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3 **REAL PROPERTY INVENTORY**

4 **REQUIREMENTS**

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18 **Installations & Environment**

19 **Business Transformation Directorate**

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26 Version: Draft Version 1.0d

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1 as leasing, network facilities (e.g. utilities) and attributes necessary to enable space management
2 were addressed (*attachment F*) to improve the overall real property inventory of the Department.
3 A robust section on financial management recommendations (*attachment G*) is included to
4 address accountability and financial material weaknesses. The book also recommends several
5 policy changes that will enable realization of the “To-Be”.

6 The book does not include all the information needed for real property management. However,
7 the recommendations will provide for an inventory that can be directly tied to real property
8 management systems and when operational, will aid in improving real property management.

9 This book does not include cost, timing or phasing requirements as this work will be completed
10 after the requirements have been documented and reviewed by the I&E Domain Governance
11 Board (DGB), the authoritative body overseeing the project. Once they modify/approve the
12 requirements, an Analysis of Alternatives (AoA) will be done that will factor in existing
13 capabilities and cost of modifications.

14 The real property inventory process model (*attachment E*), the real property inventory common
15 data model (*attachment C*) and the real property inventory logical data model (*attachment D*) are
16 difficult to read on a standard screen. The I&E Business Transformation Directorate can provide
17 large readable copies of the three products upon special request (703-604-5778).

18 The comment period ends on July 12, 2004. An adjudication of comments session is being
19 planned for July 19, 2004. The DGB expects to resolve outstanding issues and approve the final
20 recommendations on July 28, 2004. The Military Services and Defense Agencies representatives
21 are asked to have their comments channeled through their Domain Governance Board (DGB)
22 representative. If you have questions on who that is, please call 703-604-5778. The Business
23 Management Modernization Program (BMMP) Domains are asked to channel their comments
24 through their DO-IT principal. The Business Transformation Directorate will host an open house
25 on the requirements book on July 1, 2004. All are welcome to attend and it will be a great
26 opportunity to be visually walked through the book and provide an opportunity for “give and
27 take” discussions to resolve questions and issues. Call 703-604-5778 for more details on the
28 open house.

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1. Introduction

The DoD holds legal interests in nearly 1 million real property buildings, structures and facilities throughout the world. The scope and variety of these assets are unmatched by any other government or private enterprise. The current value of this inventory approaches \$600 billion; and the funds needed to operate, sustain and recapitalize the assets exceed \$30 billion each year. Real property assets are critical to the successful accomplishment of all Defense missions.

The Secretary of Defense established BMMP to provide policy direction and oversight for business management modernization efforts. This program mandates a fundamental transformation in the way DoD conducts its business management activities. Six business Domains were established to enable the transformation process. The Domains are: Acquisition, Finance, Human Resource Management, Installations and Environment, Logistics and Strategic Planning and Budgeting. The Deputy Undersecretary of Defense (Installations and Environment) (DUSD(I&E)) is identified as the Domain owner with responsibility for all I&E business areas including processes concerning real property owned or controlled by the Military Departments.

Accurate and timely real property information is vital to the I&E community as it links real property asset accountability, regulatory compliance, resource requirements for infrastructure, and decision support. Real property asset data should be managed as a DoD enterprise-wide resource rather than a local, component, or functional “stovepipe” resource. Therefore, enabling all functional DoD communities, (e.g., financial, program and budget, security, morale, welfare, and recreation, warfighters, etc.), ready-access to accurate and up-to-date real property asset information is a must.

1.1 Rationale

In its *Assessment of DoD Real Property Information Systems*¹, the ODUSD (I&E) summarized the current state of real property inventory information systems as follows:

DoD’s real property information systems, including planned improvements, do not meet DoD’s current and projected analytic and reporting requirements. Defense real property inventor data is:

- Incompatible across the Defense components
- Inaccessible to key users
- Inaccurate and incomplete, necessitating application of complex and inefficient business rules to use the data

These shortcomings result in:

¹*Assessment of DoD Real Property Information Systems*, Office of the Deputy Under Secretary of Defense for Installations, August 8, 2001, p. 3.

- 1 • Wasted money as analysts expend excessive resources to produce and
- 2 obtain usable information
- 3 • Inconsistent analyses that undermine credibility inside and outside the
- 4 Department
- 5 • Flawed decisions, based on poor information, producing unintended
- 6 consequences

7
8 The *Assessment*² further provided the following “Key Enabling Recommendations”:

- 9 • ODUSD (I&E), the Services and Defense Agencies establish, publish,
- 10 and enforce real property inventory data standards.
- 11 • ODUSD (I&E) maintain a web-accessible, consolidated Defense real
- 12 property inventory database for use by all DoD activities and analysts.
- 13 • ODUSD (I&E), the Services and Defense Agencies create an incentive
- 14 program for maintaining high quality data.

15 Consistent with both its BMMP role and the *Assessment*, DUSD (I&E) accepted these
16 recommendations, and incorporated them in its most recent Strategic Plan. Under Goal 5, “Right
17 Tools and Metrics”, Objective 5.2 specifically identifies the development of a “clearly articulated
18 process for inventorying real property and a set of requirements for future real property inventory
19 systems by end of FY 2004.”³ The result is the Real Property Inventory (RPI) initiative. The
20 RPI initiative will be the foundation for business management activities and decision making. It
21 aligns directly with the DoD, I&E and BMMP missions, visions, goals, strategies, tactics and
22 performance metric targets.

23 1.2 Strategic Alignment and Business Case

24 1.2.1 *Balanced Scorecard*

25 The Balanced Scorecard Strategy Map (Figure 1 below) aligns DoD, I&E and BMMP objectives.
26 The objectives link to assist DoD managers to track progress toward the achievement of an
27 improved facility program and related policy decisions through increased visibility of assets.
28 The logical connections are as follows:

- 29 • **Improved Asset Visibility** enables better space management and valuation of assets, and
30 facilitates the re-engineering of business processes. This is consistent with the DoD
31 Balanced Scorecard Framework quadrant entitled, “Future Challenges”, which includes
32 Defining and Developing Transformation Capabilities, and Enabling More Effective
33 Organizations.
- 34 • **Improved Space Management** enables effective use of real property, a side benefit to
35 the business goal. Likewise, the BMMP objective of “re-engineered business processes”
36 enables the DoD requirements for reduction in information cycle time and business

² Ibid, p. 6.

³ *Draft Defense Installations Strategic Plan 2004*, Defense Installations Strategic Plan Working Group, March 2004, p. 16.

- 1 systems cost. These results are consistent with the DoD Balanced Scorecard Framework
 2 quadrant entitled, “Operational”, which includes Posturing the DoD for Success, and the
 3 Employment of Assets and Processes in a Consistent Way.
- 4 • **Improved Valuation of Assets** respond to the material weaknesses identified in many IG
 5 and audit findings. The the BMMP objective “clean audit”, furthermore, enables DoD to
 6 maintain better accountability of its real property assets. This is consistent the DoD
 7 Balanced Scorecard Framework quadrant entitled, “Institutional”, which includes
 8 Decision Process Streamlining, Enhanced Financial Management, Quality of Key
 9 Facilities, and Better Management of Overhead and Indirect Costs.
 - 10 • The end results of implementing this strategy includes **Improved Operations of**
 11 **Properties and Accountability of Assets, Reduction in Business Systems Cost and**
 12 **Information Cycle Time**. These are consistent with the DoD Balanced Scorecard
 13 Objective of “Force Management”, which includes the Maintenance and Enhancement of
 14 Workforce Satisfaction, Sustainability of Tempo, and the Reasonableness of Force Cost.

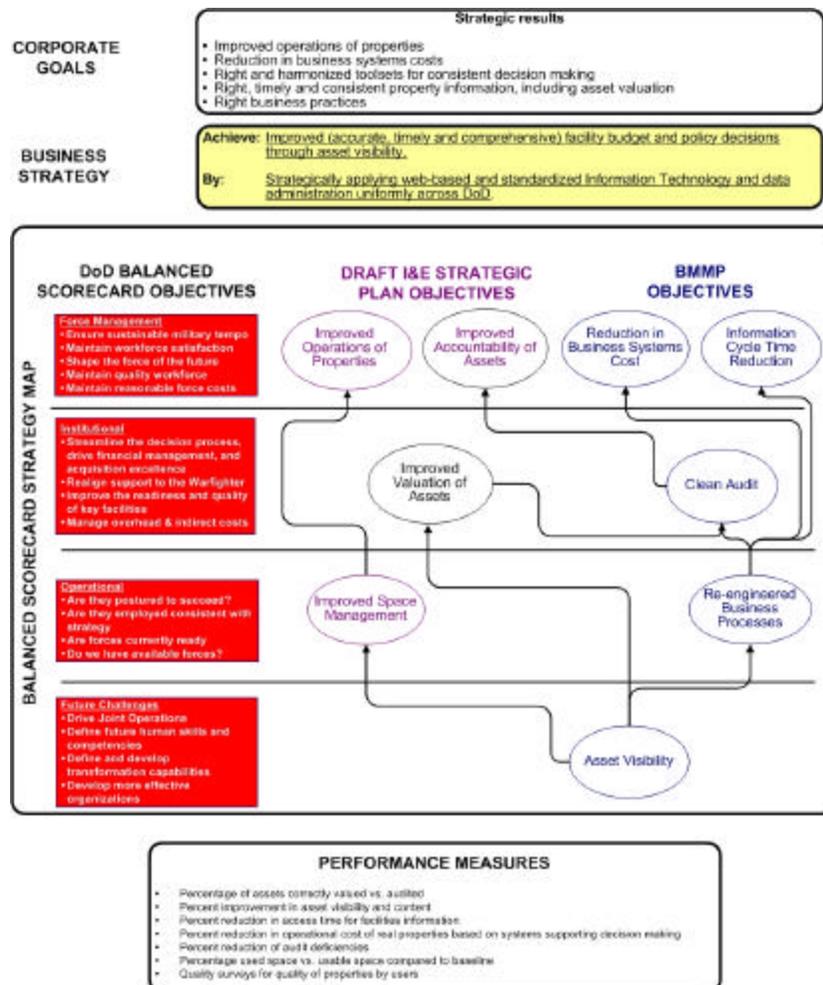


Figure 1: Preliminary Balanced Scorecard Strategy Map for Real Property Inventory

1 **1.3 The Real Property Inventory (RPI)**

2 The current RPI environment requires significant change. The OSD and Service headquarters
3 analysts and functional users' communities require immediate access to accurate, up-to-date,
4 standardized real property inventory data. The following section provides a strategic perspective
5 which was the basis for development of the strategic plan for real property inventory visibility
6 and accountability.

7 The *Assessment*⁴ further provided the following baseline analysis identifying the following
8 Strengths, Weaknesses, Opportunities and Threats (SWOT) associated with the initiative to
9 modernize DoD's real property inventory information:

10 **Strengths**

- 11 • Real property personnel are assigned to most installations
- 12 • Real property data has been collected for over 50 years and provides the information
13 foundation for much of DoD's base engineering function
- 14 • Real property databases exist, and accuracy is improving significantly
- 15 • A professional and regulatory support structure exists
- 16 • Real property accountability training is available
- 17 • The real property workforce has extensive experience and familiarity with recurring
18 requests for information
- 19 • OSD has established working groups and panels involving Service, Agency and OSD
20 staffs to address real property issues

21 **Weaknesses**

- 22 • Data terminology and definitions are inconsistent from level to level and across services
23 and functional communities
- 24 • OSD has not effectively articulated real property information requirements (established
25 and enforced standards)
- 26 • Most analysts must depend on contractors to configure data for, gaining access to and
27 retrieving desired information from systems
- 28 • Few headquarters analysts exist with a broad enough perspective to encompass real
29 property management and accountability and DoD analytic requirements
- 30 • Files must be passed through multiple levels for data to reach OSD, and they must
31 undergo a complex transformation process or substantial manipulation before the data
32 can be used
- 33 • Real property programs are generally low priority in Defense
- 34 • Outside of OSD's working groups and panels, the Services and Agencies do not
35 coordinate their real property inventory, database and system efforts and share lessons
36 learned

⁴ Ibid, p.17.

