

# Developing a Net-Centric Test and Integration Process

By Rebecca Rowsey

## Horizontal fusion helps ensure data is available on the Global Information Grid (GIG) for those who need it ...

For the second year, the Space and Naval Warfare Systems Center Charleston (SPAWAR Charleston) is supporting the Office of the Deputy Chief Information Officer, Department of Defense, on the transformational horizontal fusion effort. Net-centric testing and integration began in earnest May 2004 in the new Horizontal Fusion Test and Integration (T&I) Lab at SPAWAR Charleston.

Establishing the T&I Lab is an essential step on the road to achieving Defense Secretary Rumsfeld's vision of net-centric transformation. It provides an environment to measure successful integration of new net-centric services moving into the warfighter, business, enterprise information environment and intelligence mission areas.

The Horizontal Fusion Portfolio strategically selects and funds service and data providers, called horizontal fusion initiatives. This approach allows the submitter to maintain its management structure and development team, while helping them to become net-centric more rapidly. Net-centricity means providing an information advantage (enhanced information sharing, improved shared situational awareness and better knowledge of commander's intent) that can be turned into a warfighting advantage, which translates into faster self-synchronization, speed of command and increased combat power.

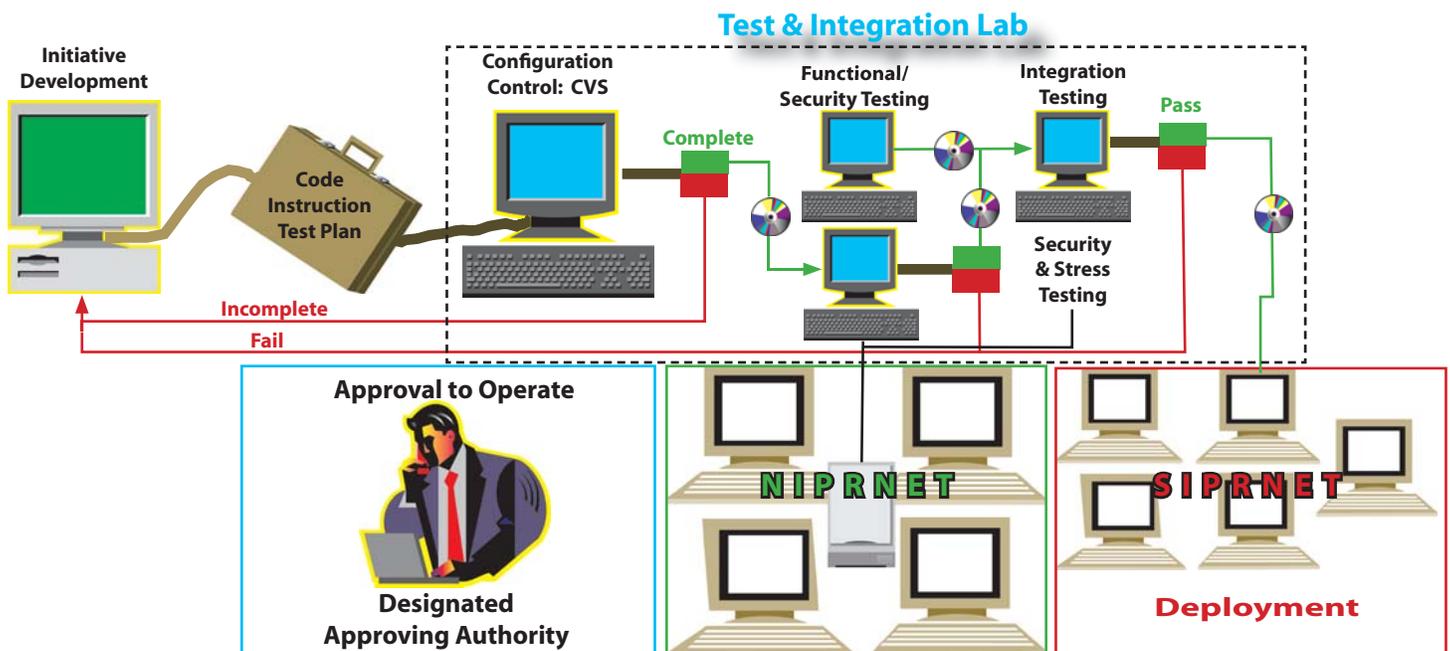
Horizontal fusion helps ensure data is available on the Global Information Grid (GIG) for those who need it, when they need it. Using horizontal fusion also ensures net-centric services facilitate manipulation of the data into information and knowledge that can be used for decision making.

