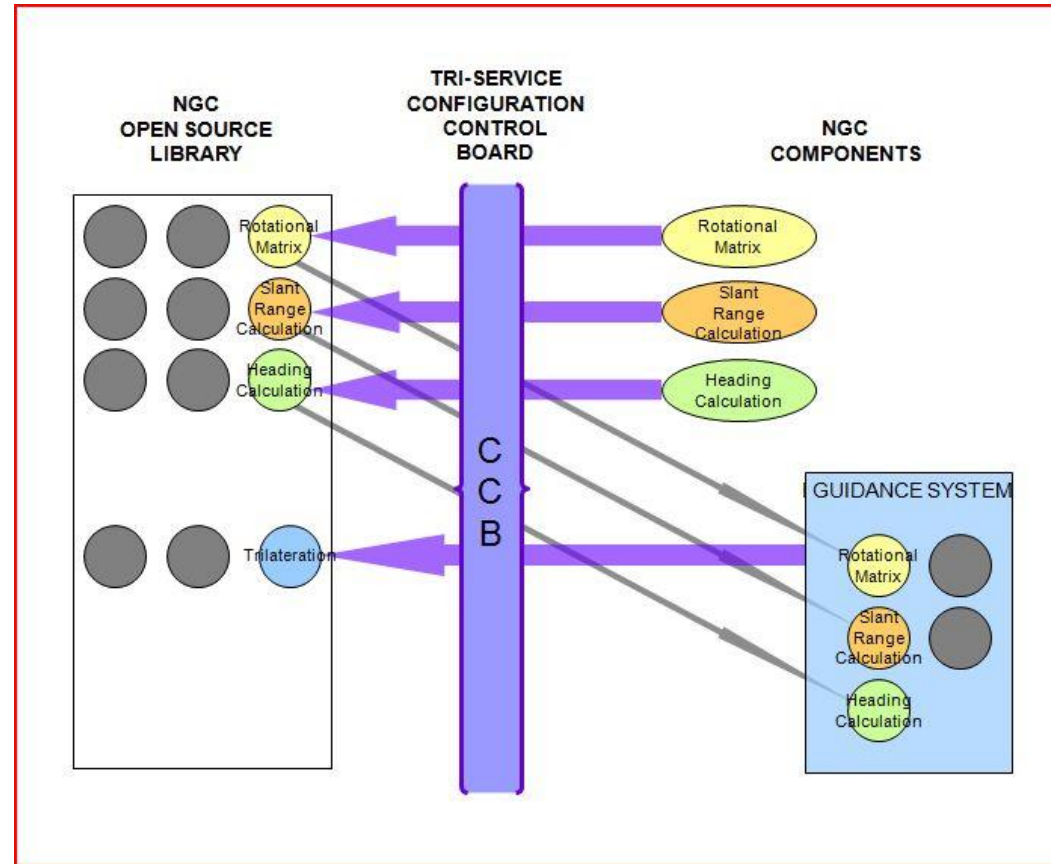
Project Description

- Develop and define a set of standards that will make NGC software portable between different operating systems and hardware platforms.
- Identify common functions for NGC software.
- Standard interface requirements will allow different users/groups to build and maintain their NGC system to best fit their needs without breaking the integrity of the system.
- Maximize interoperability between systems.

Project Description



Project Description



Deliverables & Technical Approach

- Source Code for new Target NGC Library for the MQM-107, QF-4 and for a new target the BQM-167A.
- Documentation of Target NGC Library and API
- TCS / Target NGC Library Integration Report
- Simulation and Flight Test Analysis Reports
- Regularly scheduled milestone reports and project assessments
- Use existing Army, A/F and Navy NGC algorithms as a baseline to develop NGC open source library.
- Study Army, A/F and Navy existing target control systems to define interface between major NGC system components.
- Demonstrate the use of the new Target NGC Library by flight testing operational targets, MQM-107 & QF-4 and by testing with the simulator a new target.
- Use WSMR TCS as a test bed.