

FOREWORD

This Manual is issued under the authority of DoD Directive 5000.59, "DoD Modeling and Simulation (M&S) Management," January 4, 1994. Its purpose is to prescribe a uniform glossary of modeling and simulation (M&S) terminology for use throughout the Department of Defense. In addition to the main glossary of terms, this Manual includes a list of M&S-related abbreviations, acronyms, and initials commonly used within the Department of Defense.

This Manual is effective immediately and is mandatory for use by all of the DoD Components. However, it is not a substitute for the Department of Defense Dictionary of Military and Associated Terms (JOINT PUB 1-02), which the Secretary of Defense has directed to be used throughout the Department of Defense.

The provisions of this Manual apply to the Office of the Secretary of Defense (OSD), the Military Departments, the Chairman of the Joint Chief of Staff, the Combatant Commands, the Defense Agencies, and activities administratively supported by OSD (hereafter called "DoD Components").

Send recommended changes to the Manual to:

Defense Modeling and Simulation Office
ATTENTION: Glossary Manager (Mr. Heusmann)
1901 N. Beauregard Street, Suite 510.
Alexandria, Virginia, 22311-1705

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J. S. Gansler

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DoD MODELING AND SIMULATION (M&S) GLOSSARY

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PART I

ACRONYMS/ABBREVIATIONS

A

A/D	analog-to-digital
A2ATD	Anti-Armor Advanced Technology Demonstration
Aa	Achieved Availability
AAAS	American Association for the Advancement of Science
AAAV	Advanced Amphibious Assault Vehicle
AAIS	Advanced Airborne Interceptor Simulator
AAL	ATM Adaptation Layer
AAODL	Atmospheric Aerosols and Optics Data Library
AAR	1 - After Action Review 2 - After Action Report
AARS	After Action Review System
AAS	Advanced Automation System
AASP	Army Automation Security Program
AASPEM	Air-to-Air System Performance Evaluation Model
AATD	Army Advanced Technology Demonstration(s)
ABCSIM	Atmospheric, Biological, and Chemical Simulation
ABE	ALSP Broadcast Emulator
ABM	Armor Breakpoint Model
ABS	Advanced Battle Simulation
ABU	Analog Backup
ACAAM	Air Courses of Action Assessment Model
ACAD	Advanced Computer Aided Design
ACALS	Army Computer-aided Acquisition & Logistics Support
ACC	Aegis Computer Center
ACDI	Asynchronous Communications Device Interface
ACEC	Army Communications-Electronics Command (now CECOM)
ACEM	1 - Advanced Campaign Effectiveness Model 2 - Air Combat Evaluation Model
ACETEF	Air Combat Environment Test and Evaluation Facility
ACI	AWSIM CTAPS Interface
ACISD	Advanced Computational and Information Sciences Directorate
ACM	ALSP Common Module
ACMI	Air Combat Maneuvering Instrumentation
ACMS	Air Combat Maneuvering Simulator
ACMT	Automated Configuration Management Tool
ACOE	Army Common Operating Environment
ACPT	Automated Corporate Planning Tool
ACQSIM	Acquisition Simulation

ACR	Advanced Concepts and Requirements
ACS	Access Control System
ACSIT	Aegis Combat System Interactive Trainer
ACT	1 - Advanced Concepts and Technology 2 - ALSP Control Terminal 3 - Architecture Characterization Template
ACTD	Advanced Concept Technology Demonstration
Ada	High Level Computer Programming Language
ADDS	1 - Advanced Data Distribution System 2 - Automated Data Distribution System
ADEPT	Administrative Data Entry for Processing Transmission
ADL	Ada Design Language
ADLP	Advanced Data Link Program
ADM	1 - Acquisition Decision Memorandum 2 - Advanced Development Model 3 - Application Distribution Module
ADMP	Army Data Management Program
ADO	Army Digitization Office
ADP	Automatic Data Processing
ADPA	American Defense Preparedness Association
ADPE	Automatic Data Processing Equipment
ADPSO	Automatic Data Processing Security Officer
ADPSSEP	Automatic Data Processing System Security Enhancement Program
ADPSSO	Automatic Data Processing System Security Officer
ADRG	Arc Digitized Raster Graphics
ADS	1 - Advanced Distributed Simulation 2 - Authoritative Data Source 3 - Automated Data System
ADSI	Advanced Distributed System Interface
ADSIM	Air Defense Simulation
ADSS	1 - Air Defense Simulation System 2 - Army Data Standardization System
ADST	Advanced Distributed Simulation Technology
ADTAM	Air Defense Tanker Analysis Model
ADUA	Administrative Directory User Agent
AESAT	Avionics & Electrical Systems Advanced Trainer
AESOP	Army EMP Simulator Operations
AETS	Airborne Electronic Threat Simulator
AFAM	Advanced Field Artillery Model
AFATDS	Advanced Field Artillery Tactical Data System
AFCENT	Allied Forces Central Europe
AFEWES	Air Force Electronic Warfare Evaluation Simulator
AFIN	Air Force Information Network
AFIT	Air Force Institute of Technology
AFNET	Air Force Network
AFO	Awaiting Further Occurrence
AFOR	Automated Forces
AFS	Advanced Flight Simulator

AFSCN Air Force Satellite Control Network
AFWG 1 - Acquisition Functional Working Group
2 - Analysis Functional Working Group
AG Application Gateway
AGCCS Army Global Command and Control System
AGES Air to Ground Engagement Simulation
AGIS Analysis and Gaming Information System
AGRAM Air-to-Ground Assessment Model
AGRMET Agricultural Meteorological Model
AHP Analytic Hierarchical Process
AHPCRC Army High Performance Computer Research Center
AI Artificial Intelligence
AI-ESTATE Artificial Intelligence and Expert System Tie to
Automatic Test Equipment
AI2 Advanced Image Intensification
AID AUTODIN Interface Device
AIN Advanced Intelligent Network
AIRES Automated Information Retrieval And Expert System
AirSAF Air Semi-Automated Forces
AIS 1 - ALSP Infrastructure Software
2 - Automated Information System
AISSAP Automatic Information System Security Assessment
Program
AISSO Automated Information System Security Officer
AITS Advance Information Technology Systems
AIU Advanced Interface Unit
ALARM Advance Low-Altitude Radar Model
ALBAM Air Land Battle Assessment Model
ALBE Air Land Battlefield Environment
ALBM Air Land Battle Management
ALES Air Land Engagement Simulation
ALISS Advanced Lightweight Influence Sweep System
ALM Airlift Loading Model
ALS ADA language system
ALSP Aggregate Level Simulation Protocol
ALWSIM Army Laser Weapon Simulation
AMASS ATO Mission Analysis and Simulation System
AMES Advanced Multiple Environment Simulator
AMG Architecture Management Group
AMHS Automated Message Handling System
AMIP Army Model Improvement Program
AMM 1 - Advanced Missile Model
2 - Army Mobility Model
AMME Automated Multi-Media Exchange
AMP Analysis of Mobility Platform
AMPE Automated Message Processing Exchange
AMPES Automatic Message Processing Exchange System
AMPS 1 - Association of Modeling, Planning and
Simulation
2 - Automated Mission Planning System

3 - Aviation Mission Planning System
 AMSAA Army Materiel Systems Analysis Activity
 AMSDL Acquisition Management Systems and Data Requirements Control List
 AMSEC Army Model and Simulation Executive Council
 AMSGOSC Army Model and Simulation General Officer Steering Council
 AMSMC Army Model and Simulation Master Catalog
 AMSMP Army Modeling and Simulation Management Program
 AMSO Army Model and Simulation Office
 AMSS Ammunition Management Standard System
 ANDF 1 - Application Neutral Data Format
 2 - Architecture Neutral Distribution Format
 ANM Automated Network Manager
 ANN Artificial Neural Networks
 ANS Artificial Neural Systems
 ANSI American National Standards Institute
 A_o Operational Availability
 AoA Analysis of Alternatives
 APHIDS Advanced Panoramic Helmet Interface Demonstrator System
 API 1 - Application Programmer's Initiative
 2 - Application Program Interface
 APIU Adaptable Programmable Interface Unit
 APM Advanced Penetration Model
 APMM Activity Planning and Management Model
 APMS Automated Program Management Information System
 APP Application Portability Profile
 APS Asynchronous Protocol Specification
 APSE ADA Programming Support Environment
 ARES 1 - Advanced Regional Exploratory System
 2 - Advanced Research Electromagnetic Simulator
 ARGUS Advanced Realtime Gaming Universal Simulation
 ARI Army Research Institute (for the Behavioral and Social Sciences)
 ARIEM Army Research Institute of Environmental Medicine
 ARIES Automated Real-Time Instrumented Experimentation System
 ARTBASS Army Tactical Battlefield Simulation System
 ARTDT Advanced Real-Time Data Tool
 ARTE Ada Run Time Environment
 ASBAT Air/Sea Battle Model
 ASC 1 - Advanced Simulation Center
 2 - Aeronautical Systems Center (Air Force)
 3 - American Standards Committee
 ASCIET All-Service Combat Identification Evaluation Team
 ASCII American Standard Code for Information Interchange
 ASCM Advanced Space Computing Module
 ASD Assistant Secretary of Defense

ASD(C3I) Assistant Secretary of Defense for Command,
Control, Communications and Intelligence
ASEM Anti-Satellite (ASAT) Engagement Model
ASIC Application-Specific Integrated Circuit
ASIS Ada Semantic Interface Specification
ASME American Society of Mechanical Engineers
ASN 1 - Abstract Syntax Notation
2 - Assistant Secretary of the Navy
ASPT Advanced Simulator for Pilot Training
ASSIST Acquisition Streamlining and Standardization
Information System
ASTC Advanced Simulation Technology Center
ASTO Advanced Systems Technology Office
ASTT Advanced Simulation Technology Thrust
ATASS Adaptive Training, Analysis, and Simulation System
ATB Analytical Tool Box
ATCAL Attrition Model Using Calibrated Parameters
ATD Advanced Technology Demonstration
ATDL 1 - Army Tactical Data Link
2 - Automated Tactical Data Link
ATDL-1 Army Tactical Data Link-One
ATE Automatic Test Equipment
ATEMS Advanced Threat Emitter Simulator
ATEWES Advanced Tactical Electronic Warfare Environment
Simulator
ATF Advanced Tactical Fighter
ATFM&S Acquisition Task Force on Modeling and Simulation
ATM Asynchronous Transfer Mode
ATO Air Tasking Order
ATR Automatic Target Recognition
ATRJ 1 - Advanced Tactical Radar Jammer
2 - Advanced Threat Radar Jammer
ATS 1 - Advanced Threat Simulator
2 - Automatic Telecommunication System
3 - Automated Tracking System
ATTD Advanced Technology Transition Demonstration
ATV ALSP (Aggregate Level Simulation Protocol)
Translator Validator
ATVSS Automatic Tracking and (with) Video Scene
Simulation System
AU Access Unit
AURA Army Unit Resiliency Analysis Model
AUT Application Under Test
AUTODIN Automatic Digital Network
AVCATT Aviation Combined Arms Tactical Trainer (virtual
simulator)
AVO ADA Validation Office, part of AJPO
AWACS Airborne Warning and Control System
AWD 1 - Advanced Warfighting Demonstration
2 - Alternate World Database

AWE	1 - Advanced Warfighting Experiment
	2 - Area Weapons Effects
AWESS	Automatic Weapon Effect Signature Simulator
AWIPS	Advanced Weather Interactive Processing System
AWIS	Army World-Wide Information Systems
AWSIM	Air Warfare Simulation
AWSIM-R	Air Warfare Simulation-Reengineered

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B

BADD Battlefield Awareness and Data Dissemination
 BASEWAM Battlefield Surveillance Electronic Warfare
 Analysis Model
 BASOPS Base Operating Information System
 BATTs Basic Air Tactics Trainer
 BAUD Characters Xmitted/sec Serially From a Computer
 BBN Broad Band Noise
 BBS 1 - Brigade/Battalion Simulation
 2 - Bulletin Board System
 BCBL Battle Command Battle Lab
 BCC Base Communications-Computer Center
 BCCS Battlefield Command and Control System
 BCOM Battalion Combat Outcome Model
 BCS Battery Computer System
 BDS Battlefield Distributed Simulation
 BDS-D Battlefield Distributed Simulation - Developmental
 BEES Battlefield Environmental Effects Software
 BER 1 - Basic Encoding Rules
 2 - Basic Error Rate
 3 - Bit Error Rate
 BERT Bit-Error-Rate Test
 BES Background Environment Simulator
 BEWSS Battlefield Environment Weapon System Simulation
 BFA Battlefield Functional Area
 BFIT Battle Force In-port Trainer
 BFM Battlefield Forecast Model
 BFTT Battle Force Tactical Trainer (naval virtual
 simulator)
 BG Battle Group
 BGEM Battle Group Effectiveness Model
 BIA Battlefield Information Architecture
 BICES Battlefield Information Collection & Exploitation
 System
 BICM Battlefield Intelligence Collection Model
 BIS 1 - Battlespace Information System
 2 - Built-in Simulation
 BISDN Binary Integrated Services Digital Network
 BIT Built-In Test
 BITE Built-in-Test Equipment
 BLC Base Level Computing
 BLCI Base Level Communication Infrastructure
 BLDM Battalion Level Differential Model
 BLERT Block-Error-Rate Test
 BLII Base Level Information Infrastructure

BLOB	Binary Large Object
BLRSI	Battle Lab Reconfigurable Simulator Initiative
BLRSIM	Battle Lab Reconfigurable Simulator
BLSM II	Base Level System Modernization Phase II (See GCCS-AF)
BM	Battlespace Management
BMC3	Battle Management, Command, Control, and Communications
BMDES	Ballistic Missile Defense Engagement Simulation
BMDO	Ballistic Missile Defense Organization
BMTA	Backbone Message Transfer Agent
BODAS	Brigade Operations Display and AAR System
BODESIM	Barrier/Obstacle Deployment and Effectiveness Simulation
BOS	1 - Battlefield Operating System 2 - Basic Operating System
BOSM	Balance of Sustainment Model
BOSS	Binary Object Storage System
bps	Bits Per Second
BPS	Battlefield Planning System
BRACE	Base Resource and Capability Estimator
BRIDGESIM	Bridge Simulator
BSC	Battle Simulation Center
BST	Basic Skills Trainer
BT	Behavioral Taxonomy
BTA	Best Technical Approach
BUCS	Back-up computer system
BULLET	Battalion/Unit Level Logistics Evaluation Tool
BV	Battlefield Visualization
BW	Bandwidth

C

C-CS Communications-Computer Systems
 C2 Command and Control
 C2I Command, Control, and Intelligence
 C2IPS Command and Control Information Processing System
 C2IS C2 Information Systems
 C2W Command and Control Warfare
 C3 Command, Control, and Communications
 C3CM Command, Control and Communications Countermeasures
 C3I Command, Control, Communications, and Intelligence
 C3I/IS C3I/Information Systems
 C3S C3 Systems
 C3ISR Command, Control, Communications, Intelligence, Surveillance, and Reconnaissance
 C4 Command, Control, Communications, and Computers
 C4I Command, Control, Communications, Computers and Intelligence
 C4I2 Command, Control, Communications, Computers, and Intelligence Integration
 C4IFTW C4I for the Warrior
 C4ISR Command, Control, Communications and Computer Intelligence, Surveillance and Reconnaissance
 C4SMP C4 System Master Plan
 CAA U.S. Army Concepts Analysis Agency
 CAAM Composite Area Analysis Model
 CAAN Combined Arms Assessment Network
 CACE Computer-Aided Cost Estimating
 CACEAS Computer-Assisted Circuit Engineering and Allocating System
 CACTIS Community Automated Counter-Terrorism Intelligence System
 CAD Computer-Aided Design
 CAD/CAM Computer Aided Design/Computer Aided Manufacturing
 CADD Computer Aided Design and Drafting
 CADDS Computer Aided Design and Drafting System
 CADE Computer-Aided Design Equipment
 CADEX Computer Adjunct Data Evaluator - X
 CADIS Communication Architecture for Distributed Interactive Simulation
 CADMAT Computer-Aided Design, Manufacture and Test
 CADS Computer-Assisted Display System
 CAE
 1 - Common Application Environment
 2 - Component Acquisition Executive
 3 - Computer Aided Engineering
 4 - Computer Aided Exercise

CAESAR Computer-Aided Exploration of Synthetic Aperture Radar

CAETI Computer-Aided Education and Training Initiative

CAFMS Computer Assisted Force Management System

CAI Computer Aided Instruction

CAINES Computer Assisted Instructional Evaluation System (AF Academy model)

CAIV Cost As An Independent Variable

CAL Computer Aided Learning

CALOW Contingency/Limited Objective Warfare

CALS 1 - Computer Aided Acquisition and Logistics Support
2 - Continuous Acquisition and Life-cycle Support

CAM 1 - Civil Affairs Model
2 - Computer Aided Manufacturing

CAMAC Computer-Aided Measurement and Control

CAMD Computer Assisted Molecular Design

CAMDSS Common Architecture for Model Development and Simulation Support

CAMEO Computer Aided Management of Emergency Operations

CAMERA Computational Algorithm for Missile Exhaust Radiation

CAMEX Computer-Assisted Map Exercise

CAMMS Condensed Army Mobility Model System

CAMPS Computer Aided Mission Planning System

CAPE Computer Aided Project Engineering

CAPP Computer-Aided Process Plan

CAPS 1 - Computer-Aided Paperless System
2 - Contingency Analysis Planning System

CARD Computer-Aided Remote Driving

CARDS 1 - Catalog of Approved Requirements Documents (Army)
2 - Central Archive for Reusable Defense Software
3 - Comprehensive Approach to Reusable Defense Software

CARE Computer Assistance Resource Exchange

CARES Cratering and Related Effects Simulation

CASDM Common Approach to Software Development and Maintenance

CASE 1 - Computer Aided Software Engineering
2 - Computer Assisted Software Engineering
3 - Computer-Assisted Systems Engineering

CASES 1 - Capabilities Assessment Expert System
2 - Contingency Assessment Simulation and Evaluation System

CASMO Combat Analysis Sustainability Model

CASP Computer Assisted Search Planning

CASS Consolidated Automated Support System

CAST Computer-Aided Software Testing

CASTFOREM Combined Arms and Support Task Force Evaluation

Model
 CASTFOREM-DIS Combined Arms and Support Task Force Evaluation
 Model with DIS
 CATIA Computer-Aided Three Dimensional Interactive
 Application
 CATIS 1 - Computer-Aided Tactical Information System
 2 - Computer-Assisted Tactical Information System
 CATT Combined Arms Tactical Trainer
 CAU Cell Adapter Unit
 CAX 1 - Combined Arms Exercise
 2 - Computer Aided Exercise
 3 - Computer Assisted Exercise (NATO)
 CBAM Combat Base Assessment Model
 CBI Computer Based Instruction
 CBITS Computer Based Instructional Training System
 CBL Computer Based Learning
 CBR Constant Bit Rate
 CBS Corps Battle Simulation
 CBS-ATCCS Corps Battle Simulation - Army Tactical Command and
 Control System Interface
 CBT Computer Based Training
 Cbt STTAR Combat Synthetic Test and Training Assessment Range
 CCB Configuration Control Board
 CCBD Configuration Control Board Directives
 CCEB Combined Communications-Electronics Board
 CCF Central Computer Facility
 CCH Computer-Controlled Hostiles
 CCIB Command and Control Interoperability Board
 CCIS 1 - Command and Control Information System
 2 - Command, Control and Intelligence System (NATO)
 CCOMEN Conventional Collateral Mission Effectiveness Model
 CCSIL Command and Control Simulation Interface Language
 CCSP Consolidated Computer Security Program
 CCTB Close Combat Test Bed
 CCTT Close Combat Tactical Trainer
 CCU Computer Control Unit
 CD-R Compact Disk - Recordable
 CD-ROM Compact Disk - Read Only Memory
 CD-V Compact Disk - Video
 CD-WO Compact Disk - Write Once
 CDA 1 - Central Design Activity
 2 - Cognitive Decision Aids
 CDAd Component Data Administrator
 CDB Common Data Base
 CDD Common Data Dictionary
 CDDI Copper Distributed Data Interface
 CDE Common Desktop Environment
 CDI Compact Disk Interactive
 CDIN CONUS Defense Integrated Network
 CDP Classified Data Processing

CDRL Contract Data Requirements List
CDS Congressional Data Sheets
CDU Control Display Unit
CE Command Entity
CECOM U.S. Army Communications-Electronics Command
CEESIM Combat Electromagnetic Environment Simulator
CEM Concepts Evaluation Model
CERS Combat Environment Realism System
CERT Computer Emergency Response Team
CES Cognitive Environment Simulator
CET Computers and Electronic Technology
CEWI Communications Electronic Warfare Intelligence
CFAW Contingency Force Analysis War Game
CFDB Conventional Forces Database
CFE 1 - Center for Engineering
2 - Contractor Furnished Equipment
3 - Conventional Forces in Europe
CFII Center for Integration and Interoperability
CFOR Command Forces
CGF Computer Generated Forces
CGI 1 - Computer Generated Imagery
2 - Computer Graphics Interface
CGM Computer Graphics Metafile
CHANCES Climatological and Historical Analysis of Cloud for
Environmental Simulations
CHAS Chemical Hazard Assessment System
CHS Common Hardware/Software
CI Configuration Item
CIC Combat in Cities
CICS Customer Information Control System
CIDS Computerized Information Delivery Service
CIE Computer Integrated Engineering
CIE-PAT Computer Integrated Engineering-Process Action Team
CIG 1 - Computer Image Generation
2 - Computer Image Generator
CIITA Computer Improved Instructor's Training Aid
CIM 1 - Computer Integrated Manufacturing
2 - Corporate Information Management
CIM/EI Corporate Information Management/Enterprise
Integration
CIMNET Center for Information Management Network
CIMP 1 - Cartographic Imaging Modeling Program
2 - Corporate Information Management Plan
CIP 1 - Capital Investment Plan
2 - Combat Information Processor
3 - Combined Interoperability Program
CIRIS Completely Integrated reference Instrumentation
System
CIRRUS Clouds, IR, Real, for Use in Simulations
CIS 1 - CASE Integration Services

2 - Combat Instruction Set
 3 - Command Information System
 CISC Complex Instruction Set Computer
 CISS Center for Information Systems Security
 CITS Combat Information Transport System
 CIU Cell Interface Unit
 CIWG Communications Interoperability Working Group
 CL Closed Loop
 CLA Conventional Land Attack
 CLAP C++ Library Actor Programming
 CLCGF Corps Level Computer Generated Forces
 CLCGF-HS Corps Level Computer Generated Forces-Hybrid State
 CLD Center Line Data
 CLDGEN Cloud Scene Generator
 CLDSIM Cloud Simulation
 CLEAR Campaign Logistics Expenditure And Replenishment Model

 CLNP Connectionless Network Protocol
 CLNS Connectionless Network Service
 CM Configuration Management
 CMAS Crisis Management ADP System
 CMASS Counterdrug Modeling and Simulation System
 CMI Computer Managed Instruction
 CMIP Common Management Information Protocol
 CMIS/P Common Management Information Services & Protocols
 CMMS Conceptual Model of the Mission Space
 CMP Configuration Management Plan
 CMR Common Model Repository
 CMS Combat Mission Simulator
 CMT Confederation Management Tool
 CMTC Combat Maneuver Training Center
 CMTC-IS Combat Maneuver Training Center-Instrumented Systems

 CMUES Campaign Model Utilizing Environmental Simulator
 CMWG Configuration Management Working Group
 CN Communications Network
 CNAD Conference of National Armament Directors (NATO)
 CNC Communications Network Control
 CNMS Consolidated Network Management System
 COADS Comprehensive Ocean Atmosphere Data Set
 COAST Course of Action Selection Tool
 COBOL Common Business Oriented Language
 COBRA Combat Outcome Based on Rules of Attrition
 COE Common Operating Environment
 COEA Cost and Operational Effectiveness Analysis (replaced by the term AOA)

 COLD Computer Output to Laser Disk
 COM Computer Output Microform
 COMBIC Combined Obscurant Model for Battlefield-Induced Contaminants

COMBIC/STATIC Combined Obscuration Model for Battlefield Induced Contaminants/Statistical Texturing Applied to Battlefield Induced Contaminants

COMINT Communications Intelligence

COMNET Communications Network

COMPASS Common Operational Modeling, Planning, and Simulation Strategy

COMPUSEC Computer Security

COMSAT Communications Satellite

COMSEC Communications Security

CONMOD Conflict Model

CORBA Common Object Request Broker Architecture

CORBAN Corps Battle Analyzer

CORDIVEM Corps/Division Evaluation Model

Corn Computer Resource Nucleus

COSAGE Combat Sample Generator

COSE Common Open Software Environment

COTS Commercial Off The Shelf

COVART Computation of Vulnerable Area and Repair Time

CPCI Computer Program Configuration Item

CPIPT Cost/Performance Integrated Process Team

CPM Critical Path Method

CPU Central Processing Unit

CRB Configuration Review Board

CRLCMP Computer Resource Life Cycle Management Plan

CRMP Computer Resources Management Plan

CROSSBOW-S Construction of a Radar to Operationally Simulate Signals Believed to Originate Within the Soviet Union

CRT Cathode Ray Tube

CRWG Computer Resource Working Group

CS Constraint Set

CSC Computer Software Component

CSCI Computer Software Configuration Item

CSE Common Support Equipment

CSERIAC Crew System Ergonomics Information Analysis Center

CSIDS CENTCOM/SOCOM Integrated Data System

CSII Center for Systems Interoperability and Integration

CSL Computer Systems Laboratory (part of NIST)

