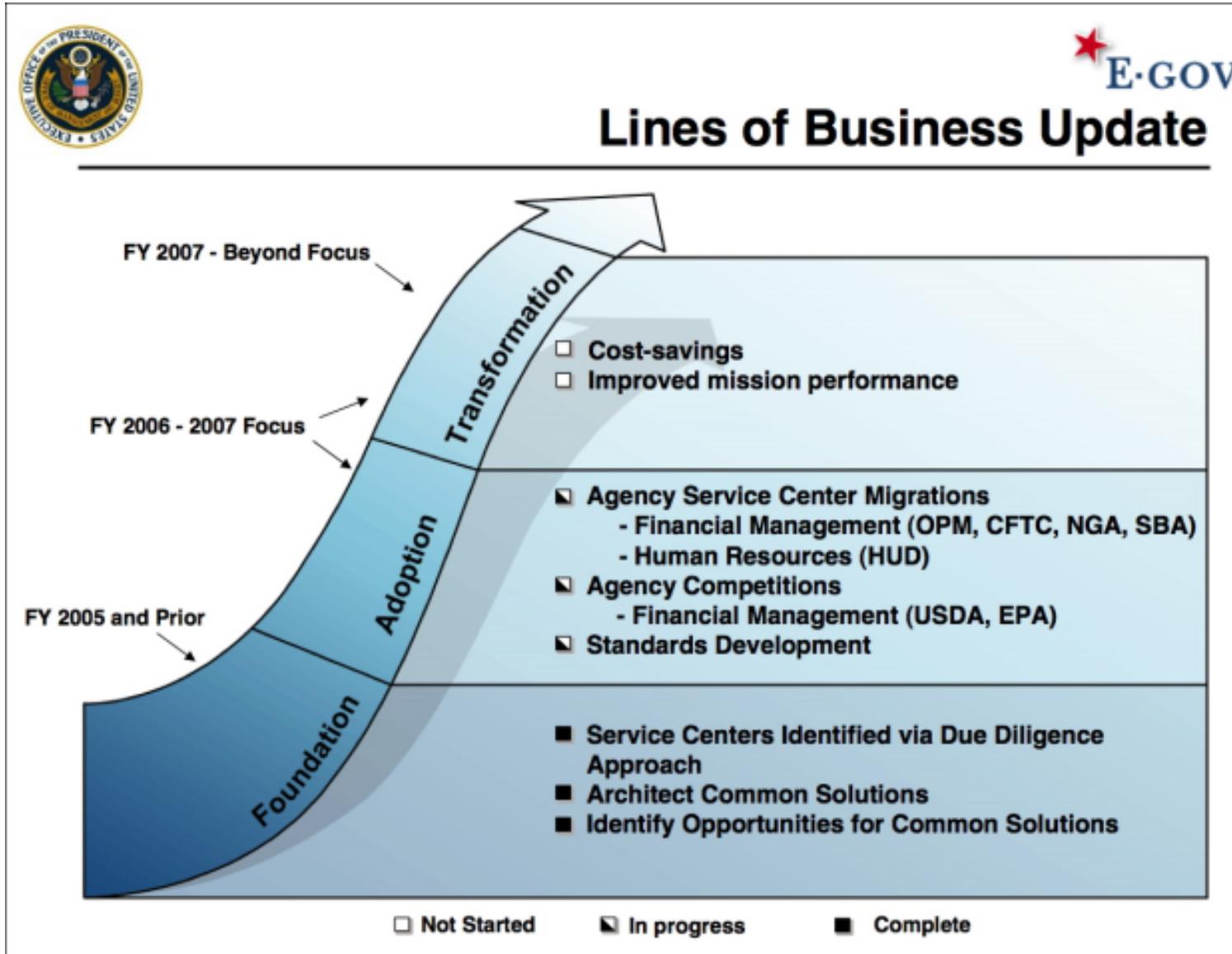


Data Strategy for the Transformation of Business Management

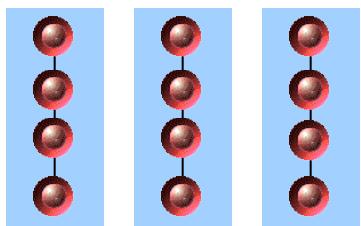
Prof. Paul A. Strassmann
George Mason University, October 16, 2006

Transformation = Cost Savings + Improved Performance

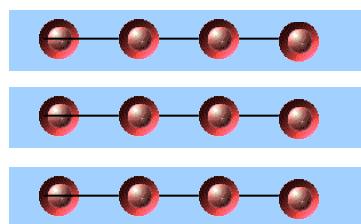


Evolution of Systems

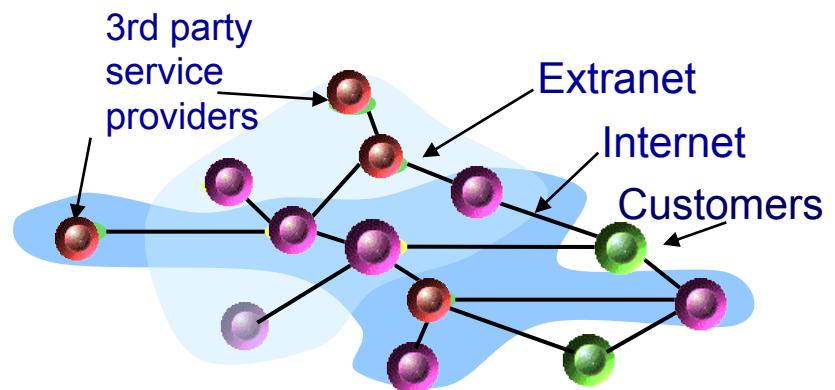
1980's and earlier



1990's



2005 -



Scope of FY06 Business Management Systems

DoD Investment Review Boards	Air Force	Army	Navy	Agencies	Business Management Systems
Finance	67	161	148	107	483
Personnel	164	320	174	134	792
Logistics	780	730	406	169	2,085
Property	71	122	44	17	254
Other	65	0	26	12	103
Total	1,147	1,333	798	439	3,717