- 1 • The Services are investing significant resources in revisions to real property databases
- 2 and systems that are based on outmoded data entry and collection methods
- 3 • At the installation level, real property personnel are largely unaware of how their
- 4 information is used as well as its potential impacts. In many organizations where
- 5 accurate information has little impact on their business, the real property data is not
- 6 maintained and up-to-date

7 **Opportunities**

- 8 • The CFO Act and working capital fund (WCF) have generated financial requirements
- 9 requiring accurate real property information
- 10 • Recent audits have exposed data problems and generated more emphasis on maintaining
- 11 accurate records
- 12 • OSD has a strong interest in making extensive use of real property data in generating and
- 13 evaluating Defense program requirements
- 14 • Technology is greatly expanding the ability to maintain and access large amounts of data
- 15 quickly
- 16 • ODUSD (I&E)'s working groups and panels have created an environment that enhances
- 17 cross-staff and cross-functional understanding of each other's requirements/challenges
- 18 and enhances identification of feasible actions for application throughout DoD
- 19 • The use of automated real property inventory data by base engineering activities and
- 20 command headquarters is increasing as access and data usability improve

21 **Threats**

- 22 • Questionable data quality and inconsistent use (understanding) of data reduces the
- 23 credibility of analyses, crippling the ability to effectively compete for scarce resources
- 24 • Other functional communities are taking control of large parts of the real property
- 25 information disconnected from the source databases and causing further inconsistencies
- 26 in reports and analyses
- 27 • Proponents of current automated real property systems may feel threatened by proposed
- 28 changes and be resistant to change
- 29 • There is Service resistance to merging the three Departments' data for fear OSD will gain
- 30 too much control

31 **Mission for the Real Property Accountability Function**

32 The real property accountability function for DoD should focus on meeting the requirements of
33 the following missions:

- 34 • Account for real property
- 35 • Provide data for local real property management
- 36 • Provide data and information to higher Service headquarters for reporting and decision
- 37 making
- 38 • Ensure accessibility to current real property data
- 39 • Establish and enforce real property data standards across DoD to facilitate data
- 40 integration and analyses

1 **Planning Assumptions**

2 Planning assumptions were used as the basis of the work performed by our work groups:

- 3 • Audit attention and interest will remain high for the foreseeable future
- 4 • Real property data will become increasingly important in determining program and
5 budget levels
- 6 • Demands for visibility of and access to real property information will increase –
7 requirements for this information from outside the engineering community will exceed
8 requirements from the engineering community
- 9 • Information technology will facilitate the maintenance of real property accountability
10 data in one central location
- 11 • Data will not have to be moved - users will be able to access data where it lies
- 12 • Accountability will remain with the engineering community
- 13 • Locally or regionally assigned accountable officials will continue to be required to
14 perform physical inventories and to certify and ensure real property records are properly
15 maintained

16 **Goals**

17 The following goals were identified in order to achieve the vision for the real property
18 accountability function:

- 19 • Motivated real property accountability professionals maintain real property records
20 current within an acceptable error rate
- 21 • All Defense users and systems have real-time access to standardized real property
22 information
- 23 • Defense analysts focus on their core competency – analysis, and not searching for,
24 challenging, scrutinizing, validating and transforming data
- 25 • Analyses dependent on real property information are credible with all federal and
26 congressional users
- 27 • The resources used to transfer and transform data are reduced and redirected to improve
28 maintenance and accessibility of data

29 The report that follows stresses using business requirements instead of regulatory compliance to
30 drive change and improvement in real property accountability.

1 **2. Current Environment**

2 With each passing year, more functional communities and Defense Components find it necessary
3 to access real property data. Until the 1980s, this data primarily supported the base engineering
4 community -- charged with property accountability and facilities maintenance -- and major
5 commands responsible for stationing units and organizations and providing adequate facilities.
6 Starting in the late 1980s, the need to use real property inventory data significantly increased
7 with the emergence of new missions for environmental compliance, clean up, pollution
8 prevention, and conservation and preservation, and with the initiation of a series of four rounds
9 of Base Realignment and Closure (BRAC). In the 1990s, the Chief Financial Officers (CFO)
10 Act of 1990 and the financial accounting requirements established for Defense revolving funds
11 required DoD to formally capitalize and depreciate real property assets. Several years later,
12 Defense leaders began demanding budget requirements for facilities programs be developed
13 based on a unit cost approach that ties to the actual inventory. This trend is continuing into the
14 present decade with the current Defense-wide effort to document all training ranges and their
15 uses with geo-spatial data. In addition, Congress has also been requesting increasingly detailed
16 information about Defense real property.

17 The demands placed on real property information are increasing; federal government and
18 Defense audit activities have similarly increased their scrutiny of real property records. Most of
19 the audits and reviews find significant shortcomings with the information.

20 This increased attention has coincided with a significant reduction in Defense resources and
21 staffs, especially at the installation level. During the past decade of declining budgets, the
22 services' priorities have centered on modernizing weapon systems while real property programs
23 were relatively underfunded across DoD. Consequently, at the local level, budget cuts have led
24 to a significant reduction in real property management staff with some managers de-emphasizing
25 the maintenance of accurate, up-to-date real property records.

26 **2.1 Regulatory Requirements**

27 U.S. law and DoD regulations and instructions establish real property accountability and
28 financial reporting requirements.

29 **2.1.1 Real Property Accountability**

30 10 United States Code (USC) 2721 directs the Secretary of Defense to maintain records of the
31 fixed property and installations on both a quantitative and a monetary basis. 10 USC 2682
32 places all real property facilities that are under the jurisdiction of DoD and used by a DoD
33 activity or agency (other than the Military Departments) under the jurisdiction of one of the
34 Military Departments. 10 USC 2674 places the Pentagon Reservation under the control of the
35 Secretary of Defense. Washington Headquarters Services (WHS) operates the Pentagon
36 Reservation and maintains leases in the National Capital Region (NCR). Defense real property
37 accountability records (excluding civil works) are maintained by each of the three Military
38 Departments (Army, Navy and Air Force) and WHS.

1 DoD has implemented the regulatory inventory requirements via DoD Instruction 4165.14,
2 *Inventory of Military Real Property*, dated August 25, 1977. ODUSD(I&E) was in the process
3 of drafting and staffing a revised DoDI to replace the 1977 version but held its release pending
4 completion of the real property business re-engineering documented in this report. The new
5 draft DoDI will identify and standardize data elements deemed essential for real property
6 accountability and for meeting DoD's immediate financial, programming and budgeting
7 requirements. In this report, several of the short-term recommendations are based on
8 implementing the requirements of the new DoDI 4165.14.

9 Volume 4, Chapter 6, DoD 7000.14-R, *Financial Management Regulation* (FMR) establishes
10 requirements for physical inventories for Property, Plant and Equipment (PP&E). It requires
11 DoD Components to inventory general real property at least every 5 years. However, real
12 property Heritage Assets and real property National Defense PP&E (e.g., missile silos and
13 ammunition storage) must be inventoried at least every 3 years. Physical inventories shall be
14 taken to ensure the real property is:

- 15 • At the location identified in the property accountability records or system;
- 16 • As described in the property records; and
- 17 • In the condition described in the property records.

18 **2.1.2 Financial Reporting and Statement Requirements**

19 In addition to real property accountability, DoD is also required to capitalize and depreciate its
20 real property holdings. 31 USC 3515 requires each executive agency designated by the President
21 to prepare and submit financial statements to the Director of the Office of Management and
22 Budget (OMB) by 31 March following each fiscal year. 31 USC 3521 further requires DoD
23 Inspector General to perform an audit of DoD's financial statement prior to submission to the
24 Comptroller General.

25 Volume 4, Chapter 6, DoD FMR provides DoD's accounting standards and policy to meet its
26 financial statement reporting requirements for PP&E. General PP&E consist of tangible assets
27 with an estimated useful life of two years or more; are not intended for sale in the ordinary
28 course of operations; are acquired or constructed with the intention of being used or made
29 available for use by the entity; and have an initial acquisition cost, book value or, when
30 applicable, an estimated fair market value that equals or exceeds the current DoD capitalization
31 threshold of \$100,000. General PP&E also includes:

- 32 • Assets acquired through capital leases, including leasehold improvements;
- 33 • Property owned by the reporting entity even though it may be in the possession of others
34 (e.g., state and local governments, colleges and universities, or contractors);
- 35 • Land, other than Stewardship Land, with an identifiable cost that was specifically
36 acquired for, or in connection with, the construction of General PP&E; and
- 37 • Land rights (which are interests and privileges held by an entity in land owned by others)
38 such as leaseholds, easements, water and power rights, diversion rights, submersion
39 rights, rights-of-way and other like interests in land.

1 The last bullet above designates land rights as financially accountable real property. Current real
2 property databases include, on a consistent basis, only “owned” real property in their databases.
3 Some “leased” real property is being included, but not on a consistent basis. The new DoDI will
4 direct the inclusion of all land rights.

5 Volume 4, Chapter 6, DoD FMR also provides rules for financial accounting responsibility for
6 real property. As noted above, Defense real properties “owned” by DoD are accounted for by
7 the three Military Departments and WHS. However, “ownership” alone does not determine
8 financial accountability. The FMR states, “DoD Components shall only report predominately
9 used General PP&E assets owned by other DoD Components when the cost of those assets, taken
10 as a whole, are material to the predominant user Component’s financial statements.” OUSD(C)
11 plans to rescind the “preponderant use” policy in the next version of the FMR. The following
12 examples illustrate how the current policy is implemented:

- 13 • For Military Departments - General Fund, if the Air Force is a tenant on an Army
14 installation and the Air Force is the preponderant user of a building on that installation,
15 the Army should report the building on the Army’s financial statements--not the Air
16 Force. This policy recognizes that the Military Departments routinely use each other’s
17 facilities in the normal course of carrying out their missions and the net effect of this
18 “cross use” of facilities is not material to the Military Departments’ financial statements.
- 19 • For Defense Agencies - General Fund, Defense Agencies that produce financial
20 statements and/or are included in DoD Consolidated Financial Statements generally must
21 recognize and report the facilities used in their operations. Most facilities used by the
22 Defense Agencies are owned by, or titled to, the Military Departments, but these facilities
23 are material to the performance of the Defense Agencies’ missions. As such, these
24 facilities are material to the Defense Agencies’ financial statements and shall be reported
25 on the annual financial statements of the Defense Agencies and excluded from the
26 financial statements of the Military Departments.
- 27 • For Working Capital Funds (WCF), when a WCF activity is the preponderant user of a
28 facility, that WCF activity shall report and depreciate that facility on its annual financial
29 statements. This requirement exists without regard to whether the WCF activity belongs
30 to a Military Department or a Defense Agency. When a WCF activity is not the
31 preponderant user but funds capital improvements, the WCF activity shall report and
32 depreciate such improvements on their annual financial statements.
- 33 • For Medical Facilities and Equipment, the preponderant use policy outlined above shall
34 not apply. These facilities serve the personnel and families working at, or living near,
35 military installations. Therefore, the military installation is the preponderant user of the
36 medical facility, and all medical General PP&E equipment and facilities shall be reported
37 on the annual general fund financial statements of the Military Department that owns the
38 installation upon which a medical facility resides.

39 Defense Agencies always had a need to track and account for the facilities they use to monitor
40 their Interservice Support Agreements (ISSAs), manage their space, and track the real property
41 projects they fund. DoD’s financial accounting responsibilities have intensified the need for all
42 Defense Agencies to track and account for their use of facilities to prepare their financial
43 statements. In effect, each Defense Agency now has a vested interest in the accuracy of the

1 Military Department's real property records and has become a "customer" for real property
2 information. Unfortunately, Defense Agencies do not have direct access to the Military
3 Departments' real property inventory databases. Nor is there a formal reconciliation process for
4 a Defense Agency to resolve a discrepancy between the Military Department's real property
5 inventory data and the Defense Agency's internal records.

6 The DoD FMR specifies depreciation expenses shall be calculated and accumulated using the
7 straight-line method based on the recorded cost less salvage value, and divided equally among
8 accounting periods during the asset's useful life.

9 Finally, DoD FMR also requires that deferred maintenance amounts be reported in annual
10 financial statements for General PP&E real property that have a cost that equals or exceeds DoD
11 \$100,000 capitalization threshold. To calculate deferred maintenance, the federal-wide
12 accounting standard permits the use of Cost Assessment Surveys or Life Cycle Cost Forecasts.

13 **2.2 Requirements Determination for Programming and Budgeting**

14 Up to this point, the discussion has centered primarily on legally driven regulatory requirements:
15 accountability and financial reporting. The emphasis now shifts to uses for real property data
16 driven by DoD's operational needs. One of the primary functions of the Service headquarters
17 and OSD is to develop and justify Defense programs and budgets to obtain the resources
18 required to equip and sustain our military forces. While adequate facilities are absolutely
19 essential to Defense, facility restoration, modernization and sustainment are often relatively low
20 program and budget priorities compared with modernizing and sustaining weapon systems and
21 training and deploying military forces. Because of this relatively low priority, real property
22 program and budget analysts must be capable of clearly and convincingly conveying the impact
23 of policies and resource decisions on the ability of Defense facilities to adequately support
24 Defense requirements. Defense decision makers should make their resource allocation decisions
25 with a firm understanding of the impacts, both short and long term, on the whole Defense
26 "system."

27 During the first Quadrennial Defense Review (QDR) in 1997, analysts from the Military
28 Services, Agencies and OSD, created a consolidated real property database to assess the force
29 structure's relationship to the real property infrastructure and the related costs for future
30 programming and budgeting. This effort highlighted the inadequacy of current information and
31 methodologies to meet DoD's analytic requirements. Subsequently, OSD has worked together
32 with the Service and Defense agency staffs to create a more robust analytic capability. This
33 report is a part of that effort.

34 To date, OSD has not established and enforced effective data standards. However,
35 ODUSD(I&E) has been doing some preliminary work to prepare for data standardization.
36 During the QDR, ODUSD(I&E) noted that the existing unique facility classification systems
37 used by the services could not support accurate analyses at OSD. In 1998, ODUSD(I&E)
38 worked with the services to create a new classification scheme called **Facility Analysis**
39 **Categories** (FACs). The service-unique category codes have been mapped to the FACs. FACs
40 have standardized facility types to designate the same thing across services. With this
41 standardization, analysts can:

- 1 • Answer questions of how many of a facility type exist in DoD;
- 2 • Share information and compare;
- 3 • Develop and evaluate stationing, sustainment, capacity and recapitalization requirements;
- 4 and
- 5 • Develop relationship to readiness for each category.

6 Following the development of the FACs, ODUSD(I&E) published a *DoD Facilities Cost Factors*
 7 *Handbook* (now the *DoD Facilities Pricing Guide*). For each FAC, ODUSD(I&E) identified
 8 two cost factors: one for sustainment and one for construction. Over 90% of the cost factors are
 9 based on commercial benchmarks with the sources for each identified in the *Handbook*. The cost
 10 factors have been developed for use at the programmatic level by any DoD organization.

