



U.S. Army Research, Development and Engineering Command



***TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.***

Advance Testing Capability (ATC)

DoD M&S Conference

10 March 2008

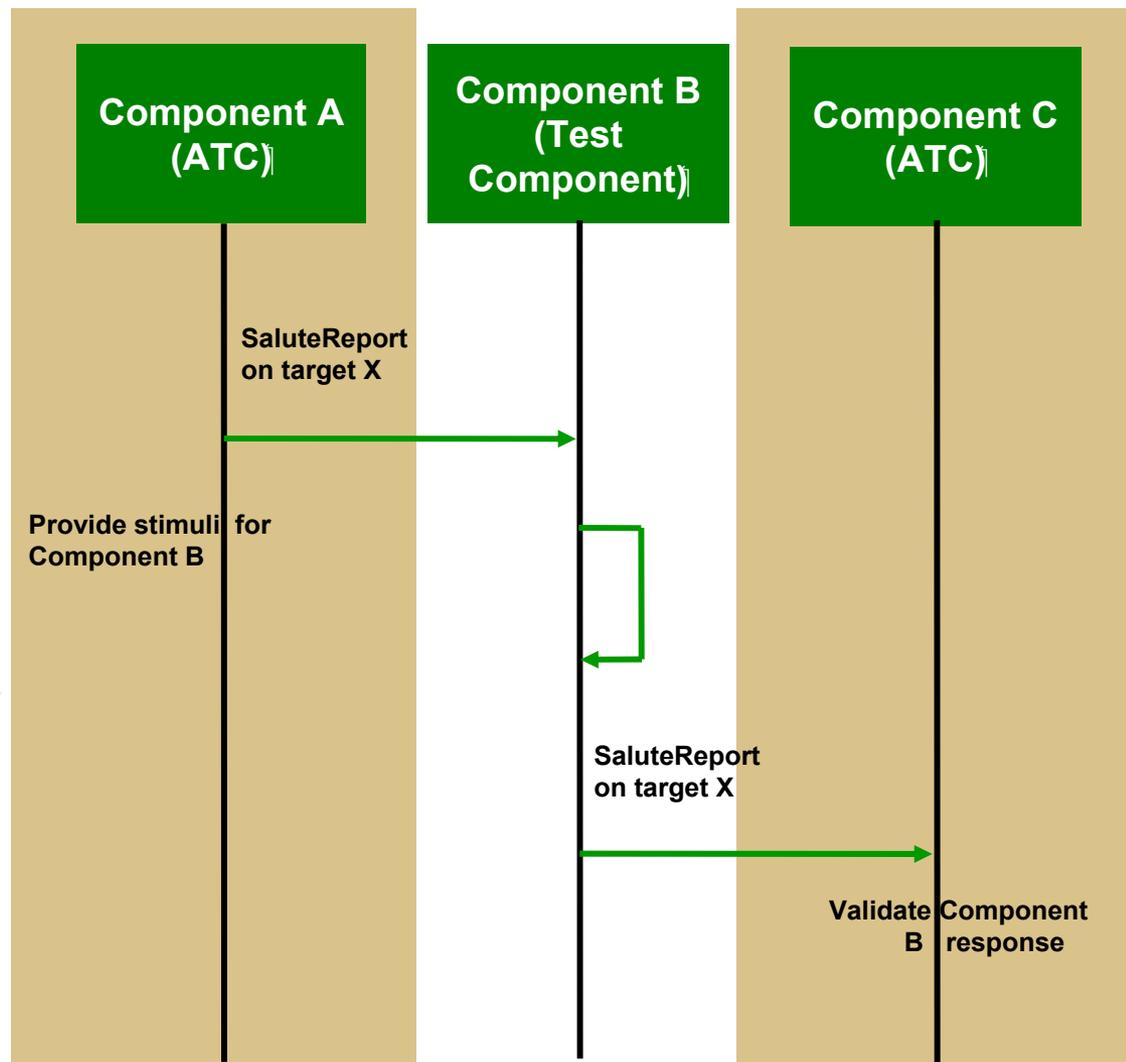


- Testing a federate in a distributed simulation environment is a 2 step process:
  - Federates are tested individually by their developers
  - The distributed simulation environment is then tested as a whole
- Data dependencies between federates force many groups to skip the individual testing and only test the system as a whole
- Problems in integration arise because federates are not tested for their adherence to system design before being integrated into the whole distributed simulation environment



- Provides users the capability to build, store and execute test for components built on the MATREX tools
- Provides the capability to perform meaningful and repeatable black-box testing on an individual components build on the MATREX tools
- Allows developers to test their individual components without having to bring up the entire federation, making debugging easier and lower the cost of testing
- Allows the Integration and Test team to debug issues during integration
- Can be used as an acceptance test for new and updated components

- Allows the users to create a sequence of actions or events to stimulate the component under test and generate responses
- Validates the responses from the test component
- Generates source code which is then run to execute the test and verify results.



