

---

# REAL PROPERTY UNIQUE IDENTIFICATION



Office of the Deputy Under  
Secretary of Defense  
Installations & Environment  
Business Transformation Directorate

November 2005

THIS PAGE INTENTIONALLY LEFT BLANK

## Table of Contents

<b>1.</b>	<b>Introduction</b> .....	<b>4</b>
<b>2.</b>	<b>Unique Identifier</b> .....	<b>5</b>
2.1.	RPUID Business Characteristics.....	9
2.2.	Procedures for Assigning and Maintaining an RPUID .....	9
2.3.	RPUID Data Characteristics .....	10
2.4.	Application of the RPUID .....	11
2.5.	Proposed Policy Changes.....	12
<b>3.</b>	<b>Network Facilities and Linear Structures</b> .....	<b>13</b>
3.1.	Background.....	13
3.2.	Network Facilities Characteristics .....	14
3.3.	Segmentation .....	16
3.4.	Procedure Changes .....	21
<b>4.</b>	<b>Business Value</b> .....	<b>22</b>
<b>5.</b>	<b>DoD Points of Contact</b> .....	<b>22</b>
<b>Attachment A.</b>	<b>Real Property Asset Taxonomy</b> .....	<b>23</b>

THIS PAGE INTENTIONALLY LEFT BLANK

## 1. Introduction

The Department of Defense (DoD) holds legal interests in 600,000 real property facilities as well as nearly 30 million acres of land at 4,700 locations<sup>1</sup> worldwide. Altogether, the scope and variety of these assets are unmatched by any other government or private enterprise. The plant replacement value of the total facility asset inventory exceeds \$650 billion, and the funds needed annually to operate, sustain, and recapitalize these assets exceed \$40 billion.

The General Accounting Office (GAO) aptly describes the challenge faced by today's managers of Federal Government property: "GAO and other auditors have repeatedly found that the federal government lacks complete and reliable information for reported inventory and other property and equipment, and can not determine that all assets are reported, verify the existence of inventory, or substantiate the amount of reported inventory and property. These longstanding problems with visibility and accountability are a major impediment to the federal government achieving the goals of legislation for financial reporting and accountability. Further, the lack of reliable information impairs the government's ability to (1) know the quantity, location, condition, and value of assets it owns, (2) safeguard its assets from physical deterioration, theft, loss, or mismanagement, (3) prevent unnecessary storage and maintenance costs or purchase of assets already on hand, and (4) determine the full costs of government programs that use these assets. Consequently, the risk is high that the Congress, managers of federal agencies, and other decision makers are not receiving accurate information for making informed decisions about future funding, oversight of federal programs involving inventory, and operational readiness"<sup>2</sup>. Further, the Congress has demanded greater fiscal accountability from managers of federal government property<sup>3</sup>.

One of the key features of the DoD real property asset solution is that it consistently relates all levels of asset information from the highest classification, e.g. installations, to the lowest, e.g. segments of linear structures (see Attachment A. Real Property Asset Taxonomy). The DoD real property asset solution can relate individual assets such as land parcels to segments of a network

---

<sup>1</sup> DoD Base Structure Report, Fiscal Year 2004 Baseline

<sup>2</sup> GAO-02-447G, Executive Guide, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, March 2002, page 6.

<sup>3</sup> Ibid, page 5: The GAO observes that "In the 1990s, the Congress passed the Chief Financial Officers Act of 1990 and subsequent related legislation, the Government Management Reform Act of 1994, the Government Performance and Results Act of 1993, and the Federal Financial Management Improvement Act of 1996. The intent of these acts is to (1) improve financial management, (2) promote accountability and reduce costs, and (3) emphasize results-oriented management. For the government's major departments and agencies, these laws (1) established chief financial officer positions, (2) required annual audited financial statements, and (3) set expectations for agencies to develop and deploy modern financial management systems, produce sound cost and operating performance information, and design results oriented reports on the government's financial position by integrating budget, accounting, and program information. Federal departments and agencies work hard to address the requirements of these laws but are challenged to provide useful, reliable, and timely inventory data, which is still not available for daily management needs."

facility through intermediate levels of the taxonomy. Contiguous collections of one or more land parcels form a site. One or more sites are assigned to an installation. All facilities are assigned to one and only one site. One or more linear facility segments (e.g. water line) form a complete linear facility (e.g. water distribution piping) which, when combined with the necessary buildings and structures (e.g. pumping stations), constitute a network facility (potable water system). All real property assets (i.e. land parcels, buildings, structures, linear structures) within the boundaries of a site are assigned to that site. Each real property site and each real property asset is assigned a unique identifier. They will be named the Site Unique Identifier (Site UID or SUID) and the Real Property Unique Identifier (Real Property UID or RPUID). In this way an entity at any level can be related to an entity at any other level.

## **2. Unique Identifier**

In terms of achieving the desirable end state of integrated real property management, a collective DoD goal shared by all functional areas involved in property management is to uniquely identify assets. Unique identification of all DoD assets will help achieve:

- The capture of timely, accurate, and reliable data on assets;
- Improvement of life-cycle asset management; and
- Tracking of assets within the DoD for financial and business purposes.

The DoD must, therefore, uniquely identify all real property in which it has a legal interest to provide for asset accountability, valuation, and life cycle management.

The Real Property Unique Identifier (RPUID) will be the key data element in DoD's real property information systems that uniquely identifies every parcel of land, building, structure, or linear structure in which DoD has a legal interest. The RPUID will allow related data from across the spectrum of the DoD business enterprise to be linked to specific real property asset records.

The DoD Data Management Strategy will use RPUIDs so that items of real property, e.g., real property assets, can be:

- Uniquely identified within their respective classifications;
- Tracked and managed throughout their respective lifecycles;
- Referenced by other systems within the enterprise (e.g., systems interoperability) without having to re-enter or replicate data; and
- Tracked throughout the enterprise for financial impact (e.g., audit trail).