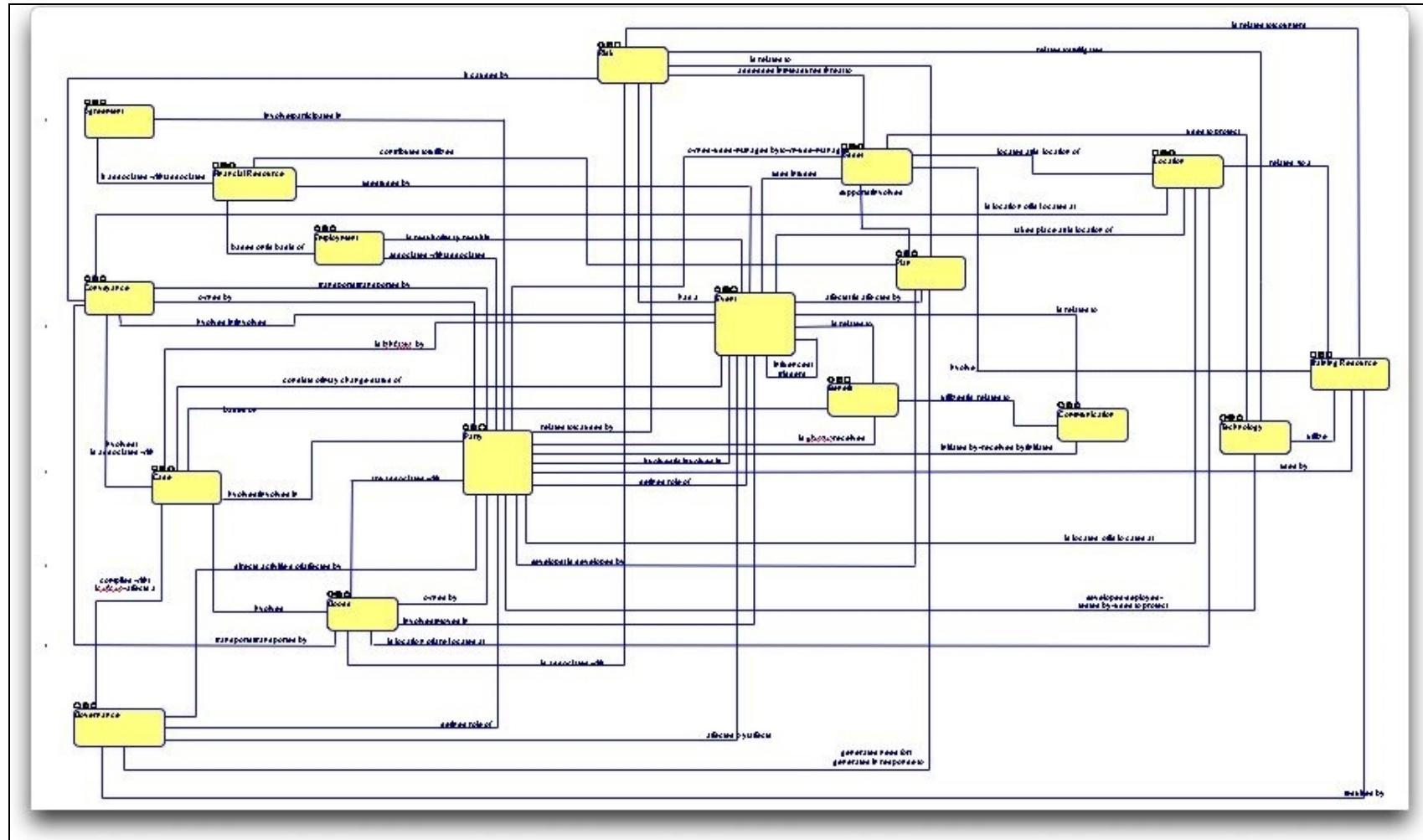
Most Spending in Infrastructure

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Layers of Architecture

Capabilities (Local)	Decision Support.
Applications	Business Applications; Workflow Control; Transaction Processing.
Computing (Distributed)	Data Centers; Messaging; Collaboration; Storage; Search; Archiving.
Communications	Backbone Network; Monitoring; Wireless; Radio; Switching; Access Control.
Foundation (Central)	Governance; Policy; Systems Engineering; Standards; Security; Strategy; Metadata.

Interdependencies Across Applications



Data Pollution Diagnostics

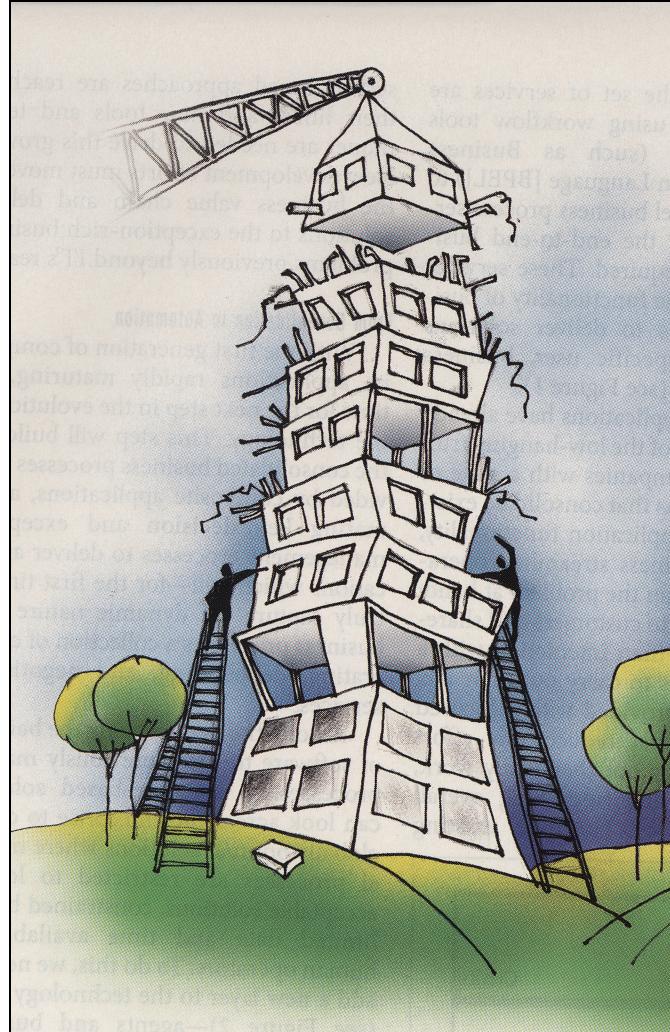
1-4GZUD	Bank One	456542345	1 Bank One Plaza Mail Suite II	Chicago	Il	60670	USA	Current Cl
1-KRWW	Prudential Securities	23467T665	100 Mulberry Street	Newark	Nj	7102	usa	Current Cl
1-KRWP	Herzog Heine Geduld	7893434344	525 Washington Blvd	Jersey City	Nj	7310	USA	Current Cl
1-KRYD	Scudder Kemper Investments	7658786	222 South Riverside	Chicago	Il	60606	USA	Current Cl
1-KS2P	Pioneer Management		60 State Street	Boston	MD	2109	USA	Current Cl
1-KS4D	Donald & Company	9999999999	512 Seventh Avenue	New York	Ny	10018	USA	Current Cl
1-KS55	Merrill Lynch	98756543	233 S. Wacker Drive	Chicago	Il	60606	USA	Current Cl
1-KS5S	Dni Holdings Inc Co Exodus Communications		300 Boulevard East	Weehawken	Nj	7087	USA	Current Cl
1-KS6K	Raymond James Financial Services-Br# 4af01		5980 Lake Michigan Drive	Allendale	Mi	49401	USA	Current Cl
1-KS7F	Raymond James Financial Services-Br# 4ky		Beckwith Street	Frenchtown	Mt	59834	USA	Current Cl
3D-50KX	3Com Corporation	9999999999	11 Penn Plaza, Suite 1710	New York	New Yo	10001	USA	Prospect
JG-3FLC	Aquila Corporation	9.9999E+10	Unknown	Kansas City		Unknown	USA	Prospect
JG-5GSE	MICHAEL FITZGERALD		Lake Union Building Suite 320	Seattle		98109	USA	Prospect
Y8+7V-51Y	Bank One, N.A.	1E+11	1 Bank One Plaza, IL1-0047	Chicago		60670	USA	Current Cl

