MCTSSA INTEROPERABILITY BRANCH

XML INFORMATION EXCHANGE INITIATIVE

1. Background. MCTSSA Interoperability Branch (IOB) is required to vet, test and validate military information exchange standards which support Joint and Combined Interoperability. Inherent to this task is the requirement to employ modern and relevant information technologies which include the effective implementation of Extensible Markup Language (XML) and Web standards.

2. Situation.

a. MCTSSA IOB represents the Marine Corps and US DOD positions on NATO and US Message Text Format (MTF), Variable Message Format (VMF), and Tactical Data Link (TDL / Link-11/Link 16/Link-22) standards bodies. No systems are currently available which implement all versions of all messages for these standards so it is impossible to validate best practices or improvements.

b. MCTSSA is currently limited to “End-to End” testing procedures to validate implementations of these standards. Code level unit testing cannot be employed to validate software that employs these standards because available systems are inconsistent, incomplete, or closed source. Emergent demand for security tagging and increased integration on networked computing devices requires the development of reference implementations on which functionality, compliance and interoperability can be validated with a level of integrity appropriate for mission critical systems.

3. Mission. MCTSSA IOB will create reference implementations for every MIL STD using current XML and web technologies in order to allow fully vetted validation, unit testing and configuration management for mission critical information exchanges.

4. Execution.

a. XML Schemas. XML technologies are uniquely well suited to define and implement military messaging standards due to the ability to specifically define data items and message structure in context with documentation. In order to leverage this potential IOB will develop and maintain XML Schemas for VMF, MTF, and TDL using naming and design rules specified for the National Information Exchange Model (NIEM).

b. Schema Aware Software. Applications which directly process the content of XML Schemas to determine data models, views, and controls are useful for establishing compliance to requirements. The use of XML schema to drive this “Model – View – Control” software design principle allows software to incorporate version changes without direct re-programming. MCTSSA IOB will develop and maintain XML Schema aware reference implementations to be version agnostic in order to implement every version of every standard.

c. Unit Testing. Code level “unit tests” provide a means to define and automate verification of software and data functionality requirements. Unit tests can be used to validate security and information exchange requirements (IERS) for mission critical applications. MCTSSA IOB will develop Unit Tests which define IER and performance characteristics required by any MIL STD message implementation. These tests will be used to verify the functionality and compliance for all reference implementations as well as for external systems.

d. Browser Based Technologies. HTML5 and Javascript support implementation on desktop and hand-held devices. They reduce vendor, platform, and software dependencies and allow rapid, affordable, and testable development processes. MCTSSA IOB will create all reference implementations using these technologies in order to maximize flexibility, re-use, and distribution.

f. Collaborative Development. While the content of military messages may not be releasable to the general public, the ways in which the messages can be implemented, displayed, distributed, or managed can be supplemented by leveraging community development efforts. Development processes which require access to restricted content will be maintained on Forge.mil. User interfaces and tools which can be developed independently of message content, or can employ sample content will leverage password protected collaborative development environments. This will allow Coalition partners to participate materially and leverage results.

5. Administration and Logistics.

a. Agile Development. The principles of this development process are dependent on effective leadership and continuous focus on specific objectives. This process includes the generation of Unit Tests as a way to define requirements and can be supplemented by a continuous build process which maintains momentum while enforcing integrated code functionality. MCTSSA IOB will employ Agile Development processes for the creation of Unit Tests and the development and maintenance of all reference implementations.

b. IOB will establish and maintain an Agile Scrum Process which identified specific goals and milestones for each week. The results of this process will be used to increase productivity on the project as well as to provide MCTSSA with a representative model for how this process can be executed to achieve results in a rapid and affordable way.

6. Command and Control. As the leading Interoperability representative for Message Standards in the Marine Corps and DoD, the Interoperability Branch Head will lead and advertise this effort in order to maximize awareness and enable participation across the Interoperability communities. He will appoint an Interoperability Engineer to manage and execute all development processes.