In a logical data model, for example the DoD Architecture Framework (DoDAF) OV-7, a unique identifier is simply a primary key, a method by which a database differentiates one occurrence of data from all others of the same class. In the context of the database, the primary key is also used as a criterion to join data from multiple sources within the database. This premise extends to multiple or distributed databases, where a primary key is extended to join data from one or more sources. Applying this to the DoD Enterprise, the RPUID becomes the

primary key for the identification of real property assets within the real property information systems; the join criteria for the databases that support business areas related to real property including the Warfighting Enterprise Mission Area. This concept also supports extensibility. Additional data attributes supporting real property can be added to the appropriate database(s) and are immediately accessible across the enterprise using the RPUID. Similarly, additional databases can be added within the enterprise to support new mission requirements. By using the RPUID, the new databases can be integrated into the real property data environment. This concept allows each database to store only the real property asset data required to support its respective mission as opposed to each database maintaining substantial amounts of redundant data. This supports the vision of single point-of-entry and shared access for real property data in the enterprise.

In addition, since data is stored once, based upon the authoritative source that owns it, data integrity and reliability is increased. This is because data is defined and entered only once and is validated consistently against a single set of business rules and criteria.

A unique identifier can be either intelligent or non-intelligent. An intelligent identifier is based on the inclusion of characteristics such as organizational component code, facility number, facility location, facility name, state code (either alpha or numeric), county code, etc., in the identifier scheme. A non-intelligent identifier is one that is automatically generated each time a record is created. It has no correlation to the attributes entered for that record. Intelligent identifiers (those that contain some kind of information) are not permanent; they change as the characteristics included within them changes. Non-intelligent identifiers, by contrast, can be permanently assigned to an asset for data relationships and data sharing. The merits of intelligent and non-intelligent UIDs must be analyzed in each case where unique identification is required, in conjunction with the attributes defined for the item of interest. Should unique identification be provided for an item of interest based upon one or a combination of multiple attributes, and the attribute(s) under consideration are not subject to taxonomy, classification, or categorization changes, an intelligent UID might be viable. Otherwise, a non-intelligent UID is more suitable.

The following example uses the RPUID to illustrate the benefits of unique identification. DoD considered the advantages of both an intelligent and non-intelligent numbering scheme for the identification of real property assets. A non-intelligent number scheme was selected as the best alternative for DoD real property. The numbering scheme will not become obsolete as the characteristics or categorization of the asset change over time. The RPUID:

- Will remain a key identifier of that asset for the life of the asset;
- Will be used by the DoD to permanently and uniquely identify all real property assets in which the DoD has a legal interest;
- Will be assigned to the asset, not to the owner, user, or installation since they may change over time;
- Will remain a part of the real property asset record even after the disposal of the asset; and
- Does not change when any of the real property assets attributes change.

In essence, the unique identifier becomes the “link key” that allows multiple databases supporting real property to be joined. This could include for example, financial, management, and geographic information systems. Figure 2-1 illustrates the integration of systems supporting real property using the RPUID.

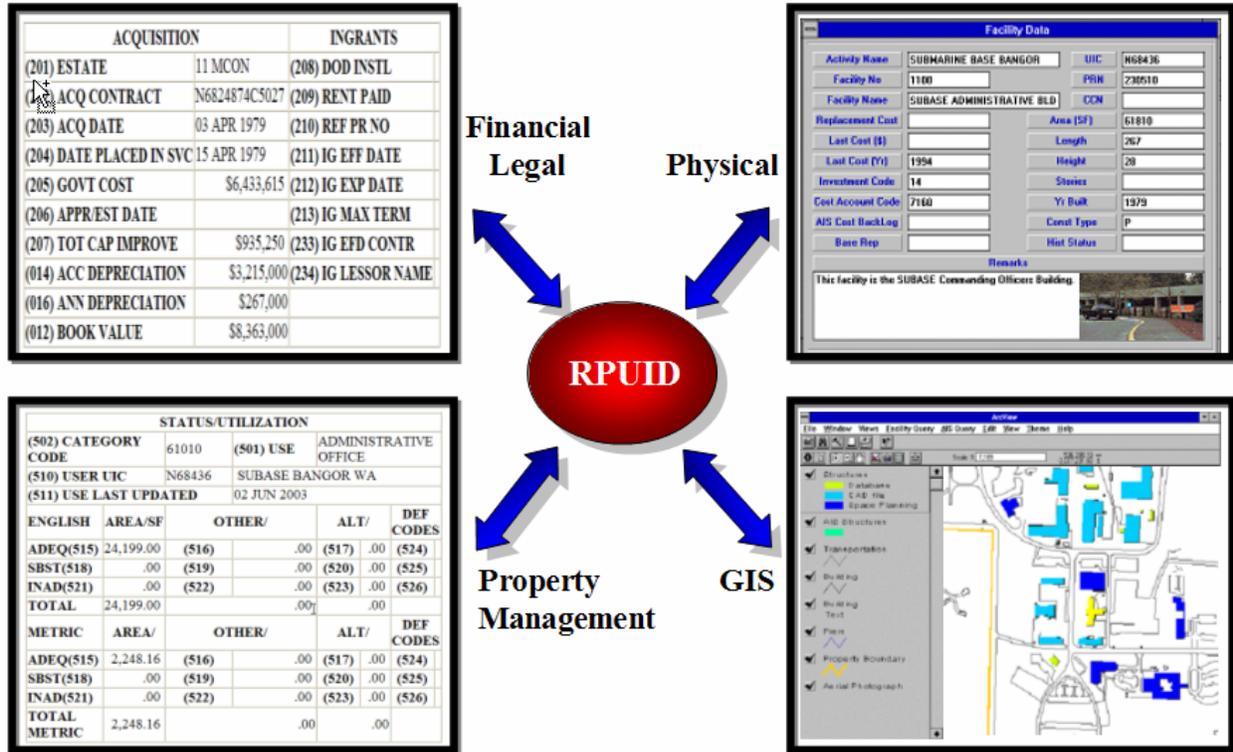
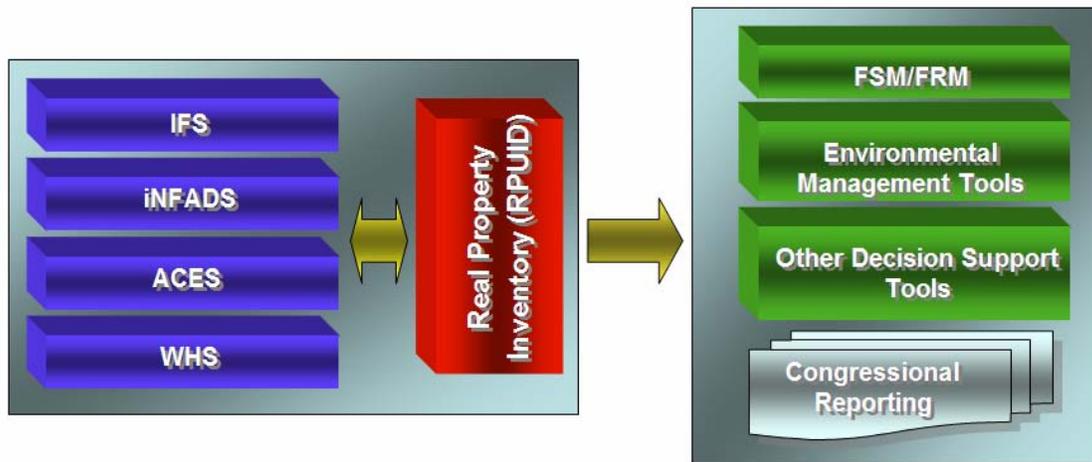