- “OM-Agility”
  - Decouple ATC from the MATREX FOM
    - Allows the use of any Object Model
- MATREX SDR import
  - Ability to import requirements from MATREX SDR and produce an ATC Test Case.
    - Allows test case traceability back to system level requirements
- “Live Interactive Mode”
  - ATC will become a ProtoCore component on the wire
    - Allows pair-wise and federation level testing
    - Allows registering objects, object updates and interactions at run-time.
    - Allows ATC to operate in various simulation architectures, including HLA 1.3, HLA 1516, TENA.

- **RDECOM (RDEC's)**

- Aviation and Missile Research, Development and Engineering Center (AMRDEC)
- Armament Research, Development and Engineering Center (ARDEC)
- Army Research Laboratory (ARL)
- Communications-Electronics Research, Development and Engineering Center (CERDEC - Belvoir/Monmouth)
- Edgewood Chemical Biological Center (ECBC)
- Natick Soldier Research, Development and Engineering Center (NSRDEC)
- Simulation & Training and Technology Center (STTC)
- Tank and Automotive Research, Development and Engineering Center (TARDEC)

- **FCS LSI**



# Points of Contact



MATREX IDE Website: <https://www.matrex.rdecom.army.mil>



# BACKUP

Advanced Testing Capability - [/home/lsheng/GRID/sands2/doc/test/auto/SANDS-0005.atc \*]

File Edit Help

TestPlan  
 SANDS-0005  
 SANDS  
 C3Nodes[B1000] Creation  
 C3Nodes[B1000] Update  
 Initial Self Sitrep (Create B1000)  
 response to creation of B1000  
 Update Receivers with Uncorrelated Salute  
 Correlated Response to loc change for R6000  
 Uncorrelated Response to loc change for R6000  
 Correlated Response to R6000 report  
 First Report on R6000  
 No Change report on R6000  
 Location Changed report on R6000  
 DOS  
 OCS  
 MTS  
 C2Device

SANDS-0005

Actors: SANDS, DOS, OCS, MTS, C2Device

Messages:

- (MRegister/MDiscover) SANDS → DOS
- (MNodeB1000) Creation SANDS → DOS
- (MUpdate/MReflect) SANDS → DOS
- (MNodeB1000) Up date SANDS → DOS
- (Msend/MReceive) SANDS → OCS: Initial Self Sitrep (Create B1000)
- (Msend/MReceive) OCS → MTS: response to creation of B1000
- (Msend/MReceive) MTS → OCS: First Report on R6000
- (Msend/MReceive) OCS → C2Device: Correlated Response to R6000 report.
- (Msend/MReceive) C2Device → OCS: Up date Receivers with Uncorrelated Salute
- (Msend/MReceive) OCS → MTS: No Change report on R6000
- (Msend/MReceive) MTS → OCS: Location Changed report on R6000

Data Event

Object  
 Interaction  
 IPC  
 Networking  
 Communication  
 Awareness  
 AggregateSituationReport  
 Collaboration  
 FDCMissionStatus  
 SaluteReport  
 SituationReport  
 UncorrelatedSaluteReport  
 CAS  
 Command  
 FireSupport  
 MissileEvent  
 NEBC  
 Service  
 Tactical  
 CommunicationAchieved  
 RadioSignal  
 SensingInteractionDXREF  
 SimulationService

Selected Input  
 SaluteReport\_1\_0\_0

mil.army.matrex.fom.interaction.SALUTEREPORT

+SaluteReport.Report Cardinality: 1+

Report [0] Cardinality: 0-1

+SaluteReport.CDT.Comment 1 << Validation Options

SaluteReport.CDT.TrackingID 1 << Validation Options

FederateHandle "B1000" << Validation Options

InteractionCounter Cardinality: 0+

SaluteReport.CDT.ReportCreatorEntityID Cardinality: 1+

+SaluteReport.CDT.NodeReceiptHistory

+SaluteReport.CDT.ContributingIDs

ContributingIDs [0] Cardinality: 1+

FederateHandle 19 << Validation Options

InteractionCounter 10 << Validation Options

SaluteReport.CDT.Salute

SALUTEStruct.CDT.Location

LatLongAltPosition.CDT.Latitude 0.706858347 Validation Options

FOM Reuse Remove Simple View Add Delete