CSM Computer Software Module

CSP Communications Service Processor

CSPEI Computer Software Product End Item

CSPM Communication System Performance Model

CSRDF Army Crew Station Research and Development Facility

CSS Communications Support System

CSSBL Combat Service Support Battle Lab

CSSCS Combat Service Support Computer System

CSSFAM Combat Service Support Functional Area Model

CSSM Cloud Scene Simulation Model

CSSTSS	1 - Combat Service Support Tactical Simulation System 2 - Combat Service Support Training Simulation System
CSU	Computer Software Unit
CT	Computer Tomography
CTAPS	1 - Contingency Tactical Air Planning System 2 - Contingency Theater Automated Planning System
CTC	Critical Technical Characteristics
CTE	Center for Test and Evaluation
CTEIP	Central Test And Evaluation Investment Program
CTF	Common Technical Framework
CTIS	1 - Combat Terrain Information System 2 - Command Tactical Information System
CTLS	Concurrent Theater Level Simulation
CTOS	Convergent Technologies Operating Systems
CUTM	Computer Understandable Terrain Model
CVAT	Combat Vehical Appended Trainer
CVF	Compressed Volume File
CVGA	Color Video Graphics Array
CVIT	Combat Vehicle Institutional Trainer
CVSA	Combat Vehicle Simulation Architecture
CVTS	Combat Vehicle Training System
CWASAR	Cruise Weapon Analysis Simulation and Research
CWICS	CTAPS Wargame Interface Control
CWM	Composite Warfare Model

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D

D/A digital-to-analog
DAB Defense Acquisition Board
DACS 1 - Data and Analysis Center for Software
2 - Digital Access and Cross-Connect System
DAd Data Administrator
DAdm Data Administration
DADS Dynamic Analysis and Design System
DAE Defense Acquisition Executive
DAES Defense Acquisition Executive Summary
DAG 1 - Data Analysis Group
2 - Data Authentication Group
DAI Distributed Artificial Intelligence
DAISY Defense Automated Information System
DAMIS Defense Analysis and Management Information System
DAP 1 - Data Access Protocol
2 - Data Administration Program
3 - Directory Access Protocol
DAPG Data Analysis Programming Group
DAPM 1 - Data Administration Program Manager
2 - Domain Analysis Process Model
DAPMO Data Administration Program Management Office
DAPS Data Acquisition and Processing System
DARIC Defense Automation Resources Information Center
DARMP Defense Automation Resources Management Program
DARPA Defense Advanced Research Projects Agency
DASD 1 - Direct Access Storage Device
2 - Deputy Assistant Secretary of Defense
DASD(IM) Deputy Assistant Secretary of Defense for
Information Management
DASP Data Administration Strategic Plan
DASS Digital Acoustic Sensor Simulator
DATS Data Automated Tower Simulator
DAU Data Acquisition Unit
DAWN Defense Attache Worldwide Network
db Decibel
DB Database
DBA 1 - Design-based Analysis
2 - Dominant Battlespace Awareness
DBAd Data Base Administrator
DBAdm Data Base Administration
DBD Data Base Document
DBK Dominant Battlespace Knowledge
DBMS Data Base Management System
DBOF Defense Business Operations Fund

DCA 1 - Data Collection and Analysis
2 - Defense Communications Agency (now DISA)

DCAC Digital Concepts Analysis Center

DCE Distributed Computing Environment

DCI 1 - Data Communication Interface
2 - Director for Central Intelligence

DCID Director for Central Intelligence Directive

DCN Defense Communications Network

DCP 1 - Decision Coordinating Paper
2 - Distributed Collaborative Planning

DCPDS Defense Civilian Personnel Data System

DCPS Data Communications Protocol Standards

DCT 1 - Desktop Computer Terminal
2 - Digital Communication Terminal

DCTN Defense Commercial Telephone Network

DCW Digital Chart of the World

DD/DS Data Dictionary/Directory System

DDA Domain Defined Attribute

DDARS Distributed Data Archive and Retrieval System

DDBMS Distributed Database Management System

DDDS Defense Data Directory System

DDI Director of Defense Information

DDL Data Definition Language

DDM Distributed Data Management

DDN Defense Data Network

DDR DoD Data Repository

DDR&E Director of Defense Research and Engineering

DDS 1 - Digital Data Service
2 - Direct Digital Synthesizer
3 - Distributed Data System
4 - Distributed Defense Simulation

DDSS Distributed Defense Simulation System

DE Data Engineering

DEA Data Exchange Agreement

DECA Digital Electronic Control Assembly

DED Data Extraction Device

DEEM Dynamic Environmental Effects Model

DEF Data Exchange Format

DELTA Data Element Tool-Based Analysis

DEM Digital Elevation Model

DES 1 - Data Encryption Standard
2 - Digital Encryption Standard

DESCEM Dynamic Electromagnetic Systems Combat Effectiveness Model

DESP Data Element Standardization Program

DET Dynamic Environment and Terrain

DEWCOM Divisional Electronic Warfare Combat Model

DEXES Deployable Exercise System

DFAD Digital Features Analysis Data

DFARS Defense Federal Acquisition Regulation Supplement

DFMS	Data File Management System
DFOM	Derived Federation Object Model
DFSAM	Direct Fire Stand-Alone Model
DGCC	Defense Information Systems Agency Global Control Center
DGDEM	Dynamic Generalized Digital Environmental Model
DGIS	Direct Graphics Interface Standard
DGIWG	Digital Geographic Information Working Group
DGSA	Defense Goal Security Architecture
DGTS	Dynamic Ground Target Simulator
DHIS	Distributed Heterogeneous Information Systems
DI	1 - Date Integrity 2 - Dismounted Infantry
DIAL	Distributed Intelligent Architecture for Logistics
DIB	1 - Defense Information Base 2 - Directory Information Base
DICE	1 - DARPA Initiative for Concurrent Engineering 2 - Distributed Interactive C3I Effectiveness Simulation Project
DID	1 - Data Item Description
DID	2 - Digital Interface Device
DIDHS	Deployed Intelligence Data Handling System
DIDOP	Digital Image Data Output Product
DIF	Data Interchange Format
DIGEST	Digital Geographic Information Exchange Standard
DII	Defense Information Infrastructure
DIICC	Defense Information Infrastructure Control Concept
DIM	Director of Information Management
DIME	Digital Integrated Modeling Environment
DIRSP	Dynamic Infrared Scene Projector
DIS	1 - Defense Information System 2 - Distributed Interactive Simulations
DISA	Defense Information Systems Agency
DISA/CI	Defense Information Systems Agency/Center for Information
DISA-IS	DISA Information System
DISANet	DISA Information Network
DISC	Defense Information System Council
DISC4	Director of Information Systems Command, Control, Communications, and Computers
DISN	Defense Information Systems Network
DISP	Directory Information Shadowing Protocol
DISS	Distributed Interactive Simulation and Stimulation
DISSIT	Distributed Interactive Simulation Synthesis with Interactive Television
DISSP	Defense Information System Security Program
DIST	Defense Integration Support Tool
DISTAR	Distributed Interactive Simulation Technologies in After Action Review
DIST-EAGLE	Distributed Interactive System for Eagle

DITPRO Defense Information Technical Procurement Office
DIVE Dismounted Infantry in a Virtual Environment
DKP Distributed Knowledge Processing
DL 1 - Data Link
2 - Distance Learning
DLI Data Link Interface
DLMS Digital Land Mass System
DLPS Data Links Processor System
DMAP Data Management and Analysis Plan
DMD Digital Message Device
DME 1 - Distributed Management Environment
2 - Distance Measuring Equipment
DMF Data Management Facility
DMG Digital Map Generator
DMGMP Data Base Generation/Modification Program
DMS 1 - Defense Message System
2 - Digital Modeling and Simulation
3 - Distributed Models and Simulations
DMSCC Defense Modeling and Simulation Coordination Center
DMSI Defense Modeling and Simulation Initiative
DMSIS Defense Modeling and Simulation Information System
DMSO Defense Modeling and Simulation Office
DMSP Defense Message System Program
DMSTTIAC Defense Modeling, Simulation, and Tactical
Technology Information Analysis Center
DNSIX DoDIIS Network Security for Information Exchange
DNVT Digital Non-Secure Voice Telephone
DoDCSEC DoD Computer Security Evaluation Center
DoDIIS DoD Intelligence Information System
DoDISS DoD Index of Specifications and Standards
DoDMSEA DoD M&S Executive Agent
DOE Distributed Object Environment
DOF Degrees of Freedom
DOIM Directors of Information Management
DOMF Distributed Object Management Facility
DONMSMO Department of the Navy, Modeling and Simulation
Management Office
DONMSTSG Department of the Navy Modeling and Simulation
Technical Support Group
DOORS Demonstration of Dynamic Object Oriented
Requirements System
DOS Disk Operating System
DOT Distributed Object Technologies
DOTBF Digitization of the Battlefield
DOW Day of the Week
DP Data Processing
DPA 1 - Defense Production Act
2 - Demand Protocol Architecture
DPDB Digital Product Data Base
DPI Data Processing Installation

DPPDB	Digital Point Positioning Database
DPS	Digital Production System
DR	1 - Data Repositories 2 - Dead Reckoning
DRAM	Dynamic Random Access Memory
DRDA	Distributed Relational Data Base Architecture
DREN	Defense Research and Engineering Network
DRFM	Digital RF Memory
DRLMS	Digital Radar Landmass Simulator
DRN	Data Representation Notation
DRRB	Data Requirements Review Board
DRTWG	Data and Repositories Technology Working Group
DRU	Data Retrieval Unit
DQ	Data Quality
DS	1 - Data Security 2 - Digital Signal 3 - Direct Support
DSA	1 - Directory System Agent 2 - Distribution Systems Analyzer
DSAMS	Defense Security Assistance Management System
DSB	Defense Science Board
DSCS	Defense Satellite Communications System
DSE	1 - Data Storage Equipment 2 - Dynamic Synthetic Environments
DSF	Display Simulation Facility
DSI	Defense Simulation Internet
DSMAC	Digital Scene Matching Area Correlator
DSMC	Defense Systems Management College
DSN	Defense Switching Network [formerly Autovon]
DSP	Digital Signal Processing
DSREDS	Digital Storage and Retrieval Engineering Data System
DSRS	Defense Software Repository System
DSS	1 - Decision Support System 2 - Distribution Standard System 3 - Digital Signature Standard
DSSA	Domain-Specific Software Architecture
DSSCS	Defense Special Security Communications System
DSSE	Developmental Software Support Environment
DSSEP	Developmental Software Support Environment Plan
DSU	1 - Data Service Units 2 - Digital Signal Unit
DSVT	Digital Secure Voice Terminal
DTAD	Digital Terrain Analysis Data
DTAMS	Digital Terrain Analysis Mapping System
DTAP	Defense Technology Area Plan
DTD	Data Transfer Device
DTE/DCE	Data Terminal Equipment/Data Circuit-Terminating Equipment
DTED	Digital Terrain Elevation Data

DTIC	Defense Technical Information Center
DTLOMS	Doctrine, Training, Leader Development, Organization, Materiel and Soldier
DTLS	Distributed Theater Level Simulation
DTM	1 - Data Transfer Module 2 - Digital Terrain Matrix
DTMP	Data Communications Protocol Standards Technical Management Plan
DTOP	Digital Topographic Data
DTS	1 - Data Terminal Set 2 - Digital Terrain System
DTSE&E	Director, Test, Systems Engineering and Evaluation
DVW	Dynamic Virtual Worlds
DWS	Distributed Wargaming System

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E

E-MAIL	Electronic Mail
E-R	Entity-Relationship Model
E2DIS	Environmental Effects for Distributed Interactive Simulation
E3	1 - Electromagnetic Environmental Effects 2 - End-To-End Encryption
E3SM	Electromagnetic Environmental Effects and Spectrum Management
EA	1 - Environmental Assessment 2 - Evaluation Authority 3 - Evolutionary Acquisition 4 - Executive Agent
EAC	Echelon Above Corps
EAD	Executive Agent Developer
EADSIM	Extended Air Defense Simulation
EADTB	Extended Air Defense Test Bed
EAGLE	U. S. Army Corps-Division Combat Model
EAROM	Electrically Alterable Read Only Memory
EBB	Electronic Bulletin Board
EBBS	Electronic Bulletin Board System
EBCDIC	Extended Binary Coded Decimal Interchange Code
EBM	Entity Based Model
EC/EDI	Electronic Commerce/Electronic Data Interchange
EC	Electronic Combat
ECCM	Electronic Counter Countermeasures
ECDES	Electronic Combat Digital Evaluation Simulation
ECDIS	Electronic Chart Display and Information System
ECESL	Electronic Combat Evaluation and Simulation Laboratory
ECM/EOCM	Electronic Countermeasures/Electro-Optical Countermeasures
ECM	Electronic Countermeasures
ECSRL	Electronic Combat Simulation Research Laboratory
EDECSIM	Extended Directed Energy Combat Simulation
EDI	1 - Electronic Data Interchange 2 - Electronic Document Interchange
EDIF	Electronic Document Interchange Format
EDIFACT	Electronic Data Interchange for Administration, Commerce, and Transportation
EDIM	Enhanced Diagnostic Inference Model
EDM	1 - Electronic Document Management Program 2 - Engineering Development Model
EDP	1 - Electronic Data Processing 2 - ELINT Data Processor

EEAT	Environmental Effects Architecture Toolkit
EEI	External Environment Interface
EEM	Environmental Event Modeler
EEPROM	Electrically Erasable/Programmable Read Only Memory
EGA	Enhanced Graphics Adapter
EGM	Earth Gravity Model
EHP	Entity Handover Protocol
EKMS	Electronic Key Management System
ELINT	Electronic Intelligence
ELIST	Enhanced Logistics Intratheater Support Tool
ELMC	Electronics Maintenance Company Model
EM	Electro-magnetic
EMA	Electronic Messaging Association
EMB	Extended Memory Block
EMD	Engineering and Manufacturing Development
EMIS	Environmental Management Information System
EMP	Electromagnetic Pulse
EMPRESS	EMP Radiation Environment Simulator for Ships
EMPRS	Electronic Military Personnel Records System
EMS	Engineering Modeling Software
ENIAC	Electronic Numerical Integrator and Computer
ENSOP	Environmental/Nuclear Simulation Oversight Panel
ENWGS	Enhanced Naval Warfare Gaming System
EO	Electro-Optical
EOB	Electronic Order of Battle
EOC	End of Conversion
EOD	Erasable Optical Disk
EOF	End of File
EOI	End of Identity
EOJ	End of Job
EOSAEL	Electro-Optical Systems Atmospheric Effects Library
EOSDIS	Earth Observing System Data and Information System
EOSS	Electro-Optical Simulation System
EOTDA	Electro-Optical Tactical Decision Aids
EPL	ELINT Parameter List
EPROM	Electronic Programmable Read Only Memory
ERD	Entity Relationship Diagram
ERDAS	Earth Resources Data Analysis System
ERIM	Environmental Research Institute of Michigan
EROM	Erasable Read-Only Memory
ERTWG	Environmental Representation Technical Working Group
ESAMS	Enhanced Surface-to-Air Missile Simulation
ESC	Air Force Electronic Systems Center
ESD	Exploitation Support Data
ESDD	Earth Science Data Directory
ESDI	Enhanced Small Data Interface
ESP	External Simulation Protocol
ESPDU	Entity State Protocol Data Unit
ESTEL	E-2C Simulation Test and Evaluation Laboratory

ETDA	Environmental Tactical Decision Aids
EW	Electronic Warfare
EWIRD	Electronic Warfare Integrated Reprogrammable Database
EWTES	Electronic Warfare Threat Environment Simulator
EXCIMS	Executive Council for Modeling and Simulation
EXERTAS	Exercise Temporal Analysis System

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F

FADAC Field Artillery Digital Automatic Computer
FAMSIM Family of Simulations (Army term for their approved suite of models)
FAQ Frequently Asked Questions
FAR Federal Acquisition Regulation
FAST 1 - Federal Automated System for Travel
2 - Field Assistance in Science and Technology
3 - Framework for Advanced Simulation Technology
FASTALS Force Analysis and Simulation of Theater Administrative and Logistic Support
FASTC Foreign Aerospace Science and Technology Center
FDAD Functional Data Administrator
FDB Functional Description of the Battlespace
FDC Functional Data Coordinator
FDDI Fiber Digital Data Interface
FDE Force Deployment Estimator
FDM Force Design Model
FEBA Forward Edge of the Battle Area
FECFR Fidelity, Exercise Control, and Feedback Requirements
FED Federation Execution Date
FEDEP Federation Execution and Development Process
FFRDC Federally Funded Research and Development Center
FI Field Instrumentation
FIFO First In, First Out
FILO First In, Last Out
FIM Functional Information Manager
FIP Federal Information Process
FIPC Federal Information Processing Center
FIPS Federal Information Processing Standards
FIRESTORM Federation of Intelligence, Reconnaissance, Surveillance and Targeting Operations, and Research Models
FIRMA Federal Information Resources Management Act
FIRMR Federal Information Resources Management Regulation
FIS Federal Information System
FLAMES Force Level Analysis and Mission Effectiveness System
FLOT Forward Line of Own Troops
FLS Force Level Simulation
FODA Feature-Oriented Domain Analysis
FODDS Fact-Oriented Data Distribution System
FOF Force-on-Force

FOHMD	1 - Fiber-Optic Helmet-Mounted Device 2 - Fiber-Optic Helmet-Mounted Display
FOM	Federation Object Model
FON	Fiber Optic Network
Force XXI	Army program to design and field the 21 st Century Army
FORCEGEN	Force Generation for Modeling and Simulation
FORCEM	1 - Force Concepts Evaluation Model 2 - Force Evaluation Model
FORCES	Force and Organization Cost Estimating System
FORGE	Force Evaluation Model Gaming Evaluator
ForMAT	Force Management and Analysis Tool
FOV	Field Of View
FPDC	Federal Procurement Data Center
FPM	Force Protection Model
FQT	Formal Qualification Testing
FRAM	Fleet Requirements Analysis Model
FRED	Federation Required Execution Details
FRT	Faster than Real Time
FS	Flight Simulators
FSCATT	Fire Support Combined Arms Tactical Trainer
FSK	Frequency Shift-Keying
FSM	Finite State Machine
FTAM	File Transfer, Access and Management
FTM	Fault Tree Mode
FTP	File Transfer Protocol
FTS	Full Threat Simulator
FTT	Field Tactical Trainer
FV	Functional Validation
FWG	Functional Working Group
FWS	Flight and Weapons Simulator
FY	Fiscal Year
FYDP	Future-Years Defense Plan

G

G/IDEP	Government/Industry Data Exchange Program
G-WARS	Ground Wars (Computer simulation model)
GAIS	Government Automated Information System
GAMS	Generalized Algebraic Modeling System
GASS	Generic Acoustic Simulation System
GATERS	Ground Air Teleoperated Robotic System
GAWS	Graphical Analysis Workstation
GBS	1 - Global Broadcast System 2 - Global Broadcasting System
GCCS	Global Command and Control System
GCSS-AF	Global Combat Support System - Air Force (formerly BLSM II)
GCDIS	Global Change Data and Information System
GCSS	Global Command Support System
GDAS	Global Deployment Analysis System
GDD/D	Global Data Dictionary and Directory
GDDM	Graphics Data Display Manager
GDEM	Generalized Digital Environmental Model
GDI	Graphics Device Interface
GDIP	General Defense Intelligence Program
GDMS	Global Data Management System
GDSS	Global Decision Support System
GENESSIS	Generic Scene Simulation Software
GEOLOC	Geographic Location
GEOREF	Geographic reference
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GFM	Government Furnished Material
GFP	Government Furnished Property
GFS	Government Furnished Software
GI	Geospatial Information
GIAC	Graphical Input Aggregate Control
GICOD	Good Idea Cutoff Data
GIF	1 - Graphic Imagery Files 2 - Graphics Interchange Format
GII	Global Information Infrastructure
GIN	Graphics Input
GIS	Geographic Information System
GKS	Graphical Kernel System
GLM	General Linear Model
GMT	Greenwich Mean Time
GNMP	Government Network Management Profile
GOB	Ground Order of Battle
GOCO	Government-Owned, Contractor Operated

GOE	Government Owned Equipment
GOGO	Government Owned, Government Operated
GOSC	General Officer Steering Committee
GOSG	General Officer Steering Group
GOSIP	Government Open System Interconnection Protocol
GOTS	Government-Off-the-Shelf
GPS	Global Positioning System
GPSS	General Purpose Simulation System
GREWMS	Global Requirements Estimator for Wartime Medical Support
GRWSIM	Ground Warfare Simulation
GSCC	Global Simulation Coordination Center
GSM	Global Shared Memory
GSS	1 - Generalized Stimulation Simulation 2 - Ground Station Simulator
GST	Greenwich Sidereal Time
GTCT	Global Tropical Cyclone Tracks Data Base
GTDB	Generic Transformed Data Base
GTE	Ground Threat Emitter
GTM	Ground Truth Model
GTMV	Ground Target Modeling and Validation
GTN	Global Transportation Network
GTRI	Georgia Tech Research Institute
GTWAPS	Global Theater Weather Analysis and Prediction System
GUARDFIST	Guard Unit Armory Device Full Crew Interactive Simulation Trainer
GUI	Graphical User Interface
GWEF	Guided Weapons Evaluation Facility

H

H/W hardware
HAMPS Host AUTODIN Message Processing System
HAP Host Access Protocol
HBR 1 - Human Behavior Representation
2 - House Budget Resolution
HBTWG Human Behavior Technology Working Group
HBV Human Behavior Variables
HCI 1 - Human Computer Interaction
2 - Human Computer Interface
HD 1 - Hard Disk
2 - High Density
HDF Hierarchical Data Format
HDL Harry Diamond Laboratories
HDLCL High-level Data Link Control Protocol
HDR High-Data-Rate
HDS High Definition Systems
HDTV High Definition Television
HDU Helmet Display Unit
HEFS Hierarchical Environmental Feature Structure
HELIPAC Helicopter Piloted Air Combat Model
HERO Heuristic Route Organization
HES Hostile Environment Simulator
HET HARPOON Embedded Trainer
HF-ATSS High Fidelity Acoustic Time Series Simulator
HFE Human Factors Engineering
HFEA 1 - Human Factors Engineering Analysis
2 - Human Factors Engineering Assessment
HITL Human-in-the-Loop
HLA High-Level Architecture
HMD Helmet Mounted Display
HMI Human-Machine Interface
HMMRSS Helmet-Mounted Mission Rehearsal Simulation System
HMS Helmet Mounted Sight
HMS/DS Helmet Mounted Sight/Display System
HMU Helmet Mounted Unit
HOL High Order Language
HOM Higher Order Model
HOTMAC High Order Turbulence Model for Atmospheric
Circulations
HPC High Performance Computer
HPCC High Performance Computing and Communications
HPCCIT High Performance Computing, Communications, and
Information Technology
HPCMP High Performance Computing Modernization Program

HPMWAM	High Power Microwave Weapon Assessment Model
HPPI	High Performance Parallel Interface
HRCP	High Resolution Cloud Prognosis Model
HRIS	Human Resource Information System
HS	High Speed
HSC	Air Force Human Systems Center
HSDC	High Speed Digital Chart
HSI	1 - Human Systems Integration 2 - High Speed Serial Interface
HTML	Hyper Text Mark-Up Language
HTTP	Hyper Text Transfer Protocol
HTU	Handheld Thermal Unit
HUMINT	Human Intelligence
HW/SWIL	Hardware/Software-In-The-Loop
HWIL	Hardware-in-the-Loop
HYTIME	Hypermedia/Time-Based Structuring Language

I

I/DBTWG	Information/Database Technology Working Group
I/ITSEC	Interservice Industry Training Systems and Education Conference
IO	1 - Information Operations 2 - Input/Output
I&M	Improvement and Modernization
I-TES	I-Band Threat Environment Simulator
I3	Intelligent Integration of Information
IAC	Information Analysis Center
IADS	Integrated Air Defense System
IAS	Intelligence Analysis System
IC	1 - Individual Combatant 2 - Image Computer 3 - Integrated Circuit
ICA	Integrated Communications Architecture
ICASE	Integrated Computer Aided Software Engineering
ICATT	Intelligent Computer Assisted Training Testbed
ICC	Integrated Control Center
ICCOG	Intelligence Community Coordination Group
ICD	Interface Control Document
ICDB	Integrated Communications Database
I-CLCGF-CBS	Integrated CLCGF Combat Battle Simulation
ICM	Intelligence Correlation Model
ICMP	Internet Control Message Protocol
ICOC	Integrated Combat Operations Center
ICOM	Input, Control, Output, and Mechanism
ICW	Interactive Courseware
IDB	Integrated Database
IDBEF	Integrated Database Extract Format
IDBTF	Integrated Database Transaction Format
IDEA	Integrated Design/Engineering Aide
IDEEAS	Interactive Distributed Early Entry Analysis Simulation
IDEF	Integration Definition
IDEF1X	Integration Definition Language for Information Modeling
IDEF0	Integration Definition for Function Modeling
IDHS	Intelligence Data Handling System
IDIQ	Indefinite Delivery, Indefinite Quantity
IDL	1 - Interface Definition Language 2 - Interface Design Language
IDM	Improved Data Modem
IDP	Initial Domain Part
IDRL	Integrated Data Requirements List

IEEE	Institute of Electrical and Electronic Engineers
I EWTPPT	Intelligence and Electronic Warfare Tactical Proficiency Trainer
IFIP	International Federation of Information Processing
IFM	Ionospheric Forecast Model
IFOR	Intelligent Forces
IG	Image Generator
IGES	Initial Graphics Exchange Standard
IGOSS	Industry/Government Open System Specification
IHADSS	Integrated Helmet and Display Sight System
IIS	Intelligence Information System
IM	Information Management
IMA	Information Mission Area
IMB	Interoperability Management Board
IMD	Information Management Directorate
IMDS	Integrated Maintenance Data System
IMINT	Imagery Intelligence
IMIT	Interoperability Management Information Tool
IMP	Information Management Plan
IMR	Information Management Representative
IMS	Information Management System
INCA	Intelligence Communications Architecture
INCOMMS	Individual Combatant Modeling and Simulation
INFORMS	Institute for Operations Research and Management Science
INFOSEC	Information Security
INMS	Integrated Network Management System
INST	Information Standards and Technology Standardization
INX	Information Exchange
IOC	1 - Initial Operational Capability 2 - Industrial Operations Command (Army)
IODA	Information Oriented Decision Architecture
IOT&E	Initial Operational Test and Evaluation
IP	1 - Image Processor 2 - Information Processor 3 - Internet Protocol
IPB	Intelligence Preparation of the Battlefield
IPC	Information Policy Council
IPM	Interpersonal Messaging
IPMS	Interpersonal Messaging System
IPPD	Integrated Product and Process Development
IPPM	Integrated Product Process Model
IPR	In-process Review
IPS	Illustrative Planning Scenarios
IPT	Integrated Product Team (See also OIPT)
IPTL	Integrated Priority Target List
IR&D	Independent Research and Development
IRDS	Information Resource Dictionary System