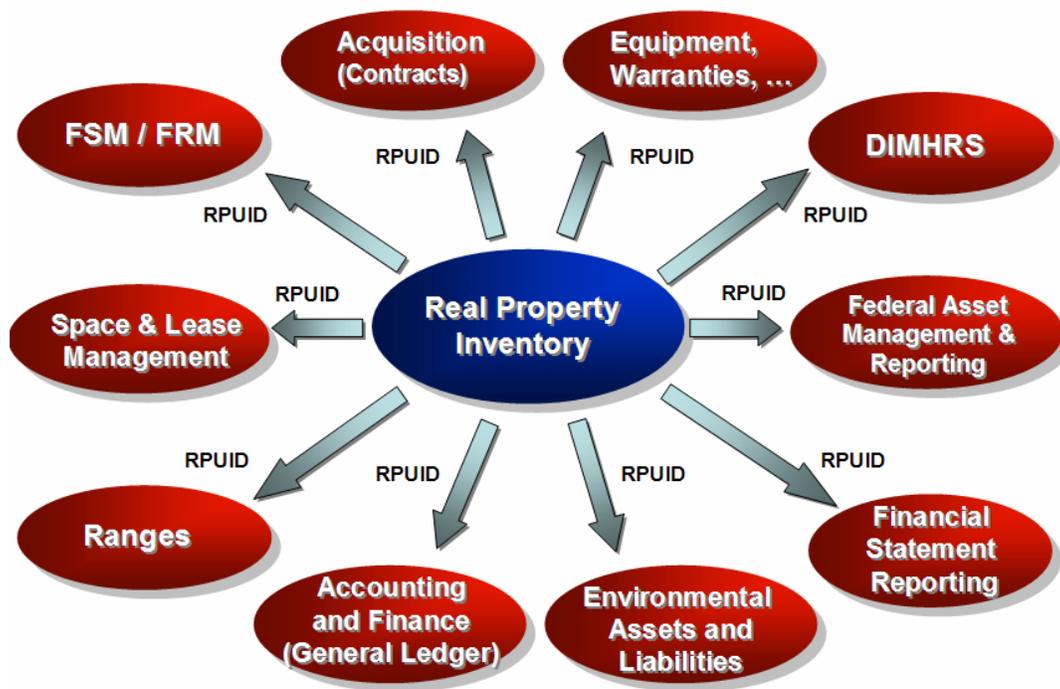
Figure 2-1: Real Property System Integration Using the RPUID

Viewing real property assets and associated information from the perspective of the entire business enterprise, the RPUID provides the integration point with respect to real property assets, enterprise transactions, and enterprise data. Using the RPUID, enterprise systems can provide the user with an integrated view of real property. In this case, real property asset information will be entered and stored once. No one system will contain all data related to real property assets (financial, legal, and physical) nor will any one system maintain the complete audit trail needed to track the financial history of real property assets.

Instead, the RPUID is the common key or identifier of the real property asset. Using the RPUID, an integrated view of the real property asset can be presented to the user, offering him/her data pulled from all of the systems that support the real property assets over their lifecycle. Figures 2-2 and 2-3 illustrate the integration of systems supporting real property using the Real Property Inventory RPUID.



*Figure 2-2: Integration of COI (Military Services and Defense Agencies) Systems Supporting Real Property Assets*



*Figure 2-3: Real Property Inventory Integration in the Enterprise Using the RPUID*

All real property assets identified in the Real Property Asset Taxonomy will be assigned an RPUID. The RPUID will complement and not replace the commonly used identifiers such as Facility Number or Building Name. In this manner, users of the “To-Be” solution will be able to identify and access real property assets as they do today rather than having to learn the RPUID key assigned or be knowledgeable of its scheme or assignment. The RPUID will provide the

enterprise with the key to the audit trail for financial and physical transactions related to real property assets over their lifecycles. Since the RPUID is permanently assigned to the asset and never changes, the asset's change history and financial audit trails remain consistent.

An RPUID will be required for all existing and future assets in the DoD and will be archived rather than deleted when the DoD relinquishes its legal interest in an asset.

### **2.1. RPUID Business Characteristics**

The DoD will use the RPUID to permanently and uniquely to identify all real property assets in which it has a legal interest. The following business rules define how the RPUID is used, when it is created, and the specifics associated with non-owned property.

The RPUID:

- Is assigned to all real property assets (land parcels, buildings, structures, and linear structures) in which DoD has a legal interest;
- Does not replace any of the commonly used identifiers currently in existence, such as facility number or building name;
- Is assigned to the real property asset, not to the owner, occupant, or installation since the owner, occupant, and installation may change over time;
- Is not based on any characteristics of the asset and does not change when criteria concerning assignment or any of the attributes of the real property asset changes;
- Remains a part of the real property asset for the life of the asset and is archived with the asset record at the time the DoD relinquishes its legal interest in the asset;
- Is the key element that will allow DoD to track financial and physical changes to the real property assets over the asset's life cycle; and
- Will be assigned when:
  - o An acquisition contract (land purchase, construction, or design-build effort), is awarded;
  - o Ownership of an asset is initially transferred to the DoD;
  - o An in-leasing contract is awarded;
  - o An asset is permitted from another government agency;
  - o A license agreement is executed;
  - o A Status of Forces Agreement is signed; or
  - o An easement is signed.
- Expansion (or contraction) of a facility or leased space does not require a new RPUID. Although the attributes will change, the RPUID remains the same.
- A gap in time of a lease will require a new RPUID assignment. An example of a gap in time of use could be a lease expiration and re-acquisition after a period of time rather than an option being exercised upon termination of the original duration.
- A single lease or occupancy agreement that includes multiple buildings requires an RPUID to be assigned to each property.

