



U.S. Army Research, Development and Engineering Command



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Advance Testing Capability (ATC)

DoD M&S Conference

10 March 2008

Report Documentation Page

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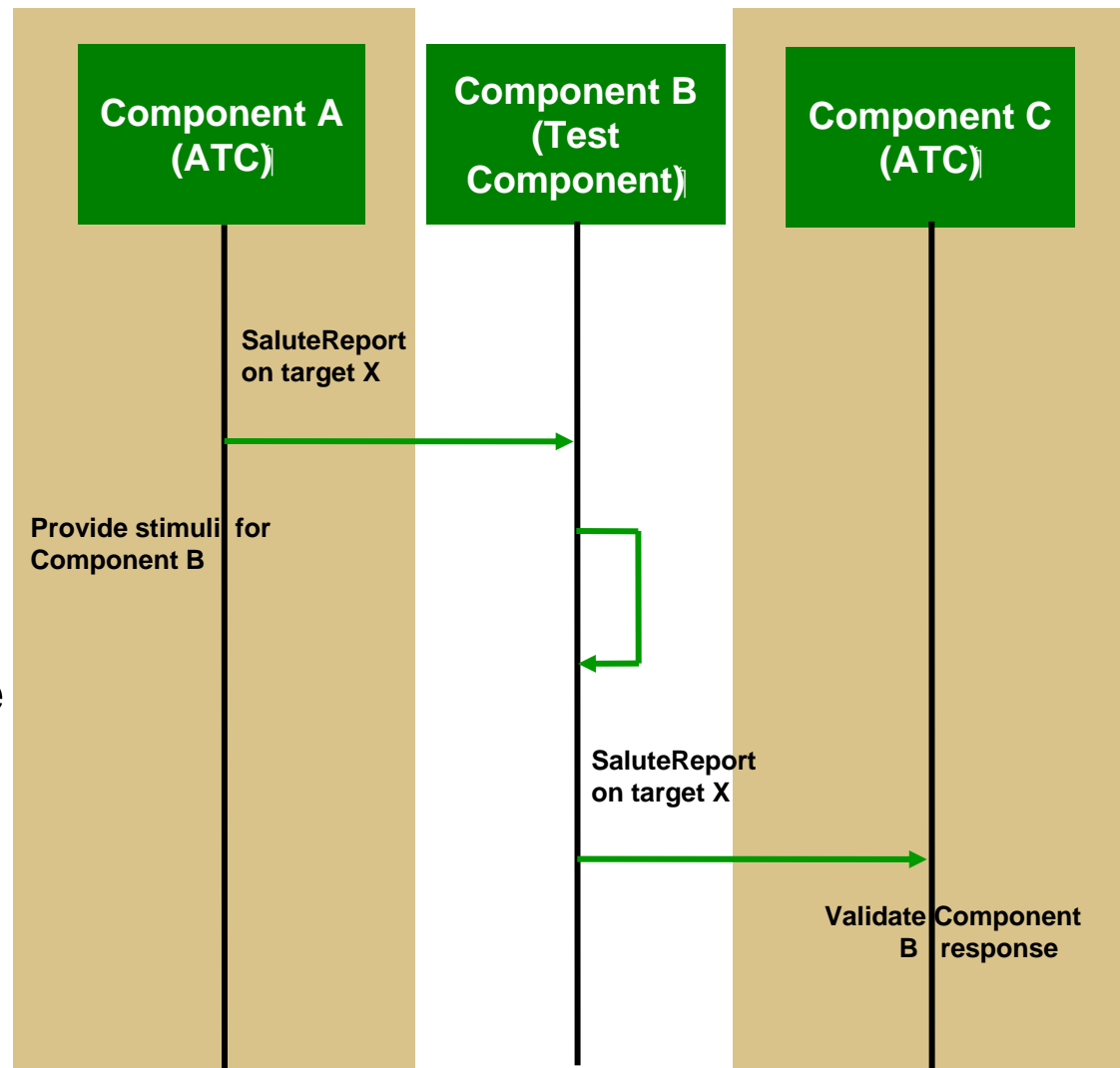
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- Testing a federate in a distributed simulation environment is a 2 step process:
 - Federates are tested individually by their developers
 - The distributed simulation environment is then tested as a whole
- Data dependencies between federates force 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**

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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

UML Sequence Diagram:

```

sequenceDiagram
    participant SANDS as <<System>>  
SANDS
    participant DOS as <<Actor>>  
DOS
    participant OCS as <<Actor>>  
OCS
    participant MTS as <<Actor>>  
MTS
    participant C2Device as <<Actor>>  
C2Device

    SANDS->>DOS: (MRegister)/MDiscover  
DOS->>SANDS: C3Nodes[B1000] Creation  
SANDS->>OCS: (MUpdate)/MReflect  
OCS->>SANDS: C3Nodes[B1000] Up date  
SANDS->>C2Device: (Msend)/MReceive  
C2Device->>SANDS: Initial Self Sitrep (Create B1000)  
SANDS->>OCS: (Msend)/MReceive  
OCS->>SANDS: response to creation of B1000  
SANDS->>C2Device: (Msend)/MReceive  
C2Device->>SANDS: First Report on R6000  
SANDS->>C2Device: Correlated Response to R6000 report.  
SANDS->>C2Device: (Msend)/MReceive  
C2Device->>SANDS: Up date Receivers with Uncorrelated Salute  
SANDS->>C2Device: (Msend)/MReceive  
C2Device->>SANDS: No Change report on R6000  
SANDS->>C2Device: (Msend)/MReceive  
C2Device->>SANDS: 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 **Cardinality: 0+**
- SaluteReport.CDT.TrackingID **Cardinality: 1+**
- FederateHandle **1 << Validation Options**
- InteractionCounter **1 << Validation Options**
- SaluteReport.CDT.ReportCreatorEntityID **"B1000" << Validation Options**
- +SaluteReport.CDT.NodeReceiptHistory **Cardinality: 0+**
- +SaluteReport.CDT.ContributingIDs **Cardinality: 1+**
- ContributingIDs [0]
- 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