IREM Integrated Research, Evaluation, and System Analysis Model

IRIAC Infrared Information Analysis Center

IRIAM Integrated Radar and Infrared Analysis and Modeling

IRIG Inter-Range Instrumentation Group

IRIS Internetted Range Interactive Simulations

IRM Information Resource Management

IS 1 - Information System
2 - International Standardization
3 - Interface Specification
4 -International Staff (NATO)

ISA 1 - Integrated Support Activity
2 - Information System Architecture
3 - Industry Standard Architecture

ISATS Information System ADP Tracking System

ISC U.S. Army Information Systems Command

ISDN Integrated Services Digital Network

ISEE Integrated Software Engineering Environment

ISEM Integrated Space Environmental Model

ISG Industry Steering Group

ISGMS Industry Steering Group on Modeling and Simulation

ISLE Integrated Simulation Language Environment

ISM Industrial, Scientific, and Medical

ISMC Imagery Standards Management Committee

ISMT Indoor Simulated Marksmanship Trainer

ISO International Standardization Organization

ISR Intelligence, Surveillance, and Reconnaissance

ISS Interactive Survivabiliy Simulation (Army aviation manned simulator/tester)

ISSAA Information Systems Selection and Acquisition Agency

ISSC Information Systems Software Center

ISSM Information Systems Security Manager

ISSO Information System Security Officer

ISSPM Information Systems Security Program

IST 1 - Infantry Squad Trainer (marksmanship trainer)
2 - Institute for Simulation and Training

IT Information Technology

ITAM Interdiction Tanker Analysis Model

ITD 1 - Interim Terrain Data
2 - Interim Terrain Database

ITDN Integrated Tactical Data Network

I TEC International Training Equipment Conference

ITEM Integrated Theater Engagement Model

ITEMM Integrated Terrain-Environment-Multipath Model

ITEMS Interactive Tactical Environment Management System

ITMRA Information Technology Management Reform Act

ITN Identification Tasking and Networking

ITPB Information Technology Policy Board

ITRI Information Technology Reuse Initiative

ITRUS	Information Technology Reuse
ITS	1 - Individual Training Standards 2 - Intelligent Tutoring System
ITSDN	Integrated Tactical/Strategic Data Network
ITSP0	Information Technology Standards Program Office
ITTS	Instrumentation Targets and Threat Simulators
ITU	Information Transport Utility
ITV	Interactive Television
ITVGS	Interactive Television Generic Server
IUSS	Integrated Unit Simulation System
IV&V	Independent Verification and Validation
IVEPSS	Immersive Virtual Environment Prototyping Simulation System
IVIS	Inter-Vehicular Information System
IW	Information Warfare
IWG	Interface Working Group
IWSDB	Integrated Weapon Systems Data Base
IWSS	Interactive Weapon System Simulation

J

J-SPACES Joint Space Combat Environment Simulation
JAC Joint Analysis Center
JACG Joint Aeronautical Commanders Group
JACTS Joint Aircrew Combat Training System
JADS Joint Advanced Distributed Simulation
JADS-I Joint Advanced Distributed Simulation-Improved
JADS/JFS Joint Advanced Distributed Simulation Joint Feasibility Study
JAFLME Joint Automated Field Logistics Model for Employment
JAMC Joint Amphibious Mine Countermeasure
JAMIP Joint Analytic Model Improvement Program
JAMP Joint Analytic Model Program
JANNAF Joint Army, Navy, NASA, Air Force
JANUS A series of land combat models with some limited air and naval operations. Primarily sponsored by Lawrence Livermore National Laboratory and TRADOC
JANUS App JANUS Applique
JAWS Joint Analytic Warfare Systems
JCALs Joint Computer-Aided Acquisition and Logistics Support
JCATS Joint Conflict and Tactical Simulation
JCCAS Joint Command and Control Attack Simulation
JCCC Joint Communications Control Center
JCCD Joint Camouflage, Concealment and Deception
JC2WC Joint Command and Control Warfare Center (formerly JEWC)
JCG Joint Commanders Group
JCG(T&E) Joint Commanders Group (Test and Evaluation)
JCM Joint Conflict Model
JCMO Joint CALS Management Organization
JCOS Joint Countermine Operational Simulation
JCS Joint Chiefs of Staff
JCSE 1 - Joint Command Support Element
2 - Joint Communications Support Element
JDA 1 - Japan Defense Agency
2 - Joint Duty Assignment
JDAL Joint Duty Assignment List
JDBE Joint Data Base Elements
JDC Joint Doctrine Center (integrated in the JWFC)
JDISS Joint Deployable Intelligence Support System
JDL Joint Director of Laboratories
JDS Joint Data Support
JDSS Joint Decision Support System

JEAP Joint Electronic Analysis Program
 JECEWSI Joint Electronic Combat Electronic Warfare Simulation
 JEDMICS Joint Engineering Data Management Information and Control System (formerly EDMIS)
 JECG Joint Exercise Control Group
 JEL Joint Electronic Library
 JEPES Joint Engineering Planning and Execution System
 JESS Joint Exercise Support System
 JETTA Joint Environment for Testing, Training, and Analysis
 JEWC Joint Electronic Warfare Center (outdated - see JC2WC)
 JFACC Joint Force Air Component Commander
 JFAST Joint Flow and Analysis System for Transportation
 JHU Johns Hopkins University
 JHU/APL Johns Hopkins University/Applied Physics Lab
 JIC Joint Intelligence Center
 JICM 1 - Joint Integrated Contingency Model
 2 - Joint Intelligence Collection Module
 JIEO Joint Interoperability and Engineering Organization
 JIMASS Joint Intelligence Modeling and Simulation System
 JINTACCS Joint Interoperability of Tactical Command and Control System
 JIPTL Joint Integrated Prioritized Target List
 JITC Joint Integration Test Command
 JITF Joint Integration Test Facility
 JCLASS Joint Land, Aerospace, and Sea Simulation
 JLC Joint Logistics Commanders
 JLOG JTF Logistics Management Information System
 JLOTS Joint Logistics Over the Shore
 JM&S Joint Modeling and Simulation
 JMASS Joint Modeling and Simulation System
 JMCIS Joint Maritime Command Information System
 JMEM Joint Munitions Effectiveness Manual
 JMETL Joint Mission Essential Task Lists
 JMSEP Joint Modeling and Simulation Executive Panel
 JMSIP Joint Modeling and Simulation Integration Program
 JMSRG Joint Modeling and Simulation Requirements Group
 JMSWG Joint Multi-TADIL Standards Working Group
 JNETS Joint Network Simulation
 JOISIM Joint Operations Information Simulation
 JOPES Joint Operation Planning and Execution System
 JOTS-VIDS Joint Operations and Tactical System - Visually Integrated Data System
 JOVE Joint Operations Visualization Environment
 JPATS Joint Primary Aircraft Training System
 JPL Jet Propulsion Laboratory
 JPO Joint Program Office
 JPSD Joint Precision Strike Demonstration

JRISS Joint Recruiting Information Support System
JRMB Joint Requirements and Management Board
JROC Joint Requirements Oversight Council
JRTC Joint Readiness Training Center
JSAN Joint Staff Automation of the Nineties
JSEAD Joint Suppression of Enemy Air Defense
JSEM Joint Service Endgame Model
JSF Joint Strike Fighter
JSIMS Joint Simulation System
JSIP Joint Services Imagery Processing System
JSMMPG Joint Services Medical Modeling and Planning Group
JSOR Joint Service Operational Requirement
JSOW Joint Stand-Off Weapon
JSP Joint Service Program
JSPS Joint Strategic Planning System
JSRB Joint Software Review Board
JSS Joint STARS Simulator
JSSA Joint Stealth Strike Aircraft
JSTARS Joint Surveillance & Target Attack Radar System
JSTASL Joint Scenario Tool Architecture and Script
Language
JSTE Joint Services Training Exercise
JT&E Joint Test and Evaluation
JTAGS Joint Tactical Ground Station
JTAMS Joint Tactical Missile Signatures
JTASC Joint Training, Analysis and Simulation Center
JTAV Joint Total Asset Visibility System
JTC 1 - Joint Technical Committee
2 - Joint Training Confederation
JTC3A Joint Tactical Command, Control and Communications
Agency
JTCTS Joint Tactical Combat Training System
JTF Joint Task Force
JTFS Joint Task Force Simulation
JTIDS Joint Tactical Information Distribution System
JTLS Joint Theater Level Simulation
JTMP Joint Training Master Plan
JTP Joint Training Program
JTS 1 - Joint Tactical Simulation
2 - Joint Training System
JTSP Joint Training Simulation Plan
JTSSG Joint Telecommunications Standards Steering Group
JTWSG Joint Theater of War Scenario Generator
JUDI Joint Universal Data Interpreter
JULLS Joint Universal Lessons Learned System
JUSTIS Joint Uniform Services Technical Information System
JVIDS Joint Visually Integrated Display System
JVL Joint Virtual Laboratory
JWAC Joint Warfare Analysis Center
JWARS Joint Warfare System

JWCA	Joint Warfighting Capability Assessment
JWFC	Joint Warfighting Center
JWICS	Joint Worldwide Intelligence Communications System
JWID	Joint Warrior Interoperability Demonstration
JWSOL	Joint Warfare Simulation Object Library
JWSTP	Joint Warfighting Science and Technology Plan

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K

KA	Knowledge Acquisition
KASC	Korean Air Simulaiton Center
KBE	Knowledge Based Extraction
KBI	Knowledge-Based Information
KBLPS	Knowledge Based Logistics Planning Shell
kbpS	Kilobits per second
KBS	Knowledge Based System
KBSC	Korean Battle Simulation Center
KDEC	Kinetic Energy Weapons Digital Emulation Center
KDR	Kill/Detection Ratio
KE	Knowledge Engineering
KHILS	Kinetic Kill Vehicle HITL Simulator
kHz	Kilohertz
KI	Knowledge Integration
KIPPL	Key Intelligence Programs Priority List
KNACK	Knowledge Acquisition Kernel
KOPS	Thousands of Operations Per Second
KPP	Key Performance Parameters
KRS	Knowledge Retrieval System
KSS	Knowledge Support System
KWIC	Key Word in Context
KWOC	Key Word out of Context

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L

LAD Logistics Anchor Desk
LAM Louisiana Maneuvers
LAN Local Area Network
LANACS Local Area Network Asynchronous Connection Server
LAPM Link Access Procedure for Modems
LASER Light Amplification by Stimulated Emission of Radiation
LAT Local Access Terminal
LATS Low Altitude Threat Simulator
LAU LAN Access Unit
LAWN Local Area Wireless Network
LB/TS Large Blast/Thermal Simulator
LBJS Littoral Battlespace Joint Service
LBTS Lower Bound on the Time Stamp
LCC Life Cycle Cost
LCCE Life Cycle Cost Estimate
LCD Liquid Crystal Display
LCM 1 - Life Cycle Management
2 - Life Cycle Model
LCSEC Life Cycle Software Engineering Center
LCSS Life Cycle Software Support
LCSSA Life Cycle Software Support Activity
LCSSE Life Cycle Software Support Environment
LCU 1 - Laptop Computer Unit
2 - Last Cluster Used
3 - Lightweight Computer Unit
LDM 1 - Logical Data Model
2 - Long Distance Modem
LDR Low-Data-Rate
LEC Local Exchange Carrier
LED Light-Emitting Diode
LEE Leading Edge Environment
LEEGCCS Leading Edge Environment for the Global Command and Control System
LEM Language Extension Module
LFU Least Frequently Used
LHN Long-Haul Network
LIFO Last In, First Out
LIVID Language Identification and Voice Identification
LLNL Lawrence-Livermore National Laboratory
LNE Local Network Element
LOC 1 - Lines of Code
2 - Lines of Communication
LOCAASS Low-Cost Anti-Armor Submunition Simulation

LOCIS	Library of Congress Information System
LOD	Level of Detail
LOE	Level of Effort
LoF	Loss Of Function
LoF (P)	Loss of Function for Personnel
LOGAIS	Logistics Automated Information System
LOGGEN	Logistics Plan Generator
LOGSAFE	Logistics Sustainability Analysis and Feasibility Estimator
LOGSIM	Logistics Simulation
LOTS	Logistics Over The Shore
LOTSSIM	Logistics Over The Shore Simulation
LP	Linear Programming
LPM	Lines Per Minute
LRC	Learning Resource Center
LRI	Line Replacement Item
LRIP	Low-Rate Initial Production
LRM	Language reference Manual
LRN	Local Range Network
LRU	Line Replaceable Unit
LSA	Logistics System Analysis
LSB	Least Significant Bit
LSC	Least Significant Character
LSE	Local Subscriber Environment
LSTF	Life Sciences Test Facility
LWTB	Land Warrior Testbed
LWTC	Littoral Warfare Training Complex

M

M&S	Modeling and Simulation
m.r.a.	model range of accuracy
M2DBMS	Multi-Model, Multi-Lingual Data Base Management System
MACATAK	Maintenance Capabilities Attack Model
MACH	Model of Atmospheric Chemical Hazards
MACIPS	Military Airlift Command Information Processing System
MACS	Mutually Agreeable Commercial Software
MAD	Message Address Directory
MAHCA	Multiple Agent Hybrid Control Architecture
MAIS	1 - Major Automated Information System 2 - Mobile Automated Instrumentation Suite
MAISRC	Major Automated Information System Review Council
MAMO	Maintenance Model
MARISIM	Maritime Simulation
MASC	Modeling Analysis and Simulation Center (U.S. Air Force)
MASDA	Model and Simulation Decision Aid
MASE	Message Administration Service Element
MASINT	Measurement and Signature Intelligence
MBE	Multi-Band Emitter
MBO	Management By Objectives
Mbps	Megabits per second
MC4	Medical Communications for Combat Casualty Care
MC&G	Mapping, Charting and Geodesy
MCAD	Mechanical Computer Aided Design
MCB	Memory Control Block
MCCR	Mission Critical Computer Resources
MCEB	Military Communications-Electronic Board
MCGA	Multicast Group Agent
MCMSMO	Marine Corps Modeling and Simulation Management Office
MCMSWG	Marine Corps Modeling and Simulation Working Group
MCS	Message Conversion System
MCTL	Militarily Critical Technology List
MCTSSA	Marine Corps Tactical Systems Support Activity
MDA	Milestone Decision Authority
MDAd	MAJCOM Data Administrator
MDAP	Major Defense Acquisition Program
MDDC	Missile Defense Data Center
MDR	Medium-Data-Rate
MDS	Meteorological Data System
MDSE	Message Delivery Service Element

MDT Message Distribution Terminal
MDT2 Multi-Service Distributed Training Testbed
MEL 1 - Master Environmental Library
2 - Master Events List
MERIT Model Evaluation Requirements Integration Tool
METL Mission Essential Task List
METS Mobile Electronic Threat Simulator
METT-T Mission, Enemy, Troops, Terrain, and Time
MFG Multi-Function Gateway
MFIP Multi-Function Interoperability Processor
MFS Manned Flight Simulator
MGED Multidevice Graphics Editor
MGRS Military Grid reference System
MHS Message Handling System
MHz MegaHertz
MIB Management Information Base
MICRO-SAINT Task network simulation language
MICSS Marine Corps Individual Combatant Simulator System
MIDAS Model for Intertheater Deployment by Air and Sea
MIDS Multifunction Information Distribution System
MIDS-LVT Multi-Functional Information Distribution System -
Low Voltage Terminal
MIIDS/IDB Military Integrated Intelligence Data
System/Integrated Database
MIL Man-in-the-loop
MILES Multiple Integrated Laser Engagement System
MILNET Military network
MIMD 1 - Multiple-Input, Multiple Data
2 - Multiple-Instruction, Multiple-Data
MIME Multipurpose Internet Mail Extension
MINX Multimedia Information Exchange Network
MIPR 1 - Military Interagency Procurement Requisition
2 - Military Interdepartmental Purchase Request
MIPS Millions of Instructions Per Second
MIS Management Information System
MISD Management Information Systems Directorate
MISMA US Army Model Improvement and Study Management
Agency
MISSI Multi-level Information System Security Initiative
MIST Multiple Input Sensor Terminal
MIT 1 - Management Information Tree
2 - Massachusetts Institute of Technology
MITL Man-In-The-Loop
ML Machine Language
MLS Multi-Level Security
MM Multi-Media
MMHS Military Message Handling System
MMI Man-Machine Interface
MMS Multilevel Mail Server
MMU 1 - Mass Memory Unit

	2 - Memory Management Unit
MMW	Millimeter Wave
MMWPROP	Millimeter Wave Propagation Prediction Model
MNC	1 - Major NATO Command (NATO) 2 - Major NATO Commander (NATO)
MNOI	Messages Not Of Interest
MNS	Mission Needs Statement
MOBA	Military Operations in Built-Up Areas
MOBACS	Military Operations in Built-Up Areas Combat Simulation
MOBCEM	Mobilization Capabilities Evaluation Model
MOBSAM	Mobilization Station Assessment Model
MODAS	Modular Ocean Data Assimilation System
ModSAF	Modular Semi-Automated Forces
MOE	Measure of Effectiveness
MOHLL	Machine Oriented High Level Language
MOM	Measure of Merit (MOMs encompass MOEs, MOOs, and MOPs)
MOO	Measure of Outcome
MOOTW	Military Operations Other Than War
MOP	Measure of Performance
MORIMOC	More Operational Realism in Modeling of Combat
MORS	Military Operations Research Society
MOSAIC	1 - Modeling System for Advanced Investigation of 2 - Models and Simulations: Army Integrated Catalog
MOSART	Moderate Spectral Atmospheric Radiance and Transmittance Code
MOUT	Military Operations in Urban Terrain
MPC	Micro Portable Computer
MPD	Message Preparation Directory
MPDU	Message Protocol Data Unit
MPF	Maritime Prepositioned Force
MPN	MSE Packet Network
MRCI	Modular Reconfigurable C4I Interface
MRM	Medical Regulating Model
MRSE	Message Retrieval Service Element
MS	1 - Message Store 2 - Milestone
MS&A	Modeling, Simulation and Analysis
MSAS	Military Simulation Assessment System
MSC	1 - Major Subordinate Command (NATO) 2 - Major Subordinate Commander (NATO)
MSCC	Modeling and Simulation Coordination Center (now MSOSA)
MSCCTF	Modeling and Simulation Coordination Center Task Force
MSD	Mass Storage Device
MSDDB	Master Seafloor Digital Data Base
MSDOS	Microsoft Disk Operating System
MSDS	1 - Master Simulation Data System

MSE 2 - Mission Scenario Data System
1 - Mobile Subscriber Equipment
2 - Multiple Simulation Exercise
MSEA Modeling and Simulation Executive Agent
MSEL Master Scenario Events List
MSI Multi-Spectral Imagery
MSIC-CLUTTER Missile-Space and Intelligence Center-CLUTTER Model
MSIP Modeling and Simulation Investment Plan
MSIS M&S Information System
MSL Mean Sea Level
MSMP Modeling and Simulation Master Plan
MSOSA M&S Operational Support Activity (formerly MSCC)
MSP Message Security Protocol
MSR Missile Simulation Round
MSRR Modeling and Simulation Resource Repository
MSS Millimeter Simulation System
MSSE Message Submission Service Element
MSWG Modeling and Simulation Working Group
MT Message Transfer
MTA Message Transfer Agent
MTADME Military Thinking and Decision Making Exercises
MTDS Marine Corps Tactical Data System
MTF 1 - Message Text Format
2 - Message Transfer Format
3 - Modulation Transfer Function
MTM Model-Test-Model
MTOPTS Millions of Theoretical Operations Per Second
MTS 1 - Message Transfer System
2 - Moving Target Simulator
MTW Major Theater War
MTWS MAGTF Tactical Warfare Simulation
MUSE Multiple UAV Simulation Environment
MUTES Multiple Threat Emitter Systems
MWARS Maneuver-Warfare Analytical Research System
MWTB Mounted Warfare Testbed

N

NABEM II	Naval Air Battle Evaluation Model II
NADM-V	NORAD Air Defense Model - Visual
NAIC	National Air Intelligence Center
NALCOMIS	Naval Aviation Logistics Command Information System
NAM	Network Assessment Model
NARDAC	Navy Regional Data Automation Center
NAS	National Academy of Sciences
NASI	NetWare Asynchronous Services Interface
NASM	National Air and Space (Warfare) Model
NASNET	Naval Aviation Simulator Network Training
NATSIM	National Simulation System
NAU	Network Addressable Unit
NBS	National Bureau of Standards (now NIST)
NCA	National Command Authorities
NCARAI	Navy Center for Applied Research in Artificial Intelligence
NCC	Network Control Center
NCDC	National Climatic Data Center
NCS	1 - National Communications System 2 - Network Computing System 3 - Network Control Station
NCSA	National Center for Super-computing Applications
NCSC	National Computer Security Center
NCSL	National Computer System Laboratory
NDL	Network Data Language
NERF	Naval Emitter reference File
NES	Network Encryption System
NESDIS	National Environmental Satellite Data and Information Service
NESSE	1 - Near Earth Simulated Space Environment 2 - Near Earth Space Synthetic Environment
NET	1 - Network Entity Title 2 - New Equipment Training 3 - Not Earlier Than
NETT	New Equipment Training Team
NETWARS	Network Warfare Simulation
NFS	Network File Server
NGCR	Next Generation Computer Resources
NIC	Network Information Center
NIDR	Network Information Discover and Retrieval
NII	National Information Infrastructure
NIMA	National Imagery and Mapping Agency (formerly DMA)
NIPRNET	Non-secure Internet Protocol (IP) Router Network
NIR	Network Information Retrieval

NISO National Information Standards Organization
NISP National Individual Security Program
NIST National Institute of Standards and Technology
NITC National Information Technology Center
NITES 1 - Naval Integrated Tactical Environmental System
2 - Navy Integrated Tactical Environment Subsystem
NITF 1 - National Imagery Test Facility
2 - National Imagery Transmission Format
NLSP Network Layer Security Protocol
NLT Not Later Than
NMS Network Management System
NODC National Oceanographic Data Center
NODDS Navy Oceanographic Data Distribution System
NOGAPS Navy Operational Global Atmospheric Prediction System
NORAPS Naval Operational Regional Atmospheric Predictions System
NOS Network Operating System
NOVAM Navy Oceanic Vertical Aerosol Model
NREN National Research and Education Network
NRL Naval Research Laboratory
NRMS Near Term Mine Reconnaissance System
NRT Near Real Time
NSC National Simulation Center
NSDE Non-Standard Data Element
NSDI National Spatial Data Infrastructure
NSF National Science Foundation
NSIDC National Snow and Ice Data Center
NSO Network Security Officer
NSRD National Software Reuse Directory
NSS Naval Simulation System
NSTC National Science and Technology Council
NSTL National Software Testing Labs
NTACMS Navy Tactical Missile System
NTB National Test Bed
NTC National Training Center
NTC-IS National Training Center Instrumentation System
NTCS-A Navy Tactical Command Systems Afloat
NTCSS 1 - Naval Tactical Command Support System
2 - Navy Tactical Command Support System
NTDS Navy Tactical Data System
NTF National Test Facility
NTIC 1 - National Technical Information Service
2 - Naval Technical Intelligence Center
NTU New Threat Upgrade
NUI Network User Interface
NUSSE Non-Uniform Simple Surface Evaporation (model)
NV&EOL Night Vision and Electro-Optics Laboratory
NVD Night Vision Device
NVE Night Vision Equipment

NVESD	Night Vision and Electronic Sensors Directorate
NVG	Night Vision Goggles
NVRAM	Non-Volatile Random Access Memory
NVS	Night Vision System
NWARS	National Wargaming System
NWP	Numerical Weather Prediction Model
NWTDB	Naval Warfare Tactical Data Base

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O

OA	Operational Architecture
OAI	Open Applications Interface
OAML	Oceanographic and Atmospheric Master Library
OASIS	Operations Analysis and Simulation Interface System
OATS	Office Automation and Technology Services
ODES	Operational and Deployment Experiments Simulator
ODI	Open Datalink Interface
ODM	Organizational Domain Modeling
ODP	Open Distributed Processing
OEA	Ocean Executive Agent
OII	Operations-Intelligence Interface
OIRA	OMB Office of Information and Regulatory Affairs
OIS	Office Information System
OLE	Object Linking and Embedding
OMA	Object Management Architecture
OMEGA	Operational Multiscale Environment Model with Grid Adaptivity
OMFTS	Operational Maneuver From the Sea
OMG	Object Management Group
OMO	Other Military Operations
OMT	Object Model Template
ONC	Open Network Computing
OO	Object-Oriented
OOA	Object-Oriented Analysis
OOD	Object-Oriented Design
OODA	Object-Oriented Design with Assemblies
OODB	Object-Oriented Data Base
OODBMS	Object-Oriented Database Management System
OOM	Object-Oriented Modeling
OOP	Object-Oriented Programming
OOT	Object-Oriented Technologies
OOTW	Operations Other Than War
OPFOR	Opposing Forces
OPT	Operations Planning Tool
OPTADS	Operations Tactical Data Systems
OR	Operations Research
ORACLE	Operational Research and Critical Link Evaluation
ORB	Object Request Broker
ORD	Operational Requirements Document
ORSA	Operations Research Systems Analysis
ORSMC	Off-Route Smart Mine Clearance
ORT	OSD Review Team
OS	Operating System
OSE	Open System Environment

OSEA	Organization for Synthetic Environment Architecture
OSF	Open Software Forum
OSINT	Open Source Intelligence
OSIRIS	Optimized Synthetic Infra-Red Interactive Simulation
OSP	Other Service Program
OSRM	Open System reference Model
OSS	Operations Support System
OTAU	Over The Air Updating
OTDR	Optical Time Domain Reflector
OTI	Office of Technical Integration
OUUSD(A&T)	Office of the Under Secretary of Defense for Acquisition and Technology