### **2.2. Procedures for Assigning and Maintaining an RPUID**

RPUID procedures will be in accordance with the following business rules.

---

- The RPUID registry will be maintained by the Office of the Secretary of Defense (OSD). RPUIDs will be assigned programmatically using technology to remove human error.
- Central control of the registry system prevents duplication of RPUIDs.
- A history of ownership is maintained if ownership of the real property asset changes; however, the RPUID remains the same.
- New asset RPUIDs will be created to identify a real property asset not previously identified within the DoD.
- A RPUID is never duplicated or re-used.
- Access to the RPUID and core data that identify a facility will be accessible to other DoD systems for use in sharing and linking of information.

### **2.3. RPUID Data Characteristics**

Each RPUID is a unique positive integer with a range from 1 to  $1 \times 10^{17}$ . At creation, the web based system-generated non-intelligent identifier will be validated and cross-referenced to prevent duplication. This integer assignment range can provide 100 quadrillion RPUIDs. This range of values is anticipated to be adequate for at least 75 years and can easily be expanded in the future if necessary.

No spaces, hyphens, or other edit characters will be allowed in the RPUID. It will be created and maintained solely as an integer value.

A RPUID can be referenced in a parent-child relationship to other UIDs for related subsets of assets, as needed for data linkages. Multiple land parcels and/or facilities will be referenced to the appropriate real property site<sup>4</sup>.

The RPUID is an integer value and will not be constructed as parent and child where the child is given a suffix number to the parent RPUID, (e.g., 111111111111316946 as parent, and 00000000000316946.01 as child). Any child relationship will also be an integer value that can be linked to the parent as shown in Table 2-1 in tabular format.

---

<sup>4</sup> A site is defined as a contiguous physical (geographic) location that is or was owned by, leased to, or otherwise possessed or used by one Military Service or an Agency of the Department of Defense, to include locations under the jurisdiction of the Department of Defense where a hazardous substance has been deposited, stored, disposed of, placed, or otherwise come to be located.

*Table 2-1: Parent Child Linkages*

Parent Real Property Unique Identifier (RPUID)	Network System	Child RPUID	Network System Component
111111111111316946	Water	11111111111110017	Water Tower
111111111111316946	Water	11111111111110009	Intake Pipe
111111111111316946	Water	11111111111110204	Water Treatment Facility
111111111111316946	Water	111111111111120220	Distribution Line

## 2.4. Application of the RPUID

### RPUID Usage Examples

The following examples show how the RPUID is handled when land and facility assets change over the life of the asset.

#### Land

- **Acquisition.** If additional land (contiguous or non-contiguous) is acquired, this will constitute a new parcel requiring a new real property asset record with a new RPUID. If land is transferred to another installation, the land parcel will retain its original RPUID; however, its relationship (using the parent-child relationship) to the installation entity will change to that of the acquiring installation.
- **Renovation.** Land is not renovated. An improvement to land may be for example, fill, trees, grading, or a berm. The RPUID will not change.
- **Expansion.** See Acquisition.
- **Disposal.**
  - Full:* When the disposal action for an entire parcel is completed, its real property asset record, RPUID, and associated information will be archived on the date DoD relinquishes its legal interest.
  - Partial:* When a disposal action only affects a portion of a parcel, the remaining portion of the parcel will retain the existing RPUID; however, the real property asset record attributes will change. This will allow the disposal action to remain available through the history of transactions affecting the original RPUID. The portion of the parcel disposed of will require a new real property asset record with a new RPUID. The real property asset record and RPUID for the portion of the parcel disposed of will be archived when DoD relinquishes its legal interest.

**Facilities: Buildings, Structures, and Linear Structures**

- **Acquisition.** If a new facility is constructed or acquired, a new real property asset record will be created and a new RPUID will be assigned on the date the contract is signed.
- **Renovation.** If a facility is partially or totally renovated, the original RPUID will still apply; however, the real property asset record attributes will change.
- **Expansion.** If a facility is expanded, the original RPUID will still apply; however, the real property asset record attributes will change.
- **Disposal.**
  - Full:* When the disposal action for an entire facility is completed, the real property asset record and RPUID will be archived when DoD relinquishes all of its legal interest.
  - Partial:* When a disposal action only affects a portion of an existing facility, the remaining part of the facility will retain the existing RPUID and the real property asset record attributes will change. The part of the facility disposed of will have the cost of disposal, physical attributes, and date associated with the disposal action documented in the disposal section of the real property record.

**2.5. Proposed DoD Policy**

In order to implement the real property unique identification concept, DoD must establish the following as policy.

- An RPUID will be assigned for all real property assets to enable tracking information unique to the real property asset regardless of whether the information is legal, physical, or financial in nature.
- The RPUID is created when the DoD acquires legal interest in the real property asset.
- An RPUID will be assigned to all existing real property assets in which DoD has a legal interest.
- The RPUID and associated real property asset information will be archived when DoD relinquishes all legal interest in the asset.

### 3. Network Facilities and Linear Structures

While the process of uniquely identifying buildings and land parcels is fairly straight forward, uniquely identifying linear structures (e.g. runways, piers, sidewalks, and distribution lines) is difficult. Linear structures, because of their geographically distributed nature, make clear identification of all its individual parts difficult. Our proposal for addressing this challenge is to separately identify each increment of each linear structure. The discussion below provides details on how DoD expects to achieve the ability to separately identify each increment.