█	COMPLETENESS	█	CONFORMITY	█	CONSISTENCY	█	DUPLICATION	█	INTEGRITY
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Data Errors in a Sample of 158 Names

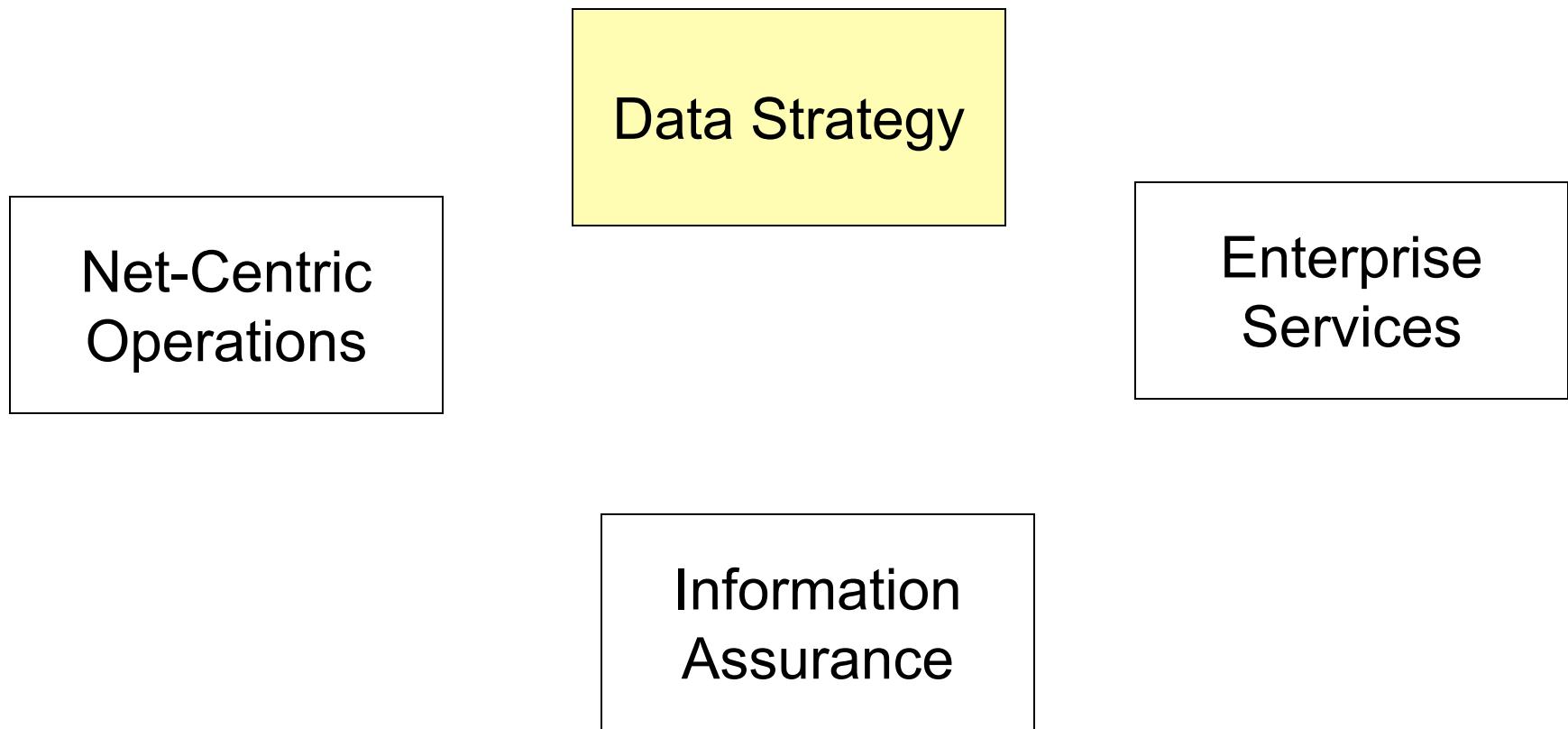
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You Cannot Get Interoperability One Project at a Time