P

PADIL	PATRIOT Air Defense Information Language
PADS	Position Azimuth Determining System
PAL	Public Ada Library
PALOS	Planning Assistant for Logistics Systems
PAMS	Predictive Aircraft Maintenance System
PASS-K	PACOM ADP Site Server - Korea
PATGEN	Patient Generator
PC	Personal computer
PCB	Printed circuit board
PCE	Process-Centered Environment
PCIS	Portable Common Interface Set
PCM	1 - Production Cost Model 2 - Pulse Coded Modulation
PCMCIA	Personal Computer Memory Card International Association
PCMT	Personal Computer Message Terminal
PCTE	Portable Common Tools Environment
PDES	Product Data Exchange using STEP
PDL	Programmable Design Language
PDR	Preliminary Design Review
PDSS	Post Deployment Software Support
PDU	Protocol Data Unit
PEGASUS	Perspective View Generator and Analysis Systems for Unmanned Sensors
PERT	Program Evaluation Review Technique
PHIGS	Programmer's Hierarchical Interactive Graphics Standard
PID	Protocol Identifier Data
PIF	Picture Interchange Format
PIN	1 - Personal Identification Number 2 - Process Identification Number
PIO	Processor Input/Output
PIPS	Polar Ice Prediction System
PLA	Plain Language Address
PLAD	Plain Language Address Designator
PLEXUS	Phillips Laboratory Expert User System
PM ITTS	Project Manager for Instrumentation, Targets, and Threat Simulations
PM	Program Manager
PMSP	Preliminary Message Security Protocol
PNP	Plug and Play
POP	Point of Presence
POP-Ds	Proof-of-Principle Demonstrations
POPS	Pyrotechnic Optical Plume Simulator

PORTSIM	Port Simulation Model
POSIX	Portable Operating System Interface
PPDB	Point Positioning Data Base
PPF	Platform Proto-Federations
PPP	Point-to-Point Protocol
Pre-BADD	Pre-Battlefield Awareness Data Dissemination
PRETT	PATRIOT Radar Emulator Test Tool
PRF	Pulse Repetition Frequency
PRIMES	Pre-flight Integration of Munitions and Electronic Systems
PRISM	1 - Parameterized Real-Time Ionospheric Specification Model 2 - Portable, Reusable, Integrated Software Modules
PROM	Programmable Read-Only Memory
PSDB	Perceived Situation Database
PSM	Portable Space Model
PTADB	Planning Terrain Analysis Data Base
PTCCN	Prototype Tactical Cryptological Communications Network
PTOS	Patriot Tactical Operations Simulation
PUA	Profiling User Agent
PVC	Permanent Virtual Circuit
PVD	Plain View Display

Q

Q/I	Question/Issue
QA	Quality Assurance
QAE	Quality Assurance Evaluator
QBE	Query By Example
QBF	Query By Form
QC	Quality Control
QDE	Quality Data Evaluation
QDOS	Quick and Dirty Operating System
QDR	1 - Quadrennial Defense Review 2 - Quality Deficiency Report
QFA	Quick File Access
QJM	Quantified Judgement Model
QMR	Quarterly Management Review
QoS	Quality of Service

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R

R&A Review and Analysis
R&D Research and Development
R-T Real-Time
RAC Reliability Analysis Center
RADGUNS Radar Directed Gun Simulation System
RADIUS Research and Development for Image Understanding Systems
RAM 1 - Random Access Memory
2 - Reliability, Availability, and Maintainability
RAPIDSIM Rapid Intertheater Deployment Simulator
RASS Random Access Storage System
RASSP Rapid Prototyping of Application Specific Signal Processors
RAV Robotic Air Vehicle
RBBS Remote Bulletin Board System
RC Routing Control
RCAS Reserve Component Automation System
RD&A Research, Development & Acquisition
RDA 1 - Remote Database Access
2 - Research, Development, and Acquisition
RDADS Real Time Data Acquisition And Display System
RDAISA Research, Development and Acquisition Information Systems Agency
RDB Relational Database
RDBMS Relational Database Management System
RDMS 1 - Range Data Management System
2 - Relational Data Management System
RDT Remote Debriefing Tool
REA Remote Entity Approximation
REDCAP Real-Time Electronic Digitally Controlled Analyzer Processor
RESA Research, Evaluation, and System Analysis Model
RESS Radar Environment Simulator System
RFS Remote File Sharing
RFSS Radio Frequency Simulation System
RG Remote Gateway
RID RTI Initialization Data
RIMS 1 - Radar Image Modeling System
2 - Research and Development Information Management System
RIP Routing Information Protocol
RIS Range Instrumentation Systems
RISC Reduced Instruction Set Computer
RISM Reduced Instruction Set Model

RITN	Real-Time Information Transfer and Networking
RLF	Reuse Library Framework
RLMS	Radar Land Mass Simulator
RMSD	Requirements, Models, Software, and Data
ROAMS	Reusable Object Access and Management System
ROI	Return on Investment
ROM	1 - Read Only Memory 2 - Rough Order of Magnitude
ROMC	Required Operational Messaging Characteristics
ROSE	Remote Operation Service Element
ROV	1 - Range of View 2 - Remotely Operated Vehicle
ROW	Rest of the World
RPC	Remote Procedure Call
RRDB	Rapidly Reconfigurable Data Base
RRDS	Reduced Resolution Data Set
RS	Relay System
RSFCT	Road Simulator for Fire Control Testing
RSIS	Rotorcraft Systems Integrated Simulator
RSOI	Reception, Staging, Onward Movement and Integration
RSS	Remote Satellite Simulation
RTAD	Relocatable Targets Analysis Data
RTCA	Real-Time Casualty Assessment
RTCNS	Real-Time Communications Network Simulator
RTCS	Real Time Clock System
RTF	Rich Text Format
RTI	Runtime Infrastructure
RTIC	Real-Time information in the cockpit
RTOS	1 - Real Time Operating System 2 - Reconfigurable Tactical Operations Simulator
RTV	Real Time Video
RWM	1 - Read-Write Memory 2 - Relocatable Window Model

S

S/W	Software
S&M	Simulation and Modeling
S&T	Science and Technology
S&TP	Science and Technology Program
SA	1 - Situational Awareness 2 - Studies and Analysis 3 - Systems Architecture
SAAE	Software Architecture Attribute Engineering
SADS	Simulated Air Defense System
SAE	Service Acquisition Executive
SAF	Semi-Automated Forces
SAFOR	Semi-Automated Forces
SALT	Society for Applied Learning Technology
SAMSON	Simulation and Modeling Supporting Operational Needs
SAS	Statistical Analysis Software
SASER	Synthetic Atmosphere and Space Environment Representations
SATCOM	Satellite Communications
SATT	Stand Alone TENCAP Simulator
SAWE-RF	Simulating Aerial Weapon Effect - Radio Frequency
SBA	Simulation Based Acquisition
SB ITS	Simulation Based Intelligent Tutoring System
SBB	Synthetic Battle Bridge
SBD	Simulation Based Design
SBDS	Simulation Based Design System
SBIS	Sustaining Base Information System
SBLC	Sustaining Base Level Computer
SBS	Seamless Battlefield Simulator
SCCB	Software Configuration Control Board
SCDL	Surveillance and Control Data Link
SCI	Sensitive Compartmented Information
SCIF	Sensitive Compartmented Information Facility
SCIPMIS	Standard Civilian Personnel Management Information System
SCM	Software Configuration Management
SCORES	Scenario Oriented Recurring Evaluation System
SCRAM	System Configuration Reconfiguration Automation Module
SDA	Software Design Activity
SDD	System Design Document
SDF	Software Development File
SDL	1 - Sensor Data Link 2 - Software Development Library

SDLC Synchronous Data Link Control (IBM)
SDM Sub-Rate Data Multiplexer
SDNS Secure Data Network System
SDP Software Development Plan
SDRB Specifications and Data Review Board
SDSA Software Development and Support Activity
SDSF Software Development and Support Facility
SE Synthetic Environment
SEAROADS Simulation, Evaluation, Analysis and Research on
Air Defense Systems
SECOMO Software Engineering Cost Model
SED Software Engineering Directorate
SEDRIS Synthetic Environment Data Representation and
Interchange Specification
SEE 1 - Software Engineering Environments
2 - Synthetic Environment Exercise
SEES Security Exercise Evaluation System
SEI Software Engineering Institute
SEM 1 - Simulation, Engineering and Modeling
2 - Spherical Earth Model
3 - System Engineering and Modeling
SESG Software Engineering Support Group
SEWSIM Space and Electronic Warfare Simulator
SF Synthetic Forces
SFCTMP Surface Temperature Model
SFTS Synthetic Flight Training Systems
SGD Symbolized Graphics Data
SGEN Signal Generator
SGML Standard Generalized Markup Language
SIAM 1 - Situational Influence Assessment Model
2 - Space Impact Assessment Methodology
SIDS Standard Interoperable Datalink System
SIF 1 - Standard Interchange Format
2 - System Integration Facilities
SIFT Simulation Interface Toolset
SIG Special Interest Group
SIGINT Signals Intelligence
SIGS Synthetic Imagery Generation System
SIL System Integration Laboratories
Sim/Stim Simulation/Stimulation
SIM Sensor Interaction Model
SiMan Simulation Management
SIMD Single Instruction Multiple Data
SIMITAR Simulation in Training for Advanced Readiness
SIMNET Simulation Network
SIMTECH Simulation Technology Program
SIMULOGS Simulation of Logistics Systems
SIMWG Simulation Working Group
SIPRNET SECRET Internet Protocol Router Network

SIRAS Simulation, Instrumentation, Reduction, and Analysis System
 SISL Secure Integration Simulation Laboratory
 SISO Simulation, Interoperability, and Standards Organization
 SLAVE Simple Lethality and Vulnerability Simulator
 SLF Scalability Logger Format
 SLIP Serial Line Internet Protocol
 SLOD Simulator Level of Detail
 SMART 1 - Simulation and Modeling Anchored in Real-World Testing
 2 - Susceptibility Model Assessment with Range Test
 SMC Air Force Space and Missile Center
 SMDS Switched Multi-megabit Data Service
 SME Subject Matter Expert
 SMI Soldier-Machine Interface
 SMSE Super Multiple Simulation Exercise
 SMSP Soil Moisture Strength Prediction Model
 SMTA Subordinate Message Transfer Agent
 SMTP 1 - Simple Mail Transfer Protocol
 2 - Simple Message Transfer Protocol
 SNA System Network Architecture
 SNAP Simulator Network Analysis Project
 SND Standardized Nomenclature Database
 SNMP Simple Network Management Protocol
 SNNAP Statistical Neural Network Analysis Package
 SNODEP Snow Depth Model
 SNP Sub-Network Protocol
 SNR Signal to Noise Ratio
 SNS Secure Network Server
 SOACMS Special Operations Aviation Combat Mission Simulators
 Soar State Operator And Result
 SOE 1 - Standard Operating Environment
 2 - Synthetic Operating Environment
 SOFATS Special Operations Forces Aircrew Training System
 SOFNET-JCM Special Operations Forces Inter-Simulation Network - Joint Conflict Model
 SOFPARS Special Operations Forces Planning and Rehearsal System
 SOL Simulation Oriented Language
 SOM Simulation Object Model
 SONET Synchronous Optical Network
 SOO Statement of Objectives
 SPCR Software Problem Change Requests
 SPD Standards Planning Database
 SPPD Signal Processor Package Design
 SPRAE Stochastic Predictor of Artillery Effectiveness
 SPS Software Product Specification
 SQA Software Quality Assurance

SQEP Software Quality Evaluation Plan
SQL Structured Query Language
SQL/DS Structured Query Language/Data System
SQP Software Quality Program
SQPP Software Quality Program Plan
SQuASH Stochastic Quantitative Analysis of System Hierarchies (Computer model for predicting terminal ballistic effects)

SRP Software Reuse Program
SRR System or Software Readiness Review
SRS 1 - Software Requirements Specification
2 - System Requirements Specification

SRT Slower Than Real Time
SS&T Space, Science and Technology
SSA Software Support Activity
SSC Small Scale Contingency
SSCDB Subsurface Currents Data Base
SSDB Standard Simulator Data Base
SSE 1 - Simulation Support Environment
2 - Single Simulation Exercise

SSF 1 - Software Support Facility
2 - Software Support Function

SSG Synthetic Signature Generator
SSGM Synthetic Scene Generation Model
SSID Standard Simulation Interface Design
SSM Soldier System Modeling
SSMC Symbology Standards Management Committee
SSP Simulation Support Plan
SSPO Simulation Strategic Planning Office
SSR Software Specification Review
SSSE Small Single Simulation Exercise
SSTORM Structured Scenario Torpedo Operational Requirements Model

STAARS Sustainment Training for Army Aviation Readiness Through Simulation

STADLS Surrogate Threat Air Defense Laser System
STAF Simulation/Test Acceptance Facility
STAGE Scenario Toolkit and Generation Environment
STAMIS Standard Army Management Information System
STARS 1 - SHAPE Technical Center Adaptable Radar Simulator
2 - Software Technology for Adaptable, Reliable Systems
3 - Software Technology for Adaptable Reliable Software
4 - Standard Accounting and Reporting System

STDL Submarine Tactical Data Link Program
STDN Secure Tactical Data Network
STE 1 - Software Test Environment
2 - Special Test Equipment

	3 - Surface Threat Emitter
STEMS	Software Test and Evaluation Message System
STEP	Standard for the Exchange of Product Model Data
STM	Synchronous Transfer Mode
STOW	Synthetic Theater of War
STOW-E	Synthetic Theater of War - Europe
STP	Software Test Plan
STR	Software Trouble Reports
STRICOM	U.S. Army Simulation, Training and Instrumentation Command
STSC	Software Technology Support Center
STVLS	Surrogate Threat Visible Laser System
SUAWACS	Soviet Airborne Warning and Control System
SUE	System Unique Equipment
SUMM	Semantic Unification Meta-Model
SUMMITS	Scenario Unrestricted Mobility Model for Intratheater Simulation
SURVIAC	Survivability/Vulnerability Information Analysis Center
SUT	System Under Test
SWCI	Software Configuration Item
SWEG	Simulated Warfare Environment Generator (naval aviation simulator support)
SWIL	Software-in-the-Loop
SWIP	Software Improvement Program
SWOE	Smart Weapon Operability Enhancement
SWPS	Strategic War Planning System
SYNB	Synthetic Battlefield
SYNC	Synchronous
SYSGEN	System Generator
SYSLOG	System Log

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T

T&S	Training and Simulation
TA	Technical Architecture
TAA	Technology Area Assessment
TAARUS	TACSIM After Action Review User System
TACCIMS	Theater Automated Command Control Information Management System
TACCSF	Theater Air Command and Control Simulation Facility
TACDEW	Tactical Advanced Combat Direction and Electronic Warfare (Navy model)
TACDEWEGCS	Tactical Advanced Combat Direction and Electronic Warfare, Environmental Generation and Control System
TACSIM	Tactical Simulation (intelligence model, air and ground sensors)
TACTICS	Tri-Service Advanced Countermeasures and Threats Integrated Combat Simulation
TACTS	Tactical Aircrew Combat Training System
TACWAR	Tactical Warfare Model
TADIL	Tactical Digital Information Link
TADSS	Training Aids, Devices, Simulators, and Simulations
TAFIM	Technical Architecture Framework for Information Management
TAFSM	Target Acquisition Fire Support Model
TAGS	Tactical Gamma Ray Simulator
TAIS	Telecommunications and Automated Information Systems
TALON	TACSIM Analysis and Operations Node
TAM	Theater Analysis Model
TAMD	Theater Air and Missile Defense
TAMMIS	Theater Army Medical Management Information System
TAMPS	Tactical Aircraft Mission Planning System
TAMS	Transportation Analysis, Modeling, and Simulation
TAP	Technology Area Plan
TAR	Technology Area Review
TARGET	Theater Analysis and Replanning Graphical Execution Toolkit
TASWIT	Tactical Advanced Simulated Warfare Integrated Trainer
TAT	TACSIM ALSP Translator
TATR	Technical Advisory Team for Reuse
TBIS	Technology Base Investment Strategy
TBMCS	Theater Battle Management Core Systems
TCC	Telecommunications Center
TCG	Time Code Generator

TCIM Tactical Communications Interface Module
TCIS Tactical Communications Interface Software
TCP/IP Transmission Control Protocol/Internet Protocol
TCSEC Trusted Computer System Evaluation Criteria
TCT Time-Critical Targets
TCU Transportable Computer Unit
TD/CM Technical Data/Configuration Management
TD/CMS Technical Data/Configuration Management System
TDC Theater Deployable Communications
TDDS Tactical Data Distribution System
TDG Tactical Decision Games
TDI Trusted Database Interpretation
TDL Tactical Data Link
TDM Time-Division Multiplexer
TDMA Time Division Multiple Access
TDP 1 - Technical Data Package
2 - Test Design Plan
3 - TSPI Data Processor
TDPS Terrain Data Preparation System
TDS Tactical Data System
TDSS Training Devices, Simulations, and Simulators
TDT Tactical Data Terminal
TEAM Threat Engagement Analysis Model
TEED Tactical End-to-End Encryption Device
TEGEN Tactical Environment Generator
TEM 1 - Terrain Effects Model
2 - Terrain Evaluation Model
TEMITS Test and Evaluation Management Information and Tracking System
TEMO Training, Exercises, and Military Operations
TEMPEST Security class involving compromise of classified data through interception of electronic impulses.
TEMS Test and Evaluation Mission Simulator
TENA Test and Evaluation Network Architecture
TERIS Test and Evaluation Range Internet System
TERSIM Terrain Simulation
TES Tactical Engagement Simulation
TESS 1 - Tactical Engagement Simulation System
2 - Tactical Environmental Support System
TEXIS Theater Exercise and Intelligence Simulation
TFA Transparent File Access
TFDD Text File Device Driver
TFG Terrain and Feature Generation
TFT Time Flexible Training
TFTP Trivial File Transfer Protocol
TGT Tank Gunnery Trainer
TIBS Tactical Information Broadcast Service
TID Touch Interactive Display
TIDES Threat Intelligence Data Extraction System
TIDS Tactical Information Distribution System

TIE	TACWAR Integrate Environment
TIES	Terrain Imagery Exploitation System
TIIP	Topographic Imagery Integration Prototype
TIM	Technical Integration Manager
TIP	TACSIM Interface Program
TIREM	Terrain-Integrated Rough-Earth Model
TLCSC	Top-Level Computer Software Component
TLD	Top Level Demonstrations
TLSP	Transport Layer Security Protocol
TMDA	Target Management and Development Application
TMDSE	Theater Missile Defense System Exerciser
TMIP	Theater Medical Information Program
TMPO	Terrain Modeling Project Office
TMS	1 - Target Management System 2 - Telecommunications Management System
TNI	Trusted Network Interpretation
TOPIT	Touched Objects Positioned in Time
TOPS	Thermodynamic Ocean Prediction System
TOSL	Tactical Ocean Simulation Laboratory
TPFDD	Time-Phased Force and Deployment Data
TPFDL	Time-Phased Force and Deployment Listing
TPN	Tactical Packet Network
TRANSCAP	Transportation Systems Capability Model
TREEGEN	Tree Generation Model
TRI-TAC	Tri-Service Tactical Communications
TRM	Technical reference Model
TRS	1 - Thermal Radiation Simulator 2 - Training, Readiness & Simulation
TSCAM	Team Signal Communications Analysis Model
TSIG	Trusted Systems Interoperability Group
TSMO	Threat Simulator Management Office
TSO	Time Stamp Ordered
TSPI	Time, Space, and Position Information
TTD	Tactical Terrain Data
TTES	Team Tactical Engagement Simulator
TTGT	Tank Team Gunnery Trainer
TTP	Tactics, Techniques and Procedures
TTS	Tactical Training Strategy
TWG	1 - Technical Working Group 2 - Technology Working Group
TWSEAS	Tactical Warfare Simulation, Evaluation and Analysis System

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U

UA	User Agent
UAGC	Upper Air Gridded Climatology Data Base
UCCATS	Urban Combat Computer Assisted Training System
UCI	User-Computer Interface
UCOFT	Unit Conduct of Fire Trainer
UD	User Domain
UDP	User Datagram Protocol
UFL	Ulchi Focus Lens
UFSP	Underground Facilities Signature Program
UGDF	Uniform Gridded Data Field
UIDL	User Interface Definition Language
UIMS	User Interface Management System
UISRM	User Interface System reference Model
UJTL	Unified Joint Task List
ULANA	Unified Local Area Network Architecture
ULCS	Unit Level Command Simulation
ULMS	Unit-Level Message Switch
UMEDS	User-Oriented Minimum Essential Data Sets
UNA	Use No Abbreviations
UNIX	An open-architecture operating system
UNMA	Unified Network Management Architecture
URL	Universal Resource Location
USAF/XOC	U.S. Air Force Directorate of Modeling, Simulation and Analysis
USAISC	U.S. Army Information System Command
USD(A&T)	Under Secretary of Defense for Acquisition & Technology
USMTF	U.S. Message Transfer Format
USMTF	U.S. Message Text Format
USNI	Universal Simulator Network Interface
USO	Unix Software Organization
USR	Universal Sapce Rectangular
UTC	Universal Time Coordinated
UTE	Unmanned Threat Emitter
UTM	Universal Transverse Mercator
UTSS	Universal Threat System for Simulators
UUCP	Unix-to-Unix Copy
UW	Unconventional Warfare
UWEF	Underwater Evaluation Facility

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V

V&V Verification and Validation
 VAIDC Video Artificial Intelligence Data Collection
 VALAD Voice Activated Logistics Anchor Desk
 VBR Variable Bit Rate
 VCOMM-CLCGF Virtual Communications in a Corps Level Computer
 Generated Forces
 VE 1 - Value Engineering
 2 - Virtual Environment
 VEMPS Vertically Polarized Electromagnetic Pulse
 Simulator
 VFM Variable Format Message
 VGDEM Variable Generalized Digital Environmental Model
 VHSIC Very High Speed Integrated Circuit
 VIC Vector In Commander
 VICTORS Variable Intensity Computerized Training System
 VIGS Video Disk Gunnery Simulator
 VISTA Variable Stability In-Flight Simulator Test
 Aircraft
 VIT Virtual Interactive Target
 VLSHSIC Very Large Scale High Speed Integrated Circuitry
 VM Virtual Memory
 VME Virtual Memory Extension
 VMF Variable Message Format
 VMS 1 - Virtual Memory System
 2 - Vertical Motion Simulator
 VMU Voice Message Unit
 VPD Virtual Prototype Demonstration
 VPG Virtual Proving Ground
 VPL Virtual Programming Language
 VR Virtual Reality
 VRML Virtual Reality Modeling Language
 VRPE Virtual Reality Presentation Engine
 VRT Variable Resolution Terrain Model
 VSR Visual Stimulation Research
 VSTI Vehicle Signature Test Instrumentation
 VSU Virtual Simulation Units
 VT Virtual Terminal
 VTC video teleconference
 VTT video teletraining
 VTTR Virtual Test and Training Range
 VUAV Virtual Unmanned Aerial Vehicle
 VV&A Verification, Validation and Accreditation
 VV&C Verification, Validation and Certification

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W

WAIS	Wide Area Information Server
WAM	1 - Wave Amplitude Model 2 - Wide Area Mine
WAN	Wide Area Network
WARSIM 2000	Warfighters' Simulation 2000
WASPS	War-at-Sea Planning System
WAVES	Weather and Atmospheric Visualization Effects for Simulation
WB	Warbreaker
WBMOD	Wide Band Scintillation Model
WBPDU	White Board Protocol Data Unit
WBSS	Wideband Digital Switching System
WBSV	Wideband Secure Voice
WEAM	Weapons Effectiveness Analysis Model
WEEMS	Weapons Effects and Environments Modeling and Simulation
WEST	1 - Weapons Effectiveness Simulated Threat 2 - Weather Environment Simulation Technology
WFS	Weapon Fire Simulator
WGS 84	World Geodetic System 1984
WISDIM	Warfighting and Intelligence Systems Dictionary for Information Management
WISSARD	What If Simulation System for Advanced Research and Development
WMASC	Weapons Modification and Simulation Capability
WORM	Write Once - Read Many
WPC	Warrior Preparation Center
WPE	Word Processing Equipment
WPS	1 - Wideband Packet Switch 2 - Worldwide Port System
WRAP	1 - Wide Area Rapid Acoustic Prediction 2 - Warfighter Rapid Acquisition Program
WWOLS	World Wide On-Line System
WWW	World Wide Web

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X, Y, and Z

X-Windows	A network based graphics windowing system
X.400	A protocol Standard for electronic mail
XTERM	X-terminal
ZULU	time zone indicator for Universal Time

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PART II

DEFINITIONS

Glossary - A

Absorbing Markov Chain Model. A Markov chain model that has at least one absorbing state and in which from every state it is possible to get to at least one absorbing state.(references (b) and (c))

Absorbing State. In a Markov chain model, a state that cannot be left once it is entered. (reference (b))

Accessibility. The ease of approaching, entering, or obtaining. (reference (e))

Accreditation. The official certification that a model or simulation is acceptable for use for a specific purpose.(references (f), (g) and (h))

Accreditation Agent. The organization designated by the accreditation sponsor to conduct an accreditation assessment for a M&S application. (reference (h))

Accreditation Authority. An individual occupying a position with the appropriate rank, grade, responsibility and/or authority to accredit a model, simulation, or federation of models and/or simulations for a particular purpose or purposes. (reference (h))

Accreditation Process. The procedure followed by the M&S application sponsor that culminates in the accreditation determination. (reference (i))

Accreditation Sponsor. The DoD Component or other organization with the responsibility for accrediting a model, simulation, or federation of models and/or simulations for a specific use or series of uses (e.g., for joint training or a Defense Acquisition Board milestone review). (reference (h))

Accuracy. The degree of exactness of a model or simulation, high accuracy implying low error. Accuracy equates to the quality of a result, and is distinguished from precision, which relates to the quality of the operation by which the result is obtained and can be repeated. (reference (b))

Activity. In modeling and simulation, a task that consumes time and resources and whose performance is necessary for a system to move from one event to the next. (reference (c))

Activity-Based Simulation. A discrete simulation that represents the components of a system as they proceed from activity to activity; for example, a simulation in which a manufactured product moves from station to station in an assembly line. (reference (b))

Activity Models. Models of the processes that make up the functional activity showing inputs, outputs, controls, and mechanisms through which the processes of the functional activity are (or will be) conducted. (reference (j))

Ada. A high order computer language designed and developed to DoD requirements for modular standard language. While the original focus was for real-time embedded software, Ada has also been used for a variety of other software systems including some simulation systems. (reference (k))

Advanced Concept Technology Demonstration (ACTD). Technology demonstrations that are tightly focused on specific military concepts and that provide the incorporation of technology that is still at an informal stage into a warfighting system. The ACTDs have three objectives: a. to have the user gain an understanding of and to evaluate the military utility of concepts before committing to acquisition; b. to develop corresponding concepts of operation and doctrine that make best use of the new capability; and c. to provide the residual operational capability to the forces. ACTDs are of militarily significant scope and of a size sufficient to establish utility. (reference (l))

Advanced Distributed Simulation (ADS). A set of disparate models or simulations operating in a common synthetic environment in accordance with the DIS standards. The ADS may be composed of three modes of simulation: live, virtual and constructive which can be seamlessly integrated within a single exercise. (reference (b))

Affected Attributes. The specific attributes of an object class instance whose value in a federation execution may be affected by that instance's participation in a dynamic interaction with another instance of the same class, or an instance of another object class. (reference (m))

Aggregate Level Simulation Protocol (ALSP). A family of simulation interface protocols and supporting infrastructure software that permit the integration of distinct simulations and war games. Combined, the interface protocols and software enable large-scale, distributed simulations and war games of different domains to interact at the combat object and event level. The most widely known example of an ALSP confederation is the Joint/Service Training Confederation that has provided the backbone to many large, distributed, simulation-supported

exercises. Other examples of ALSP confederations include confederations of analytical models that have been formed to support U.S. Air Force, U.S. Army, and USTRANSCOM studies.(reference (g))

Aggregation. The ability to group entities while preserving the effects of entity behavior and interaction while grouped. See also: disaggregation.(reference (g))

Algorithm. A prescribed set of well-defined, unambiguous rules or processes for the solution of a problem in a finite number of steps. (reference (k))

Algorithm Checks. A rigorous verification of the mathematics of an algorithm to ensure freedom from any errors in the expression (e.g., incorrect signs, incorrect variables applied in the equations, derivation errors) and to ensure that the algorithms are consistent with their stated intents. (reference (b))

Alternate Key. Property or characteristic that can be used as a secondary identifier for an entity or entity class. (reference (n))

Analytical Model. A model consisting of a set of solvable equations; for example, a system of solvable equations that represents the laws of supply and demand in the world market. (references (b) and (c))

Architecture. The structure of components in a program/system, their interrelationships, and the principles and guidelines governing their design and evolution over time.(reference (g))

Artificial Intelligence (AI). The effort to automate those human skills that illustrate our intelligence e.g., understanding visual images, understanding speech and written text, problem solving and medical diagnosis. (reference (k))

Association. A type of static relationship between two or more object classes, apart from class-subclass or part-whole relationships. (reference (m))

Associative Entity. An entity that inherits its primary key from two or more other entities (those that are associated). An associative entity is used to represent many-to-many relationships. (reference (o))

Asynchronous Transmission. Transmission in which each information character is individually synchronized (usually by the use of start elements and stop elements). (reference (p))

Asynchronous Transfer Mode (ATM). A multiplexing protocol based on a small 53-byte fixed-length cell designed to efficiently transfer information derived from several sources of data over a single carrier at high speeds.

