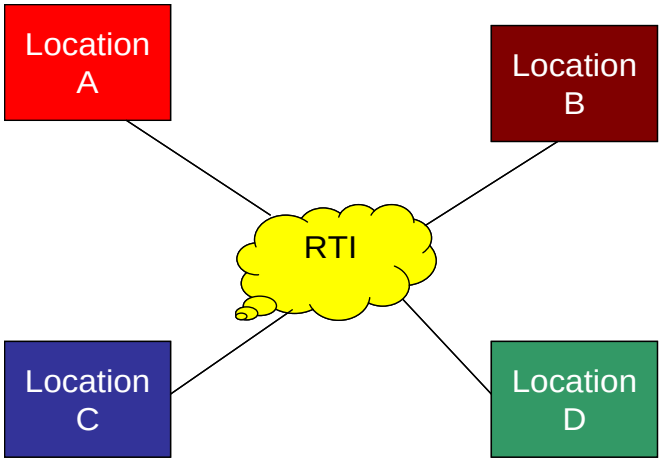
High Level Architecture (HLA) and Run-time Infrastructure (RTI)

What need is the HLA addressing?

High Level Architecture (HLA) increasingly supports large scale distributed exercises for Modeling and Simulation in the Department of Defense (DoD).



Widely distributed simulation enable:

- Pooling of hardware and human resources reducing traveling and infrastructure costs
- Co-locating simulations with troops and centers of excellence.
- Standing up a persistent simulation environment

The MATREX program provides a verified DoD Compliant RTI implementation of the DoD HLA 1.3 Interface Specification to directly address the unique needs of widely distributed simulations.

How is the HLA addressing this need?

To allow for distributed testing and experimentation across wide area networks (WAN) the Hierarchical Interconnect (HI) functionality of the MATREX RTI is utilized to reduce WAN traffic by executing the distributor component at each WAN site that is running multiple MATREX execution environments. Activating HI requires no changes from simulations and supports all HLA services.

The Hierarchical Interconnect strategy also reduces network bandwidth utilization by eliminating duplicate messages, insulates simulations from latency congestion over WAN links and increases simulation scale by handling messages “explosion” as necessary.

The MATREX RTI is robust. It has the ability to automatically detect and remove dead processes, which have been known to bog down and impede distributed testing in the past. It also detects frozen simulation and prevents them from interfering with other simulations during join or resign.

The MATREX RTI is freely available to the DoD community. Users are not bound or restricted by licensing constraints which typically arise in large scale events.

The RTI implementation is based on latest M&SCO (Modeling and Simulation Coordination Office) source code release: RTI-NG v9.0.

- MATREX v4.X changes submitted to M&SCO and merged with other source code changes; this become v9.0.
- v9.0 used as the baseline for RTI-1.3NGmatrexv5.X development.
- MATREX periodically merges updates back into the M&SCO source code baseline.

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Who is benefiting from the HLA/RTI?

- Research, Development and Engineering Command
  - AMRDEC
  - ARDEC
  - ARL
  - CERDEC (Fort Belvoir and Fort Monmouth)
  - NSRDEC
  - STTC
  - TARDEC
- Future Combat System Lead System Integrator
- 3CE (Cross Command Collaborative Effort)
- TRADOC (BLCSE)
- Select PEO's/PM's

Benefits (Why) of using the HLA/RTI?

- Can communicate to other computer simulations regardless of the computing platforms
- No Licensing required - just a Program Level Distribution Agreement (DA) between DoD Sponsors/Agencies
- Basically cost free to DoD Customers
- Highly intelligent and experienced RTI SW Developer Staff
- Quick technical support and issue resolution via MATREX RTI mail reflector

Points of Contact

www.rdecom.army.mil

www.matrex.rdecom.army.mil

Acronyms List

AMRDEC	**=** Aviation & Missile Research, Development and Engineering Center
ARDEC	**=** Armament Research, Development and Engineering Center
ARL	**=** Army Research Laboratory
ATC	**=** Advanced Test Capability
ATEC	**=** Army Test and Evaluation Command
CERDEC	**=** Communications-Electronics Research, Development and Engineering Center
DoD	= Department of Defense
FCS	**=** Future Combat System
HI	= Hierarchical Interconnect
HLA	= High Level Architecture
LSI	**=** Lead System Integrator
MATREX	**=** Modeling Architecture for Technology, Research and Experimentation
NSRDEC	**=** Natick Soldier Research, Development and Engineering Center
RTI	= Run-Time Infrastructure
STTC	**=** Simulation & Technology Training Center
TARDEC	**=** Tank and Automotive Research, Development and Engineering Center
TRADOC	**=** Training and Doctrine Command
WAN	= Wide Area Network

Get the right M&S technology to the right place, at the right time, for the Decision Maker and the Warfighter.