#### 3.1. Background

A complete utility system includes many different components. For example, an electric power system has three major capabilities: generation, transmission, and distribution. In the current “As-Is” environment, the Military Services track most utility distribution systems as a single inventory record; however, consistency in tracking the complete system is lacking. For example, FAC<sup>5</sup> codes 8111 (Electrical Power Source), 8112 (Stand-By/Emergency Power), 8121 (Electrical Power Distribution Line), and 8131 (Electrical Power Substations and Switching) are used to record the electric utility lines as well as the structures and subsequent electrical equipment required to generate, transmit, and distribute electricity. FAC code 8910 (Utility Building) includes all buildings that contain utility equipment and functions. While an intensive user of real property inventory information may understand how to generate a complete system view of utility data, an intermittent user may find it complicated. The need to readily identify all facility assets associated with each complete utility system exists in order to more effectively manage the associated real property assets.

The primary objectives of the DoD Network Facilities Work Group<sup>6</sup> were as follows:

- Develop a process and procedure to clearly identify all parts of a network facility system (e.g., a potable water system, a road system, and a railroad system) on an installation;
- Standardize measurement and segmentation of linear structures to ensure consistency in the real property inventory; and
- Determine the specific asset data elements for inclusion in the real property inventory.

Issues that affect the data and business characteristics include:

- Inventorying linear structures (e.g., electrical distribution system, water and sewer systems);
- Inventorying the non-linear facilities (e.g., reservoir, water treatment plant, bridge, trestle) of the network facility system;
- Segmenting linear structures to allow tracking and management of their segments (e.g., pipelines and electrical power lines);
- Inventorying nodes (e.g., pumps, valves, switches, and transformers); and
- Providing for geo-spatial integration.

---

<sup>5</sup> A FAC is a facility type code.

<sup>6</sup> The DoD Network Facilities Work Group was established to determine how best to uniquely identify network facilities.

The utility system issues can be expanded to include other linear structures (roads, railroads, etc.). For the purposes of this report, the term “network facilities” includes utility systems and other linear real property assets. These types of assets typically comprise the basic infrastructure of an installation or are part of its general physical plant. Information required for maintenance, management, and ongoing operations will be created and retained by the users of that data in the real property management system (e.g., Public Works (PW)/Civil Engineer (CE)), or the accounting and finance department). The data elements included for the real property inventory are the fundamental, core inventory data items required for overall asset accountability and real property management over the life cycle of the asset.

### 3.2. Network Facilities Characteristics

Per Joint Publication 1-02 “*Dictionary of Military and Associated Terms*,” a facility is defined as a real property entity that consists of one or more of the following: a building, a structure, a utility system, pavement, and/or underlying land. In the to-be construct this would be stated as a real property facility consists of one of the following: a building, a structure, a utility system, or a linear structure (defined below).

Network facilities are complete “systems” or compound assets comprised of linear structures, buildings, and structures. The road network, potable water system, sewage system, and electrical distribution system are examples of network facilities as they are each comprised of linear and non-linear real property assets.

- The roads, rail lines, potable water and sewer pipes, fences, trails, taxiways, and other networks are part of “systems” that traverse installations (e.g. transportation systems, potable water systems, power systems, etc.). This could also be stated as distribution facilities that deliver a common service or commodity to one or more real property asset(s). These linear structures will continue to be inventoried as a whole; however, segments (the piece of linear structure between two breakpoints) will be delineated by identifiable nodes or breakpoints. A segment, also called a module, is defined as a discrete portion of a linear structure between two identifiable nodes. A node is a logical breakpoint feature (e.g., substation, pole, tower, crossing, road intersection, pump, etc.) of a linear structure. The segments will be identified as modules in the real property inventory. See Figure 3-1 for an example.
- Buildings and structures within the utility or other network system occupy discrete “footprints” or fixed locations. This could include a pump station for a water system or a bridge on either a rail or road system. These types of facilities typically establish the node or breakpoint that splits linear structures into segments. Buildings and structures create a footprint that is relatively compact compared to that of a linear facility.
- Each real property asset within the system will be linked to the complete system by the asset type code (L- land or F – facility), the facility type code (B – building, S – structure, or LS – linear structure), and asset subtype code (e.g., EL- electrical generation and distribution, NG – natural gas, etc.).

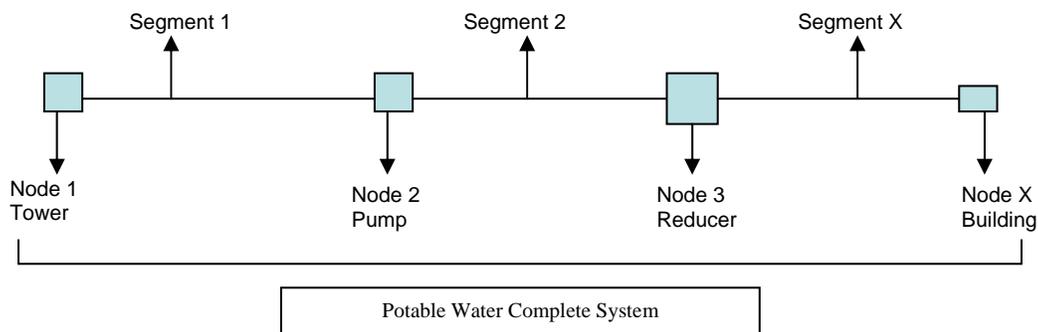
The entire network facility will be assigned an RPUID for consolidation purposes and each linear structure (total distribution system), non-linear building, and structure will also be assigned a RPUID for identification, tracking, and inventorying within the real property inventory.

Segments will not be assigned a RPUID but will be labeled as Segment 1 through Segment X. See Figure 3-1 for an example.

