NET-CENTRIC DATA MANAGEMENT

Exploiting the Business Value of Semantic Technologies

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Mills serves as lead for the Federal CIO Council's Semantic Interoperability Community of Practice (SICoP) research into the business value of semantic technologies.

A noted researcher and industry analyst, Mills has authored more than 100 reports, whitepapers, articles, and industry studies.

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TOPICS

- Net-centric data management strategy
- The business value of semantic technologies for net-centric operations
- Semantic pilot scenarios for net-centric data management:
  - Agency makes data and services net-ready
  - Community of Interest harmonizes data assets
  - System-X finds, accesses, understands, & applies data and knowledge from multiple sources
- Advancing net-centric operations via external initiatives: SICOP, iECM, NCOR
- System-X demo — Composite applications driven by semantic models

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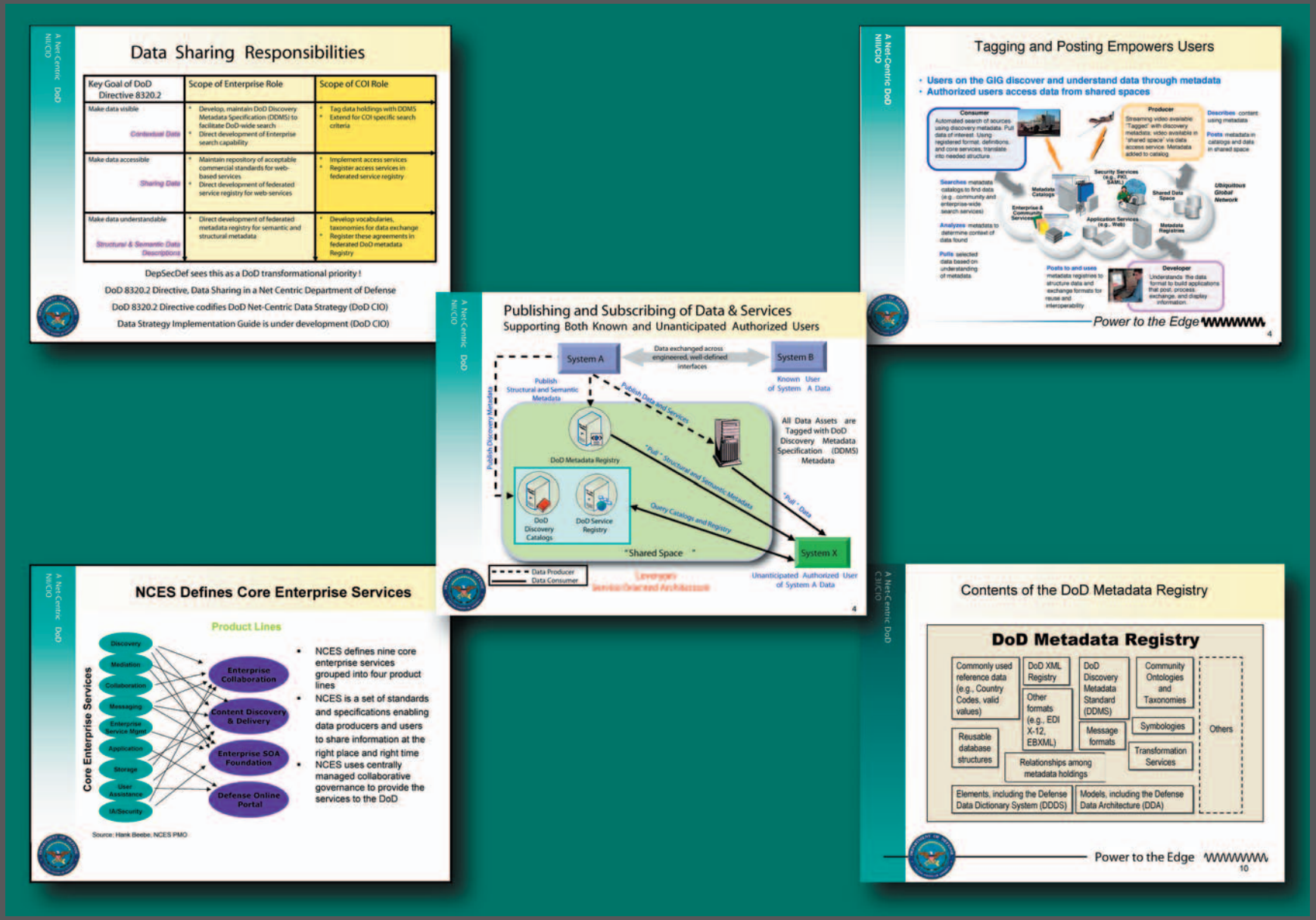
NET-CENTRIC DATA MANAGEMENT STRATEGY



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BUSINESS VALUE OF SEMANTIC TECHNOLOGY FOR NET-CENTRIC OPERATIONS

What we've been learning at SICOP — Part-1

- Semantic technologies
- Technology providers
- Early adoption
- Business value
- Market size

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1. SEMANTIC TECHNOLOGIES ARE ABOUT PUTTING SEMANTIC MODELS TO WORK...