11 These two initiatives, standardized facility types and commercially benchmarked cost factors, led
 12 to the creation of DoD Facility Sustainment Model (FSM). FSM projects the costs to sustain all
 13 of DoD's facilities over the Future Year Defense Program (FYDP) years. The Facilities
 14 Assessment Database (FAD) is used as the feeder system for FSM. However, before this can be
 15 done, FAD data must be normalized using additional data obtained from the Services, DLA,
 16 Tricare Management Activity (TMA) and Department of Defense Education Activity (DoDEA).

17 Analysts across DoD need to be able to turn data into information to enable knowledge to drive
 18 to a more informed decision. Examples of questions commonly received include:

- 19 • What are the (value of) facilities in my congressional district/state?
- 20 • What is the projected (value of) facility inventory through the POM years?
- 21 • Where are there excess facilities?
- 22 • How old is the physical plant (by category, by organization)?
- 23 • In what condition is the physical plant (by category, by organization)?
- 24 • Who are the owners or users/uses?
- 25 • Identify leased property vs "owned" property.
- 26 • What is the average age of the current set of facilities?
- 27 • How long are they expected to last?
- 28 • How will planned inventory actions and investments affect the normal aging process?
- 29 • Is the remaining useful life increasing or decreasing?
- 30 • What investment is required to "hold the line" on aging, or lower it by a specified
 31 percentage?
- 32 • What is the age profile of a selected facility type or investment category?

33 The Military Services and Defense Agencies prepare Program Objective Memorandum (POM)
 34 exhibits each year. These exhibits aid DoD in its annual review (called the Program Review) of
 35 DoD's spending plans. DoD is attempting to streamline reporting for the Program Review and
 36 would like to reduce the burden on the Services/Agencies to prepare these exhibits; however, not

1 all real property inventory data required to populate applicable exhibits are currently reported in
2 DoD inventory systems. Examples of functional areas that are not completely covered in the
3 current core real property inventory systems include lease inventory, barracks space and family
4 housing units, fire and emergency service inventory attributes and utilities information. Many of
5 these areas require data calls to populate POM exhibits. The data elements maintained in the
6 Services' inventory systems and the proposed DoD consolidated inventory would have to expand
7 for OSD to produce complete exhibits and conduct comprehensive analysis and decisions from
8 inventory data.

9 ***2.2.1 Functional Requirements Using Real Property Inventory Data***

10 Numerous functional areas and organizations in DoD require real property inventory information
11 from all three Military Departments. In addition to the requirements already discussed, they
12 require real property inventory data to:

- 13 • Facilitate the use, management and maintenance of real property;
- 14 • Enable evaluation of real property assets for planning;
- 15 • Identify and justify requirements;
- 16 • Develop reimbursement rates and support Interservice Support Agreements (ISSAs);
- 17 • Monitor compliance with laws, rules and regulations;
- 18 • Support installation tenants information requirements;
- 19 • Support capacity analyses;
- 20 • Support space management and stationing;
- 21 • Conduct "what if" assessments at HQ levels; and
- 22 • Support reporting requirements.

23 Each functional area and organization faces a unique set of business requirements for which they
24 develop and use information systems. Real property data is required to support environmental,
25 medical, educational, military operational, BRAC and family housing programs, to name just a
26 few. No single system related to real property currently serves such a diverse set of
27 requirements. The accuracy problems documented in the audits and the non-standardization of
28 data between Military Services, create a significant challenge to the warfighter, Defense
29 Agencies and functional communities in obtaining and using real property data.

30 Successful real property management depends upon integration at the DoD level and increased
31 collaboration among the various organizations. Accountability at this level addresses common
32 practices, processes, systems, guiding principles and a clearly articulated vision.

33 Managing the DOD's Real Property is a significant undertaking. Reliable and on-point
34 information is critical to enable DoD leaders and analysts make informed decisions. Across
35 DoD, dozens of independent real property inventory systems exist. These systems are not
36 structured to readily communicate with each other, creating inefficiencies in facility
37 management.

1 Future requirements should be developed using a clearly established vision to identify
2 appropriate actions and achieve the real property accountability mission. Based on the proposed
3 mission, we believe the following attributes describe the future environment toward which the
4 recommendations in this report should advance the real property accountability environment:

- 5 • Data is entered once at source and accessed from a central source; no data calls or data
6 movement is required
- 7 • Data records are complete and current with management controls to periodically monitor
8 completeness and accuracy
- 9 • Analysts have real-time DoD-wide access to required data and definitions
- 10 • Analysts at all levels are using data from the same data sources
- 11 • Analysts spend minimal time searching for data and more time performing analyses
- 12 • Real property accountable officers spend less time responding to data requests and more
13 time tending to data quality
- 14 • Real property accountable officers are motivated to maintain complete and accurate
15 records
- 16 • Adaptable information architecture readily supports expansion to accommodate new
17 requirements such as linking to geo-spatial data
- 18 • Resources needed to obtain and maintain real property information are significantly
19 reduced

20 **2.3 Current Environment of Systems**

21 Today the transactional data for the Department of Defense resides in the systems of the three
22 Military Departments and WHS. At the end of each fiscal year (September 30th), the Military
23 Departments provide a copy of their data to OSD to update the Facility Assessment Database
24 (FAD). Because there still exists a lack of standardized data elements among the Services'
25 native databases, business rules have been developed to normalize the data before inclusion in
26 FAD. Each year the data is also validated, with any anomalies reported to the respective Service
27 for correction. Data from the FAD is used to populate a variety of existing real property models
28 and is used by OSD for real property analysis. The data resides on a server within OSD and is
29 available to installations and facilities analysts through a graphic user interface. The current
30 FAD provides a good example of the barriers that must be overcome before consolidating data to
31 a single data store. This is precisely the reason we propose establishing standard elements,
32 definitions, business rules and processes. The data emanating from the Services and Agencies of
33 the Department must be collected at a consistent point in the business process, mean the same
34 thing to all parties, and be of value to all levels of the organization. This would make data stores
35 or warehouses like the FAD a more valuable product.

1 **3. Business Process Reengineering Approach**

2 The Installations & Environment Domain has partnered with the Military Services, Defense
3 Agencies and other BMMP Business Domains to transform, or reengineer, business processes for
4 the inventory of real property. The goals are reliable, timely, and useful core real property asset
5 information to support functional analysis and decision making as well as financial reporting.

6 The intent of this project is to yield core standard data elements, and codes focusing on the
7 physical, legal, and financial characteristics of real property assets both owned and not owned by
8 the DoD worldwide.

9 In FY03, DoD began the reengineering of our real property inventory business processes.
10 Participants representing the Military Services, Defense Agencies and other Domains identified
11 many core standard data elements. In addition, Inter-Agency and Cross-Service workgroups
12 were established, to continue the analysis and resolution of issues.

13 In FY04, we enhanced the foundation we laid with the reengineering of our real property
14 inventory business processes. Work groups met to discuss and resolve issues raised by the
15 Services and Agencies, and specialty focus groups were engaged to address inventory needs of
16 communities of interest. Work groups were formed to address a unique identifier for real
17 property, installation versus site definition, attributes of land for RPI, utilities measurement and
18 tracking, accounting issues, leasing and facility attributes required to enable space management.
19 Specialty focus groups were convened to identify inventory requirements associated with
20 housing, fire and emergency services and law enforcement and force protection. The issues and
21 resolutions from the work groups are included as attachments to this document. The output from
22 the work and focus groups were used to develop the Business Process Reference Models
23 (BPRM) and a Logical Data Model.

24 **3.1 Proposed Real Property Inventory Recommendations**

25 The entire Defense community will greatly benefit by moving to the recommended new
26 operating environment. The recommendations are designed to refocus and leverage the
27 resources that are currently expended to create significantly more value for a wider DoD
28 audience. The long-term recommendations cannot be achieved, however, without the
29 cooperation of the Services, Agencies and OSD.

30 The proposed DoD-wide changes to real property inventory processes and data does not relieve
31 the Military Departments and WHS of their responsibility for maintaining real property
32 inventory records.

33 We recognize that DoD faces significant challenges in implementing the recommendations.
34 These include:

- 35 • Unresourced initial costs for implementation and
- 36 • Resistance to change

1 **3.1.1 Summary of Physical Requirements with examples**

2 The critical data requirements published in the draft DoDI 4165.14 are well documented and
3 have been analyzed in the *Assessment of DoD Real Property Information Systems* dated August
4 8, 2001. We looked beyond this set of critical data requirements to identify the specific
5 functional/business requirements (rules) and data and information requirements and standards to
6 support the goals and objectives. We used the questions that Defense leaders and analysts are
7 asked to regularly answer with the real property data. Armed with this information we adjusted
8 the critical data requirements to include the additions.

9 We also used specialty focus groups of Service and Agency subject matter experts to address
10 additional areas for consideration. A synopsis of each group's results is included below along
11 with examples of how the output of their deliberations can benefit the Department in the future.
12 A more detailed report of each group's deliberations is included as Attachment F and Attachment
13 G.

14 **RPUID**

15 The RPUID is a data management concept that will allow for linking real property asset
16 information with data from other functional business areas across the Department. It will be
17 unique and will remain with the asset from initial creation of the asset record. The RPUID will
18 not replace the building number or other similar visual identifiers for real property. The RPUID
19 will link costs during all phases of the asset and allow the analyst to perform life-cycle cost
20 analysis for any facility in the inventory, even if the asset is transferred from one Service to
21 another. This concept becomes the foundation for real property asset accountability.

22 **Installation and Site**

23 The terms installation and site have been part of the DoD vernacular for many years. The
24 Military Services are aligning real property assets to commands based on mission responsibility.
25 Installations are no longer geographically constrained. All physical assets need to be properly
26 allocated to the managing installation regardless of the location. To meet this emerging need and
27 to preserve proper accountability of real property assets, the group developed standard
28 definitions for installation and site. Installation is more a management term, and represents an
29 organization, including the assets necessary for the installation command to carry out its mission.
30 Site is a real property term and represents the land and facilities under the custody and control of
31 the installation command. An installation command can have one or more sites, but a site is
32 under the control of only one installation command. This should help drive a consistent answer
33 for the number of installations in DoD, yet allow the Department analysts to report the number of
34 facilities and acres of land in each country, state, congressional district, etc. A benefit of this
35 work will be the consistency in number of DoD installations/sites reported.

36 **Land Attributes**

37 The types of land assets in the real property inventory include unimproved wilderness areas, to
38 central urban developments. Likewise, the land portfolio reflects a myriad of land uses, (roads,
39 parade grounds, waterfront, etc.), representing the different missions and requirements of the
40 DoD Services and Agencies. We standardized the definitions and reporting of land throughout

1 the Department and to provide requisite data for land management functions. We will track land
2 by parcel starting with how and when the parcel is transferred into the Department's custody and
3 control. As our use of the land changes, the parcel attributes are updated, and as the parcel is
4 disposed (or partially disposed) the attributes are updated (or the parcel can either be
5 reconfigured to note the part retained) and archived.

6 **Network Facilities (Utility Systems, Roads & Railroads)**

7 The identification of complete network facilities (utility systems, roads, and railroads), along
8 with the recognition of the linear and non-linear components of the total system and the further
9 segmentation of the linear components, will be a key element in accounting for real property
10 assets in which DoD has a legal interest. The linear and non-linear components of a network
11 facility are linked to the network facility through two new core data elements. The components
12 of a network facility are not used at the same rate, sustained at the same level, and the
13 components of the total system are not recapitalized at the same time. Hence, segmentation will
14 support analyses to determine the effect fluctuations in use (or in load) of a segment has on the
15 sustainment costs, restoration costs, and cyclical replacement of the network facility segment.
16 Segmentation also allows analysis of whether it is better to repair or replace an existing segment.
17 Department analysts can identify the total set of assets included in a privatization effort, and the
18 effect transfer of those assets will have on future budget requirements and the need to flow funds
19 from sustainment, restoration and modernization to the other base operating support account.

20 **Leasing**

21 Previous studies identified that leases are not consistently being included in any of the real
22 property inventories. Leasing subject matter experts were engaged to define the unique attributes
23 needed in the RPI to facilitate lease accountability and to complete the initial drill-down of the
24 leasing process. The group also looked at other instruments such as ingrats/outgrants, permits,
25 and easements that are used to transfer custody and control of real property. A process has been
26 developed to capture how real property inventory information in this category will be captured
27 and updated and by whom. The goal is to get the right level of information captured, keep it
28 accurate, and avoid duplication.

29 **Facility Attributes for Space or Capacity Management**

30 As the repository of the Department's real property data, the RPI will include not only the
31 physical details of each property but also key utilization attributes of each property for effective
32 asset management and planning. That is, the RPI will contain data elements relating to
33 fundamental utilization attributes, such as the property's designed use, how it is actually being
34 used, and who is using how much space and where. The physical data elements in the RPI, such
35 as width, length and height of a warehouse or the width, length and thickness of a runway, for
36 example, will provide the basis for computing a facility's use capabilities or capacity.

37 The overall management function will encompass the full life-cycle management of facilities and
38 structures, including facilities maintenance, lease management, operations management,
39 financial accounting and funding, security and other functional management areas. More
40 extensive space management functions would include such efforts as evaluating the effective

1 cost of space use, assessing the contribution (positively or negatively) of the space to mission
2 fulfillment, determining if the space is being used as intended, and determining where and what
3 amount of space is available for a given use.

4 **Focus Groups**

5 In addition to the Work Teams efforts addressed above, the ODUSD(I&E) identified specialty
6 focus areas that should be discussed for inclusion in the RPI. The Office met with OSD, Military
7 Service and Agency (as appropriate) subject matter experts to discuss housing, fire and
8 emergency services and law enforcement and force protection areas. Below are results of those
9 meetings.