Atmosphere. A kind of mission space entity. The mass of air surrounding the earth and the features embedded within it, including clouds, smoke, and fog.

Attribute. A property or characteristic of one or more entities; for example, COLOR, WEIGHT, SEX. Also, a property inherent in an entity or associated with that entity for database purposes. (references (j), (q) and (r))

Attribute Overloading. The ability of an attribute to carry one of two or more separate facts. (reference (s))

Attribute Ownership. The property of a federate that gives it the responsibility to publish values for a particular object attribute. (reference (m))

Attributive Entity. An entity that has the same primary key as the parent and additional attributes that eliminate the occurrence of repeating groups in the parent.

Authoritative Data Source. A data source whose products have undergone producer data verification, validation and certification activities.

Automated Forces (AFOR). The most automated of the computer-generated forces which requires little or no human interaction. (reference (g))

Automated Information System (AIS). A combination of computer hardware and computer software, data, and/or telecommunications that performs functions such as collecting, processing, storing, transmitting, and displaying information. Excluded are computer resources, both hardware and software, that are: physically part of, dedicated to, or essential in real time to the mission performance of weapon systems; used for weapon system specialized training, simulation, diagnostic test and maintenance, or calibration; or used for research and development of weapon systems. (references (j) and (s))

Autonomous. A battlefield entity that does not require the presence of another battlefield entity in order to conduct its own simulation in the battlefield environment is said to be autonomous. All Distributed Interactive Simulation compliant battlespace entities are autonomous in that they are responsible for creating their own view of the environment. (reference (p))

Glossary - B

Baselining. A configuration management term that implies that the item is placed under formal control so that it cannot be changed without going through a formal review process.

Battlefield View. A battlefield entity incorporates a direct soldier/machine interface that replicates the soldier/machine interface of the actual battlefield entity. (reference (p)) See: entity perspective.

Battlespace. Refers both to the physical environment in which the simulated warfare will take place and the forces that will conduct the simulated warfare. All elements that support the front line forces (e.g., logistics, intelligence) are included in this definition of battlespace. (reference (g))

Battlespace Data Base. Database that defines the specific domain of an engagement. It includes the parametric data needed to generate an operating version of the SIMWORLD. When combined with the SESSION data base (which provides the scenario and other simulation specific data), the BATTLESPACE can generate an exercise. The BATTLESPACE in all capitals is used as a shortened notation for "Battlespace Data Base." (reference (p))

Battlespace Entity. A simulation entity that corresponds to actual equipment, supplies, and personnel that can be seen or sensed on a real battlefield. (reference (p))

Behavior. For a given object, how attribute value changes affect (or are affected by) the object attribute value changes of the same or other objects.

Benchmark. The activity of comparing the results of a model or simulation with an accepted representation of the process being modeled. (reference (b))

Benchmarking. The comparison between a model's output and the outputs of other models or simulations, all of which represent the same input and environmental conditions. (reference (t))

Bit. The smallest unit of information in the binary system of notation. (references (b) and (c))

Black Box Model. A model whose inputs, outputs, and functional performance are known, but whose internal implementation is unknown or irrelevant; for example, a model of a computerized change-return mechanism in a vending machine, in the form of a table that indicates the amount of change to be returned for each amount deposited. Syn: input/output model. Contrast with: glass box model. (references (b) and (c))

Boundary Condition. The values assumed by the variables in a system, model, or simulation when one or more of them is at a limiting value at the edge of the domain of interest. Contrast with: final condition; initial condition. (references (b) and (c))

Broadcast. A transmission model in which a single message is sent to all network destinations; i.e., one-to-all. Broadcast is a special case of multicast. Contrast with: multicast; unicast.(references (b) and (c))

Browsing. Opportunity for users to freely examine and peruse through the contents of a database.

Built-in-Simulation. A special-purpose simulation provided as a component of a simulation language; for example, a simulation of a bank that can be made specific by stating the number of tellers, number of customers, and other parameters. (references (b) and (c))

Built-in-Simulator. A simulator that is built-in to the system being modeled; for example, an operator training simulator built into the control panel of a power plant such that the system can operate in simulator mode or in normal operating mode. (references (b) and (c))

Glossary - C

C++ (C-Plus-Plus). A high order computer language used extensively in commercial software. C++ is an object-oriented extension to the C language. (reference (k))

Cancellation. A mechanism used in optimistic synchronization mechanisms such as Time Warp to delete a previously scheduled event. Cancellation is a mechanism used within the Time Warp executive, and is normally not visible to the federate. It is implemented (in part) using the Runtime Infrastructure event retraction mechanism. (reference (m))

Candidate Key. An attribute or group of attributes that might be chosen as a primary key. (reference (o))

Catalogue. An enumeration of M&S data, or other items arranged systematically with descriptive details such as setup time, running time, developer, point of contact, etc. (reference (t))

Causal Order. A partial ordering of messages based on the "causally happens before" (\rightarrow) relationship. A message delivery service is said to be causally ordered if for any two messages M_1 and M_2 (containing notifications of events E_1 and E_2 respectively) that are delivered to a single federate where $E_1 \rightarrow E_2$, then M_1 is delivered to the federate before M_2 . (reference (m))

Central Station. A computer connected to a local area network that transmits/receives simulation management protocol data units at the direction of the simulation manager. (reference (p))

Class. A description of a group of objects with similar properties, common behavior, common relationships, and common semantics. (reference (m))

Class Hierarchy. A specification of a class-subclass, or "is-a" relationship between object classes in a given domain. (reference (m))

Class Word. A word in the name of a data element describing the category to which the data element belongs; e.g., "date," "name," "code." The word establishes the general structure and domain of a standard data element. (references (q) and (u))

Closed-Form Solution. A closed-form solution for representing time in dynamic models is a method in which the states or status of resources are described as explicit and computationally tractable functions of time. Thus, the status of a resource at time "t" can be found by evaluating the appropriate function at "t", without having to simulate combat from the start of that combat through time "t". (reference (t))

Code Verification. A rigorous audit of all compilable code to ensure that the representations of verified logic have been properly implemented in the computer code. (reference (i))

Coenetic Variable. In modeling, a variable that affects both the system under consideration and that system's environment. (reference (c))

Cohesion. Cohesion refers to the degree to which the contents of a module are logically related. (reference (d))

Common Federation Functionality. Agreements on common simulation functionality (services and resources) which are finalized among all participants in the federation during the federation development process. Federation members identified during Federation Design will propose opportunities for common services in areas of assigned responsibilities (also established during Federation Design) during federation development for discussion and negotiation among all federation participants. For instance, agreements on common representations of terrain (data, source, resolution, dynamic vs. static), and environment (required types, data sources, resolution, servers), would be negotiated and agreed to, as would any relevant federation-specific algorithms (e.g., extrapolation). (reference (m))

Common-Use M&S. M&S applications, services, or materials provided by a DoD Component to two or more DoD Components. (references (f) and (g))

Complex Data. Data that cannot be characterized as a single concept, atomic data element as defined in reference (q). Complex data includes most scientific and technical data. It has been recently categorized by the Complex Data Task Force into: a. highly derived data (e.g., probability hit/kill); b. objects utilizing the concepts of multiple inheritance (e.g., student-assistant is subclass of student class and employee class), multiple root hierarchies (e.g., a tank is a vehicle and a tank is a weapon where "vehicle" and "weapon" are each roots), and polymorphic attributes (e.g., "capacity" for different types of aircraft may mean number of people, pounds of cargo, or gallons of fuel); c. compositions such as command hierarchies, road networks, images (binary large objects), compound documents; and d. artifacts of legacy systems and physical constraints (e.g., aircraft category and mission in one data element, intelligence facility code where the first few bytes define how the rest of the field is used. (reference (g))

Component Class. An object class which is a component, or part of, a "composite" object which represents a unified assembly of many different object classes. The identification of a Component Class in the object model template (OMT) should include cardinality information. (reference (m))

Composite Attribute. A single attribute that is composed of a specific set of identifiable pieces of information; e.g., an address made up of a street number, city, state, and zip code. (reference (o))

Compression. Any of several techniques that reduce the number of bits required to represent information in data transmission or storage, therefore conserving bandwidth and/or memory, wherein the original form of the information can be reconstructed; also called compaction. (reference (p))

Computational Model. A model consisting of well-defined procedures that can be executed on a computer; for example, a model of the stock market, in the form of a set of equations and logic rules. (reference (c))

Computer Generated Forces (CGF). A generic term used to refer to computer representations of forces in simulations that attempts to model human behavior sufficiently so that the forces will take some actions automatically (without requiring man-in-the-loop interaction). Also referred to as Semi-automated Forces. DoD programs addressing various levels of computer automation of forces include Command Forces, Intelligent Forces, Modular Semi-Automated Forces, Integrated Tactical Environment Management System, and Close Combat Tactical Trainer Semi-Automated Forces. (references (g))

Computer Hardware. Devices capable of accepting and storing computer data, executing a systematic sequence of operations on computer data, or producing control outputs. Such devices can perform substantial interpretation, computation, communication, control, or other logical functions. (reference (w))

Computer Resources. The totality of computer hardware, firmware, software, personnel, documentation, supplies, services, and support services applied to a given effort.

Computer Simulation. A dynamic representation of a model, often involving some combination of executing code, control/display interface hardware, and interfaces to real-world equipment.

Computer Software (or Software). A set of computer programs, procedures, and associated documentation concerned with the operation of a data processing system, e.g., compilers, library routines, manuals, and circuit diagrams.

Computer Software Documentation. Technical data or information, including computer listings and printouts, which documents the requirements, design, or details of computer software, explains the capabilities and limitations of the software, or provides operation instructions for using or supporting computer software during the software's operational life. (reference (x))

Computer War Game. A technique by which different concepts, different pieces of hardware, or different military plans can be investigated in a multi-sided confrontation using a computer to generate displays of the battlefield and perform computations of outcomes. (reference (a))

Conceptual Analysis. The step in the federation development and execution process which establishes the conceptual framework for the federation. It feeds the design of the overall federation structure. The conceptual view of the objects and interactions that must be represented in the federation is key to identifying reuse opportunities in established Federation Object Models (FOMs), and high-level representation of the federation scenario refined during Conceptual Analysis also provides the basis for generation of a more detailed scenario instance during Federation Design/Development. (reference (m))

Conceptual Model. A statement of the content and internal representations which are the user's and developer's combined concept of the model. It includes logic and algorithms and explicitly recognizes assumptions and limitations. (reference (b))

Conceptual Model of the Mission Space (CMMS). First abstractions of the real world that serve as a frame of reference for simulation development by capturing the basic information about important entities involved in any mission and their key actions and interactions. They are simulation-neutral views of those entities, actions, and interactions occurring in the real world.

Conceptual Schema. Descriptive representation of data and data requirements that supports the "logical" view or data administrator's view of the data requirement. This view is represented as a semantic model of the information that is stored about objects of interest to the functional area. This view is an integrated definition of the data that is unbiased toward any single application of data and is independent of how the data is physically stored or accessed. (references (j))

Concrete Model. A model in which at least one component represented is a tangible object; for example, a physical replica of a building. (references (b) and (c))

Concurrent Engineering. Concurrent engineering is a systematic approach to the integrated, concurrent design of products and their related processes, including manufacture and support. This approach is intended to cause the developers, from the outset, to consider all elements of the product life cycle from conception through disposal, including quality, cost, schedule, and user requirements. See also: Integrated Product and Process Development. (reference (k))

Condition. The values assumed at a given instant by the variables in a system, model, or simulation. See also: boundary condition; final condition; initial condition; state. (references (b) and (c))

Conditional Event. A sequentially dependent event that will occur only if some other event has already taken place. See also: time-dependent event. (references (b) and (c))

Configuration. A collection of an item's descriptive and governing characteristics, which can be expressed: a. in functional terms i.e., what performance the item is expected to achieve; and b. in physical terms i.e., what the item should look like and consist of when it is built.

Configuration Management (CM). The application of technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a model or simulation, control changes, and record and report change processing and implementation status. (references (i), (y), and (z))

Conservative Synchronization. A mechanism that prevents a federate from processing messages out of time stamp order. This is in contrast to optimistic synchronization. The Chandry/Misra/Bryant null message protocol is an example of a conservative synchronization mechanism. (reference (m))

Consistency. Data that is maintained so that it is free from variation or contradiction. (references (e) and (j))

Constant. A quantity or data item whose value cannot change. (reference (c))

Constrained Simulation. A simulation where time advances are paced to have a specific relationship to wallclock time. These are commonly referred to as real-time or scaled-real-time simulations. Here, the terms *constrained simulation* and (*scaled*) *real-time simulation* are used synonymously. Human-in-the-loop (e.g., training exercises) and hardware-in-the-loop (e.g., test and evaluation simulations) are examples of constrained simulations. (reference (m))

Constructive Model or Simulation. See: Live, Virtual and Constructive Simulation. (reference (g))

Continuous Model. A mathematical or computational model whose output variables change in a continuous manner. Contrast with: Discrete Model. (references (b) and (c))

Continuous Simulation. A simulation that uses a continuous model. (references (b) and (c))

Continuous System. A system for which the state variables change continuously with respect to time. (reference (k))

Control Station. Facility that provides the individual responsible for controlling the simulation and also provides the capability to implement simulation control as Protocol Data Units on the Distributed Interactive Simulation network. (reference (b))

Controllability. In respect to user interface of SAFORs, this is the ability of a user to dynamically change the tactics or behavior of a force during the course of an exercise easily and efficiently. For all exercises this is the ability to stop and restart an exercise from some interim point in time.

Cooperative Development. A project in which two or more DoD Components share in domain research, technical studies, or technology development that may result in dissimilar M&S applications. (references (f), (h), (k), and (p))

Coordinate. Linear or angular quantities which designate the position that a point occupies in a given reference frame or system. Also used as a general term to designate the particular kind of reference frame or system, such as Cartesian coordinates or spherical coordinates. (reference (p))

Coordinated Time Advancement. A time advancement mechanism where logical clock advances within each federate only occur after some coordination is performed among the federates participating in the execution e.g., to ensure that the federate never receives an event notice in its past. Aggregate Level Simulation Protocol, for example, used coordinated time advancement. (reference (m))

Critical Event Simulation. A simulation that is terminated by the occurrence of a certain event; for example, a model depicting the year-by-year forces leading up to a volcanic eruption, that is terminated when the volcano in the model erupts. See also: time-slice simulation. (references (b) and (c))

Cross-Functional Integration. The melding of acquisition functions (such as design analysis with logistics analysis) involving shared modeling and simulation data and information. (reference (k))

Cultural Features. Features of the environment that have been constructed by man. Included are such items as roads, buildings, canals, marker buoys; boundary lines, and, in a broad sense, all names and legends on a map.

Current Time (of a federate). Same as federate time. (reference (m))

Cybernetics. The study of human control functions and the mechanical and electronic systems designed to replace or emulate them, including computers. "Cyber," as a prefix, denotes anything related to computer environments, especially things that involve extensive interaction by the user. (reference (a))

Glossary - D

Data. A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means. (references (j), (q), and (r))

Data Administration (DAdm). The responsibility for definition, organization, supervision, and protection of data within an enterprise or organization. (references (j) and (aa))

Data Administrator (DAd). A person or group that ensures the utility of data used within an organization by defining data policies and standards, planning for the efficient use of data, coordinating data structures among organizational components, performing logical database design, and defining data security procedures. See also: Data Steward. (references (j), (q), and (bb))

Data Architecture. The framework for organizing and defining the interrelationships of data in support of an organization's missions, functions, goals, objectives, and strategies. Data architectures provide the basis for the incremental, ordered design and development of databases based on successively more detailed levels of data modeling. (reference (j))

Data Attribute. A characteristic of a unit of data such as length, value, or method of representation. (references (q) and (bb))

Data Center. An organization which serves as a conduit between data sources and data customers. The data center may transform these data as necessary to meet the operational requirements, format, security, and data verification, validation, and certification provisions of its sources and supported users.

Data Certification. The determination that data have been verified and validated. Data user certification is the determination by the application sponsor or designated agent that data have been verified and validated as appropriate for the specific M&S usage. Data producer certification is the determination by the data producer that data have been verified and validated against documented standards or criteria. (reference (g))

Data Collection. The process of obtaining information that supports a functional activity, or information requirement. (reference (j))

Data Dictionary. A specialized type of database containing metadata that is managed by a data dictionary system; a repository of information describing the characteristics of data used to design, monitor, document, protect, and control data in information systems and databases; an application of a data dictionary system. (references (q) and (aa))

Data Dictionary System. An automated system such as an IRDS that can support one or more data dictionaries. A system specifically designed for managing a data dictionary. (reference (bb))

Data Element. A basic unit of information having a meaning and subcategories (data items) of distinct units and values (e.g., address). (reference (aa))

Data Element Standardization. The process of documenting, reviewing and approving unique names, definitions, characteristics and representations of data elements according to established procedures and conventions. (reference (q))

Data Entity. An object of interest to the enterprise, usually tracked by an automated system. (references (j), (q) and (u))

Data Exchange Standard. Formally defined protocols for the format and content of data messages used for interchanging data between networked simulation and/or simulator nodes used to create and operate a distributed, time and space coherent synthetic environment. (reference (y))

Data Integrity. In information processing, the condition in which data is accurate, current, consistent, and complete (reference (j))

Data Logger. A device that accepts Protocol Data Units (PDUs) from the network and stores them for later replay on the network in the same time sequence as the PDUs were originally received. See also: Protocol Data Unit. (references (b) and (c))

Data Model. In a database, the user's logical view of the data in contrast to the physically stored data, or storage structure. A description of the organization of data in a manner that reflects the information structure of an enterprise. (references (j), (q) and (r))

Data Quality. The correctness, timeliness, accuracy, completeness, relevance, and accessibility that make data appropriate for use. Quality statements are required for source, accuracy (positional and attribute), up-to-dateness/currency, logical consistency, completeness (feature and attribute), clipping indicator, security classification, and releasability. (references (g) and (j))

Data Repository. A specialized database containing information about data, such as meaning, relationships to other data, origin,

usage, and format, including the information resources needed by an organization. (reference (j))

Data Security. The protection of data from accidental or intentional modification or destruction and from accidental or intentional disclosure to unauthorized personnel. (references (j))

Data Source. An organization or subject matter expert who, because of either mission or expertise, serves as a data producer.

Data Standardization. The process of documenting, reviewing, and approving unique names, definitions, characteristics and representations of data according to established procedures and conventions. (references (j) and (q))

Data Steward. The person or group that manages the development, approval, and use of data within a specified functional area, ensuring that it can be used to satisfy data requirements throughout the organization. (references (j) and (q))

Data Structure. The logical relationships that exist among units of data and the descriptive features defined for those relationships and data units; an instance or occurrence of a data model. (references (q) and (bb))

Data Synchronization. The timing requirements of a data element, or between and/or among data elements. (references (j))

Data Validation. The documented assessment of data by subject area experts and its comparison to known values. Data user validation is an assessment as appropriate for use in an intended model. Data producer validation is an assessment within stated criteria and assumptions. (reference (g))

Data Value. A value associated with a data element. One of the allowable values of a data element. (references (j) and (aa))

Data Verification. Data producer verification is the use of techniques and procedures to ensure that data meets constraints defined by data standards and business rules derived from process and data modeling. Data user verification is the use of techniques and procedures to ensure that data meets user specified constraints defined by data standards and business rules derived from process and data modeling, and that data are transformed and formatted properly. (reference (g))

Data Verification, Validation & Certification (VV&C). The process of verifying the internal consistency and correctness of data, validating that it represents real world entities appropriate for its intended purpose or an expected range of purposes, and certifying it as having a specified level of quality or as being appropriate for a specified use, type of use,

or range of uses. The process has two perspectives: producer and user process. (reference (g))

Database. A collection of interrelated data, often with controlled redundancy, organized according to a schema to serve one or more applications; the data are stored so that they can be used by different programs without concern for the data structure or organization. A common approach is used to add new data and to modify and retrieve existing data. (references (j), (q) and (r))

Database Administration (DBAdm). The activity responsible for the enforcement of the policies and standards established by the data administrator, to include providing technical support for physical database definition, design, implementation, maintenance, integrity, and security; and coordinating with computer operations technicians, system developers, vendors, and users. Database administration is oriented toward technical support for databases and the effective and efficient use of information technology resources. (reference (j))

Database Administrator (DBAd). A person or group that enforces policy of "how," "where," and "in what manner," data is stored and maintained in each database. Provides information to the Data Administrator (DA) on organizational use of data within the subject database. (reference (aa))

Database Directory. A database of entries each of which represents information about a database or a directory of databases. Information includes the name of a database or directory, ownership, point of contact, access path to the database or directory, description of purpose of database.

Database Management System (DBMS). A system that provides the functionality to support the creation, access, maintenance, and control of databases, and that facilitates the execution of application programs using data from these databases.

Dead Reckoning. The process of extrapolating emulation entity position/orientation based on the last known position/orientation, velocity, and (sometimes) higher-order derivatives of position vs. time and/or other vehicle dynamic characteristics. Syn: remote entity approximation. (references (b) and (p))

Deaggregate. See: disaggregate.