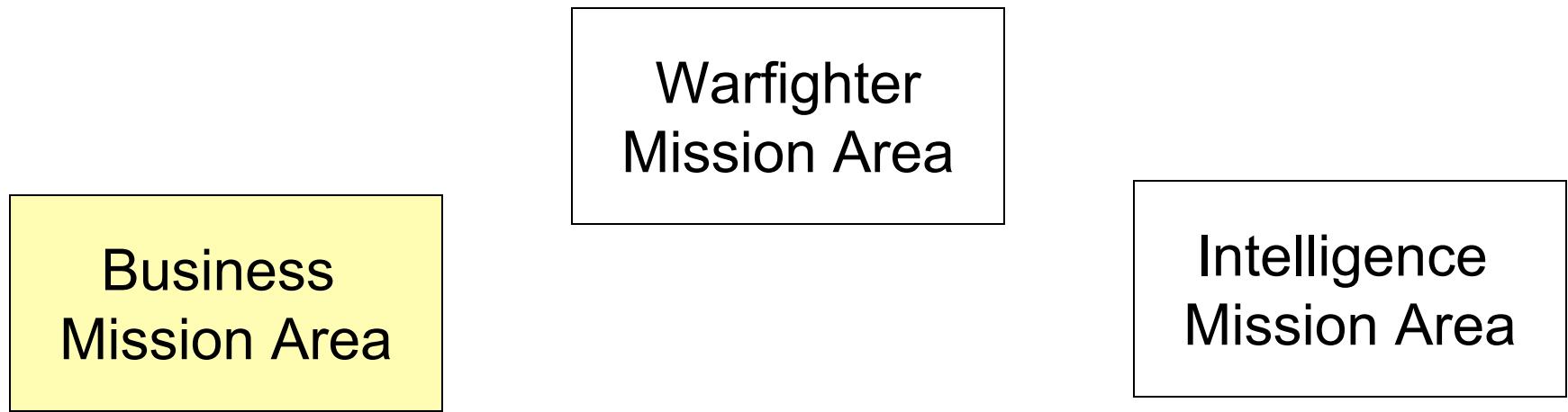


You Cannot Get Interoperability One System at a Time

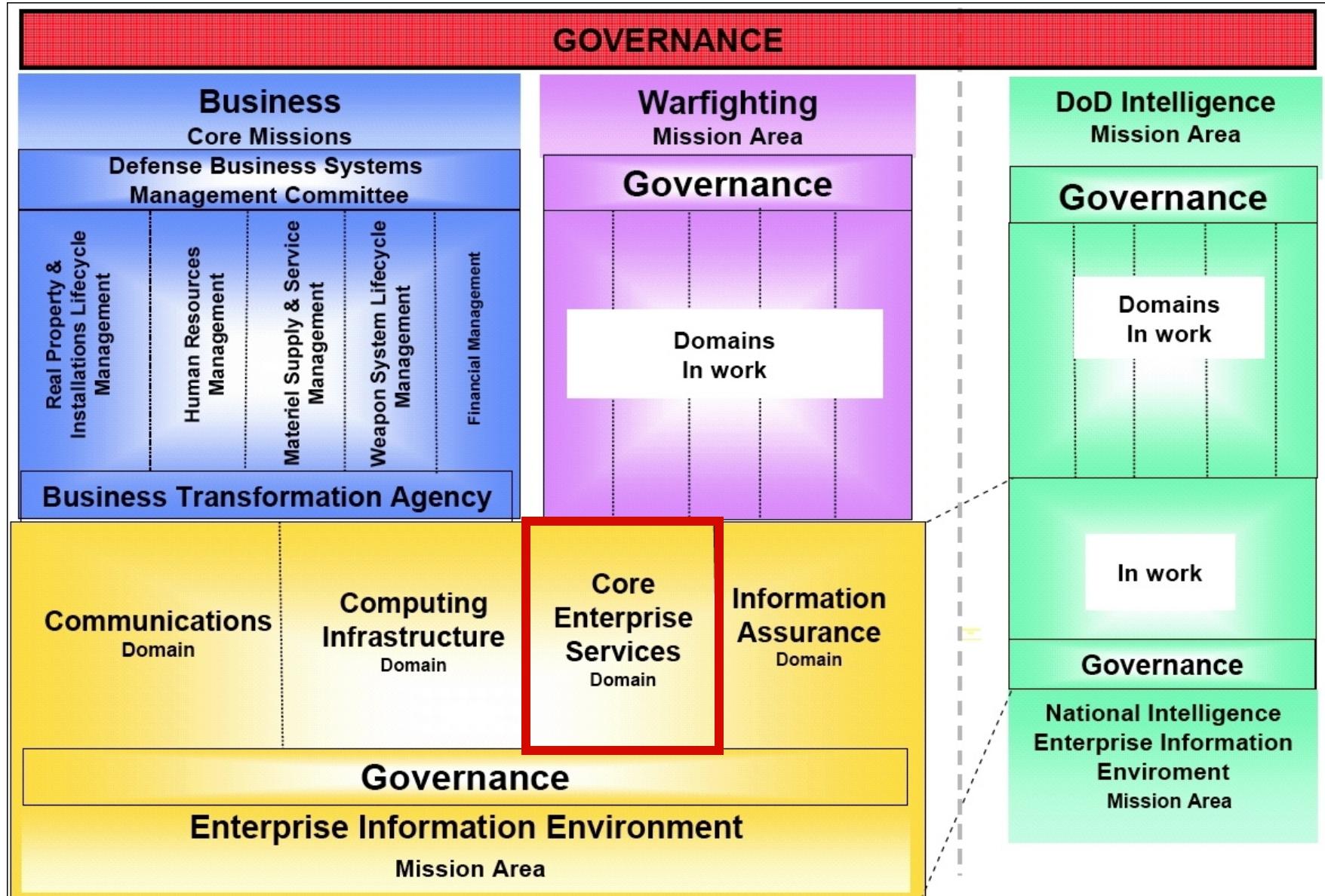
Components of Transformation in DoD



Organization for Transformation in DoD



Organization for Transformation of DoD



The DoD Net-Centric Data Strategy

- The Net-Centric Data Strategy (DOD Directive 8320.2, December 2, 2004) is a key enabler of the Department's transformation;
- The Strategy provides the foundation for managing the Department's data;
- Tags all data with metadata to enable discovery by DoD users;

Policies on Interoperability

- DoD 4630/5000: Interoperability is “the ability to provide and accept data, information, materiel, and services.
- DoDD 4630.5: IT and NSS interoperability shall be verified throughout a system's life.
- DoDD 5105.19: DISA shall ensure end-to-end interoperability.
- DoDI 4630.8: All IT and NSS must be tested for interoperability before fielding and certified by DISA (JITC).

