Application Domain Definitions

Reference Material for the Software Resources
Data Report (SRDR) Data Item Description (DID)

Microcode and Firmware (M&F)

Definition	Firmware/microcode is software is stored on target hardware devices that do not have hard disks and use programmable logic devices. It is a combination of persistent memory and the program code and data stored in it [1]			
Source Definition	**Microcode and Firmware**: Software that is the architecture of a new piece of hardware or software that is burned into silicon and delivered as part of a hardware product. This software is the most complex because it must be compact, efficient, and extremely reliable [2] **Microcode and Firmware**: "Firmware/microcode is the way software is stored in devices that do not have hard disks. It is a combination of persistent memory and the program code and data stored in it." [3]			
Typical examples	Field Programmable Gate Arrays (FPGAs)	Microwave controllers	Field Programmable Logic (FPL)	Electronic Programmable Logic Device (EPLD)
	Application Specific Integrated Circuit (ASIC)	Programmable Read-Only Memory (PROM)	Erasable Programmable Read-Only Memory (EPROM)	Electrically Erasable Programmable Read-Only Memory (EEPROM)
	Complex Programmable Logic Device (CPLD)	Programmable Array Logic (PAL)		

Signal Processing (SP)

Definition	Software that requires timing-dependent device coding to enhance, transform, filter, convert, or compress data signals [1]			
Source Definition	**Signal Processing**: Software dominated by functions that enhance, transform, filter, convert, or compress data signals. Large volumes of data are processed using complex algorithms, often with real time operating requirements [2]			
Typical examples	Lasers	Sonar	Acoustic	Electromagnetic
	Signal Processor	Radar Altimeter	Photographic Sensors	Motion Sensors
	Infrared Sensors	Sensor Assembly	Electronic Sensors	Seeker Assembly
	Signal Electronics	Optical Assembly	Tracking Sensors	Antenna Assembly

Vehicle Payload (VP)

Definition	Software which controls and monitors vehicle payloads and provides communications to other vehicle subsystems and payloads [1]			
Source Definition	**Vehicle Payload**: Software used to manage and control payload functions (experiment control, sensor management, etc.) for manned or unmanned space applications [2]			
Typical examples	Fire Control	Mine Warfare	Electronic Attack subsystem controller	Weapons Delivery and Control
	Gun fire control system	Missile fire control systems	Antisubmarine warfare fire control and torpedo fire control systems	Pointing, Command, & Control Interface
	Payload Flight Software	Armament	Survivability Payload	Reconnaissance Payload
	Electronic Warfare Payload	Armament/Weapons Delivery	Intelligence, Surveillance Reconnaissance Payload	Mission Payload

Vehicle Control (VC)

Definition	Software necessary for the control of vehicle primary and secondary mechanical devices and surfaces [1]			
Source Definition	**Flight Systems**: Onboard software used for various functions associated with the operation and control of airborne platforms (e.g., airplanes, helicopters, missiles, and spacecraft) [2] **Avionic**: Software that is on-board & controls the flight and operation of the aircraft [3]			
Typical examples	Flight Control	Electrical Power	Hydraulic	Fuel Subsystem
	Propulsion	Attitude Control System	Structures & Mechanisms	Bus Flight Software
	Thermal Control	Landing Gear	Controls software	Thrust Vector Actuation
	Executive			

Other Real-Time Embedded (ORTE)

Definition	Interrupt-driven, embedded software in military and consumer appliances, devices, and products, possibly directing and processing sensor inputs/outputs, generally with a very small executive for an operating system interface to basic processor(s). Real-time data processing unit responsible for directing and processing sensor input/output [1]			
Source Definition	**Radar**: Software used in the operation and control of radar systems [2] **Embedded Electronics**: An application that is very hardware-specific and often embedded in the firmware of electronic devices and other hardware [2] **Robotics**: Software that provides logic and control for robotic or automation equipment [2] **Real Time**: Software that must operate close to the processing limits of the CPU. This is interrupt-driven software and is generally written in C, Ada or Assembly language. It generally operates with a very small executive for an operating system interface to the basic processor [3]			
Typical examples	Embedded Electronics/ Appliance	Robotics	PDAs	Telemetry, Tracking, & Command (TT&C)
	Guidance, Navigation and Control	Controls and Displays	Data Links	Radios (device)
	Remote Control	Receiver	Transmitter	Exciter
	Bombing Computer	Video and recorders	Telephones (device)	Built-in-Test

Command and Control (C&C)