Defense Simulation Internet (DSI). A wide-band telecommunications network operated over commercial lines with connectivity to both military and civilian satellites, allowing users to be linked on a world-wide wide-area network. Note: Superseded with Enhanced Internet Protocol Services in the Defense Information System Network (DISN). (reference (g))

Dependent Variable. A variable whose value is dependent on the values of one or more independent variables. Contrast with: independent variable. (references (b) and (c))

Descriptive Model. A model used to depict the behavior or properties of an existing system or type of system; for example, a scale model or written specification used to convey to potential buyers the physical and performance characteristics of a computer. Contrast with: prescriptive model. (references (b) and (c))

Deterministic. Pertaining to a process, model, simulation or variable whose outcome, result, or value does not depend upon chance. Contrast with: stochastic. (references (b) and (p))

Deterministic Algorithm. A process that yields a unique and predictable outcome for a given set of inputs. (reference (k))

Deterministic Model. A model in which the results are determined through known relationships among the states and events, and in which a given input will always produce the same output; for example, a model depicting a known chemical reaction. Contrast with: stochastic model.(references (b) and (c))

Digital Simulation. (1) A simulation that is designed to be executed on a digital system. (2) A simulation that is designed to be executed on an analog system but that represents a digital system. (3) A simulation of a digital circuit. Contrast with: analog simulation. See also: hybrid simulation.(references (b) and (c))

Disaggregate. Activity that decomposes an aggregated entity into multiple entities representing its components. (reference (b))

Disaggregation. The ability to represent the behavior of an aggregated unit in terms of its component entities. If the aggregate representation did not maintain state representations of the individual entities, then the decomposition into the entities can only be notional. (reference (g))

Discrete Model. A mathematical or computational model whose output variables take on only discrete values; that is, in changing from one value to another, they do not take on the intermediate values; for example, a model that predicts an organization's inventory levels based on varying shipments and receipts. Contrast with: continuous model. (references (b) and (c))

Discrete Simulation. A simulation that uses a discrete model.(references (b) and (c))

Discrete System. A system for which the state variables change instantaneously at separated points in time. (references (k) and (x))

Distributed Interactive Simulation (DIS) Compatible. Two or more simulations and/or simulators are DIS compatible if they are DIS compliant and their models and data that send and interpret Protocol Data Units support the realization of a common operational environment among the systems (coherent in time and space). (reference (b))

Distributed Interactive Simulation (DIS) Network Manager. A specified agency with the responsibility to manage the physical network used for distributed simulation. Responsibilities include: ensuring security of network; scheduling of utilization; establishing network priorities; monitoring execution of scheduled usage; coordinating functional, technical, and user communities' network requirements. (reference (b))

Distributed Interactive Simulation (DIS) Protocol Data Unit (PDU). A standard that specifies the format and structure in which data will be organized. The general purpose is to facilitate the electronic transfer of data between agencies with software; specifically, DIS PDUs are designed to enable communications between different types of simulators, simulations, and models. (reference (b))

DoD M&S Executive Agent. A DoD Component to whom the USD(A&T) has assigned responsibility and delegated authority for the development and maintenance of a specific area of M&S application, including relevant standards and databases, used by or common to many models and simulations. (references (f), (g), and (k))

DoD Publications. DoD issuances that implement or supplement DoD Directives and Instructions by providing uniform procedures for management or operational systems and disseminating administrative information. DoD Publications include: Catalogs, Directories, Guides, Handbooks, Indexes, Inventories, Lists, Manuals, Modules, Pamphlets, Plans, Regulations, and Standards that implement or supplement DoD Directives or Instructions. (reference (h))

Domain. The physical or abstract space in which the entities and processes operate. The domain can be land, sea, air, space, undersea, a combination of any of the above, or an abstract domain, such as an n-dimensional mathematics space, or economic or psychological domains. (reference (t))

Dual Use Technologies. Technologies with both a military and a civilian application.

Dynamic Model. A model of a system in which there is change, such as the occurrence of events over time or the movement of objects through space; for example, a model of a bridge that is subjected to a moving load to determine characteristics of the bridge under changing stress. (references (b) and (c))

Dynamic Natural Environment. The natural environment is constantly changing as a result of man-made efforts (battlefield smoke) and natural phenomenon (weather). Incorporating dynamic natural environment into real time simulations provides a more realistic test bed for weapons, equipment, and personnel.
(reference (y))

Glossary - E

Emitter. A device that is able to discharge detectable electromagnetic or acoustic energy. (references (b) and (p))

Empirical. Pertaining to information that is derived from observation, experiment, or experience. (references (b) and (c))

Emulate. To represent a system by a model that accepts the same inputs and produces the same outputs as the system represented. For example, to emulate an 8-bit computer with a 32-bit computer. (references (b) and (c))

Emulation. A model that accepts the same inputs and produces the same outputs as a given system. See also: simulation. (references (b) and (c))

Emulator. A device, computer program, or system that performs emulation. (references (b) and (c))

Encapsulation. The process of hiding the details of an object that do not contribute to its essential characteristics. (references (d))

Endogenous variable. A variable whose value is determined by conditions and events within a given model. Syn: internal variable. Contrast with: exogenous variable. (references (b) and (c))

Enterprise. An arbitrarily-defined functional and administrative entity that exists to perform a specific, integrated set of missions and achieve associated goals and objectives, encompassing all of the primary functions necessary to perform those missions.

Enterprise Model. An information model(s) that presents an integrated top-level representation of processes, information flows, and data. (references (j) and (cc))

Entity. A distinguishable person, place, unit, thing, event, or concept about which information is kept. (reference (o))

Entity Coordinates. Location with respect to a simulation entity. (reference (b))

Entity Perspective. The perception of the synthetic environment held by a simulation entity based on its knowledge of itself and its interactions with the other simulation entities. This includes not only its own view of the simulated physical environment (terrain, air, and sea), but also its own view of itself, the other entities in the synthetic environment, and of

the effects of the other entities on itself and the synthetic environment. Syn: world view. (reference (b))

Entity Relationship Diagram (ERD). A graphic representation of a data model.

Environment. The texture or detail of the natural domain, that is terrain relief, weather, day, night, terrain cultural features (such as cities or farmland), sea states, etc.; and the external objects, conditions, and processes that influence the behavior of a system (such as terrain relief, weather, day/night, terrain cultural features, etc.). (reference (b))

Environmental Effect. The impact that the natural environment or environmental feature has on some component or process in the simulation exercise such as the propagation of energy and image formation, the performance of a weapon system, platform or sensor, or other non-visualized combat process.

Environmental Effect Model. A numerical model, parametric model, or database for simulating a natural environmental effect on an entity of a simulation exercise, such as a sensor or platform.

Environmental Entity. A simulation entity that corresponds to dynamic elements of the natural state of the geographic, atmospheric, and bathyspheric environment, of the synthetic environment, that can be seen or sensed on a real battlefield, for example, craters, smoke, building collapse, weather conditions, and sea state. (reference (b))

Environmental Features. An individual element of the natural environment (e.g., a rain system, fog, cloud).

Environmental Model. A numerical model, parametric model, or database designed to produce an accurate and consistent data set for one or more parameters that characterize the state of the natural environment.

Environmental Representation. An authoritative representation of all or a part of the natural or man-made environment, including permanent or semi-permanent man-made features.(reference (g))

Environmental Simulation. A simulation that depicts all or part of the natural or manmade environment of a system; for example, a simulation of the radar equipment and other tracking devices that provide input to an aircraft tracking system. (reference (c))

Equilibrium. See: steady state. (reference (b))

Error Model. a. A model used to estimate or predict the extent of deviation of the behavior of an actual system from the desired behavior of the system; for example, a model of a communications channel, used to estimate the number of transmission errors that can be expected in the channel; b. in software evaluation, a model used to estimate or predict the number of remaining faults,

required test time, and similar characteristics of a system. (references (b) and (c))

Euler Angles. A set of three angles used to describe the orientation of an entity as a set of three successive rotations about three different orthogonal axes (x, y, and z). The order of rotation is first about z by angle (ψ), then about the new y by angle (θ), then about the newest x by angle (ϕ). Angles ψ and ϕ range between $\pm \pi$, while angle θ ranges only between $\pm \pi/2$ radians. These angles specify the successive rotations needed to transform from the world coordinate system to the entity coordinate system. The positive direction of rotation about an axis is defined by the right-hand rule. (reference (b))

Event. A change of object attribute value, an interaction between objects, an instantiation of a new object, or a deletion of an existing object that is associated with a particular point on the federation time axis. Each event contains a time stamp indicating when it is said to occur. (reference (m))

Event Notice. A message containing event information. (reference (m))

Event-Oriented Simulation. A simulation in which attention is focused on the occurrence of events and the times at which those events occur; for example, a simulation of a digital circuit that focuses on the time of state transition. (references (b) and (c))

Executive Council for Modeling and Simulation (EXCIMS). An organization established by the USD(A&T) and responsible for providing advice and assistance on DoD M&S issues. Membership is determined by the USD(A&T) and is at the Senior Executive Service, flag, and general officer level. (reference (f))

Exercise Manager. Test director or training officer who manages the setup, control, and feedback of a simulation exercise after the computer network is activated. This individual is part of the user organization. Syn: Simulation Manager. (reference (b))

Exogenous Variable. A variable whose value is determined by conditions and events external to a given model. Syn: external variable. Contrast with: endogenous variable. (references (b) and (c))

Expert System. An expert system is a knowledge collection combined with an inference engine capable of interpreting queries and chaining together separate items of knowledge to develop new inferences. The knowledge is typically causally represented as a system of rules. In some cases, expert systems can retrace their paths of inference on demand, thus explaining their conclusions and reasoning. (reference (dd))

Extensibility. The ability of a data structure to accommodate additional values or iterations of data over time without impacting its initial design. (references (e) and (j))

External Schema. A logical description of an enterprise that may differ from the conceptual schema upon which it is based in that some entities, attributes, or relationships may be omitted, renamed, or otherwise transformed. (references (j))

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Glossary - F

Face Validation. The process of determining whether a model or simulation seems reasonable to people who are knowledgeable about the system under study, based on performance. This process does not review the software code or logic, but rather reviews the inputs and outputs to ensure they appear realistic or representative. (references (b) and (p))

Fair Fight. Two or more simulations may be considered to be in a fair fight when differences in the simulations' performance characteristics have significantly less effect on the outcome of the conflict than actions taken by the simulation participants. (reference (b))

Fast Time. a. Simulated time with the property that a given period of actual time represents more than that period of time in the system being modeled; for example, in a simulation of plant growth, running the simulation for one second may result in the model advancing time by one full day; that is, simulated time advances faster than actual time; b. the duration of activities within a simulation in which simulated time advances faster than actual time. Contrast with: real time; slow time. (references (b) and (c))

Feature. A static element of the synthetic environment that exists but does not actively participate in synthetic environment interactions. Features are represented in the implementation environment by cartographic databases that are used by simulation assets. Entities can interact with features (building them, destroying them, colliding with them, etc.), but features are passive in that they do not initiate action. When features are dynamic (e.g., dynamic terrain) they are called environment entities. See: environmental entity; synthetic environment. (reference (b))

Federate. A member of a High Level Architecture Federation. All applications participating in a Federation are called Federates. This may include federation managers, data collectors, real world ("live") systems (e.g., C4I systems, instrumented ranges, sensors), simulations, passive viewers and other utilities. (reference (m))

Federate Time. Scaled wallclock time or logical time of a federate, whichever is smaller. Federate time is synonymous with the "current time" of the federate. At any instant of an

execution different federates will, in general, have different federate times. (reference (m))

Federation. A named set of interacting federates, a common federation object model, and supporting Runtime Infrastructure, that are used as a whole to achieve some specific objective. (reference (m))

Federation Element. Term applied to an individual model and/or simulation that is part of a federation of models and simulations. (reference (h))

Federation Execution. The actual operation, over time, of a subset of the federates and the Runtime Infrastructure initialization data taken from a particular federation. It is the step where the executable code is run to conduct the exercise and produce the data for the measures of effectiveness for the federation execution. (reference (m))

Federation Execution Data (FED). Information derived from the Federation Object Model (class, attribute, parameter names, etc.). Each federation execution needs one. In the abstract, creation of a federation execution is simply the binding of a federation execution name to a Federation Execution Data. The organization of Federation Execution Data will become the subject of standard so Federate Object Model tools can automatically generate them for any vendor's Runtime Infrastructure. (reference (m))

Federation Execution Sponsor. Federation development begins with a user and a requirement. The federation execution sponsor is the organization which uses the results and/or products from a specific application of modeling and simulation. It is the group responsible for establishing the need for the development and execution of a federation. They also establish the framework for the Measures of Effectiveness by which the results of the execution are employed. (reference (m))

Federation Object Model (FOM). An identification of the essential classes of objects, object attributes, and object interactions that are supported by a High Level Architecture federation. In addition, optional classes of additional information may also be specified to achieve a more complete description of the federation structure and/or behavior. (reference (m))

Federation Objective. The statement of the problem that is to be addressed by the establishment and execution of a federation. The description of the problem domain implicit in the objectives statement is critical for focusing the domain analysis activities in the conceptual analysis phase. It specifies the top level goals of the federation, and may specify the operational need or shortfall from which federation developers will derive a scenario

for the federation execution. The federation objectives drive this specification, as the scenario development phase must utilize the statement of the objectives to generate a viable context for system evaluations intrinsic to the federation objectives. High-level testing requirements implied in the federation objectives may also drive the identification of well-defined "test points" during development of the federation scenario. (reference (m))

Federation Required Execution Details (FRED). A global specification of several classes of information needed by the Runtime Infrastructure to instantiate an execution of the federation. Additional execution-specific information needed to fully establish the "contract" between federation members (e.g., publish responsibilities, subscription requirements, etc.) is also documented in the FRED. The set of management requirements provides one source of input to the Federation Required Execution Details specification, which will be recorded in a standardized format. (reference (m))

Federation Time. The time used to coordinate the activities between federation members. Runtime Infrastructure services are specified in terms of Federation Time and are independent of the discipline used by Federation members to advance to their individual temporal states. (reference (m))

Federation Time Axis. A totally ordered sequence of values where each value represents an instant of time in the physical system being modeled, and for any two points T_1 and T_2 on the federation time axis, if $T_1 < T_2$, then T_1 represents an instant of physical time that occurs before the instant represented by T_2 . Logical time, scaled wallclock time, and federate time specify points on the federation time axis. The progression of a federate along the federation time axis during the execution may or may not have a direct relationship to the progression of wallclock time. (reference (m))

Fidelity. The accuracy of the representation when compared to the real world. (references (g))

Field. A series of contiguous bits treated as an instance of a particular data type that may be part of a higher level data structure. (references (b) and (p))

Field Instrumentation. An internal or external recording, monitoring, and relaying device employed by live instrumented entities, usually platform, facility, or exercise-unique, and not typically part of the operational system or equipment. These devices provide an independent source of data to assess the performance of operational systems involved in the exercise. (reference (b))

Final Condition. The values assumed by the variables in a system, model, or simulation at the completion of some specified duration of time. Syn: equilibrium condition. Contrast with: boundary condition; initial condition. (references (b) and (c))

Final State. The values assumed by the state variables of a system, component, or simulation at the completion of some specified duration of time. (references (b) and (c))

Functional Area. A functional area encompasses the scope (the boundaries) of a set of related functions and data for which an OSD Principal Staff Assistant or the Chairman of the Joint Chiefs of Staff has DoD-wide responsibility, authority, and accountability. A functional area (e.g., personnel) is composed of one or more functional activities (e.g., recruiting), each of which consists of one or more functional processes (e.g., interviews). Also known as a business area. (reference (g))

Functional Data Administrator (FDAd). A person or group that ensure the utility of data used within the Functional Area by defining data policies and standards, planning for the efficient use of data, coordinating data structures among organizational components, performing logical database design, and defining data security procedures. (reference (g))

Functional Process. A well-defined (or definable) set of logically related tasks and decisions within a functional activity that use resources to produce products or services. (reference (j))

Functional Process Improvement. Application of a structured methodology to define a function's "as is" and "to be" environments; current and future mission needs and end user requirements; objectives and a strategy for achieving those objectives; and a program of incremental and evolutionary improvements to processes, data, and supporting Automated Information Systems that are implemented through functional, technical, and economic analysis and decision-making. (reference (j))

Glossary - G

Game. A physical or mental competition in which the participants, called players, seek to achieve some objective within a given set of rules. See also: game theory. (references (b) and (c))

Game Theory. a. The study of situations involving competing interests, modeled in terms of the strategies, probabilities, actions, gains, and losses of opposing players in a game. See also: management game; war game; b. the study of games to determine the probability of winning given various strategies. (references (b) and (c))

Gateway. A device that connects two systems, especially if the systems use different protocols. For example, a gateway is needed to connect two independent local networks, or to connect a local network to a long-haul network. (reference (p))

Generic Domain. A domain type where the attribute is constrained only by the data type assigned by the data base management system (DBMS), or implied by the record type in a flat file, whichever is applicable. (reference (o))

Generic Element. A generic element is the part of a data element that establishes a structure and limits the allowable set of values of a data element. A generic element has no functional or application context other than to define a general class of data and ensure consistency in structure and domain. (reference (q))

General-Use M&S Applications. Specific representations of the physical environment or environmental effects used by, or common to, many models and simulations; e.g., terrain, atmospheric, or hydrographic effects. (references (f), (g) and (h))

Glass Box Model. A model whose internal implementation is known and fully visible; for example, a model of a computerized change-return mechanism in a vending machine, in the form of a diagram of the circuits and gears that make the change. Contrast with: black box model. Syn: white box model. (references (b) and (c))

Global Combat Support System (GCSS). Demand driven, joint initiative designed to accelerate delivery of combat support applications and databases (e.g., logistics, engineering, finance, medical) to the warfighter. Focus is on providing user access to these applications from a single workstation.

Graphical Model. A symbolic model whose properties are expressed in diagrams; for example, a decision tree used to express a

complex procedure. Contrast with: mathematical model; narrative model; software model; tabular model. (references (b) and (c))

Guise. A function that provides the capability for an entity to be viewed with one appearance by one group of participants, and with another appearance by another group. (references (b) and (p))

Greenwich Mean Time (GMT). A measure of time that conforms, within a close approximation, to the mean diurnal rotation of the Earth and serves as the basis of civil time-keeping. Universal time (UT1) is determined from observations of the stars, radio sources, and also from ranging observations of the Moon and artificial Earth satellites. The scale determined directly from such observations is designated Universal Time Observed (UTO); it is slightly dependent on the place of observation. When UTO is corrected for the shift in longitude of the observing station caused by polar motion, the time scale UT1 is obtained. When an accuracy better than one second is not required, Universal Time can be used to mean Coordinated Universal Time (UTC) Also called "Universal Time [Coordinated]" or "Zulu Time." (reference (x))

Ground Truth. The actual facts of a situation, without errors introduced by sensors or human perception and judgment. (reference (b))

Glossary - H

Happens Before, Causal (-->). A relationship between two actions A_1 and A_2 (where an action can be an event, an RTI message send, or an Runtime Infrastructure message receive) defined as follows: a. if A_1 and A_2 occur in the same federate/Runtime Infrastructure, and A_1 precedes A_2 in that federate/Runtime Infrastructure, then $A_1 \text{ -->} A_2$; b. if A_1 is a message send action and A_2 is a receive action for the same message, then $A_1 \text{ -->} A_2$; and c. if $A_1 \text{ -->} A_2$ and $A_2 \text{ -->} A_3$, then $A_1 \text{ -->} A_3$ (transitivity). (reference (m))

Happens Before, Temporal (-->_t). A relationship between two events E_1 and E_2 defined as follows: if E_1 has a smaller time stamp than E_2 , then $E_1 \text{ -->} E_2$. The Runtime Infrastructure provides an internal tie-breaking mechanism to ensure (in effect) that no two events observed by a single federate contain the same time stamp. (reference (m))

Haptic. Refers to all the physical sensors that provide a sense of touch at the skin level and force feedback information from muscles and joints. (reference (a))

Haptics. The design of clothing or exoskeletons that not only sense motions of body parts (e.g., fingers) but also provide tactile and force feedback for haptic perception of a virtual world.

Heterogeneous. Consisting of or involving dissimilar elements or parts.

Heterogeneous Network. A collection of simulations with partially consistent behaviors and/or partially correlated data bases. Examples include simulators of different fidelity, mixed virtual and live simulations, and mixes of virtual and constructive simulations. (reference (b))

Heuristic. Relating to or using a problem-solving technique in which the most appropriate solution of several found by alternative methods is selected at successive stages of a program for use in the next step of the program.

Hierarchical Model. A model of information in which data are represented as trees of records connected by pointers. (reference (o))

Hierarchy. Hierarchy is a ranking or ordering of abstractions. (reference (d))

High Level Architecture (HLA). Major functional elements, interfaces, and design rules, pertaining as feasible to all DoD simulation applications, and providing a common framework within which specific system architectures can be defined. (reference (p))

Higher Order Model (HOM). A computer model representing combat elements, their functions and/or the terrain they operate on in an aggregated manner. A HOM may represent a battalion as a specific entity which is a conglomeration or averaging of the characteristics of its real-world components. "Higher Order" generally refers to echelons battalion and above with greater than 100m resolution, e.g. 3km, and with faster than real-time performance (e.g., days compressed into minutes, hours into seconds). See also: war game. (references (b) and (p))

Homogeneous Network. A network of DIS objects with fully consistent behaviors and fully correlated data bases. (references (b) and (p))

Host or Host Computer. A computer that supports one or more simulation applications. All host computers participating in a simulation exercise are connected by network(s) including wide area networks, local area networks, and RF links. (references (b) and (c))

Human Factors. The discipline or science of studying man-machine relationships and interactions. The term covers all biomedical and psychological considerations; it includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluation.

Human-in-the-Loop (HITL). A model that requires human interaction. See: interactive model. (reference (b))

Human-Machine Simulation. A simulation carried out by both human participants and computers, typically with the human participants asked to make decisions and a computer performing processing based on those decisions. (reference (b))

Hybrid Simulation. A simulation that combines constructive, live, and/or virtual simulations, typically in a distributed environment. Such simulations typically combine simulators with actual operational equipment, prototypes of future systems, and realistic representations of operational environments. (reference (p))

Glossary - I

Iconic Model. A physical model or graphical display that looks like the system being modeled; for example, a non-functional replica of a computer tape drive used for display purposes. See also: scale model.(references (b) and (c))

Identity Simulation. A simulation in which the roles of the participants are investigated or defined; for example, a simulation that identifies aircraft based on their physical profiles, speed, altitude, and acoustic characteristics. (reference (b))

Implementation. The means by which a synthetic environment, or portions of a synthetic environment, is realized. (reference (b))

In-Basket Simulation. A simulation in which a set of issues is presented to a participant in the form of documents on which action must be taken; for example, a simulation of an unfolding international crisis as a sequence of memos describing relevant events and outcomes of the participant's actions on previous memos.(references (b) and (c))

Independent Time Advancement. A means of advancing federate time where advances occur without explicit coordination among federates. Distributed Interactive Simulation is an example of a federation using independent time advancement. (reference (m))

Independent Verification and Validation (IV&V). The conduct of verification and validation of a model or simulation by individuals or agencies that did not develop the model or simulation. (reference (b))

Information. Any communication or reception of knowledge such as facts, data, or opinions, including numerical, graphic, or narrative forms, whether oral or maintained in any medium, including computerized databases, paper, microform, or magnetic tape. (references (j), (q), and (cc))

Information Management (IM). The creation, use, sharing, and disposition of data or information as corporate resources critical to the effective and efficient operation of functional activities consistent with Information Management guidance issued by the Office of the Secretary of Defense. Information Management includes the structuring of functional management improvement processes by the Office of the Secretary of Defense Principal Staff Assistants to produce and control the use of data and information in functional activities; information resources

management; and supporting information technology and information services. (reference (ee))

Information Model. A model that represents the processes, entities, information flows, and elements of an organization and all relationships between these factors. (reference (q))

Information Resource Dictionary System (IRDS). A set of standard specifications for a data dictionary system resulting from U.S. Federal and national standards efforts; a computer system conforming to those standards that provides facilities for recording, storing, and processing descriptions of an organization's significant information and information processing resources. (references (aa) and (bb))

Information System (IS). The organized collection, processing, maintenance, transmission, and dissemination of information in accordance with defined procedures, whether automated or manual. (references (j) and (q))

Information Technology (IT). The hardware and software used in connection with government information, regardless of technology involved, whether computers, communications, micrographics, or others. (references (j) and (cc))

Information Warfare (IW). Actions taken to achieve information superiority by affecting adversary information, information-based processes, information systems, and computer-based networks, while defending one's own information, information-based processes, information systems, and computer-based networks. (reference (u))

Infrastructure. An underlying base or foundation; the basic facilities, equipment, and installations needed for the functioning of a system. See: M&S infrastructure.

Initial Condition. The values assumed by the variables in a system, model, or simulation at the beginning of some specified duration of time. Contrast with: boundary condition; final condition. (reference (b))

Initial State. The values assumed by the state variables of a system, component, or simulation at the beginning of some specified duration of time. Contrast with: final state. (reference (b))

Instantiation. To represent an abstraction by a concrete instance.

Instructional Simulation. A simulation intended to provide a simulation equivalent of a real or hypothesized stimulus that could occur in the synthetic environment for the purpose of training. (reference (b))

Integrated Product and Process Development (IPPD). An approach to systems acquisition that brings together all of the functional disciplines required to develop, design, test, produce and field a system. This is essentially the same as Concurrent Engineering. (reference (k))

Integrated Product Team (IPT). Integrated Product Teams are a means to achieve concurrent engineering or Integrated Product and Process Development. They are multi-disciplinary teams consisting of representatives from all disciplines involved in the system acquisition process, from requirements development through disposal. Having the participation of all the appropriate disciplines, Integrated Product Teams are often empowered to make decisions to achieve successful development of their particular product. (reference (k))

Intelligence Community Coordinating Group (ICCOG). Serves as the intelligence community's forum for M&S exchange, fostering improved communication among community and other government agencies and industry. The Intelligence Community Coordinating Group promotes sharing programs, methodologies, tools, techniques, data and other information. (reference (g))

Intelligent Agent. A software entity that carries out a set of operations on behalf of a user with some degree of independence or autonomy, and in so doing, employs knowledge or representation of the user's goals or desires.

Intelligent Forces (IFOR). A specific program funded by Defense Research Projects Agency to build a maximum of intelligence into the computer representations of forces. (reference (g))

Interaction. An explicit action taken by an object, that can optionally (within the bounds of the Federation Object Model) be directed toward other objects, including geographical areas etc. (reference (m))

Interaction Parameters. The information associated with an interaction which objects potentially affected by the interaction must receive in order to calculate the effects of that interaction on its current state. (reference (m))

Interactive Model. A model that requires human participation.
Syn: human-in-the-loop. (reference (b))

Internal Schema. An internal schema describes data as it is physically stored and includes all aspects of the environment in which a database is to reside. (references (j) and (r))

Interoperability. See: M&S Interoperability.(reference (g))

Interval-Oriented Simulation. A continuous simulation in which simulated time is advanced in increments of a size suitable to make implementation possible on a digital system.(references (b) and (c))

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Glossary - J

Joint M&S. Representations of joint and Service forces, capabilities, equipment, materiel, and services used by the Joint community or by two, or more, Military Services. (reference (f))

JM&S Proponent. The joint Component responsible for life cycle management of a JM&S application or data base. (reference (ee))

Joint Modeling and Simulation Executive Panel (JMSEP). An organization responsible for providing advice and assistance on joint M&S issues. The joint Components provide representatives. Membership is at the O-6 level or higher. The Deputy Director for Wargaming, Simulation, and Operations, J-8, serves as the chair. (reference (ee))

Joint Modeling and Simulation Investment Plan (JMSIP). A joint Components plan, published under the authority of the Chairman of the Joint Chiefs of Staff and with the coordination of the joint Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) programs and funding for joint and common use JM&S to achieve the specified goals and objectives outlined in the JM&S Master Plan. (reference (ee))

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Glossary - K

Knowledge. The rules, environment, etc. that form the structure humans use to process and relate to information, or the information a computer system must have to behave in an apparently intelligent manner.