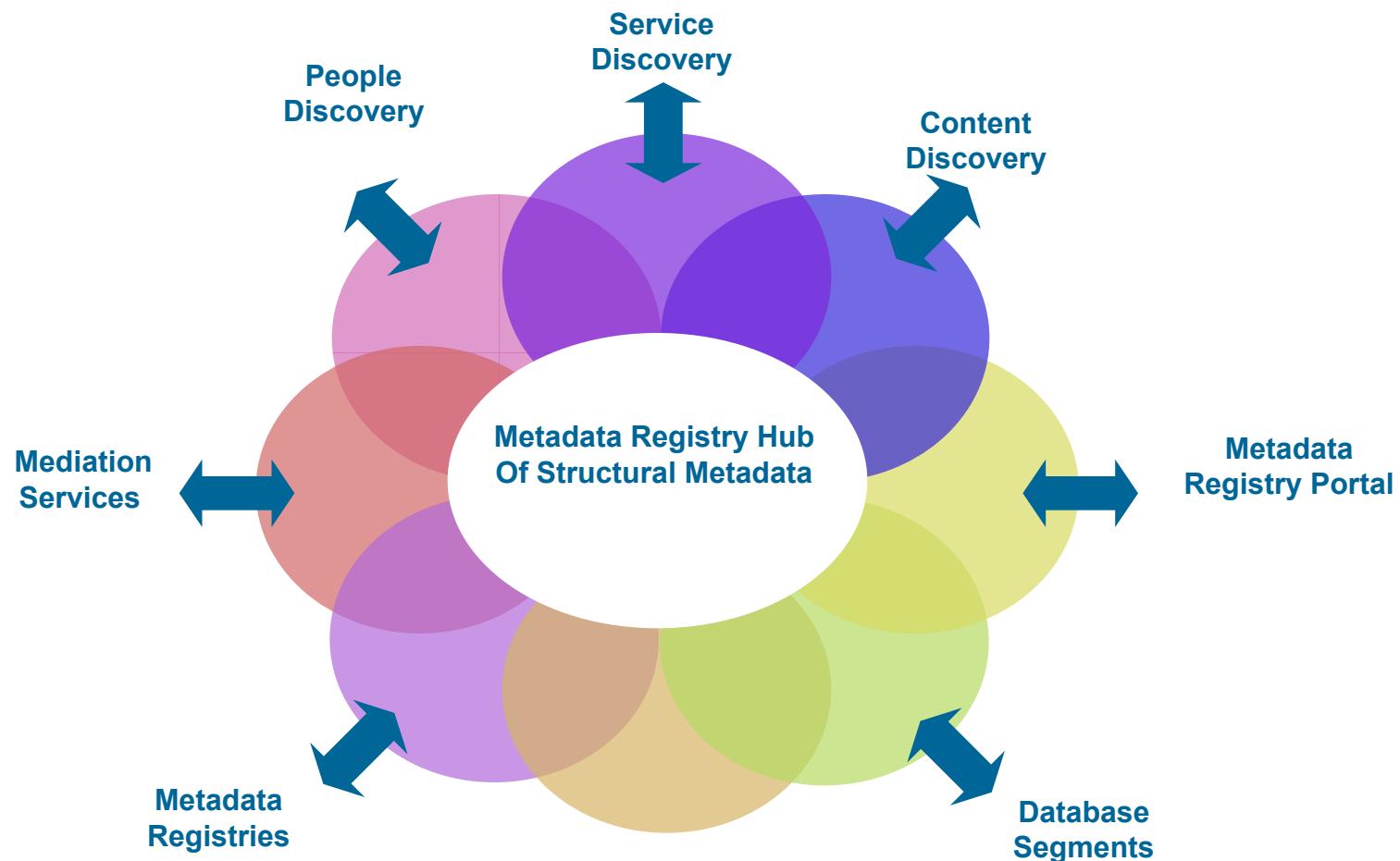
The DoD Net-Centric Data Objectives

- Deliver an environment that enables “many-to-many” information exchanges.
- Enable access to and sharing of information.

Characteristics of Data

- Visible, accessible, understandable;
- Available when and where needed;
- Usable by unanticipated users;
- “Tagged” to enable discovery;
- Registered for description, posting, storing;
- Distributed for access based on identity;
- Organized for shared vocabularies;
- Archived for analytic uses.

Metadata Registry Relationships



Data Engineering Defined

According to the IEEE Computer Society: Data Engineering is concerned with the role of data in the design, development, management and utilization of information systems:

- database design;
- knowledge of data and its processing;
- languages to describe data, define access and manipulate databases;
- strategies and mechanisms for data access;
- security and integrity control;
- engineering services and distributed systems