Definition	Software that allows humans to manage a dynamic situation and respond in real time			
Source Definition	Vehicle onboard master data processing unit(s) responsible for coordinating and directing the major mission systems [1] **Command and Control**: An application that provides commands and monitoring between users (and other systems) and hardware (or hardware-embedded software) [2] **Command and Control**: Software that allows humans to manage a dynamic situation and respond in human real time [3]			
Typical examples	Mission Management	Mission Computer Processing	Mission Control	Command processing
	Air traffic control	Data reduction/ analysis	Telemetry Processing	Battlefield command
	Battle management			

Communications (COM)

Definition	The transmission of information, e.g. voice, data, commands, images, and video across different mediums and distances. Primarily software systems that control or manage transmitters, receivers and communications channels [1]			
Source Definitions	**Communications**: An application involved in the transmission and receipt of data across networks [2] **Message Switching**: Transport layer software performing packet and circuit switching, handling electronic mail and implementing file transfer protocols [2] **Network Management**: Software that monitors and reports on the status of all components of telecommunication networks, including communication links and nodes [2] **Voice Provisioning**: An application that provides clients with access to voice communications by providing accounts and appropriate access, unifying the common elements of end-user operations and management of call systems [2] **Telecommunication**: Software that facilitates the transmission of information from one physical location to another [3]			
Typical examples	Switches	Routers	Integrated circuits	Multiplexing
	Encryption	Broadcasting	Transfer modes	Radios (networks)
	Network management	Network Operations	Satellite communications	Telecommunications
	Networks (WAN/LAN)	Protocols (VOIP, TCP/IP, PKI, etc.)		

System Software (SS)

Definition	Layers of software that sit between the computing platform and applications [1]			
Source Definition	**Device Driver**: An application that provides low level connectivity services for a particular device (hardware or software) attached to or loaded onto a computer [2] **System and Device Utilities**: Software used to help analyze, configure, optimize or maintain a computer [2] **OS/Executive**: Software that controls basic hardware operations, serves as a platform for applications to run, or that directly contributes to such a system. Multi-user operating systems provide management and security of system users [2] **System**: Layers of software that sit between the hardware and applications programs [3]			
Typical examples	Operating Systems	Infrastructure	Framework	Middleware
	Device Driver	Display Drivers	File management	Image Processing
	Interface Driver	Utilities		

Process Control (PC)

Definition	Software that manages the planning, scheduling and execution of a system based on inputs, generally sensor driven [1]		
Source Definition	**Process Control**: Software that controls various processes by commanding devices, monitoring processes via sensor feedback, and modifying commands as a function of desired behavior versus feedback. Often associated with industrial environments [2] **Process Control**: Software that controls an automated system. Generally sensor driven. Examples are software that runs a nuclear power plant, or software that runs an oil refinery, or a petrochemical plant [3]		
Typical examples	Temperature control	Manufacturing process control	Device or instrument control

Scientific and Simulation (S&S)

Definition	Non real time software that involves significant computations and scientific analysis [1]			
Source Definition	**Artificial Intelligence**: Machine learning algorithms or software that often seeks to mimic human intellectual processes [2] **Computer Aided Design**: An application for creating, editing, and analyzing graphical models & representations [2] **Expert System**: An application that emulates the decision-making ability of a human expert [2] **Math and Complex Algorithms**: An application dominated by complex mathematical operations or algorithms, numerical methods or complex analysis [2] **Simulation**: Software that evaluates numerous scenarios and summarizes processes or events to simulate physical, business or biological processes, complex systems or other phenomena that may not have simple empirical relationships [2] **Graphics**: An application using custom or advanced image rendering (ray tracing, smoothing, fractals, etc. [2] **Scientific**: Software that involves significant computations and scientific analysis. This type of software is often sensor driven with data capture schemes to accumulate data (from a spacecraft, say) then followed by extensive data analysis. Frequently written in FORTRAN [3]			
Typical examples	System Integration Lab (SIL) Simulation	Simulators	Offline Data Analysis	Expert Systems
	Math & Algorithm Intensive	Graphics	Statistical Analysis	Artificial Intelligence
	Simulation & Modeling	Engineering & Science	3D Modeling & Animation	Trainer Simulations
	Computer Aided Design (CAD)	Model Based Systems Engineering (MBSE)	Weather models	

Test, Measurement, and Diagnostic Equipment (TMDE)

Definition	Software used for testing, measuring, diagnosing, emulating, and evaluating operational hardware and software systems Software necessary to operate and maintain systems and subsystems which are not consumed during the testing phase and are not allocated to a specific phase of testing [1] This does not include built-in-test (BIT)			
Source Definitions	**Diagnostics**: An application that performs a comprehensive series of built-in tests on core components and reports the results of each test [2] **Test and Measurement Equipment**: Software that supports the peculiar or unique testing and measurement equipment that allows an operator or maintenance function to evaluate operational conditions of a system or equipment by performing specific diagnostics, screening or quality assurance effort at an organizational, intermediate, or depot level of equipment support [3]			
Typical examples	Test equipment software	Test driver	Maintenance and Diagnostic	Fault Tolerance
	Diagnostic	Equipment emulators		