10 **Housing**

11 The Housing Focus Group met and discussed housing requirements of an inventory. We
12 started discussions looking at three housing interests: owned housing, private housing,
13 and public/private partnerships. It was agreed that owned housing is clearly included in
14 the DoD real property inventory and private housing is not included in the inventory, but
15 public/private ventures (PPV) may require further review. While the government retains
16 a legal interest in PPV housing, it is not clear that the interest is a real property interest.
17 PPV interest will be evaluated for inclusion/exclusion in the inventory and a
18 recommendation will be provided later. The group acknowledged three items that need
19 to be addressed. They are:

20 DoD currently tracks real property assets to the building level, while housing can have
21 multiple units in a building. For the inventory to be useable to their management team,
22 they need the capability to track specific information (e.g., number of bedrooms, number
23 of bathrooms, handicap accessibility and square feet) at the housing unit level while most
24 other asset information can be tracked at the building level. To solve this issue we
25 propose continuing to track assets at the building level, but creating an approach where
26 relevant information that pertains to a housing unit can be validated and entered. Each
27 housing unit is a sub-record of the building asset record. Thus each unit is treated as a
28 module of the building.

29 Each military housing area on, or around, a base, camp or station is generally identified
30 as neighborhood. The neighborhood designation is a critical and unique identifier for all
31 Services. As an example play areas, support facilities and schools are linked to
32 neighborhoods, and each neighborhood is linked to a site. In addition, jurisdiction (fire,
33 emergency service, police, etc.) and the rules of who provides the support (federal
34 government exclusive, local authorities, or combined) needs to be tracked as well. The
35 we propose six new core data elements be added to address the housing requirements.

36 **Fire and Emergency Services**

37 All Service and Agency Fire and Emergency Service Organizations are going to a geo-
38 spatial environment in the "To-Be" state. Identified core data elements for GEOLOC
39 Codes, latitude and longitude should satisfy their inventory requirements. Since the Real
40 Property Managers across the Department will identify the assets that the Fire and

1 Emergency Service Organizations are concerned with, including fire hydrants, they could
2 not identify any other unique data elements that were not included in our current list or
3 would not be satisfied eventually by the geo-spatial information.

4 **Law Enforcement and Force Protection**

5 Law Enforcement is moving in the same direction as the Fire and Emergency Service
6 functions, which is towards a geo-spatial environment, with mobile emergency units
7 using display screens similar to State Highway Patrol operations. With the exception of
8 special mission locations the Services/Agencies do not currently have much of this
9 capability. The geo-spatial capability is being developed by Commands, mostly out of
10 the Installation Facility Management Office, whom they are coordinating with, so that the
11 delivered capability also meets law enforcements requirements such as the location of
12 barriers, electronic security systems, and entrances/exits. The defined RPI core data
13 elements previously determined satisfy law enforcement's basic need to describe the
14 general physical characteristics of buildings, utilities and other structures. Since
15 installation facility managers will most likely be the authorized source for the physical
16 RPI core data elements they will be the same for the geo-spatial systems. Therefore,
17 beyond the general physical RPI data elements, the geo-spatial systems will provide the
18 level of detail required for law enforcement to most effectively perform their mission.
19 Conclusion: No additional unique RPI data elements are required to support law
20 enforcement.

21 Force Protection (includes Homeland Security and Anti-Terrorism) is primarily
22 concerned with vulnerabilities and capabilities. An Installation/Site is evaluated for
23 vulnerabilities based on an overall assessment of their critical infrastructure and not
24 necessarily building by building. No universal coding system has been developed by the
25 Services/Agencies and reports tend to be narratives and not mathematically scored.
26 Standoff distances, barriers, blast wall ratings, and window ratings are all part of physical
27 security assessments and reports. The physical security requirements are extensive and
28 ever changing as technology accelerates. These inspections normally rate facilities as a
29 whole and not in part so if compliance is achieved in one area but not another the whole
30 facility is in non-compliance. In terms of the need to add unique RPI core data elements
31 for force protection, the area of most interest is in the capability of the structure. These
32 capability descriptors are mostly management related versus physical, legal, or financial
33 characteristics of property. Conclusion: No additional unique RPI data elements are
34 required to support law enforcement.

35 **3.1.2 Summary of Financial requirements with examples**

36 Standardization of the core RPI data elements, business rules and procedures, compliant with
37 federal financial regulations, are required to enable Military Services to properly track, update
38 and maintain asset information. Asset accountability and accurate valuation of capital assets are
39 critical factors in support of the Secretary of Defense high priority initiative to have timely,
40 accurate and reliable financial data for use in making effective management decisions and for
41 achieving favorable audit opinions on the Department of Defense financial statements.

1 The I&E Domain is focused on transforming business management processes with the realization
2 that financial planning and management is a large part of the business transformation. As an
3 example, DoD has reported for the last three years on the reliability of the department's financial
4 statements, concluding that the department is not able to provide adequate evidence supporting
5 material amounts in its financial statements. Two specific items where the department was
6 unable to comply with applicable financial reporting requirements are the property, plant and
7 equipment and environmental liabilities areas. In order to resolve weaknesses, the result of the
8 accounting focus group will be applied to financial management as well as the related business
9 management. Historically, the Installation and Environment's program requirements have
10 greatly exceeded the resultant yearly budgets. The shortfall stems, in part, from the difficulty in
11 articulating I&E requirements in a manner that the comptroller community can accept and
12 defend. Working the business and financial aspects together insures that as the business is
13 transformed and streamlined the financial linkages are not broke. The focus is to create and
14 reinforce a results-oriented management approach, particularly with respect to resource-
15 allocation decisions.

16 An example of is the development of business rules for estimated useful life. Adoption of
17 industry standards for useful life for each FAC drives to a more meaningful and realistic useful
18 life, and the linkage to financial data will present data that can be beneficial for analysts. DoD
19 will have the information to conduct proactive analysis and perform "repair versus replace"
20 decisions based on historical costs of the facility in question. This analysis can be performed in a
21 timely fashion to allow for the resultant decision to be used as input for the programming
22 process.

23 Real property data should be looked on as a Defense resource rather than a local, component, or
24 functional "stovepipe" resource. Therefore, enabling all functional communities (including the
25 financial, program and budget communities) ready access to accurate and up-to-date real
26 property asset information is a must. The goals of the I&E Domain are timely, accurate, and
27 reliable data, when and where needed, along with streamlined enterprise-wide business processes
28 that enhance the support of the DoD Business and to the Warfighter.

29 The data in the Services and Agencies is maintained in many different locations, in different
30 formats, and processed and validated through different business rules and validation criteria.
31 Centralized reporting and decision making is impacted by this fact, as well as due to the
32 costliness and time involved in data calls and the subsequent consolidation, translation and
33 cleansing of this data into a common format. In addition, timeliness of data from the aspect of
34 the enterprise is an issue due to the time involved in the consolidation process before it is
35 available to the user.

36 As part of our efforts to better define real property inventory requirements and processes, we
37 examined the end-to-end life cycle process of real property inventory management. We
38 distinguished the end-to-end sequence in a process model (Attachment E). This process model
39 articulates the touchpoints with real property accountability. For example, the process model
40 defines the time/business event that triggers depreciation. Prior to this work, there seemed to be
41 confusion among the the RPI community with regard to depreciation start date. The process
42 model also defines other business events that effect real property accountability. This process
43 model will be a key element in implementing the "To-Be" solution for real property inventory.

1 **4. Data Management**

2 **4.1 Background**

3 The foundation for business management activities and decision making in the Installations and
4 Environment (I&E) Community is the Real Property Inventory (RPI). The Department of
5 Defense (DoD) Business Transformation involves an ongoing effort to standardize and
6 streamline operational processes, correct long-standing management weaknesses, and help
7 analyze whether enabling technology effectively supports performance of the DoD mission.
8 Enabling all functional communities with ready access to accurate, complete and up-to-date real
9 property asset information is a must. The goals of the I&E Domain are timely, accurate, and
10 reliable data, when and where needed, together with streamlined enterprise-wide business
11 processes that enhance the support of the DoD Business and to the Warfighter.

12 A Real Property Inventory (RPI) workshop was held in October, 2003 to discuss the Business
13 Transformation with respect to the RPI that the I&E Domain initiated. Following this meeting,
14 I&E focus groups were formed to represent the initial capabilities of the I&E Domain, e.g. Real
15 Property Inventory (RPI), Real Property Management (RPM) and Environment, Safety and
16 Occupational Health (ESOH). These focus groups constituted the initial Community(s) of
17 Interest (COIs) formed in support of the Domain's transformation effort. The I&E Domain and
18 COIs oversee the development of the Data Management Strategy process as it evolves and is
19 implemented within the I&E Domain and DoD-wide COIs to ensure its continued success. The
20 COIs will accomplish this by forming close relationships with key stakeholders and subject
21 matter experts (SMEs) in the Military Services and Defense Agencies that provide or use real
22 property data.

23 The strategy to manage the I&E enterprise data has become increasingly more important over the
24 last few years. Continued breakthroughs in network technology and the Internet have made data
25 available across applications, departments, corporations, and enterprises. Despite these
26 developments, several major problems remained unsolved:

- 27 • Data still is not visible to all users who need it
- 28 • Data resides in incompatible formats
- 29 • Data cannot be systematically managed, integrated, unified, or cleansed

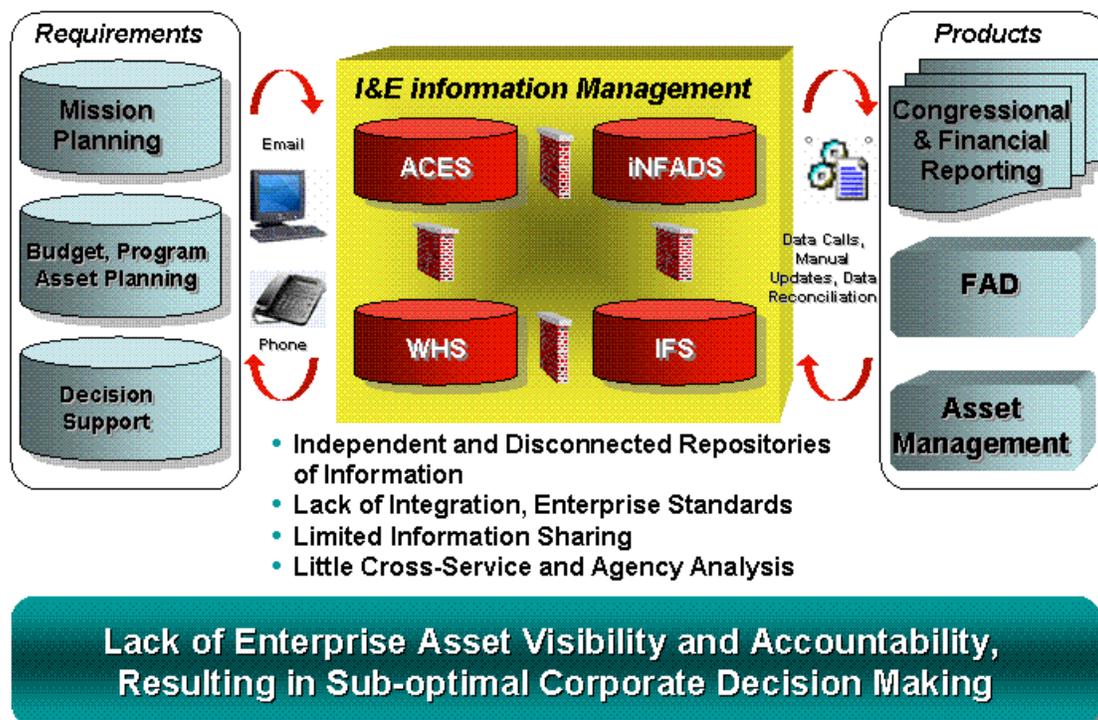
30 There are also many information and data conflicts where data is redundant or out-of-date, and
31 often cannot be accessed because of formatting differences. These conflicts seriously impact the
32 DoD's ability to obtain the data and information necessary for decision-making in both an
33 effective and timely manner.

34 **4.2 The Need for a Data Management Strategy**

35 Information and data is one of the organization's most valuable assets. As a result, a
36 management strategy should be implemented to guarantee the reliability and integrity of an
37 organization's information assets: data should be managed as an asset of the enterprise, not as a

1 part of the application that processes it. Consistent and reliable data provides the user with the
2 basis for accurate and efficient decision-making.

3 The real property data in the Military Services and Defense Agencies is maintained in many
4 different locations, in many different systems, in different formats. Further, it is processed and
5 validated through different business rules and according to different validation criteria.
6 Centralized reporting and decision-making is understandably hampered⁵. In addition,
7 manpower, time and cost involved in data calls and the subsequent “data scrub” into a common
8 format for analysis and reporting requires resources that could be used for more mission-critical
9 tasks. Timeliness of data from the aspect of the enterprise also becomes an issue due to the time
10 involved in the “data scrub” process before it is available to the user, and the fact that the data is
11 not real time, but represents a point in time based on the time of the data call.



12

13

Figure 2: Current “As-Is” Environment Supporting Real Property

⁵ Assessment of DoD Real Property Information Systems, prepared for the Office of the Deputy Under Secretary of Defense for Installations and Environment, August 8, 2001, p. 3.