Key Concepts: Governance Namespace and Information Resource

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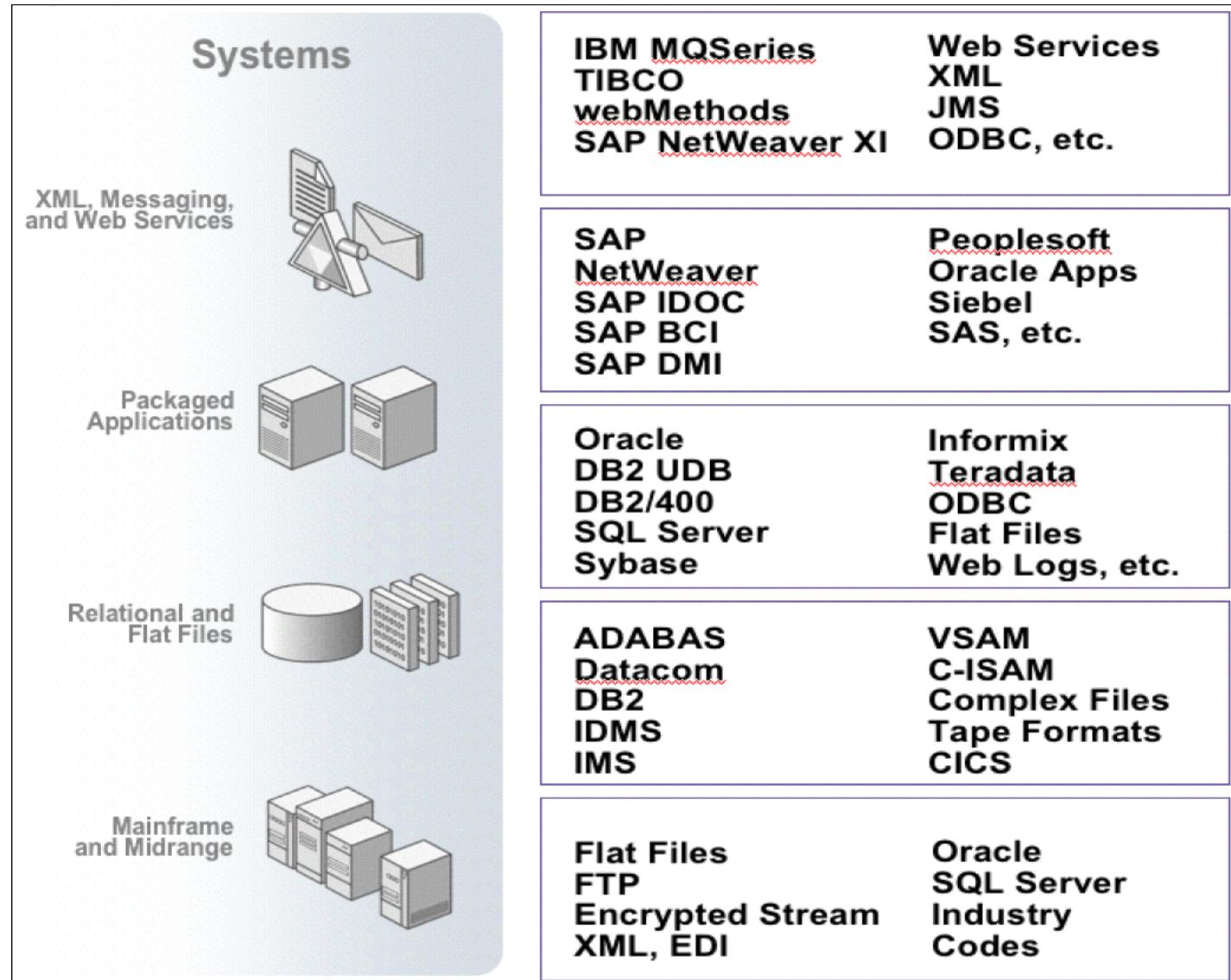
Definition: Governance Namespace

- A Governance Namespace is a space in which Information Resources are registered and controlled.
- Governance Namespace Manager has the power to control the metadata configuration.
- Governance Namespace Manager has the authority to enforce decisions concerning the metadata.

Definition: Information Resource

- An Information Resource is any item that describes or defines some data or set of data.
 - For example, an XML schema defines a format for data.
- All registered items are Information Resources, subject to the lifecycle processes and are enforced by the Governance Namespace Manager.

Where is the Data?



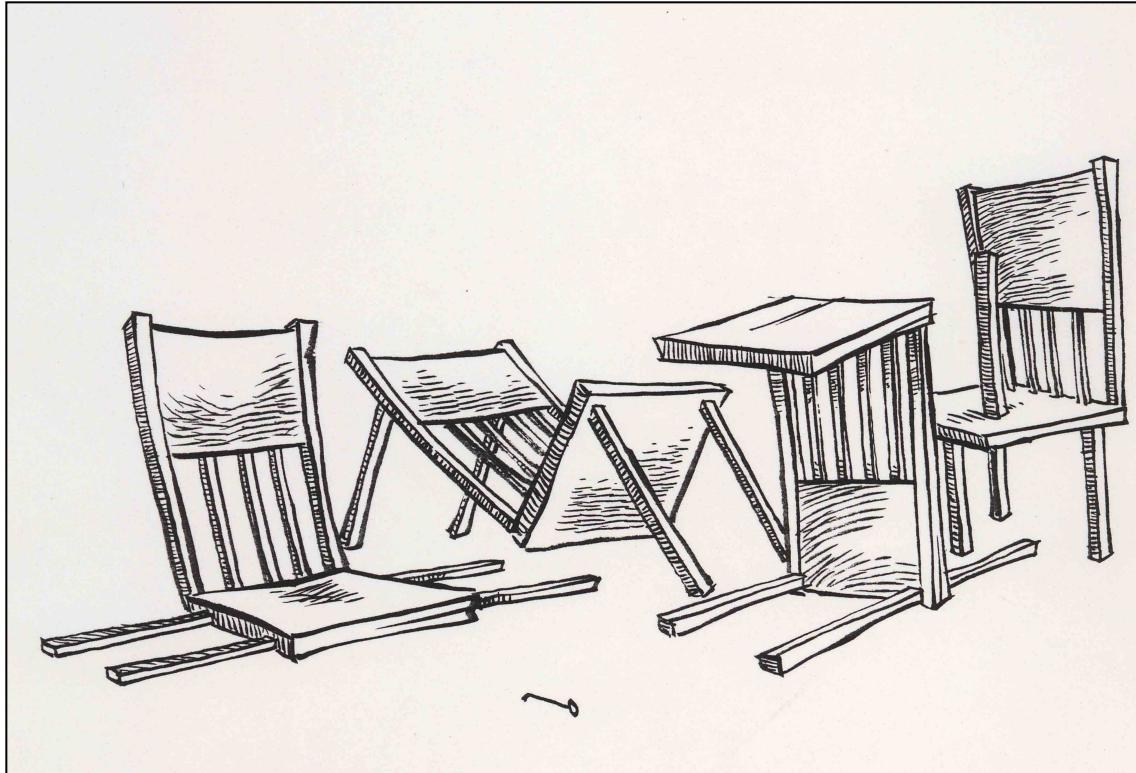
What Data?

UNSTRUCTURED	STRUCTURED	SEMISTRUCTURED
Microsoft Word	XML	LegalXML
Microsoft Excel	HL7	IFX
PowerPoint	HIPAA	cXML
PDF	ASTM	ebXML
Star Office	EDI-X12	HL7 V3.0
Word Perfect	EDI-Fact	ACORD (AL3,
ASCII reports	FIX	GJXDM
HTML	Cargo IMP	TWPDES
EBCDIC	MVR	
Undocumented	AFP	
Flat files	Post Script	
RPG	DJDE	
ANSI		

Example of Data Pollution

What is Your Citizenship?	Frequency
US	9,451
Yes	228
USA	158
U.S.A.	128
U.S.	88
United States	20
(US)	5
Green Card	2
Naturalized	1
Applied	1