Training (TRN)

Definition	Hardware and software that are used for educational and training purposes [1]			
Source Definition	Training/CBT/CAI: An application that delivers education or training [2]			
Typical examples	Computer Based Training (CBT)	Computer Aided Instruction (CAI)	Tutorial Applications	Courseware

Software Tools (TOOL)

Definition	Software that is used for analysis, design, construction, or testing of computer programs [1]			
Source Definitions	**Testing Software**: Software for testing and evaluating hardware and software systems [2] **Software Development Tools**: Software used for analysis, design, construction, or testing of computer programs [2]			
Typical examples	Compilers	Linker/loaders	Debuggers	Editors
	Assemblers	Requirements analysis & design tool aids	Code generators	Programming aids
	Report generators	Code auditors	Test case data recording	Test case data reduction/analysis
	Test case generation			

Mission Planning (MP)

Definition	Provides the capability to maximize the use of the platform. The system supports all the mission requirements of the platform and may have the capability to program onboard platform systems with routing, targeting, performance, map, and Intel data [1]			
Source Definition	**Mission Planning and Analysis**: Software used to support mission planning activities such space mission planning, aircraft mission planning, scenario generation, feasibility analysis, route planning, and image/map manipulation [2] **Command and Control**: Software that allows humans to manage a dynamic situation and respond in human real time [3]			
Typical examples	Scenario generation	Planning & Analysis	Target planning	Route planning
	Fuel planning	Cargo load planning		

Custom AIS Software (CAS)

Definition	Software needed to build a custom software application to fill a capability gap not captured by COTS/GOTS software packages [1]			
Source Definition	**Graphical User Interface**: A general class of applications using windows, icons, menus and a pointing device, which are developed using standard features of a modern integrated development environment (IDE) [2] **Multimedia**: An application that achieves enhanced user interaction by going beyond standard computing interfaces, for example, using graphics and input devices in ways that require custom programming [2] **Internet Server Applet**: Platform-independent software which executes in the browser, typically Javascript and its libraries. This may also include server-side scripting for example using PHP [2] **See QSM Customer Application Software Definitions Slide**: [3]			
Typical examples	Glue code	External system interfaces	Data transformation	Inter-COTS/GOTS data exchange
	Graphical User Interface	Internet Server Applet	Website	

Enterprise Service Systems (ESS)

Definition	Software needed for developing functionality or a software service that are unassociated, loosely coupled units of functionality that have no calls to each other embedded in them [1].			
Source Definition	Software needed for developing functionality or a software service that are unassociated, loosely coupled units of functionality that have no calls to each other embedded in them [1]. COTS/GOTS services that are unassociated, loosely coupled units of functionality. **Electronic Data Exchange**: An application specialized in the structured transmission of business data or documents between separate parties (companies, organizations, etc.) without human intervention [2]			
Typical examples	Enterprise service management	Machine-to-machine messaging	Service discovery	People and device discovery
	Metadata discovery	Mediation service	Service security	Content discovery and delivery
	Federated search	Enterprise catalog service	Data source integration	Enterprise content delivery network
	Session management	Presence and awareness	Text collaboration	White boarding and annotation
	Application sharing	Application broadcasting	Virtual spaces	Identity management
	Content discovery	Collaboration	User profiling and customization	

Enterprise Information Systems (EIS)

Definition	Software needed for building an enterprise information system that uses an integrated database to support typical business processes within business/functional areas and consistent information access across areas and systems [1]. COTS/GOTS attributed to a specific software service or bundle of services			
Source Definition	See SEER-SEM Enterprise Information Systems Definitions Slide: [2] See QSM Enterprise Information Systems Definitions Slide: [3]			
Typical examples	Enterprise resource planning	Enterprise data warehouse	General ledger	Accounts payable
	Revenue and accounts receivable	Funds control and budgetary accounting	Cost management	Financial reporting
	Real property inventory and management	Document management	Logistic or Supply Planning & Control	Transaction Processing
	Management Performance Reporting	Office Information System	Reservation System	Geographic or spatial information system
	Financial Transactions	Database management	Data Warehousing	Executive Information System
	Internet Server Applet	Report Generation	Office Automation	Data Mining
	Catalog/Inventory Management	Purchasing / Inventory Control	Material Requirement Planning	Fleet Management