The term “Network Facilities” includes utilities and other linear-type real property assets. These assets are also a part of the basic infrastructure of an installation or are part of the installation’s general physical plant. Every utility (e.g., acetylene and ice plants) is not a network facility and every network facility (e.g., railroad and roads and streets) is not a utility. The linear type facilities considered in this document include:

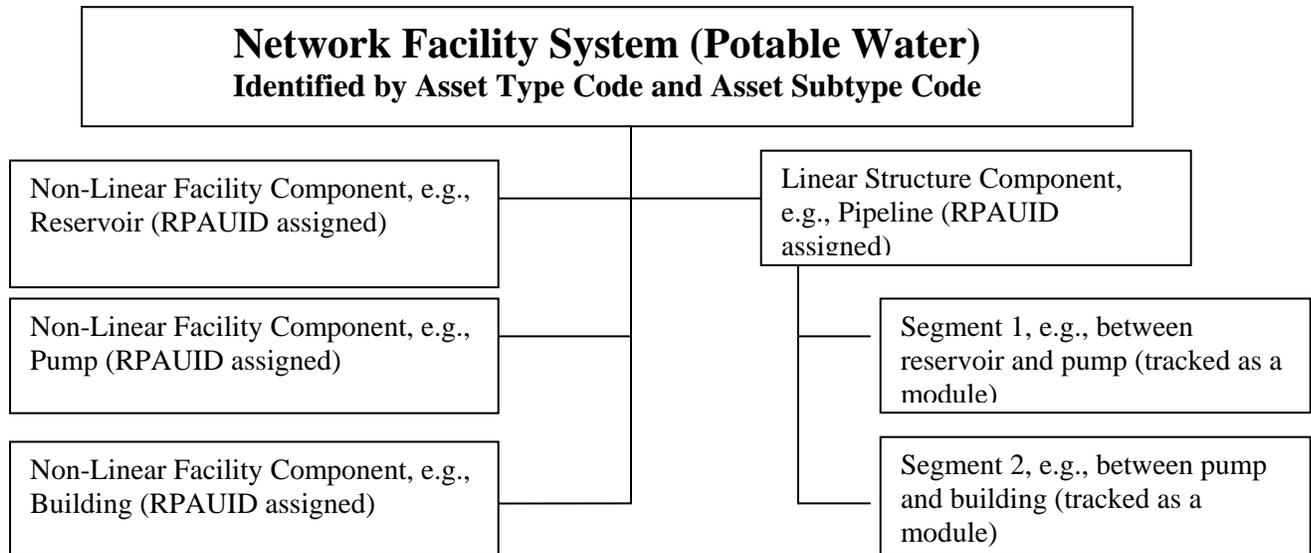
- Bulk Liquid Fuel Pipelines;
- Communication Lines;
- Electricity (Power) lines;
- Heating Lines;
- Sewer Lines;
- Water Lines;
- Roads;
- Railroads;
- Linear Ground Improvement Structures (e.g., fence, wall, and storm drainage); and
- Miscellaneous Utilities.

To properly inventory linear structures, they must be segmented into distinct lengths or modules. A module is therefore defined as a discrete portion of a linear structure between two identifiable nodes. If no such features are present, the facility should be artificially segmented by a designated amount of linear feet for the convenience of the real property manager. Table 3-1 shows a proposed designated amount for artificial linear structure segmentation if no identifiable node is present.



**Figure 3-1: Relationship between Node and Segment**

Segmenting the linear structure allows defined units or lengths of the facility to be identified in the inventory, an important element in not only tracking existing assets but also their general characteristics. Segmentation also follows industry best practices. Part of the process of developing segments is accurately identifying nodes (physical and discrete items such as pumps, poles, manholes, substations, etc.). The relationships between the network facility and its components are shown in Figure 3-2 for a potable water system.



**Figure 3-2: Example - Components of a Specific Network Facility**

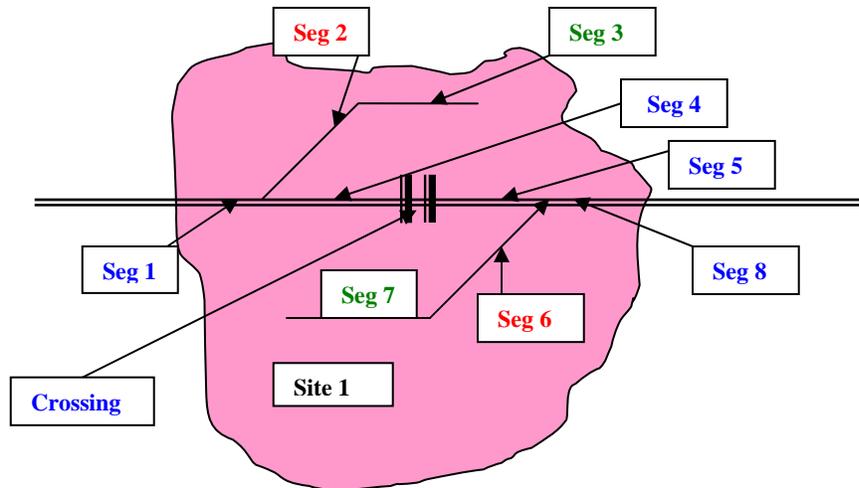
An example of segmentation of a network facility is described more fully in the following paragraph and is shown in Figure 3-3 for a railroad.

### 3.3. Segmentation

Railroads are part of an installation's physical plant and transportation infrastructure but are not generally considered to be a utility. Nevertheless, railroads create a linear footprint or network across one or more sites that comprise the installation. In order to properly inventory all the rail assets, the rail line will be segmented by identifiable nodes, as described below. Each segment will be delineated as a length of rail line between the two breakpoints. This will include the set of parallel rails, the crossties, spikes, and signage.

The segmentation will be based on the following breakpoints or nodes:

- Switches;
- Crossings;
- Type of rail;
- Signals;
- Bridges/trestles;
- Yards/terminals;
- Site or installation boundary; and
- If a section of track equals one-half mile without a switch, crossing, signal, or bridge/trestle, yard, terminal or any other identifiable feature, then the half-mile segment will be artificially delineated as a module.