1 A data management strategy providing a methodology for data standards at the enterprise level
2 addresses the information and data lifecycle of the enterprise from identification and analysis
3 through user discovery and applications processing. One of the CIO goals, as confirmed by the
4 Deputy Secretary of Defense in Management Initiative Decision (MID) 905⁶, is to populate the
5 network with all data (intelligence, non-intelligence, raw, and processed) and change the
6 paradigm from “process, exploit, and disseminate” to “post before processing.” All data is
7 advertised and available for users and applications when and where they need it, allowing users
8 and applications to search for and “pull” data as needed. As the DoD moves to a Net-Centric
9 environment, the goal of “post before processing” with respect to data will make data readily
10 available to the user before normal processing and dissemination have completed, thus allowing
11 users to make more timely and effective decisions⁷. This paradigm will require standards for
12 data such that users can easily discover and understand the data assets of the enterprise, and use
13 this data correctly, effectively, and in a timely manner. In addition, data will be available to a
14 broader base of qualified users, not just the current users of I&E’s data assets. These unplanned
15 or unanticipated users will require sufficient understanding of these data assets so as to be able to
16 pull and analyze data for effective analysis and decision-making. This paradigm will also
17 change the focus of data from the application that processes it to the role of the data as it applies
18 to the enterprise, and how it is processed and used by the enterprise.

19 Attachment I of this document presents an overview of the DoD concept of the Net-Centricity
20 and the Global Information Grid (GIG).

21 **4.3 Unique identifier**

22 On July 29, 2003, Michael Wynne, acting Undersecretary of Defense Acquisition, Technology
23 and Logistics (AT&L), issued a policy for the unique identification of items purchased by the
24 DoD, including new equipment, major modifications, and procurements of equipment and
25 spares. The policy states that unique identification is a mandatory requirement for all
26 solicitations issued by DoD on or after January 1, 2004. A unique identifier (UID) is a set of
27 data for assets that is globally unique and unambiguous, ensures data integrity and data quality
28 throughout its life, and supports enterprise business applications and users.

29 The Department must, of necessity, uniquely identify the items to which it takes title to provide
30 for better asset accountability, valuation and life cycle management. Unique identification
31 provides the Department the opportunity to differentiate an individual real property asset from all
32 others. Unique identification of items provides the Department with the source data to facilitate
33 accomplishment of the following:

- 34
- Capture timely, accurate and reliable data on real property assets

1. ⁶ Management Initiative Decision 905, Net-Centric Business Transformation and eGovernment, December 24, 2002, p. 4.

⁷ Memorandum, DoD Net-Centric Data Strategy, 9 May 2003, p. 3.

- 1 • Improve life-cycle asset management
- 2 • Track items in the Department for financial accountability purposes and asset
- 3 lifecycle management

4 The I&E Data Management Strategy uses unique identifiers where appropriate so that items of
5 interest, e.g. real property assets, ESOH issues having resources identified to them, can be:

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

11 In a logical data model, (e.g. DoDAF OV-7), a unique identifier is simply a primary key, a
12 method implemented in a database to identify one occurrence of data from all others of the same
13 class. In the context of the database, the primary key is used as criteria to join data from
14 multiple sources within the database based upon a common criterion, e.g. the primary key. This
15 premise extends to multiple or distributed databases, where the primary key is extended to join
16 data from one or more databases. Applying this to the DoD Enterprise, the UID becomes the
17 primary key for the identification of real property assets within the RPI database(s), the join
18 criteria for the databases supporting I&E, (RPI, RPM, ESOH, the Military Services and Defense
19 Agencies), and extends to the databases supporting the Business and Warfighting Enterprise
20 Mission Areas. This concept also supports extensibility as additional data attributes supporting
21 real property can be added in the appropriate database(s) and is immediately accessible by using
22 the UID. Similarly, additional databases can be added within the enterprise to support new
23 mission requirements, and by using the UID, the new databases can be integrated into the real
24 property data environment. This concept allows each database to store the real property asset
25 data that is required to support its respective mission as opposed to each database maintaining
26 the same data redundantly, thus supporting the vision of single point-of-entry and shared access
27 for real property data in the enterprise. In addition, since data is stored once based upon the
28 authoritative source that owns it, data integrity and reliability is increased due to the fact that
29 data is defined only once, validated consistently against common business rules and criteria. The
30 architecture supports the integration of real property data from multiple sources to support an
31 enterprise view of real property assets to the user, e.g. up-to-date asset data pulled from multiple
32 sources real-time based on the UID of the real property asset.

33 A unique identifier can be either intelligent or non-intelligent. An intelligent identifier is based
34 on using characteristics such as organizational component code, facility number, facility
35 location, facility name, state code, (either alpha or numeric), county code, etc. in the identifier
36 scheme. A non-intelligent identifier is one that is automatically generated by computer each
37 time a record is created and has no correlation to the attributes entered for that record, e.g. a
38 sequence number. Intelligent identifiers (those that contain some kind of information), are not
39 permanent; they change as the criteria for their assignment changes. Non-intelligent identifiers,

1 by contrast, are permanently assigned to an asset for data relationships and data sharing. The
2 merits of intelligent and non-intelligent UIDs will be analyzed in each case where unique
3 identification is required, in conjunction with the attributes defined for the item of interest.
4 Should unique identification be provided for an item of interest based upon one or a combination
5 of one or more attributes of an item, AND the attribute(s) under consideration will not be subject
6 to taxonomy, classification or categorization changes, an intelligent UID might be considered
7 viable. If not, a non-intelligent UID might be required. Based on the recommended unique
8 identification scheme, business rules will be defined. Each UID, scheme and associated business
9 rules will then be entered in the I&E Metadata Repository, published, and made available to
10 users of I&E data assets.

11 The following example uses the Real Property UID (RPUID) to illustrate the benefits of unique
12 identification. The RPI focus group research considered the advantages of both an intelligent
13 and non-intelligent numbering scheme for the identification of real property assets. A non-
14 intelligent number scheme is recommended as the best alternative for the RPUID, as the
15 numbering scheme will not become obsolete as the characteristics or categorization of the asset
16 changes over time. The RPUID:

- 17 • Will remain a key identifier of that asset for the life of the asset
- 18 • The DoD will use the RPUID to permanently and uniquely identify all real property
19 assets in which the DoD has an interest
- 20 • The RPUID will be assigned to the asset, not to the owner or the installation since
21 they may change over time
- 22 • The RPUID will remain a part of the real property asset record for the life of the asset
- 23 • It does not change when criteria of assignment of the real property asset changes

24 In essence, the unique identifier becomes the “link key” that allows multiple databases
25 supporting real property to be joined together, for example financial, management and GIS
26 systems. Figure 4 illustrates the integration of systems supporting real property using the
27 RPUID.

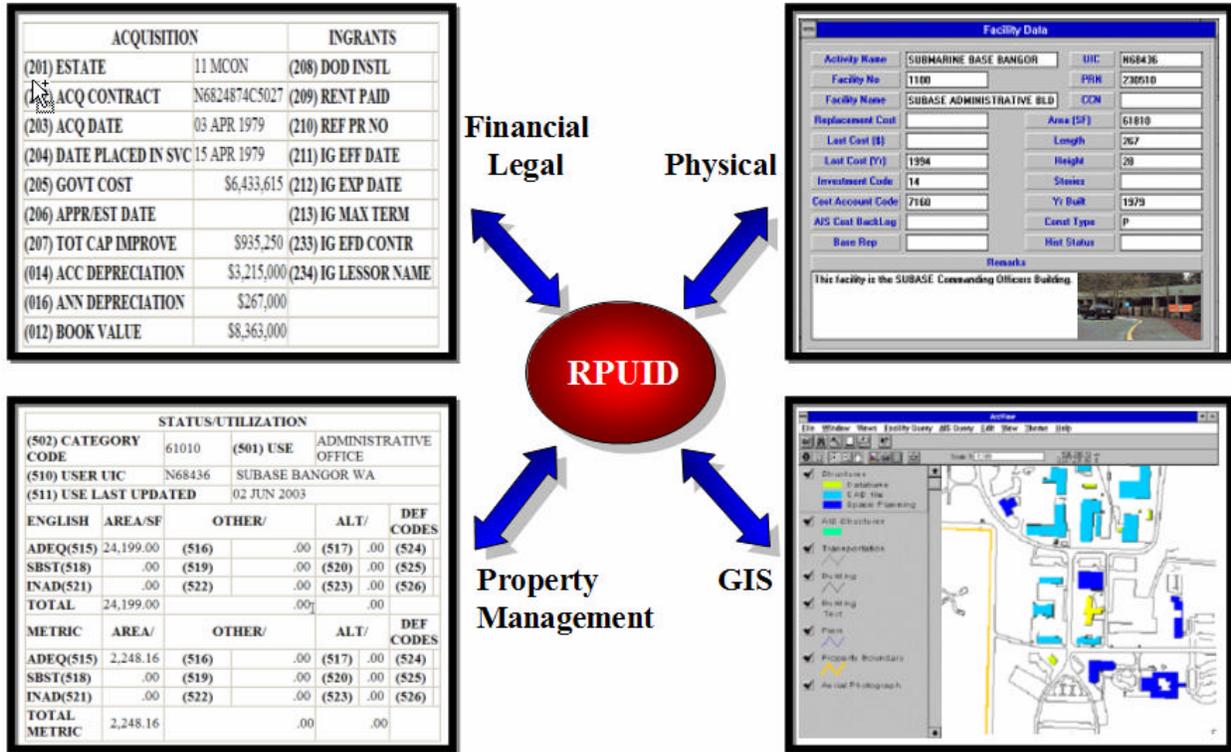
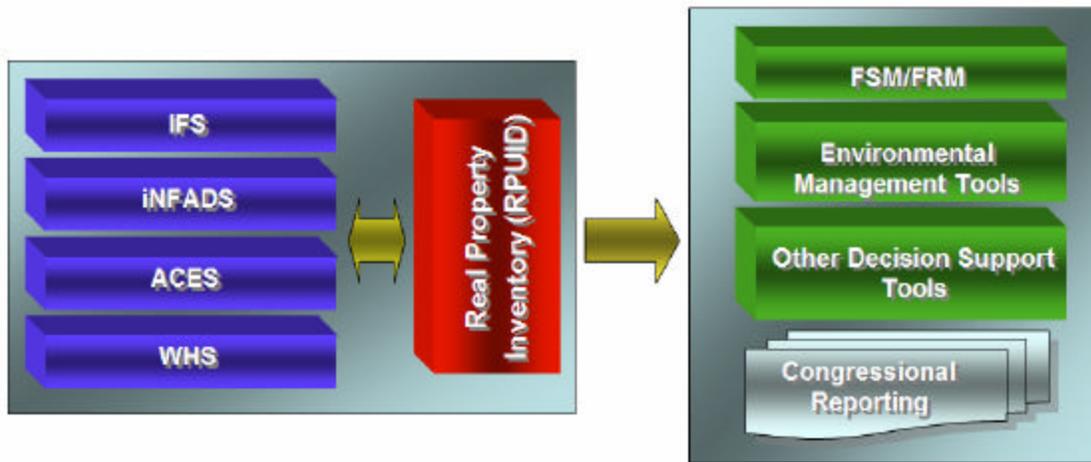


Figure 3: Real Property System Integration Using the RPUI

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2
3 Taking a step back, and viewing real property assets and information from the perspective of the
4 enterprise, the RPUI provides the integration point with respect to real property assets,
5 enterprise transactions, and enterprise data. Using the RPUI, enterprise systems can provide
6 the user with an integrated view of real property. In this case, real property asset information
7 will be entered and stored once in respective systems supporting the mission and business
8 requirements of the various DoD Business and Warfighting Enterprise Mission Areas. No one
9 system will contain all data related to real property assets, e.g. financial, legal and physical, nor
10 will any one system maintain the complete audit trail to track the financial history of real
11 property assets. Instead, the RPUI is the common key or identifier of the real property asset.
12 Using the RPUI, an integrated view of the real property asset can be presented to the user
13 presenting him with data pulled from the systems supporting the lifecycle of real property assets.
14 These systems can be the suite(s) of systems supporting the DoD Business and Warfighting
15 Enterprise Mission Areas (e.g. Acquisition, Accounting and Finance, HRM, I&E), and/or the
16 suite(s) of systems used by the real property COIs (e.g. the Military Services and Defense
17 Agencies) supporting the management of real property assets. Figures 5 and 6 illustrate the
18 integration of systems supporting real property using the Real Property Inventory RPUI.



1

2 *Figure 4: Integration of COI (Military Services and Defense Agencies) Systems Supporting Real*
 3 *Property Assets*

4



5

6 *Figure 5: Real Property Inventory Integration in the Enterprise Using the RPUID*

7 All real property assets identified in the Real Property Asset Taxonomy in which DoD has an
 8 interest will be assigned a RPUID. The RPUID will not replace any of the commonly used
 9 identifiers such as Facility Number or Building Name but will instead compliment them. In this
 10 manner, users of the “To-Be” solution will be able to identify and access real property assets as
 11 they do today rather than having to learn the RPUID key assigned to real property assets, nor be

1 intimately knowledgeable of its scheme or assignment. The RPUID will provide the enterprise
2 with the key to the history and audit trail for financial transactions and physical changes related
3 to real property assets over their respective lifecycles. Since the RPUID is assigned to the asset
4 for its respective life and never changes, the asset's change history and financial audit trails
5 remain consistent throughout the asset's life.

6 The RPUID as identified in the business rules for real property assets will be created when:

- 7 • An acquisition contract (land purchase, construction, or design-build effort) is
8 awarded
- 9 • Ownership of an asset is transferred to a Military Department/WHS
- 10 • At the award of the leasing contract
- 11 • An asset is permitted from another government agency
- 12 • A license agreement is executed
- 13 • A Status Of Forces Agreement (SOFA) is negotiated and signed
- 14 • An easement is negotiated and signed

15 A RPUID will be required for all existing as well as future assets in the Department, and the
16 RPUID will be archived with the asset at the time that the Department relinquishes all legal
17 interest.