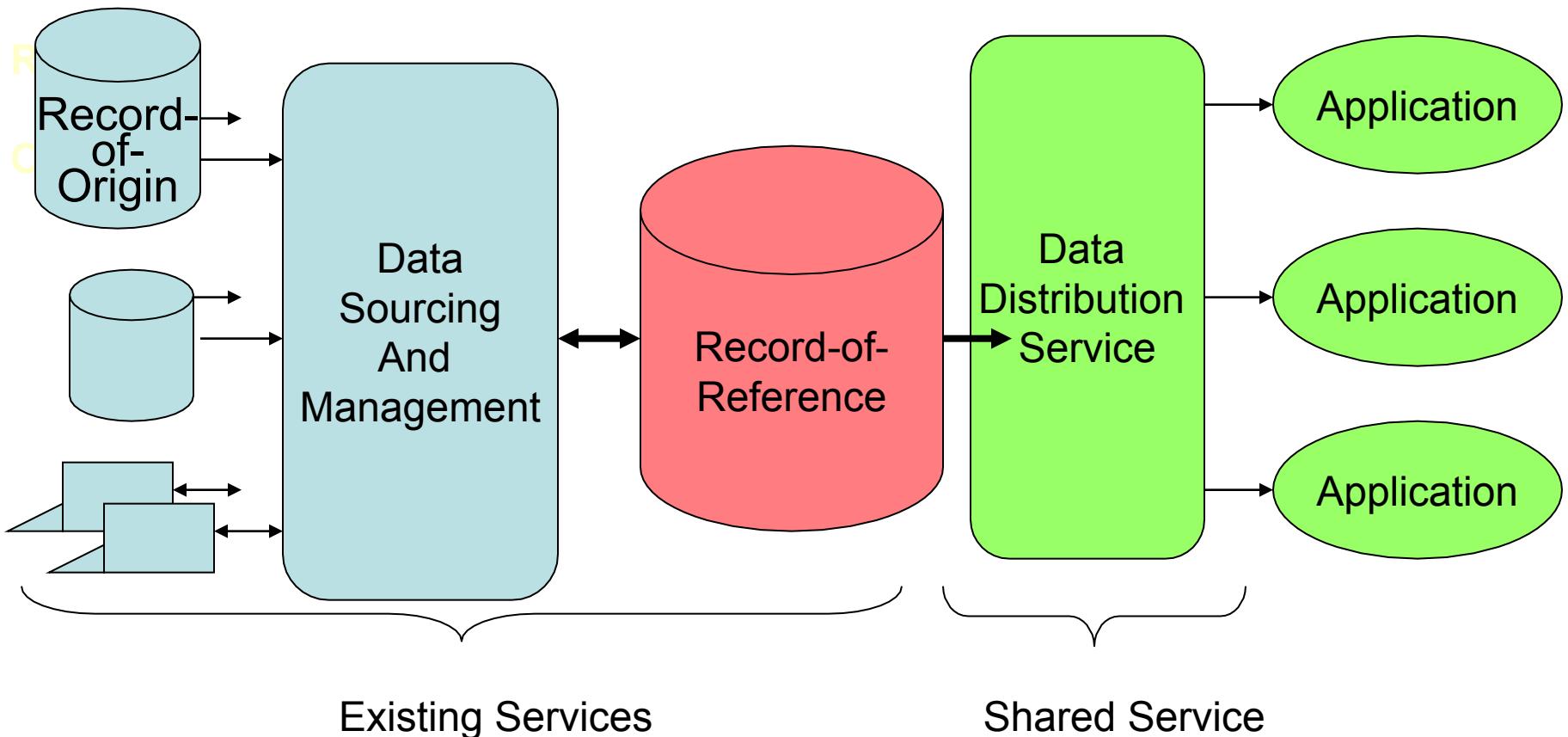
Description of Data Must Include Taxonomy



Information Resource Registration Process

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Data Sourcing vs. Data Distribution



Example of a Data Transformation Case

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A Sample Scenario

Five likely participants in a close air strike scenario:

- Special Forces Forward Observer
- A loitering F/A - 18
- A Aegis tomahawk capable platform off shore
- Loitering UAV
- A Joint Command Authority (AWACS)

Close Air Support Case

Operational Scenario

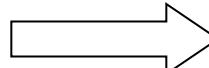
- A. Special Operations Force is tasked to request Immediate CAS on a target.

A Predator unmanned aerial vehicle (UAV) is on station for support.

- B. SOF contacts AWACS with request. AWACS passes the request to Special Operations Liaison Element).

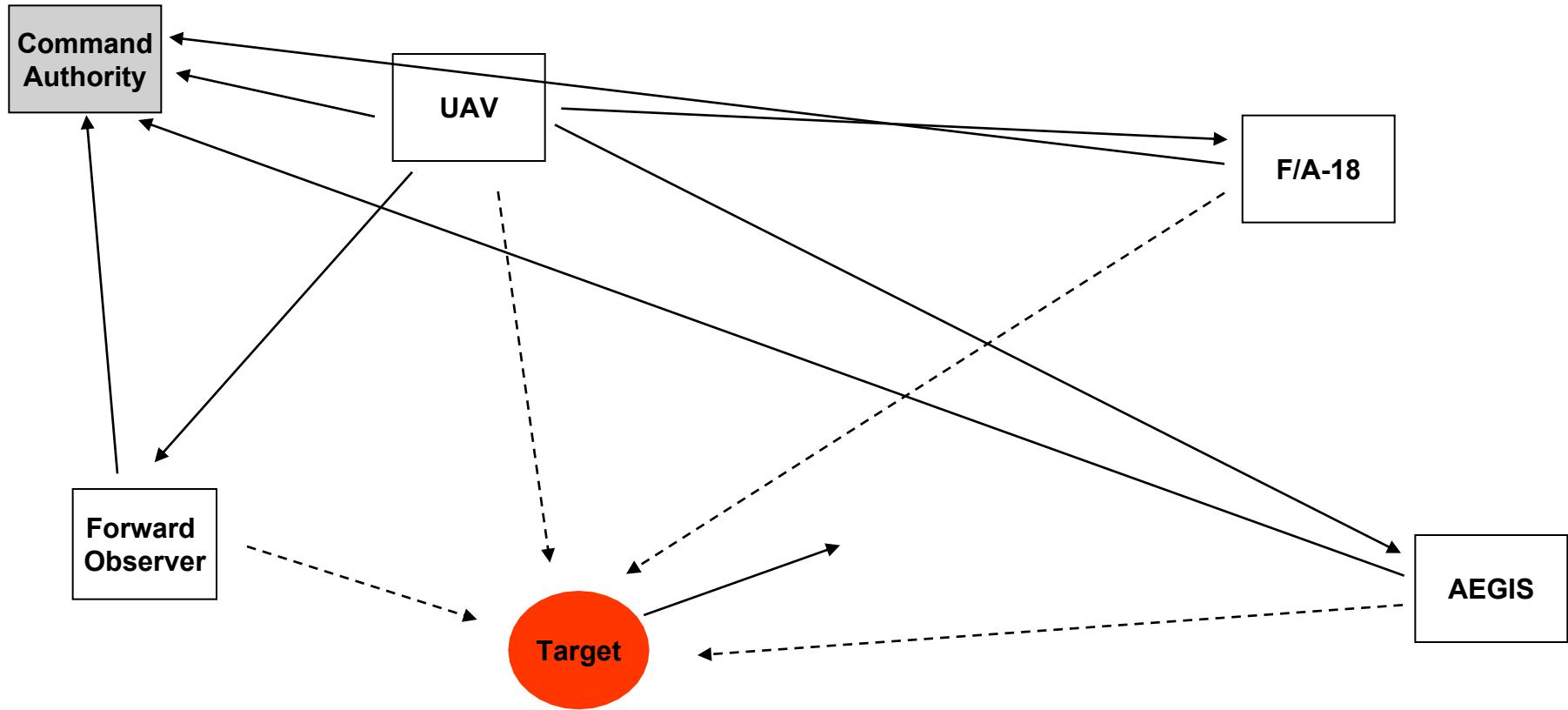
- C. Joint Special Operations Task Force assigns a section of USMC F/A-18Ds, F-15Es.