**Figure 3-3: Railroad Segments (Seg) Example**

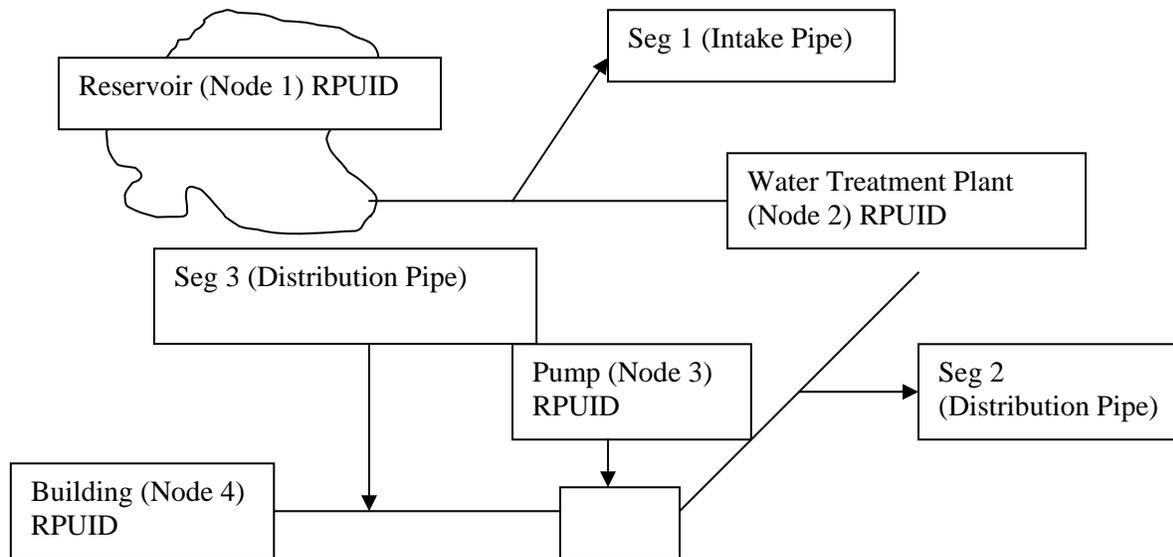
This example includes a railroad track (with spurs, sidings, and a crossing) located on a single site. Although not shown in the example, the railroad track will also have signals and switches. The track is divided into eight segments or modules. These eight segments are linked to the site where the individual segments cross. As can be seen from this example, segmentation provides an easy way for real property management personnel to identify exactly what portions of a railroad (spur, siding, main track) require sustainment, restoration, or modernization and which are rated for the transportation of hazardous materials. Segmentation will also allow the tracking of sustainment, restoration, and modernization costs at a more granular level. The segments shown in Figure 3-3 are described below.

- Seg 1 or Module 1 is the stretch of track from where it enters the site until the first spur (includes switch).
- Seg 2 or Module 2 is the spur until it reaches the siding (includes switch).
- Seg 3 or Module 3 is the siding off of the first spur.
- Seg 4 or Module 4 is the section of track from the first spur until it reaches the road crossing. The total length of this segment will include the crossing. If the crossing was actually a bridge or trestle, the bridge or trestle would be considered a non-linear asset that is part of the network facility. The bridge or trestle would have an assigned RPUID and its characteristics would be inventoried as data elements for the bridge.
- Seg 5 or Module 5 is the section of track from the crossing until it reaches the second spur.
- Seg 6 or Module 6 is the second spur.
- Seg 7 or Module 7 is the second siding.
- Seg 8 or Module 8 is the section of track from the second spur to the site boundary.

A potable water system is part of the key infrastructure of every installation's physical plant. The potable water system is normally comprised of buildings, structures and linear structures across one or more sites that comprise the installation. In order to properly inventory all the linear assets, the water distribution pipe will be segmented by identifiable nodes, as described

below. Each segment will be delineated as a length of distribution pipe between the two breakpoints. This can include reservoirs, wells, distribution pipes, treatment plants, pumps, and storage tanks.

Figure 3-4 shows a potable water distribution system (network facility).



**Figure 3-4 Potable Water Network Facility Segments (Seg) Example**

The system is divided into three segments. Each segment is assigned and tracked as a module of the asset record and four nodes. These seven components are described below.

- Node 1 is the water reservoir located on the installation.
- Seg 1 or Module 1 is the length of distribution pipeline (Intake Pipe) from the point of intake to the water treatment facility.
- Node 2 is the water treatment plant.
- Seg 2 or Module 2 is the length of distribution pipeline (Distribution Pipe) from the water treatment facility to a major pump.
- Node 3 is a major pump.
- Seg 3 or Module 3 is the length of distribution pipeline (Distribution Pipe) from the major pump to the point where it is tied into the building's potable water distribution system.
- Node 4 is the building.

The definitions listed below identify the types of assets to be inventoried.

In the absence of natural breakpoints, basic guidance is provided to provide a convenient start and stop point for a module. This guidance is intended to be flexible and relies on common sense implementation. For example, if an electrical distribution line has reached 1,000 LF from the start point and another breakpoint (node) is only another 300 LF away, common sense would

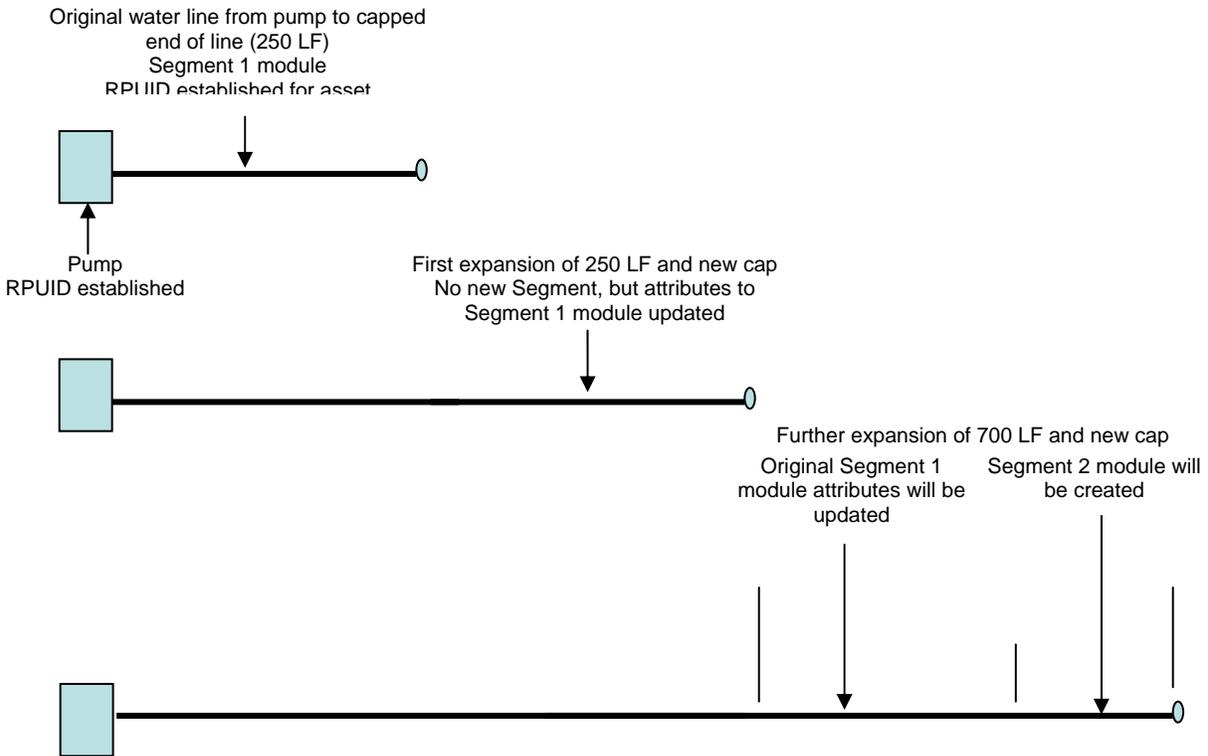
dictate that the module will be 1,300 LF versus having two modules, one 1,000 LF in length and the other 300 LF in length.