18 **4.4 Core Data Elements**

19 One of the current problems with the systems used by the Military Services and Defense
20 Agencies for the reporting of their respective real property assets is the lack of standardization
21 with respect to the definitions, attributes, business rules and validation criteria used for real
22 property data⁸. As a result, consolidated reporting of assets for which DoD has a legal interest
23 requires data calls, and the subsequent timely and costly consolidation, translation and validation
24 of data using complex business rules into a common format for analysis and reporting. This
25 process affects the timeliness and reliability of data, impacting cost effective planning, analysis
26 and decision-making.

27 In conjunction with the business process reengineering (BPR) effort being performed for the
28 enterprise, workshops were held by the I&E Domain to analyze issues identified with the RPI
29 and to establish a plan to address these issues in the "To-Be" architecture. Focus groups were

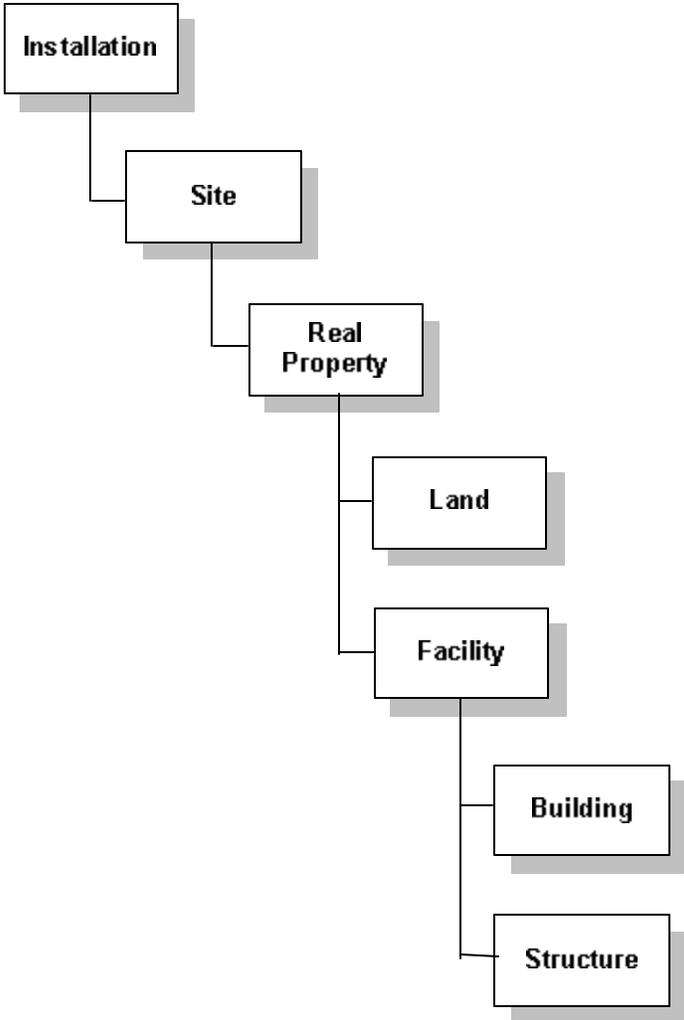
⁸ Assessment of DoD Real Property Information Systems, prepared for the Office of the Deputy Under Secretary of Defense for Installations and Environment, August 8, 2001, p. 3.

1 formed following the workshops containing SMEs from the Military Services and Defense
2 Agencies to address issues and topics identified in the I&E workshops including:

- 3 • Core Data Elements
- 4 • Accounting issues and deficiencies
- 5 • Installation vs. Site
- 6 • Land
- 7 • Facilities
- 8 • Space Management
- 9 • Leases
- 10 • Networked Facilities

11 Additional focus groups have since been formed on a smaller basis to support Fire and Safety
12 Management and Housing. These focus groups comprise COIs for the I&E Domain, and have
13 been tasked with identifying the classes of real property items for which the DoD has a legal
14 interest. The focus groups identified taxonomy for real property assets, and then classified real
15 property items according to this taxonomy. The RPI taxonomy is depicted in Figure 7, Real
16 Property Asset Taxonomy.

17



1 to work with legacy system owners, ERP development teams, and local metadata repository
2 owners to ensure that the common data model includes the appropriate data asset meanings and
3 associated business rules.

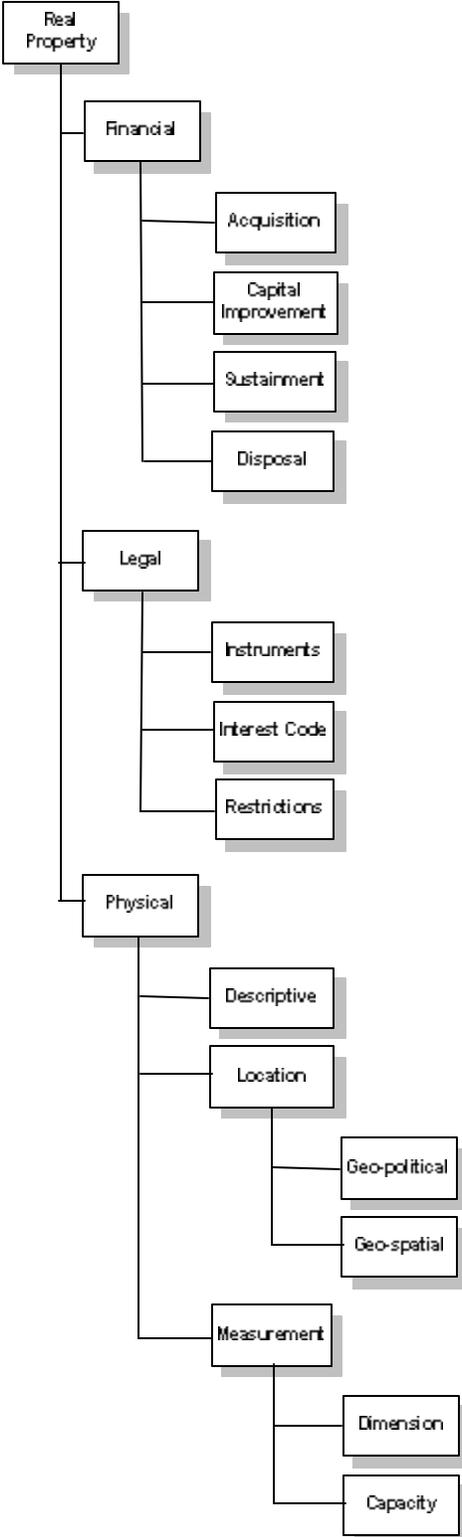
4 Using the data reporting requirements of Draft DoDI 4165.14, data maintained in the systems of
5 the Military Services and Defense Agencies and the taxonomy described above, a common data
6 model was constructed. This model reflects:

- 7 • Entities defined for the real property asset objects identified for the RPI entities (e.g.
8 Site, Facility and Land)
- 9 • Relationships defined between these entities to show dependencies and cardinality
10 (e.g. one-to-one, one-to-many)
- 11 • Business rules defined for the existence of each asset type (e.g. entity), and how each
12 entity is related to the other

13 Using the common data model described above, attributes, or core data elements, have been
14 identified to characterize and define real property assets. These attributes are broken into 3
15 categories as follows:

- 16 • Financial, e.g. acquisition date and cost, capital improvements, sustainment, disposal
17 and salvage
- 18 • Legal, e.g. deeds, metes and bounds, restrictions
- 19 • Physical, e.g. asset name, geo-political and geo-spatial location information, size,
20 dimensions, capacity, construction type, usage type, quality rating

21 The Core Data Element Attribute Taxonomy is depicted in Figure 8. It should be noted that the
22 taxonomy is generic, and there is overlap between some attributes in each classification of the
23 taxonomy, e.g. interest code has financial as well as legal implications with regard to real
24 property.



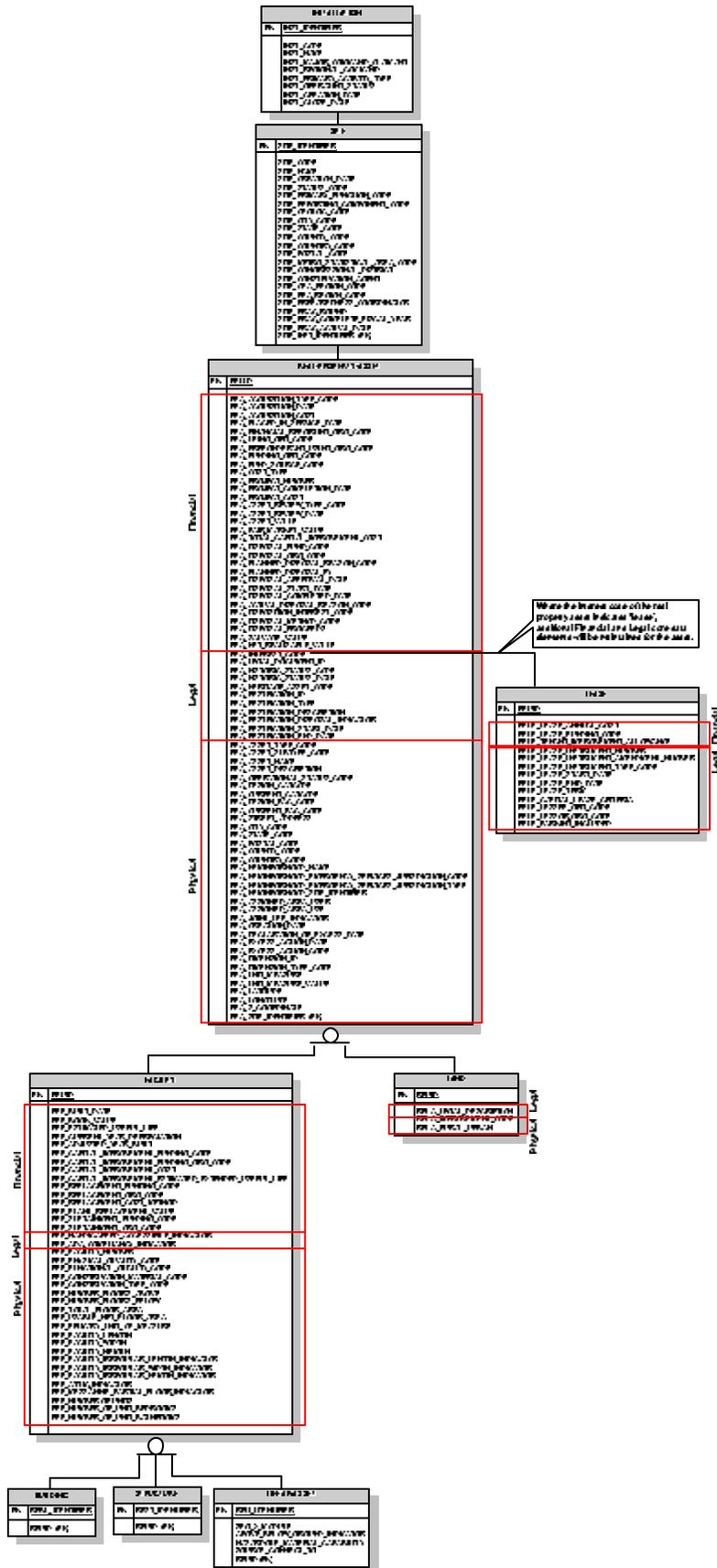
1 Operational Views, and is referred to as the OV-7. The OV-7 is used to document the data
2 requirements and structural business process rules of the architecture's operational view. It
3 describes the data and information that is associated with the information exchanges of the
4 architecture within the scope and to the level of detail required for the purposes of the
5 architecture. The OV-7 representing real property is a decomposed view of the RPI common
6 data model, and contains data elements, primary and foreign keys, characteristics and attributes,
7 and relationships for the objects contained within the logical data model.

8 The OV-7 is created in third normal form which means that all attributes identified for an entity
9 depend on the primary key of the entity only. This concept breaks data down into elementary
10 entities or data objects, with relationships defined between objects. This concept also promotes
11 the sharing and reuse of data objects in the enterprise data model. For example, creating a data
12 object called real property asset which includes attributes defining acquisition, e.g. data and cost,
13 eliminates the use of these attributes to define acquisition attributes for personal property asset or
14 intangible assets. However, defining an elementary object called acquisition with the attributes
15 data and cost allows this data object to be shared by the data objects real property asset, personal
16 property asset and intangible asset.