Horizontal fusion is focusing on tough security policy issues that will need to be revised to accommodate a net-centric environment. For the Quantum Leap-2 demonstration on August 11, coalition and cross-domain security were introduced, surfacing key requirements for metadata tagging, issuance of SIPRNET Public Key Infrastructure (PKI) certifications and single sign-on.

The SPAWAR Charleston T&I lab team groups the initiatives as data providers, portlet providers, or as data and portlet providers. A portlet is a Java-based Web component, managed by a portlet container that processes requests and generates dynamic content. Portlets are used by portals as pluggable user interface components that provide a presentation layer to information systems.

Data providers may be producers or consumers — or both. Other key integration considerations are the external dependencies. Some initiatives depend on the output data of one or more

Figure 1. The Test and Integration Lab Process



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*Rebecca Rowsey reviews test and integration procedures for team members.*

initiatives as the input data for their initiative. For example, in order to display the operational picture to support situational awareness, timely track data feeds must be supplied to the application that displays the current picture of the battlefield situation.

The T&I Lab process starts (see Figure 1) when the initiative submits to SPAWAR Charleston its software code, installation instructions, test plans and other related materials needed to accomplish functional integration and security testing. This information is stored in the Concurrent Versions System (CVS). CVS provides a means for the T&I Lab personnel to ensure they are testing the most recent version of an initiative's code (each initiative is responsible for maintaining version control of its own code). CVS also maintains all versions of the portal baseline. If the submitter's input is incomplete, the submitter will be notified to update the initial submission.

Prior to commencement of testing, the Designated Approving Authority (DAA), required by the DoD Information Technology Security Certification and Accreditation Process (DITSCAP), reviews the Systems Security Authorization Agreement (SSAA) and the initiative's in-house testing to determine if the program is mature enough to enter testing.

The first action of the SPAWAR Charleston lab testers is to install a clean copy of the Horizontal Fusion Mars Portal (user entry point to horizontal fusion capabilities) and the initiative's code on one of the "clean" test stations. After installation, the initiative's functions are tested based on the cases submitted in the test plan. The T&I Lab also develops test cases.

The security certification and accreditation team, with assistance from the SPAWAR Charleston T&I Lab, may also perform initial security scans and checks during this test period. If these tests are successful, then the initiative's code will be installed on the server being used for integration testing. If not, the submitter will be notified of the problems found and asked to revise and resubmit the code.

Integration testing involves installing an initiative's code onto the test portal and verifying that it performs in accordance with the applications operating instructions and satisfies the mandated

security requirements. SPAWAR Charleston testers then run more use cases to simulate the expected performance of the portal. During this testing, the team will look for interoperability problems as well as any other conflicts. If any are found, then the team will document the problem and work with the submitter's development teams to isolate the problem and determine what corrective action may be needed.



*Clarissa Miller discusses the lab schedule with Dale Messer, Tom Glabb and Joanna Shirley.*

configuration of the portal to assist planners in properly scaling it to support expected user loading under varied operational conditions.

The goal of horizontal fusion's test and integration process is to move new net-centric capabilities to the operational Mars Portal Server on SIPRNET as quickly as possible so its capabilities can be easily accessible to warfighters. The latest capabilities were successfully demonstrated during Quantum Leap-2. This demonstration was the second in a series designed to show the potential of new net-centric initiatives.

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SPAWAR's testing and integration approach in support of the Horizontal Fusion Portfolio is well underway. Having a net-centric test and integration process and proven resident expertise allows SPAWAR Charleston to provide a knowledge base and initial sourcing capability that readily facilitates the development of other net-centric programs such as FORCENet, Joint Raptor, Net-Centric Enterprise Services, as well as other transformational services for military services and agencies.

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