- D. Aircraft get situational brief from AWACS aircraft while in route, then switch to Terminal Attack Control to execute CAS missions.

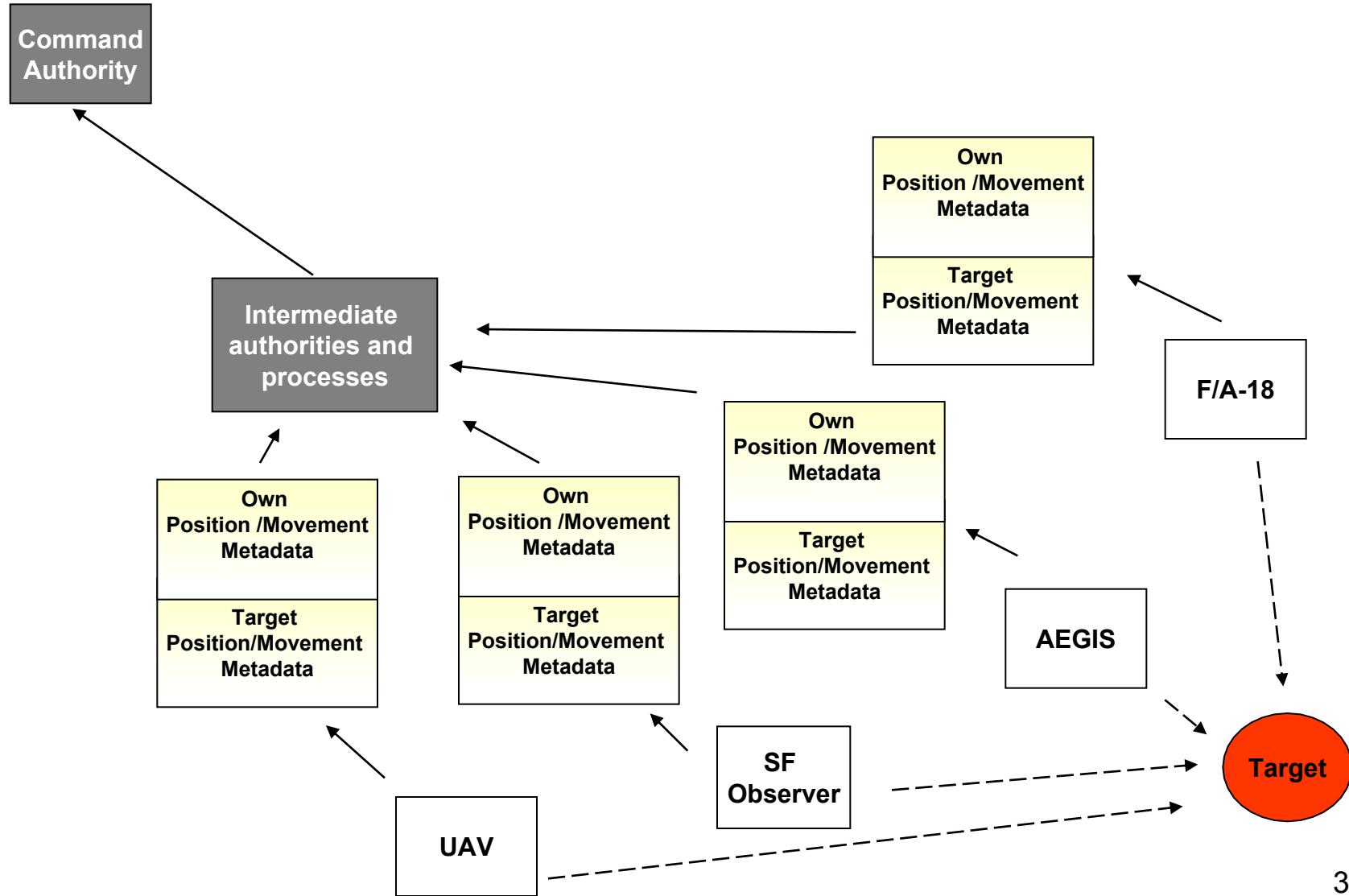


Find aircraft available for Close Air Support (CAS) given coordinates.

Operational View



Data Needed on Target Position



Observations about Data Management

The Curse of Genesis II:7-9

- ...and they have all one language ...and now nothing will be restrained from them, which they have imagined to do.
- ...confound their language, that they may not understand one another's speech.
- Therefore is the name of it called Babel.

Division of Labor = The Engine of Wealth

“The division of labor is limited by the scope of organization.”

Adam Smith (1723-1790)

The Limits on the Scope of Organizations

“The scope of an organization is limited by its capacity to collaborate.”

Summary

A shared definition of Data is the pre-requisite for Cooperation.