17 A representation of the common data model is depicted in Figure 9.

18 Attachments to this document contain the following reference documents and products:

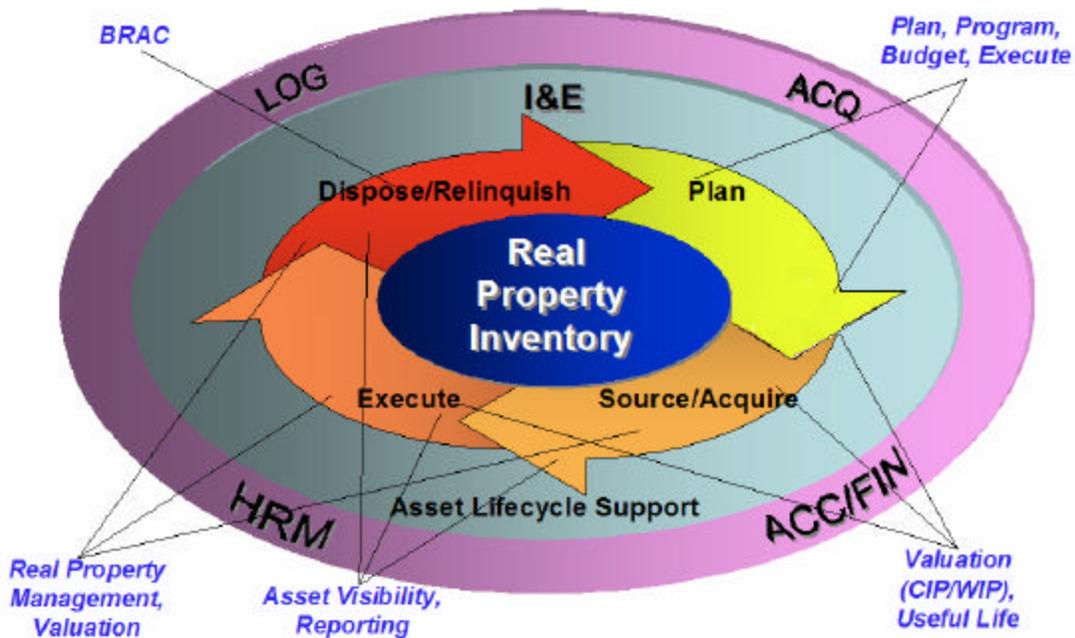
- 19 • Attachment C – RPI Common Data Model
- 20 • Attachment D - OV-7 RPI Logical Data Model View
- 21 • Attachment A - Entity and entity definitions
- 22 • Attachment B – Attribute, attribute definitions, business rules, domain values (pick
23 lists) and validation criteria



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Figure 8: RPI Conceptual Common Data Model

Based on the developed taxonomy, the identified core data elements will allow the Department to identify and track real property assets for which it has a legal interest over the life of the respective asset. The core data elements of the RPI will form the basis for the systems used to support the capabilities and mission of the I&E Domain such as RPM and ESOH. In addition, the I&E Domain and its COIs will be the authoritative source for the core data elements for the real property inventory in support of the Business and Warfighting Enterprise Mission Areas. Figure 10 illustrates the lifecycle of real property assets, and the business and data requirements over the lifecycle.



13
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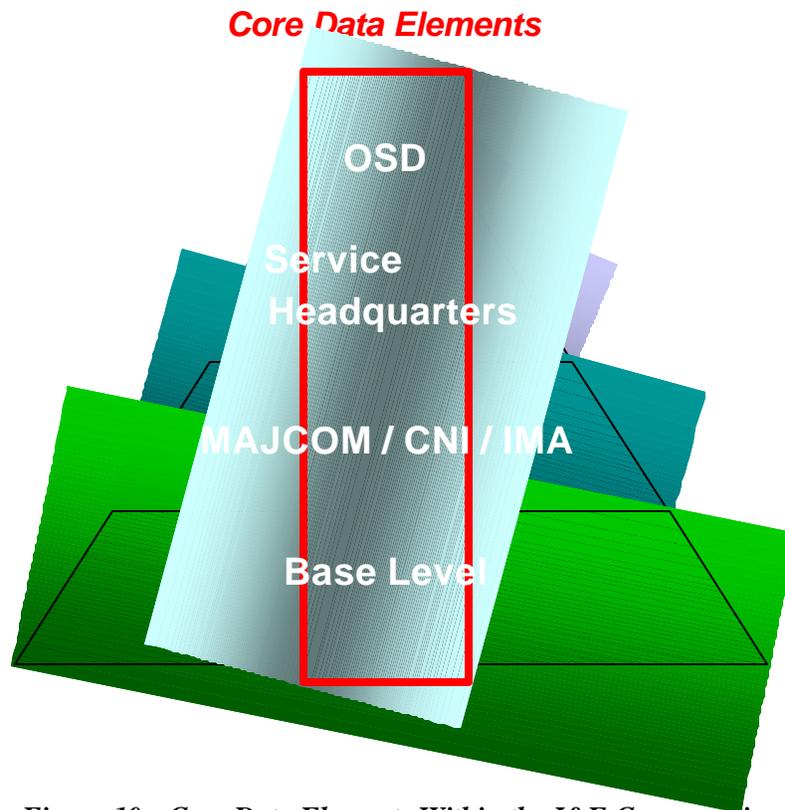
Figure 9: Core Data Element support for the Real Property Asset Lifecycle

15 These core data elements define a common vocabulary, definitions, validation criteria and
16 business rules such that real property assets are described consistently across the Military
17 Services and Defense Agencies, with no data conversion, translation or transformation required.
18 These features will enforce standardization with respect to real property data in the “To-Be”
19 environment by validating data upon initial entry into the system and at when update of this data
20 is performed.

21 To support the identification and physical characteristics of real property assets, standard
22 measures have been defined. For example, utilities typically comprise the basic infrastructure of
23 an installation or are part of its general physical plant. In the RPI, utilities are considered
24 “Linear Assets” or “Network Facilities”. Information required for maintenance, management
25 and ongoing operations will be created and retained by the users, (e.g., Public Works Department

1 (PWD), or the accounting and finance department), of that data in the RPM System. The data
 2 elements included for the RPI are the fundamental, core inventory data items required for overall
 3 asset accountability and real property management. General data elements and attributes are
 4 required for each system as well as for the individual assets within each sub group, including the
 5 appropriate units of measure and other physical characteristics. Segmenting the linear assets will
 6 allow the RPI to inventory defined units or lengths of the asset, an important element in not only
 7 tracking what assets exist but also their general characteristics. Segmentation will provide
 8 additional standardization with respect to real property assets and the related data across the
 9 Military Services and Defense Agencies.

10 The effect of the RPI core data elements is to simplify analysis and reporting of the real property
 11 inventory. And since the data will be real-time and up-to-date with no translation or conversion
 12 required, data reliability and data availability is a given. The core data elements will be required
 13 for all real property assets in which DoD has a legal interest, and are the fundamental, core
 14 inventory data items required for overall asset accountability and real property management.
 15 Using the I&E focus groups, as additional data assets are identified and requirements are
 16 developed, the common data model will be extended so that consistent and reliable data for the
 17 RPI is available, and stewardship and reporting responsibilities are fulfilled.



18

19 *Figure 10: Core Data Elements Within the I&E Communities*

20 As the information and data of the I&E Domain are its most important assets, the lifecycle of
 21 these assets needs to be managed. There is a cost associated with each information and data
 22 assets that is maintained in support of the Domain, from the resources required to support the
 23 lifecycle to the disk space required for storage and archive. The COIs supporting the I&E
 24 Domain must weigh the cost of data lifecycle maintenance against the use and benefits of these

1 data assets, and when the maintenance cost exceeds the benefits, and archiving of such data is
2 recommended.

3 ***4.4.1 RPI Common Data Model Structure***

4 Real property assets are the fundamental, atomic entities of the RPI. The RPI common data
5 model provides a hierarchical structure to support real property assets that in turn supports the
6 accounting, management and inventory aspects of the RPI from the perspective of the I&E
7 Domain, and the Military Services and Defense Agencies. This structure provides a model for
8 discovery and drill-down from the highest aspects of real property, down to the specific details of
9 each asset, thereby providing a well-suited view of real property for planning, analysis and
10 reporting from the perspective of the real property user communities. Conversely, the structure
11 supports the roll-up of real property data for use by the real property user communities.

12 As the authoritative source for real property, the I&E Domain has recommended definitions and
13 business rules for real property with respect to the following aspects of the RPI:

- 14 • Accounting and financial management
- 15 • Real Property Unique Identifier
- 16 • Installation and Site
- 17 • Attributes of Land for RPI
- 18 • RPI Attributes for Non-Owned Real Property
- 19 • RPI Requirements for Space Management
- 20 • Network Facilities

21 These recommendations are included in attachments to this document, and are discussed in this
22 section with respect to implementation in the common data model.

23 In the common data model, Sites have been defined as physical geographic entities and are
24 comprised of contiguous land parcels, upon which facilities may be constructed. Sites, in turn,
25 are grouped to form Installations. Installations do not necessarily represent geographic entities,
26 but are groupings of one or more Sites identified to support management and mission directives
27 as identified by the Military Services and Defense Agencies.

28 In the common data model, the entity hierarchy is represented using parent-child relationships
29 between entities. Each parent is identified by a primary key, which is also the foreign key of the
30 child. The primary and foreign keys of the parent and child entities are the basis of the
31 relationship between the entities. Cardinality is the type of relationship between the parent and
32 child records of a relationship, identified as one-to-one (1:1), one-to-many (1:many), or many-to-
33 many (many:many). The INSTALLATION and SITE entities are both defined by primary keys
34 consisting of unique identifiers, e.g. INSTALLATION_IDENTIFIER and SITE_IDENTIFIER
35 respectively. In this example, referential integrity between the INSTALLATION and SITE
36 entities is enforced using the primary key of the INSTALLATION entity,
37 INSTALLATION_IDENTIFIER, which is the foreign key in the SITE entity, SITE_
38 INST_IDENTIFIER, completing the relationship. The relationship between INSTALLATION
39 and SITE is one-to-many. As discussed previously, unique identifiers will be assigned to
40 Installations and Sites for the life of the respective entity. While providing a hierarchical view of

1 the INSTALLATION and SITE entities, this structure also provides flexibility with respect to
2 support of organizational and mission changes that affect real property. For example,
3 Installations can be closed or realigned, and Sites can be closed, realigned or merged. The effect
4 of these changes to the affected entities is reflected in the model using the foreign key
5 INSTALLATION_IDENTIFIER. If a Site is realigned from one Installation to another, the
6 foreign key SITE_INST_IDENTIFIER in the SITE entity is updated with the value of the
7 primary key INSTALLATION_IDENTIFIER of the new parent Installation. The Site is then a
8 child of the new parent Installation.

9 RPI assets are maintained in the entity REAL-PROPERTY-ASSET, identified by the primary
10 key RPUID. RPI assets are children of the Site that is responsible for them. In the Model, this is
11 represented by the parent SITE, (identified by the primary key SITE_IDENTIFIER), and the
12 child REAL-PROPERTY-ASSET entities, related by the foreign key RPA_SITE_IDENTIFIER.
13 The relationship between SITE and REAL-PROPERTY-ASSET is one-to-many. Real property
14 assets can be disposed of either entirely or in part. The structure of the common data model and
15 the RPUID support this functionality. For example, a land parcel identified by a single RPUID
16 can be divided, where part of a land parcel is disposed of, while the DoD retains interest in the
17 remaining land parcel. In the case of the dividing of land parcels, the original RPUID is
18 maintained for the retained portion of the land parcel and an additional RPUID is created for the
19 disposed parcel, which is then archived for inventory purposes.

20 In the “To-Be”, RPI data will never be deleted, it will be archived so as to maintain auditability
21 of the system. In the case of archiving, RPI records will be updated to reflect the fact that the
22 DoD has relinquished its interest in the real property asset, with the archive data indicating that
23 the data no longer represents asset of the DoD. The archived data will be maintained so that it
24 can be retrieved should the need for the data arise.

25 Real property can be in one of two mutually exclusive forms: Facility or Land, supported in the
26 entities FACILITY and LAND respectively. In the common data model, the REAL-
27 PROPERTY-ASSET entity contains those attributes common to all assets irrespective of asset
28 type, such as RPUID acquisition date, acquisition cost, and interest code. The FACILITY and
29 LAND entities contain those attributes that are specific to the type of asset, Facility or Land.
30 The relationship between the parent REAL-PROPERTY-ASSET and child FACILITY **OR**
31 LAND entities is one-to-one, based on the RPUID.

32 A Facility can be in one of two mutually exclusive forms: Building or Structure, supported in
33 the entities BUILDING and STRUCTURE respectively. In the common data model, the
34 FACILITY entity contains those attributes common to all Facilities irrespective of the type. The
35 BUILDING and STRUCTURE entities contain those attributes that are specific to the type of
36 asset, Building or Structure. The relationship between the parent FACILITY and child
37 BUILDING **OR** STRUCTURE entities is one-to-one, based on the RPUID. The BUILDING-
38 MODULE entity is a child of the BUILDING entity, and is used to support decomposition of the
39 real property of type Building, such as Housing or a Network Facility. For example, a Housing
40 unit is a single Facility, but can be comprised of one or more units, e.g. apartments. BUILDING
41 to BUILDING-MODULE relationship as one-to-many, allowing a real property asset of type
42 Building to be decomposed into the units that comprise it.

43 Each of the entities defined in the common data model will be composed of attributes to define
44 the financial, legal and physical characteristics of the real property asset in the RPI. Through the

1 real property asset lifecycle, assets are acquired, improved, sustained, and disposed of.
2 Throughout the life of the real property asset, the attributes of the RPI record will be updated to
3 reflect changes in the asset with respect to financial (e.g. capital improvement, disposal) and
4 legal (e.g. restrictions) transactions, and physical changes (e.g. capital improvement, partial
5 disposal or demolition). In this manner, the history of changes to each real property asset in the
6 RPI will be maintained for planning, analysis and reporting. Audit trails and mechanisms will be
7 maintained to indicate the source and time of each change to real property asset records, as well
8 as archiving of data to indicate asset characteristics throughout the lifecycle of each real property
9 asset. For example, in the case of the dividing of a land parcel, archiving of the original land
10 parcel data will be performed such that a before and after image of the land parcel data is
11 available to users to support analysis, reporting and audit trail maintenance.

