GOES-R AWG Integration Team: Interface with the AWG Application Teams

Lihang Zhou[2], Walter W. Wolf[2], Mitchell D. Goldberg[1]
Shuang Qiu[2], Pete Keenh[2], Qingzhao Guo[3]
[1]NOAA/NESDIS/ORA, Camp Springs, MD 20746;
[2]QSS Group, Inc, Lanham, MD 20706; [3]IMSG

1. INTRODUCTION

NOAA/NESDIS/STAR is taking the lead in the activities to develop, demonstrate and recommend end-to-end capabilities for the GOES-R Level 2 product systems. Fifteen GOES-R Algorithm Working Group (AWG) teams have been formed to select specialty area algorithms and develop the corresponding product generation systems. To ensure faster, cheaper and smoother transitions from research into operations, the AWG teams will develop systems in a collaborative environment (CE) that will bring consistency across the product systems; compilers, operating systems, coding standards, standardized documentation, test data sets, and defined benchmarks.

The AWG Integration Team (AIT) will work with the Application Teams to implement the standards within each product system, will set up and maintain a configuration management system for change management (CM), and will develop an integrated system that will be packaged with all the supporting documentation and delivered to the customer. In this presentation we will describe the strategy and procedures to interface with all the AWG teams where we will stress the quality assurance (QA) activities that are planned for the GOES-R AWG product generation systems.

Algorithm Working Group (AWG)

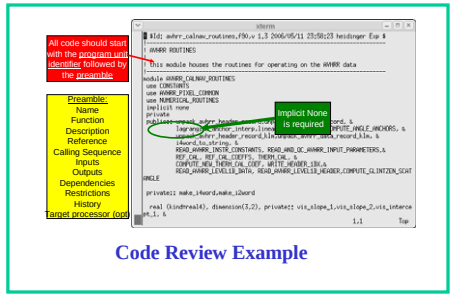
- Imagery
- Soundings (Chris Barnet)
- **Winds (Jaime Daniels)**
- **Clouds (Andy Heidinger)**
- Aviation (Ken Prior)
- **Aerosols / Air Quality / Atmospheric Chemistry (Shoba Kondragunta)**
- Hydrology (Robert Kuligowski)
- **Land Surface (Dan Tarpley)**
- SST (Alexander Ignatov)
- Cryosphere (Jeff Key)
- Radiation Budget (Istvan Lazslo)
- Lightning
- Space Environment (Steven Hill)
- Proxy Data (Fuzhong Weng)
- Cal/Val (Changyong Cao)
- Data Processing

(Underlined are the teams already formed; **Green** indicates passed the Algorithm Design Review)

2. Algorithm Integration Team (AIT)

AIT will be start working with the AWG Product Development Teams when they start creating the product systems. We will provide the teams with:

- coding standards & guidelines
- code review & code examples
- software for the creation and standardization of the input and output data formats.
- standard libraries for all Product Teams to use.
- more efficient processing systems.



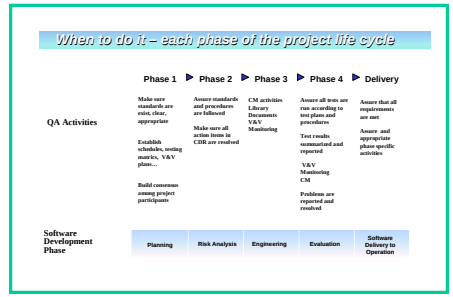
Code Review Example

- The AIT will receive multiple system deliveries from the Product Teams.
- The AIT will review the Product Systems, bring them up to the standards, modify to decrease the processing time, and deliver the updated system back to the Product Teams.

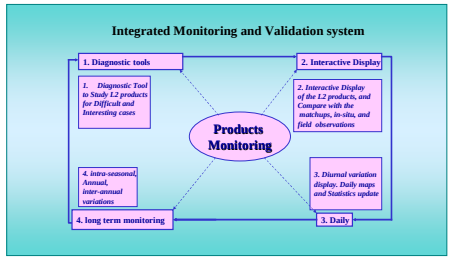
AIT Team Members:

- Walter Wolf – System Lead
- Lihang Zhou – Quality Assurance Lead
- Peter Keehn – Programming, CM, Sounding, Clouds, Radiation Budget, Cryosphere, Space Weather
- Qingzhao Guo – Programming, Standards, Aerosols, Proxy, SST, Ocean Color, Radiance
- Shuang Qiu – Verification, Validation, Land, Winds, Aviation, Hydrology, Lightning
- Ray Garcia, Graeme Martin, Maciek Smuga-Otto, Steve Wanzong – System evaluation and integration support.

3. Quality Assurance



- Ensure the standards, guidelines are adopted by the product development teams.
- Configuration Management
  - Receive code deliveries from product teams
  - Verify and Review code deliveries
  - Distribute updated software package to product team to reduce time of future integration



- Common monitoring and validation tools
  - Work with all the teams to develop an integrated monitoring and validation tools.

Documentation:

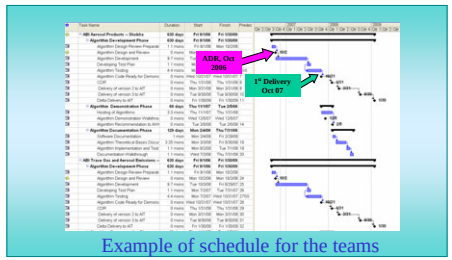
- Algorithm Design Review Document
- Critical Design Review Document
- Detailed Design Document
- System Design Document
- Metadata Document
- Algorithm Theoretical Basis Document (ATBD)

4. Project Management

PM Approach: Process improvement; Quality Assurance; Reviews/Reports; Earn Value

PM Tools: MS Project; Spreadsheets, etc..

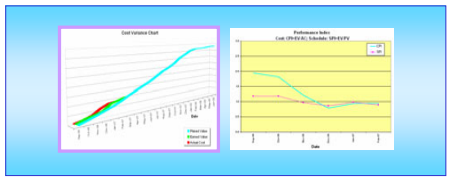
Project Schedule



Example of schedule for the teams

Earn Value

- Integrates technical, cost, schedule, with risk management
- Monthly Review and Reports.



5. Summary

- Deliver pre-operational code with all supporting materials to the System Prime – test plans, software and implementation documentation.
- All code will adhere to NESDIS Operational Development Standards.
- All pre-operational code is thoroughly tested in a scalable operational demonstration environment -- Collaborative Environment.

Website: *http://www.orbit.nesdis.noaa.gov/star/goesr*