The Global Positioning System (GPS) User Equipment (UE)/ Host Application Equipment (HAE) Database

SPAWAR
Systems Center
San Diego

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The Global Positioning System (GPS) User Equipment (UE)/Host Application Equipment (HAE) database was developed by the Information Assurance Systems Engineering Branch, Code 2873, of the Space and Naval Warfare Systems Center San Diego (SSC San Diego), with sponsorship from the National Security Agency (NSA) V4 and the GPS Joint Program Office (JPO). Under this initial sponsorship, a prototype specific to GPS UE was developed and populated with a multitude of data from all services and various agencies. The database enables the user to determine the current state of GPS UEs and provides the ability to research system capabilities by instantly accessing various reports, forms, and queries.

This database resulted from a thorough review of over 600 existing UEs in use by all branches of the Armed Forces and required rigorous interface with many organizations, including depots and the U.S. Space Command. The database employs a friendly graphical user interface to support user decision-making where GPS UEs are a factor. Key attributes include

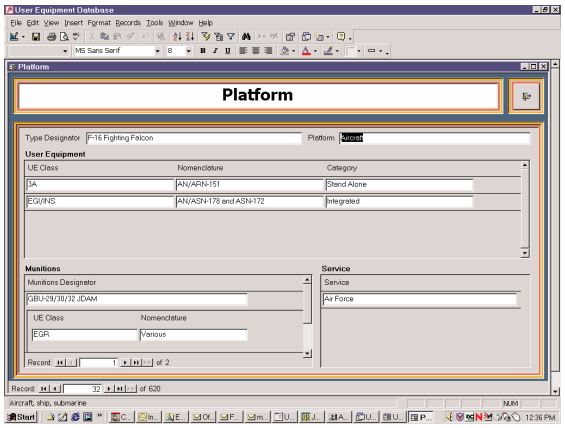
- UE manufacturers
- Precise Positioning Service/Security Module (PPS-SM) and Selective Availability Anti-Spoofing Module (SAASM) security modules by designation
- Cryptographic keying capabilities and requirements
- Weapons platforms and their associated GPS-guided munitions

Queries such as, "What types of UEs are handheld, and of these, what security modules and rekey options are available?" or "What UEs are contained on a battle-ready F-14 Tomcat, including munitions?" or "What is the keying capability of the PLGR?" can all be answered by clicking through the user interface and easily extracting pertinent data. In addition, by selecting the appropriate tables and fields, the required information can be prioritized and displayed in a variety of formats inherent to a relational database.

This database can be used and viewed from many perspectives:

- From a *Logistics* or *Integration* perspective, the database provides the user with detailed information concerning which UEs are used on a specific platform, and to which branch of the military service that platform belongs. Logistics professionals could also take advantage of tables of Manufacturers, Ancillary Equipment, and GPS simulators for quick reference.
- From a *Security* perspective, the database displays a variety of different reports that show the various types of security modules, PPS-SM and Auxiliary Output Chip, SAASM, No module, etc. Also, the user can develop a detailed view of which UEs contain security modules and on what types of platforms they are used to support a risk assessment. Users can also determine if a specific type of key material is required for a particular UE.
- From an *Operational* perspective, performing a query will provide the user with information on platform requirements, such as "Which platforms use a specific UE? What type of munitions does that platform carry, and, of those, which UEs are PPS-SM capable?" The database will also assist in planning for mission integration where a mix of platforms exist, to ensure UEs are capable of meeting mission requirements.
- From a *Cryptographic Key Management* perspective, the database offers easy access to a variety of reports that show what types of key fill devices certain UEs require for loading Keying Material (keymat). For units deployed to remote locations, this information is critical in planning for a possible emergency supersession of GPS keymat. Similarly, the ability to query for UE keying capabilities and zeroization requirements could prove priceless in a contingency situation, or following the known loss of an asset.
- From a *GPS Overall User System Capability Planning and Evolution* perspective, this database can provide and maintain valuable data in terms of total GPS assets, capabilities, and status in one unified view of the total GPS system.

The GPS UE/HAE database is a potentially invaluable tool for numerous applications. Designed as a relational database, extracting data and assembling it in desired combinations and formats is only bound by the user's imagination.



The GPS UE/HAE database

The Space and Naval Warfare Systems Center, San Diego

Joining diplomatic skills and economic and military strength, information dominance has become one of the four primary instruments of national power. Information dominance means providing sufficient and timely information and associated tools to plan and execute effectively, while denying the enemy—through both active and passive means—adequate information on which to plan and execute effectively.

Space and Naval Warfare Systems Center San Diego (SSC San Diego) is poised to provide the expertise and tools to achieve information dominance. We are at the cutting edge of transforming data into information, information into knowledge, and knowledge into understanding. We have defined, articulated, and integrated a futuristic vision: "To be the Nation's pre-eminent provider of integrated C4ISR (command, control, communications, computers, intelligence, surveillance, and reconnaissance) solutions for information dominance." We intend to continue to expand SSC San Diego's leadership in defining, developing, integrating, installing, and sustaining C4ISR systems. The following summarizes our broad range of programs, capabilities, and accomplishments—a summary of our work toward achieving our vision.

Our work ranges from basic research and prototype development through systems engineering and integration, to sustainment of fielded systems.

Major SSC San Diego programmatic and technical thrusts are directed toward merging advanced technology and systems into integrated C4ISR capabilities; supporting joint C4ISR needs of the military; and cooperating but not competing with industry. SSC San Diego's work addresses the needs of the Navy, Marine Corps, Air Force, Army, and Coast Guard programs. We also support government agencies and Commanders-in-Chief (CINCs) in addressing their unique C4ISR requirements.

The overriding goal of C4ISR must be to provide our warfighters the tools necessary to achieve information dominance over all known and potential adversaries. This goal is in concert with operational precepts outlined in Joint Vision 2020; achieving information superiority is crucial to the full-spectrum dominance sought by our Armed Forces. SSC San Diego's vision—to be the Nation's pre-eminent provider of integrated C4ISR solutions for warrior information dominance—guides our work.

For More Information

For more information concerning the GPS UE/HAE database, its potential to your organization, and the inclusion of tailored capabilities to meet your specific needs, please contact the SSC San Diego Information Assurance Branch at 619-553-9523.

Reviewed and approved by

Patricia A. Miller, CAPT, USN
Commanding Officer
SSC San Diego
San Diego, CA 92152–5001

SD 422
April 2002