Knowledge-Based System. A system in which the domain knowledge is explicit and separate from the system's operational instructions/information.

Known Object. An object is known to a federate if the federate is reflecting or updating any attributes of that object.
(reference (m))

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Glossary - L

Lag Variable. a. In a discrete simulation, a variable that is an output of one period and an input for some future period; b. in an analog simulation, a variable that is a function of an output variable and that is used as input to the simulation to provide a time delay response or feedback. (reference (b))

Latency. The time required for a device to begin physical output of a desired piece of data once processing is complete.

Lead Variable. a. In a discrete simulation, a variable that is an output of one period and that predicts what the output of some future period will be; b. in an analog simulation, a variable that is a function of an output variable and that is used as input to the simulation to provide advanced time response or feedback. (reference (b))

Live Entity. A perceptible object that can appear in the virtual battlespace but is unaware and non-responsive (either by intent, lack of capability or circumstance) to the actions of virtual entities. See also: field instrumentation. (reference (b))

Live Simulation. One of several categories of simulation. See Live, Virtual, and Constructive Simulation. (reference (g))

Live, Virtual, and Constructive Simulation. The categorization of simulation into live, virtual, and constructive is problematic, because there is no clear division between these categories. The degree of human participation in the simulation is infinitely variable, as is the degree of equipment realism. This categorization of simulations also suffers by excluding a category for simulated people working real equipment (e.g., smart vehicles). (reference (g))

a. Live Simulation. A simulation involving real people operating real systems.

b. Virtual Simulation. A simulation involving real people operating simulated systems. Virtual simulations inject human-in-the-loop in a central role by exercising motor control skills (e.g., flying an airplane), decision skills (e.g., committing fire control resources to action), or communication skills (e.g., as members of a C4I team).

c. Constructive Model or Simulation. Models and simulations that involve simulated people operating simulated systems. Real people stimulate (make inputs) to such simulations, but are not involved in determining the outcomes.

Local Area Network. A class of data network that provides high data rate interconnection between network nodes in close physical proximity. (reference (z))

Local Time. The mean solar time for the meridian of the observer. (reference (m))

Logical Data Model. A model of the data stores and flows of the organization derived from the conceptual business model. (reference (q))

Logical Time. A federate's current point on the logical time axis. If the federate's logical time is T, all time stamp ordered messages with time stamp less than T have been delivered to the federate, and no time stamp ordered messages with time stamp greater than T have been delivered; some, though not necessarily all, time stamp ordered messages with time stamp equal to T may also have been delivered. Logical time does not, in general, bear a direct relationship to wallclock time, and advances in logical time are controlled entirely by the federates and the Runtime Infrastructure. Specifically, the federate requests advances in logical time via the Time Advance Request and Next Event Request Runtime Infrastructure services, and the Runtime Infrastructure notifies the federate when it has advanced logical time explicitly through the Time Advance Grant service, or implicitly by the time stamp of time stamp ordered messages that are delivered to the federate. Logical time (along with scaled wallclock time) is used to determine the current time of the federate (see definition of federate time). Logical time is only relevant to federates using time stamp ordered message delivery and coordinated time advances, and may be ignored (by requesting a time advance to "infinity" at the beginning of the execution) by other federates. (reference (m))

Logical Time Axis. A set of points (instants) on the federation time axis used to specify before and after relationships among events. (reference (m))

Logical Verification. The identification of a set of assumptions and interactions for which the M&S correctly produces intended results. It determines the appropriateness of the M&S for a particular application and ensures that all assumptions and algorithms are consistent with the conceptual M&S. (reference (i))

Long-Haul Network (LHN). A communications network of devices which are separated by substantial geographical distance. A LHN could be any of numerous networks available commercially or through the government that can accommodate the requirements of the DIS virtual battlefield for long distance network services. Also called Wide Area Network. See: wide area network. (references (b) and (p))

Lookahead. A value used to determine the smallest time stamped message using the time stamp ordered service that a federate may generate in the future. If a federate's current time (i.e., federate time) is T , and its lookahead is L , any message generated by the federate must have a time stamp of at least $T+L$. In general, lookahead may be associated with an entire federate (as in the example just described), or at a finer level of detail e.g., from one federate to another, or for a specific attribute. Any federate using the time stamp ordered message delivery service must specify a lookahead value. (reference (m))

Lower Bound on the Time Stamp (LBTS). Lower Bound on the Time Stamp of the next time stamp ordered message to be received by a Runtime Infrastructure from another federate. Messages with time stamp less than LBTS are eligible for delivery by the runtime infrastructure to the federate without compromising time stamp order delivery guarantees. Time stamped ordered messages with time stamp greater than LBTS are not yet eligible for delivery. LBTS is maintained within the runtime infrastructure using a conservative synchronization protocol. (reference (m))

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Glossary - M

Machine Simulation. A simulation that is executed on a machine. See also: computer simulation. (references (b) and (c))

Management Game. A simulation game in which participants seek to achieve a specified management objective given pre-established resources and constraints; for example, a simulation in which participants make decisions designed to maximize profit in a given business situation and a computer determines the results of those decisions. See also: war game. (references (b) and (c))

Markov Chain. A discrete Markov process. (reference (c))

Markov Chain Model. A discrete, stochastic model in which the probability that the model is in a given state at a certain time depends only on the value of the immediately preceding state. Syn: Markov model. See also: semi-Markov model. (references (b) and (c))

Markov Process. A stochastic process that assumes that in a series of random events, the probability for occurrence of each event depends only on the immediately preceding outcome. See also: semi-Markov process. (references (b) and (c))

Mass Storage. Refers to any device that can store large amounts of data and retrieve it at some later time, even after system power-down. Mass storage devices are usually categorized in terms of being either on-line storage or off-line storage.

Mathematical Model. A symbolic model whose properties are expressed in mathematical symbols and relationships; for example, a model of a nation's economy expressed as a set of equations. Contrast with: graphical model; narrative model; software model; tabular model. (reference (b))

Mean Solar Time. A time measurement where time is measured by the diurnal motion of a fictitious body (called "mean Sun") which is supposed to move uniformly in the celestial Equator, completing the circuit in one tropical year. Often termed simply "mean time." The mean Sun may be considered as moving in the celestial Equator and having a right ascension equal to the mean celestial longitude of the true Sun. At any given instant, mean solar time is the hour angle of the mean Sun. In civil life, mean solar time is counted from the two branches of the meridian through 12 hours; the hours from the lower branch are marked a.m. (ante meridian), and those from the upper branch, p.m. (post meridian). In astronomical work, mean solar time is counted from the lower branch of the meridian through 24 hours. Naming the meridian of reference is essential to the complete identification

of time. The Greenwich meridian is the reference for a worldwide standard of mean solar time called "Greenwich Mean Time" (GMT) or "Universal Time [Coordinated]" (UTC). (reference (m))

Measure of Effectiveness (MOE). A qualitative or quantitative measure of the performance of a model or simulation or a characteristic that indicates the degree to which it performs the task or meets an operational objective or requirement under specified conditions.

Measure of Outcome (MOO). Metric that defines how operational requirements contribute to end results at higher levels, such as campaign or national strategic outcomes. (reference (k))

Measure of Performance (MOP). Measure of how the system/individual performs its functions in a given environment (e.g., number of targets detected, reaction time, number of targets nominated, susceptibility of deception, task completion time). It is closely related to inherent parameters (physical and structural) but measures attributes of system behavior. See also: measure of effectiveness. (references (b) and (c))

Message. A data unit transmitted between federates containing at most one event. Here, a message typically contains information concerning an event, and is used to notify another federate that the event has occurred. When containing such event information, the message's time stamp is defined as the time stamp of the event to which it corresponds. Here, a "message" corresponds to a single event, however the physical transport media may include several such messages in a single "physical message" that is transmitted through the network. (reference (m))

Message (event) Delivery. Invocation of the corresponding service (Reflect Attribute Values, Receive Interaction, Instantiate Discovered Object, or Remove Object) by the Runtime Infrastructure to notify a federate of the occurrence of an event. (reference (m))

Metadata. Information describing the characteristics of data; data or information about data; descriptive information about an organization's data, data activities, systems, and holdings. (references (j), (q), (aa), and (bb))

Meta-Knowledge. Knowledge about knowledge. Knowledge about the use and control of domain knowledge in an expert or knowledge-based system. Knowledge about how the system operates or reasons. Syn: wisdom. (reference (p))

Metamodel. A model of a model. Metamodels are abstractions of the M&S being developed which use functional decomposition to show relationships, paths of data and algorithms, ordering, and interactions between model components and subcomponents. Metamodels allow the software engineers who are developing the

model to abstract details to a level that subject matter experts can validate. (reference (p))

Methodology. The system of principles, practices, and procedures, applied to a specific branch of knowledge.

Metric A measure of the extent or degree to which a product possesses and exhibits a certain quality, property, or attribute. (reference (c))

Metric(s). A process or algorithm that may involve statistical sampling, mathematical computations, and rule-based inferencing. Metrics provide the capability to detect and report defects within a sample. (reference (e))

Mission Space. The environment of entities, actions, and interactions comprising the set of interrelated processes used by individuals and/organizations to accomplish assigned tasks. (reference (g))

Mock-Up. A full-sized structural, but not necessarily functional, model built accurately to scale, used chiefly for study, testing, or display. See also: physical model. (references (b) and (c))

Model. A physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. (references (b), (f), (g), and (p))

Modeling. Application of a standard, rigorous, structured methodology to create and validate a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. (references (j))

Modeling and Simulation (M&S). The use of models, including emulators, prototypes, simulators, and stimulators, either statically or over time, to develop data as a basis for making managerial or technical decisions. The terms "modeling" and "simulation" are often used interchangeably. (reference (p))

Modeling and Simulation (M&S) Accreditation. The official certification that a model or simulation is acceptable for use for a specific purpose. (references (b) and (f))

Modeling and Simulation (M&S) Application Sponsor. The organization that utilizes the results/product(s) from a specific application of an M&S. (reference (h))

Modeling and Simulation (M&S) Developer. The agency that actually develops an M&S or the agency that is overseeing the M&S development by a contractor or FFRDC. (reference (y))

Modeling and Simulation (M&S) Executive Agent. See: DoD M&S Executive Agent. (references (f), (g), and (k))

M&S Infrastructure. A M&S infrastructure consists of M&S systems and applications, communications, networks, architectures, standards and protocols, and information resource repositories. (references (f), (g) and (k))

M&S Interoperability. The ability of a model or simulation to provide services to and accept services from other models and simulations, and to use the services so exchanged to enable them to operate effectively together. (references (f) and (g))

Modeling and Simulation Master Plan (MSMP). A DoD plan, published under the authority of the USD(A&T) and with the coordination of the DoD Components, that establishes short-term (present to 6 years) and long-term (beyond 6 years) DoD goals and objectives for the application of M&S for joint and common use within the Department of Defense. It shall also include an assessment of current M&S capabilities, and a road map that delineates the management, investment, and technical strategies required to achieve DoD M&S objectives. (reference (f))

M&S Working Group (MSWG). The MSWG supports the activities of the Executive Council for Modeling and Simulation and responds to guidance and direction from the USD (A&T). The Director, Defense Modeling and Simulation Office, chairs the MSWG. The membership of the MSWG will normally be 0-6 military officers or GM-15 grade civilians. The MSWG promotes coordination and cooperation of DoD M&S at the working level. Members will represent their organization, serve as the Defense Modeling and Simulation Office point of contact for M&S issues, and prepare their principals for Executive Council for Modeling and Simulation meetings. MSWG membership will mirror the organizational makeup of the Executive Council for Modeling and Simulation; however, other organizations may be added by majority vote of the group, as required. (reference (g))

Model-Test-Model. An integrated approach to using models and simulations in support of pre-test analysis and planning; conducting the actual test and collecting data; and post-test analysis of test results along with further validation of the models using the test data. (reference (k))

Modifier. A word that helps define and render a name unique within the database, which is not the prime or class word. (references (q) and (u))

Modular Semi-Automated Forces (ModSAF). A class of Computer Generated Forces utilizing a modular software structure in which model components have well-defined and documented interfaces allowing run-time reconfiguration of model behavior to develop generalized, and more sophisticated, representations of reactive behaviors and missions. (reference (g))

Monte Carlo Algorithm. A statistical procedure that determines the occurrence of probabilistic events or values of probabilistic variables for deterministic models; e.g., making a random draw. (reference (k))

Monte Carlo Method. In modeling and simulation, any method that employs Monte Carlo simulation to determine estimates for unknown values in a deterministic problem. (references (b) and (c))

Monte Carlo Simulation. A simulation in which random statistical sampling techniques are employed such that the result determines estimates for unknown values. (reference (b))

Multicast. A transmission mode in which a single message is sent to selected multiple (but not necessarily all) network destinations; i.e., one-to-many. Contrast with: broadcast, unicast. (references (b) and (c))

Multisensory I/O. The use of more than one sensory mechanism (visual, aural, tactile, etc.) to interact with a computer-generated environment. (reference (a))

Multi-State Objects. Mission space entities that express a changing state (in attribution and visual display) as the simulation progresses (e.g., damage to structures, changes in vegetation, damage system representations such as vehicles, tanks, etc). (reference (g))

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Glossary - N

Narrative Model. A symbolic model the properties of which are expressed in words; for example, a written specification for a computer system. Syn: verbal descriptive model. Contrast with: graphical model; mathematical model; software model; tabular model. (references (b) and (c))

Natural Model. A model that represents a system by another system that already exists in the real world; for example, a model that uses one body of water to represent another. (references (b) and (c))

Network Byte Order. The Internet-standard ordering of the bytes corresponding to numeric values. (reference (p))

Network Communication Services. The capability provided to electronically transmit modeling and simulation data between networked computational nodes in a manner that meets requirements for transmission latency, multi-cast addressing and security needed to support the creation and operation of distributed time and space coherent synthetic environments. (reference (y))

Network Filter. A system to selectively accept or reject data received from the network. (reference (b))

Network Management. The collection of administrative structures, policies, and procedures that collectively provide for the management of the organization and operation of the network as a whole. See: network manager. (references (b) and (c))

Network Manager. The person or organization responsible for maintaining, monitoring and scheduling the operation of the portion of a network used for a distributed simulation and whose responsibilities for the network terminates at the gateways and who is not responsible for the simulation hosts or a local area network. Normally, also in charge of the gateway and not part of the user organization. (reference (b))

Network Node. A specific network address. See: node. Contrast with: processing node. (reference (b))

Network Theory. The study of networks used to model processes such as communications, computer performance, routing problems, and project management. (references (b) and (c))

Node. A general term denoting either a switching element in a network or a host computer attached to a network. See: processing node; network node. (references (b) and (c))

Non-Absorbing State. In a Markov chain model, a state that can be left once it is entered. (references (b) and (c))

Non-Standard Cell. A cell that is not compliant with the Distributed Interactive Simulation message and data base standards. Non-standard cells require a Cell Adapter Unit in order to join a Distributed Interactive Simulation exercise. (references (b) and (p))

Non-Standard Data Element. Any data element that exists in a system or application program and does not conform to the conventions, procedures, or guidelines established by the organization. (reference (q))

Normative Model. A model that makes use of a familiar situation to represent a less familiar one; for example, a model that depicts the human cardiovascular system by using a mechanical pump, rubber hoses, and water. (references (b) and (c))

Notional Data. Speculative or theoretical data rather than actual data.

Numerical Model. a. A mathematical model in which a set of mathematical operations is reduced to a form suitable for solution by simpler methods such as numerical analysis or automation; for example, a model in which a single equation representing a nation's economy is replaced by a large set of simple averages based on empirical observations of inflation rate, unemployment rate, gross national product, and other indicators; b. A model whose properties are expressed by numbers. (references (b) and (c))

Glossary - O

Object. A fundamental element of a conceptual representation for a federate that reflects the "real world" at levels of abstraction and resolution appropriate for federate interoperability. For any given value of time, the state of an object is defined as the enumeration of all its attribute values. (reference (m))

Object-Based. A software design methodology adhering to only some of the properties of object-oriented software; for example, Ada does not support inheritance, a key property of object oriented systems, therefore Ada is often referred to as an object based language. See: object-oriented.

Object Model. A specification of the objects intrinsic to a given system, including a description of the object characteristics (attributes) and a description of the static and dynamic relationships that exist between objects. (reference (m))

Object Model Framework. The rules and terminology used to describe High Level Architecture object models. (reference (m))

Object Ownership. Ownership of the ID attribute of an object, initially established by use of the Instantiate Object interface service. Encompasses the privilege of deleting the object using the Delete Object service. Can be transferred to another federate using the attribute ownership management services. (reference (m))

Object-Oriented Language. A language that best suits an object-oriented decomposition of software and that provides the capability to implement classes and objects. Directly supports data abstraction and classes, and provides additional support for inheritance as a means of expressing hierarchies of classes. (references (k) and (ff))

Object-Oriented Programming. Use of a programming system that results in programs organized as cooperative collections of objects, each of which represents an instance of some class, and whose classes are members of class hierarchies as defined by the inheritance mechanism. (reference (d))

Occlusion. The vision effect of closer objects overlapping or occluding more distant ones, providing visual clues to judge how close objects are from the viewer. Slight head motions provide more information about occlusions. (reference (a))

Octet. A sequence of eight bits, usually operated upon as a unit. (reference (p))

Office of the Secretary of Defense (OSD). Includes the immediate Offices of the Secretary and Deputy Secretary of Defense, the Under Secretaries of Defense, the Director of Defense Research and Engineering, the Assistant Secretaries of Defense (ASDs), the General Counsel of the Department of Defense (GC, DoD), the Assistants to the Secretary of Defense (ATSDs), the OSD Directors, or equivalents, who report directly to the Secretary or the Deputy Secretary of Defense, and such other staff offices as the Secretary of Defense establishes to assist in carrying out assigned responsibilities. (references (f) and (h))

Off-Line Storage Devices. Off-line storage devices generally are used for data backup and archival applications, using media-like magnetic tapes or removable hard or floppy disks.

On-Line Storage Devices. On-line storage devices provide more immediate retrieval of data and usually refer to devices such as magnetic or optical hard disk drives.

Open System. A system in which the components and their composition are specified in a non-proprietary environment, enabling competing organizations to use these standard components to build competitive systems. There are three perspectives on open systems: portability - the degree to which a system component can be used in various environments, interoperability - the ability of individual components to exchange information, and integration - the consistency of the various human-machine interfaces between an individual and all hardware and software in the system. (references (k) and (ff))

Operational Environment. A composite of the conditions, circumstances, and influences that affect the employment of military forces and the decisions of the unit commander. Frequently characterized as permissive, semi-permissive, or non-permissive. (reference (b))

Optimistic Synchronization. A mechanism that uses a recovery mechanism to erase the effects of out-of-order event processing. This is in contrast to conservative synchronization. The Time Warp protocol is an example of an optimistic synchronization mechanism. Messages sent by an optimistic federate that could later be canceled. (reference (b))

Orthogonal. Pertaining to or composed of right angles. Variables which are orthogonal are mutually independent mathematically. This includes the notion of 'independence' or 'ease of transformation' as used in regard to matrices in multivariate analysis.

Outcome-Oriented Simulation. A simulation in which the end result is considered more important than the process by which it is obtained; for example, a simulation of a radar system that uses methods far different from those used by the actual radar,

but whose output is the same. Contrast with: process-oriented simulation. (references (b) and (c))

Output Validation. The process of determining the extent to which the output (outcome distributions for the M&S and/or sub-models) represent the significant and salient features of distributions or real world systems, events, and scenarios. (reference (i))

Owned Attribute. An object attribute that is explicitly modeled by the owning federate. A federate that owns an attribute has the unique responsibility to provide values for that attribute to the federation, through the Runtime Infrastructure, as they are produced. (reference (m))

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Glossary - P

Parallax. The vision effect of having two eyes viewing the same scene from slightly different positions that creates a sense of depth. Computer-generated environments, one for each eye, artificially create the parallax effect. (reference (a))

Parallel Processing. Multiple processes running on multiple processors simultaneously.(reference (k))

Parametric Model. A model using parametric equations that may be based on numerical model outputs or fits to semi-empirical data to succinctly describe a particular process, feature, or effect. (reference (p))

Period. The time interval between successive events in a discrete simulation. (references (b) and (c))

Petri Net. An abstract, formal model of information flow, showing static and dynamic properties of a system; i.e., the petri net is defined by its places, transitions, input function, and output function.(references (b) and (c))

Physical Data Model. A representation of the technologically independent information requirements in a physical environment of hardware, software, and network configurations representing them in the constraints of an existing physical environment. (references (j) and (r))

Physical Model. A model whose physical characteristics resemble the physical characteristics of the system being modeled; for example, a plastic or wooden replica of an airplane. A mock-up. See also: iconic model; scale model. Contrast with: symbolic model. (references (b) and (c))

Pixel. A "picture element," refers to the smallest visual unit in an image on a computer display. (reference (a))

Platform. A generic term used to describe a level of representation equating to vehicles, aircraft, missiles, ships, fixed sites, etc., in the hierarchy of representation possibilities. Other representation levels include units (made up of platforms) and components or modules (which make up platforms). (references (b) and (p))

Polygon. A flat plane figure with multiple sides, the basic building block of virtual worlds. The more polygons a computer can display and manipulate per second, the more realistic the virtual world will appear. Humans perceive the equivalent of 80

million polygons at more than 30 frames per second in normal vision. (reference (a))

Predictive Model. A model in which the values of future states can be predicted or are hypothesized; for example, a model that predicts weather patterns based on the current value of temperature, humidity, wind speed, and so on at various locations. (references (b) and (c))

Prescriptive Model. A model used to convey the required behavior or properties of a proposed system; for example, a scale model or written specification used to convey to a computer supplier the physical and performance characteristics of a required computer. Contrast with: descriptive model. (references (b) and (c))

Prime Word. A word included in the name of a data entity that represents the logical data grouping (in the logical data model) to which it belongs. (references (q) and (u))

Principal Staff Assistants. The Under Secretaries of Defense; the Assistant Secretaries of Defense (ASDs); the General Counsel of the Department of Defense (GC, DoD); the Assistants to the Secretary of Defense (ATSDs); and the OSD Directors, or equivalents, who report directly to the Secretary or Deputy Secretary of Defense. (reference (h))

Probabilistic Model. See: stochastic model. (reference (b))

Processes. Processes affect entities. Attrition, communications, and movement are examples of processes. Processes have a level of detail by which they are described. (reference (t))

Process Improvement Modeling. Defines and documents the current ("as is") and desired future ("to be") processes and information requirements of a functional activity. Two types of process improvement models are:

a. Activity Models. Models of the processes that make up the functional activity showing inputs, outputs, controls, and mechanisms through which the processes of the functional activity are (or will be) conducted. (reference (j))

b. Data Model. In a database, the user's logical view of the data in contrast to the physically stored data, or storage structure. A description of the organization of data in a manner that reflects the information structure of an enterprise. (references (q) and (u))

Process Model. A model of the processes performed by a system; for example, a model that represents the software development process as a sequence of phases. Contrast with: structural model. (reference (b))

Process-Oriented Simulation. A simulation in which the process is considered more important than the outcome; for example, a model of a radar system in which the objective is to replicate exactly the radar's operation, and duplication of its results is a lesser concern. Contrast with: outcome-oriented simulation. (references (b) and (c))

Processing Node. The hardware and software processing resources devoted to one or more simulation entities. See: node. Contrast with: network node. (reference (b))

Protocol. A set of rules and formats (semantic and syntactic) that define the communication behavior of simulation applications. (references (b), (c), and (f))

Protocol Data Unit (PDU). Distributed Interactive Simulation terminology for a unit of data that is passed on a network between simulation applications. (reference (g))

Protocol Data Unit (PDU) Standards. Formally defined data exchange standards established for each of the several primary classes of functionality that is represented in the DIS synthetic environment; e.g., movement, weapons, firing effects, collisions, etc. (reference (y))

Protocol Entity. An object that exchanges information with other protocol entities in a network via Protocol Data Units in accordance with an established protocol. A key attribute of a protocol entity is its state. State transitions occur in a given protocol entity in accordance with the established protocol as the result of: a. Protocol Data Units received from other protocol entities, and b. occurrence of an external event (e.g., expiration of a time-out counter.) See also: Protocol Data Unit. (reference (b))

Protocol Suite. A defined set of complementary protocols within the communication architecture profile. (reference (p))

Prototype. A preliminary type, form, or instance of a system that serves as a model for later stages or for the final, complete version of the system. (references (b) and (c))

Pseudocode. A description of control and/or data structures in a natural language with no rigid rules of syntax. (reference (i))

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Glossary - Q

Qualitative Data. A data value that is a non-numeric description of a person, place, thing, event, activity, or concept. (references (q))

Quality Assurance (QA). The policies, procedures and systematic actions established in an enterprise for the purpose of providing and maintaining some degree of confidence in data integrity and accuracy throughout the life cycle of the data. The planned systematic activities necessary to ensure that a component, module, or system conforms to established technical requirements. (reference (r))

Quantitative Data. Numerical expressions that use Arabic numbers, upon which mathematical operations can be performed. (references (q))

Queue. In queuing theory, a set of zero or more entities waiting to be serviced by a service facility. (references (b) and (c))

Queuing Model. A model consisting of service facilities and entities waiting in queues to be served; for example, a model depicting teller windows and customers at a bank. (references (b) and (c))

Queuing Network Model. A model in which a process is described as a network in which each node represents a service facility rendering a given type of service and a queue for holding entities waiting to be served; for example, a model depicting a network of shipping routes and docking facilities at which ships must form queues in order to unload their cargo. (references (b) and (c))

Queuing Theory. The study of queues and the performance of systems that service entities that are organized into queues. See also: queuing model; queuing network model. (references (b) and (c))

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Glossary - R

Random. Pertaining to a process or variable whose outcome or value depends on chance or on a process that simulates chance, often with the implication that all possible outcomes or values have an equal probability of occurrence; for example, the outcome of flipping a coin or executing a computer-programmed random number generator. (references (b) and (c))

Real Battlefield. See: real world. (reference (b))

Real-Time. In modeling and simulation, simulated time advances at the same rate as actual time; for example, running the simulation for one second results in the model advancing time by one second. Contrast with: fast time; slow time. (reference (b))

Real-Time Service. A service that satisfies timing constraints imposed by the service user. The timing constraints are user specific and should be such that the user will not be adversely affected by delays within the constraints. (reference (p))

Real-Time Simulation. Same as constrained simulation. (reference (m))

Real-Time System. A system that computes its results as quickly as they are needed by a real-world system. Such a system responds quickly enough that there is no perceptible delay to the human observer. In general use, the term is often perverted to mean within the patience and tolerance of a human user.