**Table 3-2: Artificial Linear Structure Segmentation (Not All Inclusive)**

Linear Structure	Segmentation Amount
Steam Lines	1,000 LF
Electrical Lines	1,000 LF
Water Lines, Potable, Non-Potable, and Fire	1,000 LF
Sewage and Storm Drainage Lines	1,000 LF
Fence	1,000 LF
Wall	1,000 LF
Petroleum, Oil and Lubricant (POL) Lines	1,000 LF
Natural Gas Lines	1,000 LF
Communication Lines	1,000 LF
Tunnel	1,000 LF
Airfield Runways	1,000 LF
Road/Street	1,050 LF (.2 MI)
Railroad	2,640 LF (.5 MI)

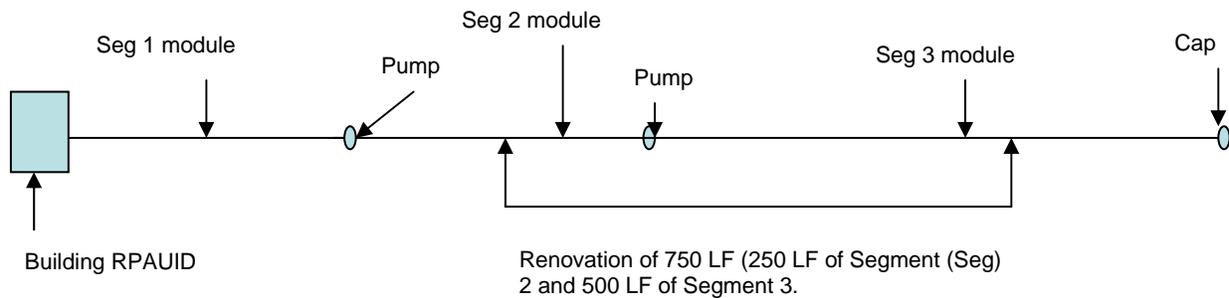
The following examples depict how segmentation is handled in linear structures that are expanded, renovated, or disposed.

- 1. Expansion.** If a segment is expanded and the expansion does not create another segment based on the rules above, then the old Seg X module will still apply and the attributes will be updated. If a new segment is required due to this expansion, it will be assigned its own Seg X module. See Figure 3-5.



*Figure 3-5: Segmentation in an Expanded Linear Structure*

2. **Renovation.** Either an entire or a partial segment may be renovated. See Figure 3-6.
  - a. If a renovation involves all or part of a single segment, the affected segment's data attributes will be adjusted accordingly in the real property inventory. The real property inventory will have the capability for many such entries over the life cycle of the system.
  - b. If a renovation project affects multiple segments, each segment will maintain its Seg X module number. The replacement date and amount of segment replaced will be entered into the appropriate real property asset record as an update to its attributes.



**Figure 3-6: Segmentation in a Renovated Linear Structure**

- 3. Disposal.** If a segment or group of segments is disposed of, the Seg X module(s) and attributes of the module(s) will be updated. This also applies to partial segment disposal.

New characteristics need to be added to enable the network facilities concept. Identification of these characteristics would include the following:

- Codes that identify the type of network facility the assets comprise (e.g., “EL” for electrical system, “RR” for railroad, “PW” for potable water treatment and distribution).
- Seg X module number to identify the discrete portion of a linear structure between two identifiable nodes.
- Whether the segment of the linear structure is above or below the surface (ground or water).
- Whether the segment meets regulatory standards to transport (pipeline, railroad, etc.) hazardous materials. An example of this is 131-pound railroad trackage.
- The supplier type (commercial; federal, state, or local government; or public utility) of the common service or commodity to which the network facility is connected.

### 3.4. Procedure Changes Needed in DoD

Currently, the linear structures, structures, and buildings associated with a complete utility system are not accounted for as a total system. Other linear structures such as roads, railroads, etc., are inventoried and accounted for in the same way. The implementation of the network facilities concepts proposed in this report will require the following procedure changes to allow the total system to be easily identified in the Department of Defense’s real property inventory.

- Network facilities will be identified through the Asset Type Code (L- land and F – facility), Facility Type Code (B – building, LS – linear structure and S – structure) and Network Facility Type Code (e.g., EL- electrical generation and distribution, NG – natural gas, RR – railroads, etc.).
- Network facilities must also be identified by their individual components (buildings, structures, and linear structures).
- Each linear component should be broken down into segments based on implementation guidance.

#### **4. Business Value**

The DoD real property unique identification concept brings forward several new capabilities for real property management. It allows for land to be identified and inventoried as an asset separate from, but still related to, its improvements. The concept provides for a way of segmenting linear structures and networked assets so that they can be related to financial management, geospatial, environmental and other real property management systems. The DoD proposal also offers a consistent set of business rules governing the application of enterprise unique asset identification.

#### **5. DoD Points of Contact: Send request to [ATL-Webmaster@osd.mil](mailto:ATL-Webmaster@osd.mil)**

## Attachment A. Real Property Asset Taxonomy

