



U.S. Army Research, Development and Engineering Command



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Advance Testing Capability (ATC)

DoD M&S Conference

10 March 2008

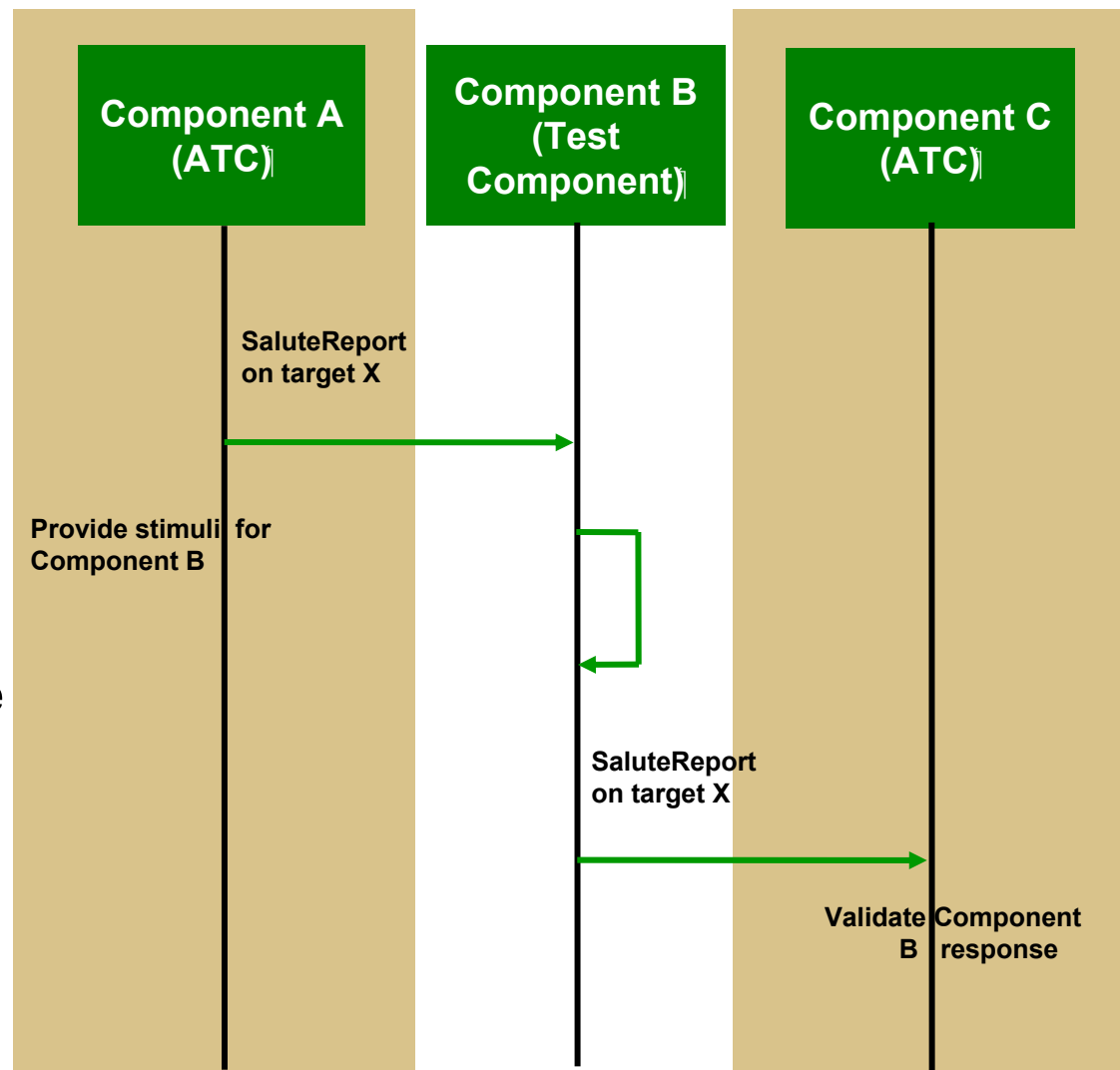


- Testing a federate in a distributed simulation environment is a 2 step process:
 - Federates are tested individually by their developers
 - The distributed simulation environment is then tested as a whole
- Data dependencies between federates force many groups to skip the individual testing and only 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

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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
- (MUpdate/MReflect) 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) OCS → MTS: Up date Receivers with Uncorrelated Salute
- (Msend/MReceive) MTS → OCS: No Change report on R6000
- (Msend/MReceive) OCS → C2Device: 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

Remove

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

ContributingIDs [0]

FederateHandle 19 << Validation Options

InteractionCounter 10 << Validation Options

SaluteReport.CDT.Salute

SALUTEstruct.CDT.Location

LatLongAltPosition.CDT.Latitude 0.706858347 Validation Options

Simple View Add Delete