Real-World. The set of real or hypothetical causes and effects that simulation technology attempts to replicate. When used in a military context, the term is synonymous with real battlefield to include air, land, and sea combat. Syn: real battlefield. (reference (b))

Real-World Time. The actual time in Greenwich, England. Syn: sidereal time. (references (b) and (c))

Reality Engine. Any computer system specifically designed to generate virtual images on a display device. (reference (a))

reference Version. The most recent version of a model or simulation that has been released by, and under configuration management of an approving authority. (reference (b))

Reflected Attribute. An object attribute that is represented but not explicitly modeled in a federate. The reflecting federate accepts new values of the reflected attribute as they are

produced by some other federation member and provided to it by the Runtime Infrastructure. (reference (m))

Reflected Object. An object that is represented but not explicitly modeled in a simulation. The reflecting simulation accepts changes in state of the reflected object as they are produced by some other federation member and provided to it by the Runtime Infrastructure.

Regime. The interaction domain of entities. Platform level

Reliability Model. A model used to estimate, measure, or predict the reliability of a system; for example, a model of a computer system, used to estimate the total down time that will be experienced. (references (b) and (c))

Reliable Service. A communication service in which the received data is guaranteed to be exactly as transmitted. (references (b), (c), and (p))

Remote Entity Approximation (REA). The process of extrapolating and interpolating any state of an entity based on its last known state. This includes dead reckoning and smoothing. Syn: dead reckoning. (reference (b))

Research, Development, and Acquisition (RDA). One of the three domains for Army M&S applications. RDA includes all M&S used for design, development, and acquisition of weapons systems and equipment. M&S in the RDA domain are used for scientific inquiry to discover or revise facts and theories of phenomena, followed by transformation of these discoveries into physical representations. RDA also includes test and evaluation (T&E) where M&S are used to augment and possibly reduce the scope of real-world T&E. (reference (y))

Resolution. The degree of detail and precision used in the representation of real world aspects in a model or simulation. See also: granularity. (references (g), (i), and (k))

Retraction. An action performed by a federate to unschedule a previously scheduled event. Event retraction is visible to the federate. Unlike "cancellation" that is only relevant to optimistic federates such as Time Warp, "retraction" is a facility provided to the federate. Retraction is widely used in classical event oriented discrete event simulations to model behaviors such as preemption and interrupts. (reference (m))

Right-Hand Rule. Positive rotation is clockwise when viewed toward the positive direction along the axis of rotation. (reference (b))

Runtime Infrastructure (RTI). The general purpose distributed operating system software which provides the common interface services during the runtime of an High Level Architecture federation.

Glossary - S

Scalability. The ability of a distributed simulation to maintain time and spatial consistency as the number of entities and accompanying interactions increase. (reference (g))

Scale Model. A physical model that resembles a given system, with only a change in scale; for example, a replica of an airplane one tenth the size of the actual airplane. (references (b) and (c))

Scaled Wallclock Time. A quantity derived from a wallclock time defined as $\text{offset} + [\text{rate} * (\text{wallclock time} - \text{time of last exercise start or restart})]$. All scaled wallclock time values represent points on the federation time axis. If the "rate" factor is k, scaled wallclock time advances at a rate that is k time faster than wallclock time. (reference (m))

Scenario. a. Description of an exercise. It is part of the session database that configures the units and platforms and places them in specific locations with specific missions; b. an initial set of conditions and time line of significant events imposed on trainees or systems to achieve exercise objectives. (references (b) and (c))

Scenario Development. A phase of the development of a federation. In this phase, the federation developer(s) formulate a scenario whose execution and subsequent evaluation will lead toward achieving the study objectives set forth by the federation sponsor. The scenario provides an identification of the major entities that must be represented by the federation, a conceptual description of the capabilities, behavior, and relationships (interactions) between these major entities over time, and a specification of relevant environmental conditions (e.g., terrain, atmospheric). Initial and termination conditions are also provided. The style of format of the scenario documentation (e.g., graphics, tables, text) is entirely at the discretion of

the federation developer. However, communities of use may wish to establish scenario documentation standards among themselves to facilitate reuse of scenario components. The output of this phase is a functional-level scenario description, which is provided as input to the Conceptual Analysis phase. Certain key activities during Conceptual Analysis may also drive reiterations of the Scenario Development phase. (reference (m))

Scheduling an Event. Invocation of a primitive (Update Attribute Values, Send Interaction, Instantiate Object, or Delete Object) by a federate to notify the Runtime Infrastructure of the occurrence of an event. Scheduling an event normally results in the Runtime Infrastructure sending messages to other federates to notify them of the occurrence of the event. (reference (m))

Schema. Descriptive representation of data and/or data requirements that describe conceptual, internal, or external views of information/data needs.

Scope. Used in reference to SAFOR, scope refers to the aspects of combat portrayed by the system. For example, ground combat, combat support, combat service support, air-to-air combat, air-to-ground combat, air-to-ship combat, naval surface combat, naval undersea warfare, deployment. (reference (d))

Seamless. Perfectly consistent. Transparent.

Segment. A portion of a session that is contiguous in simulation time and in wall-clock time (sidereal time). (references (b) and (c))

Selector. A portion of an address identifying a particular entity at an address (e.g., a session selector identifies a user of the session service residing at a particular session address). (reference (p))

Semi-Automated Forces (SAFOR). Simulation of friendly, enemy and neutral platforms on the virtual battlefield in which the individual platform simulation are operated by computer simulation of the platform crew and command hierarchy. The term "semi-automated" implies that the automation is controlled and monitored by a human who injects command-level decision making into the automated command process. See also: Computer-Generated Forces. (references (k) and (ff))

Semi-Markov Model. A Markov chain model in which the length of time spent in each state is randomly distributed. (references (b) and (c))

Semi-Markov Process. A Markov process in which the duration of each event is randomly distributed. (references (b) and (c))

Session. A portion of an exercise that is contiguous in wall-clock (sidereal) time and that is initialized per an exercise database. (references (b) and (c))

Shutter Glasses. Stereoscopic viewing eyeglasses that alternately reveal an image to the left and right eye to create the parallax effect giving a sense of depth (each eye receives a slightly different image). The shutters are typically composed of electrically switched liquid crystal display or Polaroid material and have no moving parts. (reference (a))

Sidereal Time. Time based upon the rotation of the Earth relative to the vernal equinox. Time that is independent of simulation clocks, time zones, or measurement errors. The "Ground Truth" of time measurement. See also: Real World Time. (reference (gg))

Simuland. The system being simulated by a simulation. (reference (b))

Simulated Time. Time as represented within a simulation. Syn: virtual time. See also: fast time; real time; slow time. (reference (c))

Simulation. A method for implementing a model over time. (references (f) and (g))

Simulation Application. a. The executing software on a host computer that models all or part of the representation of one or more simulation entities. The simulation application represents or "simulates" real-world phenomena for the purpose of training, analysis, or experimentation. Examples include manned vehicle (virtual) simulators, computer generated forces (constructive), environment simulators, and computer interfaces between a Distributed Interactive Simulation network and real (live) equipment. The simulation application receives and processes information concerning entities created by peer simulation applications through the exchange of Distributed Interactive Simulation Protocol Data Units. More than one simulation application may simultaneously execute on a host computer; b. the application layer protocol entity that implements standard Distributed Interactive Simulation protocol. (references (b) and (c))

Simulation Clock. A counter used to accumulate simulated time. (references (b) and (c))

Simulation Entity. An element of the synthetic environment that is created and controlled by a simulation application through the exchange of Distributed Interactive Simulation Protocol Data Units (e.g., tanks, submarines, carriers, fighter aircraft, missiles, bridges). It is possible that a simulation application may be controlling more than one simulation entity. (references (b) and (c))

Simulation Environment. a. Consists of the operational environment surrounding the simulation entities including terrain, atmospheric, bathyspheric and cultural information; b.

all the conditions, circumstances, and influences surrounding and affecting simulation entities including those stated in a. (reference (b))

Simulation Game. A simulation in which the participants seek to achieve some agreed-upon objective within an established set of rules. For example, a management game, a war game. Note: The objective may not be to compete, but to evaluate the participants, increase their knowledge concerning the simulated scenario, or achieve other goals. Syn: gaming simulation. (references (b) and (c))

Simulation Management. A mechanism that provides centralized control of the simulation exercise. Functions of simulation management include: start, restart, maintenance, shutdown of the exercise, and collection and distribution of certain types of data. (references (b) and (c))

Simulation Manager. See: exercise manager. (reference (b))

Simulation Object Model (SOM). A specification of the intrinsic capabilities that an individual simulation offers to federations. The standard format in which SOMs are expressed provides a means for federation developers to quickly determine the suitability of simulation systems to assume specific roles within a federation. (reference (m))

Simulation Process. The imitative representation of the actions of platform(s), munitions(s), and life form(s) by computer program(s) in accordance with a mathematical model and the generation of associated battlefield entities. May be fully automated or partially automated. In the latter case, the human-in-the-loop injects command-level decisions into the process and is not intended to be a "trainee." (reference (b))

Simulation Support Entity. Processing modules used to support, control, or monitor the simulation environment, but which do not actually exist on the battlefield. This includes battlefield viewing devices for controllers or exercise observers such as the stealth vehicle, the plan view display, after action review systems, and simulation control systems. (references (b) and (p))

Simulation Time. a. A simulation's internal representation of time. Simulation time may accumulate faster, slower, or at the same pace as sidereal time; b. The reference time (e.g., Universal Coordinated Time) within a simulation exercise, this time is established by the simulation management function before the start of the simulation and is common to all participants in a particular exercise. (references (b) and (c))

Simulator. a. A device, computer program, or system that performs simulation; b. For training, a device which duplicates

the essential features of a task situation and provides for direct human operation. (reference (b))

Single Point-of-Entry. The organization (s) responsible for entering data values for a data element. (reference (j))

Six Degrees of Freedom (6 DOF). Refers to the number of simultaneous directions or inputs a sensor can measure. Typically used to describe the combination of spatial positions (X, Y, Z) and orientation (roll, pitch, yaw). (reference (a))

Slow Time. The duration of activities within a simulation in which simulated time advances slower than actual time. (reference (b))

Smoothing. Interpolation of the previous state of an entity (location, velocity, etc.) to the current state, creating a smoothed transition between two successive entity state updates. (reference (b))

Span. The scale of the domain that is global, theater, regional, local, individual. Description of the span is often subjective.

Stability. Constancy of purpose; steadfastness; reliability; dependability. (reference (e))

Stabilized-Variable Model. A model in which some of the variables are held constant and the others are allowed to vary; for example, a model of a controlled climate in which humidity is held constant and temperature is allowed to vary. (references (b) and (c))

Standard. A rule, principle, or measurement established by authority, custom, or general consent as a representation or example. (reference (g))

State. a. The internal status of a simulation entity; e.g. fuel level, number of rounds remaining, location of craters, etc.
b. a condition or mode of existence that a system, component, or simulation may be in; for example, the pre-flight state of an aircraft navigation program or the input state of given channel;
c. the values assumed at a given instant by the variables that define the characteristics of a system, component, or simulation.
Syn: system state. See also: final state; initial state; steady state. (reference (b))

State Transition. A change from one state to another in a system, component, or simulation. (reference (b))

State Variable. A variable that defines one of the characteristics of a system, component, or simulation. The values of all such variables define the state of the system, component, or simulation. (reference (b))

Static Model. A model of a system in which there is no change; for example, a scale model of a bridge, studied for its appearance rather than for its performance under varying loads. (references (b) and (c))

Steady State. A situation in which a model, process, or device exhibits stable behavior independent of time. (references (b) and (c))

Stealth Viewer. A component that provides the capabilities for visually observing a Distributed Interactive Simulation exercise without participating in the Distributed Interactive Simulation exercise interaction. (reference (b))

Stimulate. To provide input to a system in order to observe or evaluate the system's response. (references (b) and (c))

Stimulation. Stimulation is the use of simulations to provide an external stimulus to a system or subsystem. An example is the use of a simulation representing the radar return from a target to drive (stimulate) the radar of a missile system within a hardware/software-in-the-loop simulation. (reference (k))

Stimulator. a. A hardware device that injects or radiates signals into the sensor system(s) of operational equipment to imitate the effects of platforms, munitions, and environment that are not physically present; b. a battlefield entity consisting of hardware and/or software modules that injects signals directly into the sensor systems of an actual battlefield entity to simulate other battlefield entities in the virtual battlefield. (reference (b))

Stochastic. Pertaining to a process, model, or variable whose outcome, result, or value depends on chance. Contrast with: deterministic. (references (b) and (c))

Stochastic Model. A model in which the results are determined by using one or more random variables to represent uncertainty about a process or in which a given input will produce an output according to some statistical distribution; for example, a model that estimates the total dollars spent at each of the checkout stations in a supermarket, based on probable number of customers and probable purchase amount of each customer. Syn: probabilistic model. See also: Markov-chain model. Contrast with: deterministic model. (reference (b))

Stochastic Process. Any process dealing with events that develop in time or cannot be described precisely, except in terms of probability theory. (reference (k))

Structural Model. A representation of the physical or logical structure of a system; for example, a representation of a computer network as a set of boxes connected by communication lines. Contrast with: process model. (references (b) and (c))

Structural Validation. The process of determining that the M&S assumptions, algorithms, and architecture provide an accurate representation of the composition of the real world as relevant to the intended use of the M&S. (reference (i))

Subject Area. A major, high-level classification of data. A group of entity types that pertain directly to a function or major topic of interest to the enterprise. (references (j))

Symbolic Model. A model whose properties are expressed in symbols. Examples include graphical models, mathematical models, narrative models, software models, and tabular models. Contrast with: physical model. (references (b) and (c))

Symbology. A graphic representation of concepts or physical objects. (reference (aa))

Synthetic Battlefield. One type of synthetic environment. (reference (g))

Synthetic Environments (SE). Internetworked simulations that represent activities at a high level of realism from simulations of theaters of war to factories and manufacturing processes. These environments may be created within a single computer or a vast distributed network connected by local and wide area networks and augmented by super-realistic special effects and accurate behavioral models. They allow visualization of and immersion into the environment being simulated. (references (g), (y), and (ee))

System. A collection of components organized to accomplish a specific function or set of functions. (reference (c))

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Glossary - T

3-D. Three-dimensional, refers to the visual display that exhibits breadth, height and thickness or depth. Standard 2-D computer images and television displays create a flat image with only height and breadth. (reference (a))

T-1. Data communications service that supports 1.544 megabits per second operation. (reference (z))

T-2. Data communications service that supports 45 megabits per second operation. (reference (z))

Tabular Model. A symbolic model whose properties are expressed in tabular form; for example, a truth table that represents a Boolean logic "OR" function. Contrast with: graphical model; mathematical model; narrative model; software model. (references (b) and (c))

Taxonomy. A classification system. Provides the basis for classifying objects for identification, retrieval and research purposes. (reference (t))

Technical Data. Scientific or technical information recorded in any form or medium (such as manuals and drawings). Computer programs and related software are not technical data; documentation of computer programs and related software are. Also excluded are financial data or other information related to contract administration.

Technical Infrastructure. The internal framework that must be built to implement an operational service. (reference (j))

Tightly Coupled. A condition that exists when simulation entities are involved in very close interaction such that every action of an entity must be immediately accounted for by the other entities. Several tanks in close formation involved rapid, complicated maneuvers over the terrain is an example of a tightly coupled situation. (reference (p))

Time. The measurable aspect of duration. Time makes use of scales based upon the occurrence of periodic events. These are: the day, depending on the rotation of the Earth; the month, depending on the revolution of the Moon around the Earth; and the year, depending upon the revolution of the Earth around the Sun. Time is expressed as a length on a duration scale measured from an index on that scale. For example: 4 p.m. local mean solar time means that 4 mean solar hours have elapsed since the mean Sun was on the meridian of the observer. (reference (m))

Time-Dependent Event. An event that occurs at a predetermined point in time or after a predetermined period of time has elapsed. See also: conditional event. (references (b) and (c))

Time Flow Mechanism. The approach used locally by an individual federate to perform time advancement. Commonly used time flow mechanisms include event driven (or event stepped), time driven, and independent time advance (real-time synchronization) mechanisms. (reference (m))

Time Management. A collection of mechanisms and services to control the advancement of time within each federate during an execution in a way that is consistent with federation requirements for message ordering and delivery. (reference (m))

Time-Slice Simulation. a. A discrete simulation that is terminated after a specific amount of time has elapsed; for example, a model depicting the year-by-year forces affecting a volcanic eruption over a period of 100,000 years. Syn: time-interval simulation. See also: critical event simulation; b. a discrete simulation of continuous events in which time advances by intervals chosen independent of the simulated events; for example, a model of a time multiplexed communication system with multiple channels transmitting signals over a single transmission line in very rapid succession. (reference (b))

Time Stamp (of an event). A value representing a point on the federation time axis that is assigned to an event to indicate when that event is said to occur. Certain message ordering services are based on this time stamp value. In constrained simulations, the time stamp may be viewed as a deadline indicating the latest time at which the message notifying the federate of the event may be processed. (reference (m))

Time Stamp Order (TSO). A total ordering of messages based on the "temporally happens before" (\rightarrow_t) relationship. A message delivery service is said to be time stamp ordered if for any two messages M_1 and M_2 (containing notifications of events E_1 and E_2 , respectively) that are delivered to a single federate where $E_1 \rightarrow_t E_2$, then M_1 is delivered to the federate before M_2 . The Runtime Infrastructure ensures that any two time stamp ordered messages will be delivered to all federates receiving both messages in the same relative order. To ensure this, the Runtime Infrastructure uses a consistent tie-breaking mechanism to ensure that all federates perceive the same ordering of events containing the same time stamp. Further, the tie-breaking mechanism is deterministic, meaning repeated executions of the federation will yield the same relative ordering of these events if the same initial conditions and inputs are used, and all messages are transmitted using time stamp ordering. (reference (m))

Time Step Models. Dynamic models in which time is advanced by a fixed or independently determined amount to a new point in time, and the states or status of some or all resources are updated as of that new point in time. Typically these time steps are of constant size, but they need not be. (reference (t))

Time Variable. A variable whose value represents simulated time or the state of the simulation clock. (references (b) and (c))

Tracked Munitions. A munition for which tracking data is required. By necessity, a tracked munition becomes a simulation entity during its flight; its flight path is represented, therefore, by Entity State Protocol Data Units. (references (b) and (c))

Translator. The translator is the portion of an actor that interacts with ALSP. Normally, this is new software that adds the ability to transmit information about objects modeled by the actor and to receive information about objects modeled by other actors and to ghost these objects. (reference (hh))

Transmit Management. The control of the transmission rate to match the transmission media. The transmission rate is selected to reduce total network traffic. (reference (b))

Transportation Service. A Runtime Infrastructure provided service for transmitting messages between federates. Different categories of service are defined with different characteristics regarding reliability of delivery and message ordering. (reference (m))

True Global Time. A federation-standard representation of time synchronized to Greenwich Mean Time or Universal Time [Coordinated] (as defined in this glossary) with or without some offset (positive or negative) applied. (reference (m))

Typing. Typing is the enforcement of the class of an object, such that objects of different types may not be interchanged, or may be interchanged only in restricted ways. (reference (d))

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Glossary - U

Unbundling. The process of unpacking a bundled Protocol Data Unit into multiple separate Protocol Data Units. Contrast with: bundling. (reference (b))

Unconstrained Simulation. A simulation where there is no explicit relationship between wallclock time and the rate of time advancements. These are sometimes call "as-fast-as-possible" simulations, and these two terms are used synonymously here. Analytic simulation models and many constructive "war game" simulations are often unconstrained simulations. (reference (m))

Unicast. A transmission mode in which a single message is sent to a single network destination; i.e., one-to-one. (references (b) and (p))

Unit. a. An aggregation of entities; b. a basis of measurement. (references (b) and (c))

Unit Conversion. A system of converting measurement from one basis to another; for example, English/metric, knots/feet per second, etc. (reference (b))

Universal Time [Coordinated] (UTC). The same as Greenwich Mean Time. A nonuniform time based on the rotation of the Earth, which is not constant. Usually spoken as, "Coordinated Universal Time." (reference (m))

Universal Space Rectangular (USR) Coordinate System. A right-handed orthogonal coordinate system with its origin at the center of the Earth, positive x-axis in the equatorial plane and passing through the zero degree meridian, positive y-axis in the equatorial plane and passing through the ninety degree east meridian, and positive z-axis passing through the North Pole. (reference (gg))

User. Military, industrial, or academic organizations requiring access to the DIS network. Prior to use, they will appoint one point of responsibility for their use of the network. This person is the Exercise Manager. See also: Simulation Manager. (reference (b))

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Glossary - V

Validation. The process of determining the degree to which a model or simulation is an accurate representation of the real-world from the perspective of the intended uses of the model or simulation. (references (f) and (h))

Validation Agent. The organization designated by the M&S sponsor to perform validation for a model, simulation, or federation of models and/or simulations. See also: verification and validation proponent. (reference (h))

Validity. The quality of maintained data that is found on an adequate system of classification (e.g., data model) that is rigorous enough to compel acceptance. (references (e) and (j))

Variable. A quantity or data item whose value can change. See also: dependent variable; independent variable; state variable. Contrast with: constant. (references (b) and (c))

Verification. The process of determining that a model or simulation implementation accurately represents the developer's conceptual description and specification. Verification also evaluates the extent to which the model or simulation has been developed using sound and established software engineering techniques. (references (f) and (g))

Verification Agent. The organization designated by the M&S sponsor to perform verification for a model, simulation, or federation of models and/or simulations. See also: verification and validation proponent. (reference (h))

Verification and Validation (V&V) Proponent. The agency responsible for ensuring verification and validation is performed on a specific model or simulation. (reference (b))

Vignette. A self-contained portion of a scenario. (reference (b))

Virtual. Refers to the essence or effect of something, not the fact. (reference (a))

Virtual Battlespace. The illusion resulting from simulating the actual battlespace. (reference (b))

Virtual Images. Visual, auditory and tactile stimuli that are transmitted to the sensory end organs so they appear to originate from within the three-dimensional space surrounding the user. (reference (a))

Virtual Network. The interconnection of Distributed Interactive Simulation cells by any communications means that provide the

necessary network services to conduct an exercise. (references (b) and (p))

Virtual Prototype. A model or simulation of a system placed in a synthetic environment, and used to investigate and evaluate requirements, concepts, system design, testing, production, and sustainment of the system throughout its life cycle. (reference (g))

Virtual Reality. The effect created by generating an environment that does not exist in the real world. Usually, a stereoscopic display and computer-generated three-dimensional environment giving the immersion effect. The environment is interactive, allowing the participant to look and navigate about the environment, enhancing the immersion effect. Virtual environment and virtual world are synonyms for virtual reality. (reference (a))

Virtual Simulation. See: Live, Virtual, and Constructive Simulation. (reference (g))

Virtual Time. See: simulated time. (reference (b))

Virtual World. See: synthetic environment. (reference (b))

Visualization. The formation of an artificial image that cannot be seen otherwise. Typically, abstract data that would normally appear as text and numbers is graphically displayed as an image. The image can be animated to display time varying data. (reference (a))

Visual Stealth. A component that provides the capabilities for visually observing a Distributed Interactive Simulation exercise without participating in the Distributed Interactive Simulation exercise interaction. (reference (b))

Glossary - W

Wallclock Time. A federate's measurement of true global time, where the measurement is typically output from a hardware clock. The error in this measurement can be expressed as an algebraic residual between wallclock time and true global time or as an amount of estimation uncertainty associated with the wallclock time measurement software and the hardware clock errors. (reference (m))

Warfare Simulation. A model of warfare or any part of warfare for any purpose (such as analysis or training). (references (b) and (t))

War Game. A simulation game in which participants seek to achieve a specified military objective given pre-established resources and constraints; for example, a simulation in which participants make battlefield decisions and a computer determines the results of those decisions. See also: management game. Syn: constructive simulation; higher order model. (references (b) and (c))

White Box Model. See: glass box model. (reference (b))

Wide Area Network (WAN). A communications network designed for large geographic areas. (references (b) and (c))

World Coordinate System. The right-handed geocentric Cartesian system. The shape of the world is described by the World Geodetic System 1984 standard. The origin of the world coordinate system is the centroid of the earth. The axes of this system are labeled X, Y, and Z, with: the positive X-axis passing through the Prime Meridian at the Equator; the positive Y-axis passing through 90 degrees East longitude at the Equator; and the positive Z-axis passing through the North Pole. (references (b) and (c))

World Geodetic System 1984 (WGS 84). A geocentric coordinate system which describes a basic frame of reference and geometric figure for the Earth, and which models the Earth from a geometric, geodetic, and gravitational standpoint. The WGS 84 coordinate system origin and axes also serve as the x, y, and z axes of the WGS 84 ellipsoid, the z axis being the rotational axis. (reference (ii))

World View. The view each simulation entity maintains of the simulated world from its own vantage point, based on the results of its own simulation and its processing of event messages received from all external entities. For Computer Generated Forces and for manned simulators or real vehicles, the world view is the perceptions of the participating humans. (references (b) and (p))

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Glossary - X, Y, and Z

Yoked Variable. One of two or more variables that are dependent on each other in such a manner that a change in one automatically causes a change in the others. (references (b) and (c))

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