12 Data standards recommended for the RPI have been defined in the common data model, and are
13 included in Attachments A and B of this document. These standards have been proposed by the
14 I&E COIs to resolve issues regarding consistency and the lack of collaboration that is currently
15 found with the real property systems in use within DoD. These standards include:

- 16 • Common vocabulary and definitions: Promotes understanding of real property data
17 and the characteristics that define it. The vocabulary and definitions proposed for the
18 RPI has been based upon the vocabulary of the EBPM and recommendation by the
19 I&E RPI COIs.
- 20 • Validation criteria: Referential integrity, range and uniqueness checks will increase
21 the quality and consistency of real property data by using standard edit and validation
22 tools to catch data errors and anomalies at each point that data is entered or changed.
- 23 • Standard data: Domain rules and default values will control the population of data
24 within the “To-Be”. Domain rules consist of pick lists, and are pre-defined values
25 that users select typically through pull-down value lists. The domain rules defined by
26 the real property COIs will replace those domain rules currently used by the Military
27 Services and Defense Agencies providing a standardized and common method for
28 identifying and defining real property assets in the RPI. This eliminates “free format”
29 entry of data by users, and increases the quality, consistency and usability of data for
30 analysis and reporting.
- 31 • Authoritative sources: In identifying standards for the RPI, authoritative sources have
32 been used so as to provide consistency and integrity with respect to the “To-Be”
33 solution and the data that it will support. For example, the FASB and FRM have been
34 used as the basis for the definition of accounting business rules. Sources including
35 FIPS and the DoDI have been used for the definition of domain rules.
- 36 • Business rules: Business rules define the events, triggers and processing of data to
37 support the business processes defined in the EBPM. In addition, business rules
38 defined for the RPI will be used to populate data within the RPI. Authoritative
39 sources will be used to insert and update data within the RPI based upon events
40 defined in the “To-Be”. For example, when a construction contract is authorized to
41 build (create) a real property asset, an RPUID will be created for the new asset and a
42 template record created in the RPI. The initial data created for the asset in the

1 template real property record will be populated by contract data entered by
2 Acquisition. This will improve the consistency and quality of data within the RPI as
3 well as within the enterprise as the re-entry of data will not be required: Data will be
4 entered once and shared.

5 To support user discovery of real property asset data and asset type identification, 2 attributes
6 have been proposed for the REAL-PROPERTY-ASSET entity: RPA_ASSET_TYPE_CODE
7 and RPA_ASSET_SUBTYPE_CODE. These attributes will also be used to support real
8 property asset identification for the UID Registry. Business and domain rules have been defined
9 for these attributes, with each to be populated automatically by the system based on the value of
10 the Facility Analysis Category (FAC) code for the real property asset.

11 RPA_ASSET_TYPE_CODE is used to define the asset type and can be either:

- 12 • L Land
- 13 • B Building
- 14 • S Structure
- 15 • N Network Facility

16 RPA_ASSET_SUBTYPE_CODE is used to identify the type of Network Facility, and will be
17 driven off of the FAC code as well. Business and domain rules for the
18 RPA_ASSET_SUBTYPE_CODE are described in Attachment F, Real Property Legal and
19 Physical Recommendations.

20 **Recommendation:** Our recommendation is to accept the standard core data elements,
21 definitions, business and domain rules as the standards for real property.

22 **4.4.2 Accounting**

23 Standardization of the RPI core data elements, business rules and procedures, compliant with
24 federal financial regulations, are required to enable Military Services and the Defense Agencies
25 to properly track, update and maintain asset information. Asset accountability and accurate
26 valuation of capital assets are critical factors in support of the Secretary of Defense high priority
27 initiative to have timely, accurate and reliable financial data for use in making effective
28 management decisions and for achieving favorable audit opinions on the Department of Defense
29 financial statements.

30 The I&E Domain and real property COIs analyzed the real property asset lifecycle, identifying
31 key processes, events and triggers identified in the EBPM. The Accounting Working Group
32 analyzed those data elements and developed the timeline and comprehensive definitions to be
33 implemented across the DoD as standard triggers used to inactivate assets' financial and physical
34 accountability. The Core Data Element Taxonomy identifies the financial categories identified
35 for real property assets as:

- 36 • Acquisition
- 37 • Capital improvement
- 38 • Sustainment
- 39 • Excess

1 • Disposal

2 The identification of standard data elements and definitions to highlight the financial
3 implications of these activities is a critical factor to the process of recording and maintaining the
4 assets' book value in the financial records and accurately representing the entity's operating
5 position. For each of these activities, core data elements have been proposed to capture data
6 required to characterize the effect of the activity, as well as to capture the financial impact of the
7 activity. Core data elements have been identified to capture the date, financial effect (e.g. cost,
8 proceeds), activity or transaction type, impact to the asset (e.g. useful life) and funding
9 organization of the activity and the fund source. The RPI common data model contains the core
10 data elements that have been proposed to capture the financial data and effects of changes to real
11 property. Data will be captured for each real property asset, for each change to a real property
12 asset for which a financial effect or impact is realized.

13
14 There is a one-to-many relationship between the RPI real property asset and the financial activity
15 or event that occurs for the asset. For example, over the life of an asset, one or more capital
16 improvements may be initiated that may alter or recharacterize an asset from the perspective of its
17 physical attributes, designate use and useful life. For the purpose of planning, analysis and
18 discovery, the core data elements reflecting these events can be pulled with the financial data
19 available for reporting and financial audit tracking.

20 **4.4.3 Legal**

21 During the RPI focus group meetings, the I&E Domain and real property COIs analyzed each
22 asset type and the related activities and processes for data to identify the legal characteristics for
23 real property assets and the transactions that affect these assets. The Core Data Element
24 Taxonomy identifies the legal categories identified for real property assets as:

- 25 • Interest code
26 • Instruments
27 • Restrictions

28 Instruments represent legal documents that identify the legal characteristics of a real property
29 asset and include deeds and leases. One of the assumptions of the RPI is that there will be an
30 automated document management system integrated with the BMMP "To-Be". It is proposed
31 that the integration of the RPI and the document management system use the RPUID. In this
32 manner, archived documents can be referenced using the RPUID for the desired asset maintained
33 in the RPI.

34 Interest code is defined by DoDI 4165.14, and identifies the interest or stake of the DoD in a real
35 property asset, e.g. owned or leased (non-owned). Core data elements have been defined for the
36 REAL-PROPERTY-ASSET entity to support leases. Business rules have been proposed so that
37 population of lease-related data elements will be based upon the interest code for the asset, and
38 will be populated directly from acquisition data contained in the lease.

39 For each activity engaged with respect to real property assets, there is legal information (e.g.
40 instruments), the type of interest that the DoD has in the asset and restrictions that may affect the
41 use of the asset.

1 Restrictions are limitations on the use or interest the Government has in a real property asset.
2 The restrictions are not mutually exclusive; that is, multiple restrictions may exist simultaneously
3 for a real property asset. Therefore, numerous restrictions may be applicable in a particular real
4 property record. Examples of restrictions would include reversionary clauses in the deed,
5 development restrictions, environmental restrictions, historical status, etc. Restrictions originally
6 derive from acquisition conveyance but may be added to, modified or deleted over time.
7 Restrictions may also be added or modified when the property is disposed; consequently, the
8 same list of restrictions applies to both acquisition and disposition activities. The common data
9 model includes a one-to-many relationship between the REAL-PROPERTY-ASSET entity and
10 the RESTRICTION entity, with the RPUID providing the basis for the relationship.

11 **4.4.4 Physical**

12 During the RPI focus group meetings, the I&E Domain and real property COIs analyzed each
13 asset type and the related activities and processes for data to identify the physical characteristics
14 for real property assets and the transactions that affect these assets. The Core Data Element
15 Taxonomy identifies the physical categories identified for real property assets as:

- 16 • Descriptive
- 17 • Measurement
- 18 • Location

19 Descriptive attributes are those that identify or describe characteristics of real property assets
20 such as asset name, description, operational status, historical status and quality.

21 Measurement attributes define the size and capacity of an asset. The RPI common data model
22 provides support for as many measures as is needed for an asset as opposed to the 3 measures
23 currently required for reporting in DoDI 4165.14. The capability to maintain more extensive
24 measurement characteristics for an asset provides the basis for more comprehensive planning and
25 analysis with respect to the utilization of real property. The core data elements proposed to
26 identify measurement characteristics of a real property asset include:

- 27 • Dimension type code – Domain rule containing the types of dimension to be stored
28 for an asset including FAC, area, length, width, height, thickness, weight, and load
29 capacity
- 30 • Unit-of-measure – The measurement unit used to identify the asset characteristic, e.g.
31 acre, feet, square feet, cubic feet, tons, pounds, pounds per square foot and gallons.
- 32 • Unit-of-measure value – The numerical value which used with the unit of measure
33 identifies the dimension quantity for the asset

34 The common data model includes a one-to-many relationship between the REAL-PROPERTY-
35 ASSET entity and the entities used to support dimensional characteristics, with the RPUID
36 providing the basis for the relationship.

37 Location attributes define the geo-political and geo-spatial characteristics of an asset. The RPI
38 common data model provides support for as many locations as is needed for an asset such as
39 actual location, contact information for management. The core data elements proposed to
40 identify location characteristics of a real property asset include:

- 1 • Address – The street number, street name, direction, suite/room number at which the
2 real property asset is located
- 3 • City – The code for the city in which the real property asset is located
- 4 • State – The code for the state in which the real property asset is located
- 5 • County –The code for the county in which the real property asset is located
- 6 • Postal Code – Standard five-character postal zip code representing the real property
7 asset’s primary mailing address
- 8 • Country –The code for the country in which the real property asset is located
- 9 • Rural / Urban – Utilize General Services Administration (GSA)/Office of
10 Management and Budget (OMB) accepted rule for rural – urban locations

11 The common data model includes a one-to-many relationship between the REAL-PROPERTY-
12 ASSET entity and the entities used to support location characteristics, with the RPUID providing
13 the basis for the relationship.

14 As discussed in the GIS section in this document, geo-spatial location information will provide
15 the coordinates to relate a real property asset with points on the earth. The RPUID will be the
16 integration tool to link geo-spatial and geo-political data for a real property asset.

17 **Recommendation:** The FAC code will be derived and stored automatically based on the
18 CATCODE entered for the real property asset. DoD performs an annual analysis of real
19 property, and it is recommended that during this analysis, FAC and CATCODE assignment to
20 real property assets be reviewed in addition to CATCODE to FAC translation. At this point,
21 FAC code assignment to real property would be validated and refreshed as required.

22 **Recommendation:** FAC codes with respect to land currently characterize how land parcels are
23 acquired by the DoD, not how the land is used. The I&E Domain and real property COIs
24 recommend that a working group be formed to analyze FAC codes currently used for land, and
25 that code be identified to characterize land parcels with respect to use as opposed to type of
26 acquisition.

27

1 **5. Conclusion**

2 The long-term recommendations cannot be achieved, however, without continued cooperation
3 among the Services, Agencies and OSD. The “To-Be” real property inventory environment
4 proposed for DoD-wide use does not relieve the Military Departments and WHS of their
5 responsibility for maintaining real property inventory records. The proposed data controls can be
6 designed to give these organizations full control of and responsibility for entering, maintaining
7 and managing the inventory data.

8 As discussed, the foundation for business management activities and decision making in the I&E
9 Domain is the RPI. In order to develop a common approach and improve accountability for
10 reporting real property throughout the DoD and to promulgate consistent terminology, there is a
11 need for a cross-service strategy that will standardize the reporting of real property throughout
12 the Department. In addition, to standardize the identification and reporting of real property
13 information throughout the Department and improve accountability, a framework for the
14 development of data standards with respect to Real Property data needs to be implemented. To
15 summarize, the framework provided by the I&E Data Management Strategy will help to provide:

16 The entire Defense community will greatly benefit by moving to the recommended new Data
17 Management Strategy. The recommendations are designed to refocus and leverage the resources
18 that are currently expended to create significantly more value for a wider DoD audience. The
19 recommendations also will bring the real property accountability community into compliance
20 with Defense policy for accounting for real property, establishing data standards for application
21 across DoD, and migrating legacy information systems to a DoD standard system that facilitates
22 sharing information with other systems and users. Nevertheless, all of DoD will gain very
23 substantial benefits for their efforts. These advantages include:

- 24 • Real property inventory accountability, and improved real property asset visibility and
25 life cycle management;
- 26 • Improved quality and accuracy of DoD financial statements resulting in clean audit
27 opinions;
- 28 • More accurate data faster enabling more uses of data as a resource predictor;
- 29 • Shared community-wide interest in meeting users’ data requirements;
- 30 • Improved opportunity for analyses and more confident decision making;
- 31 • Capability to visually link real property inventory data with GIS, imagery, and
32 operational capabilities;
- 33 • Significantly reduced number of out-of-cycle data calls and data requests made to the
34 Military Services and Defense Agencies and real property accountable personnel, thereby
35 freeing resources to maintain accurate records;
- 36 • Responsibility shifted to a single source, ODUSD(I&E), for providing access to real
37 property installation management data;

- 1 • Integration and interoperability with Business and Warfighter Enterprise Mission Area
2 efforts and compliance with DoD standards and directives;
- 3 • Data standards to promote:
 - 4 ○ Identification of data assets
 - 5 ○ Authoritative source of data assets
 - 6 ○ Increased reliability and validity of property reporting
 - 7 ○ Understanding and usage of data assets
 - 8 ○ Interoperability of systems using real property data assets
 - 9 ○ Trust by users and applications such that they can determine and assess the
10 authority of real property data sources
 - 11 ○ Standard terminology within the Department to reference real property assets
- 12 • Minimized cost for sharing information and/or adapting applications.

1 **Attachments**

1 **Attachment F. Real Property Legal and Physical Recommendations**

2

1 **Attachment G. Real Property Financial Management Recommendations**

2

1 **Attachment H. I&E Data Management Strategy**

1 **Attachment I. Net-Centricity, the Global Information Grid (GIG) and the**
2 **Net-Centric Data Strategy**

1 **Attachment J. Reference Documents**

1 **Attachment K. List of Acronyms and Abbreviations**

2

1 **Attachment L. Glossary of Terms**