- Semantic technologies represent meanings, associations, and know-how about the uses of things separately from data and program code.
- This knowledge representation is called an **ontology** — a run-time semantic model of information, defined using constructs for:

  – Concepts – classes, things
  – Relationships – properties (object and data)
  – Rules – axioms and constraints
  – Instances of concepts – individuals (data, facts)

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SEMANTIC MODELS (AKA ONTOLOGIES) ARE LIKE AND UNLIKE OTHER IT MODELS

- Like **databases** ontologies are used by applications at run time (queried and reasoned over). Unlike databases, relationships are first-class constructs.
- Like **object models** ontologies describe classes and attributes (properties). Unlike object models, ontologies are set-based and dynamic.
- Like **business rules** they encode rules. Unlike business rules, ontologies organize rules using axioms.
- Like **XML schemas** they are native to the web (and are in fact serialized in XML). Unlike XML schemas, ontologies are graphs not trees, and used for reasoning.

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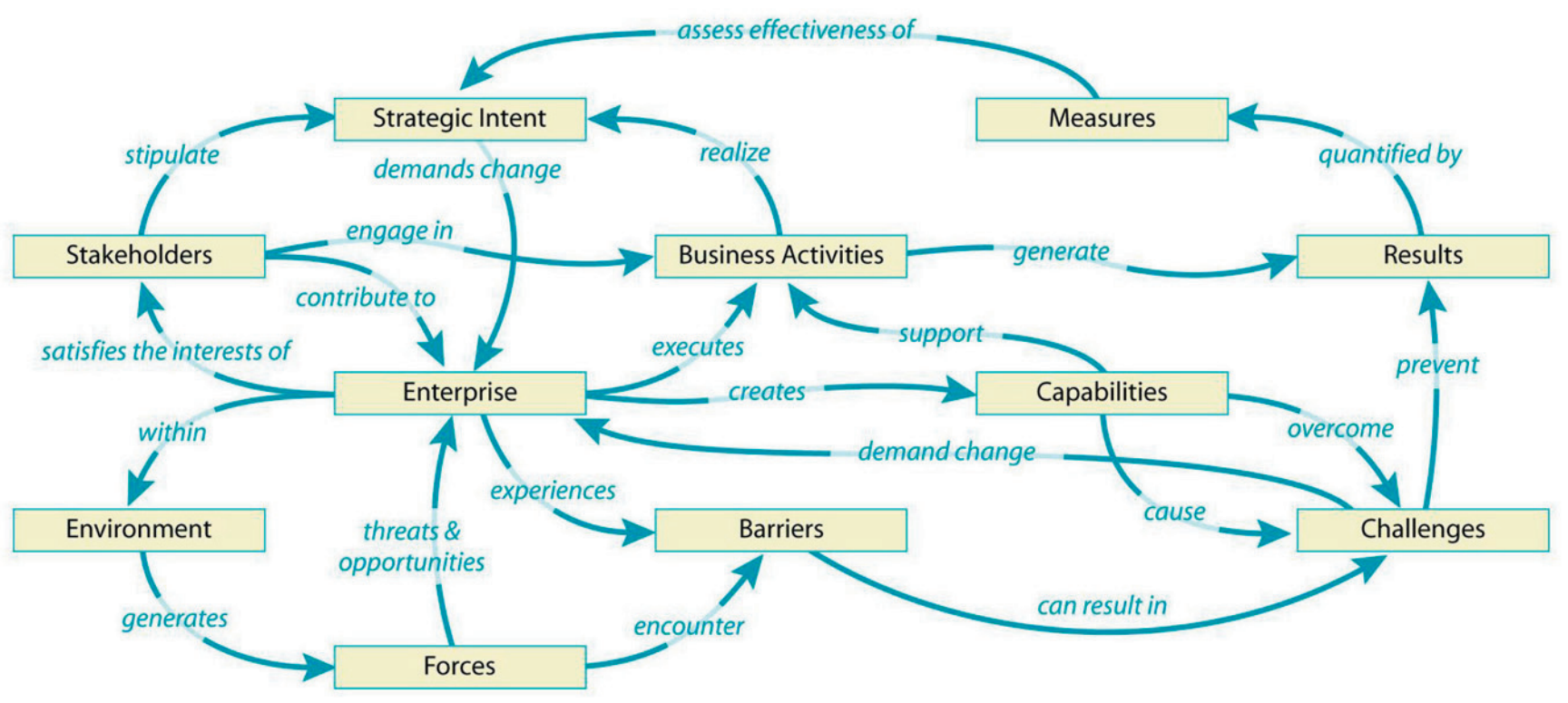
THIS IS A BUSINESS ONTOLOGY...



Source: Top Quadrant

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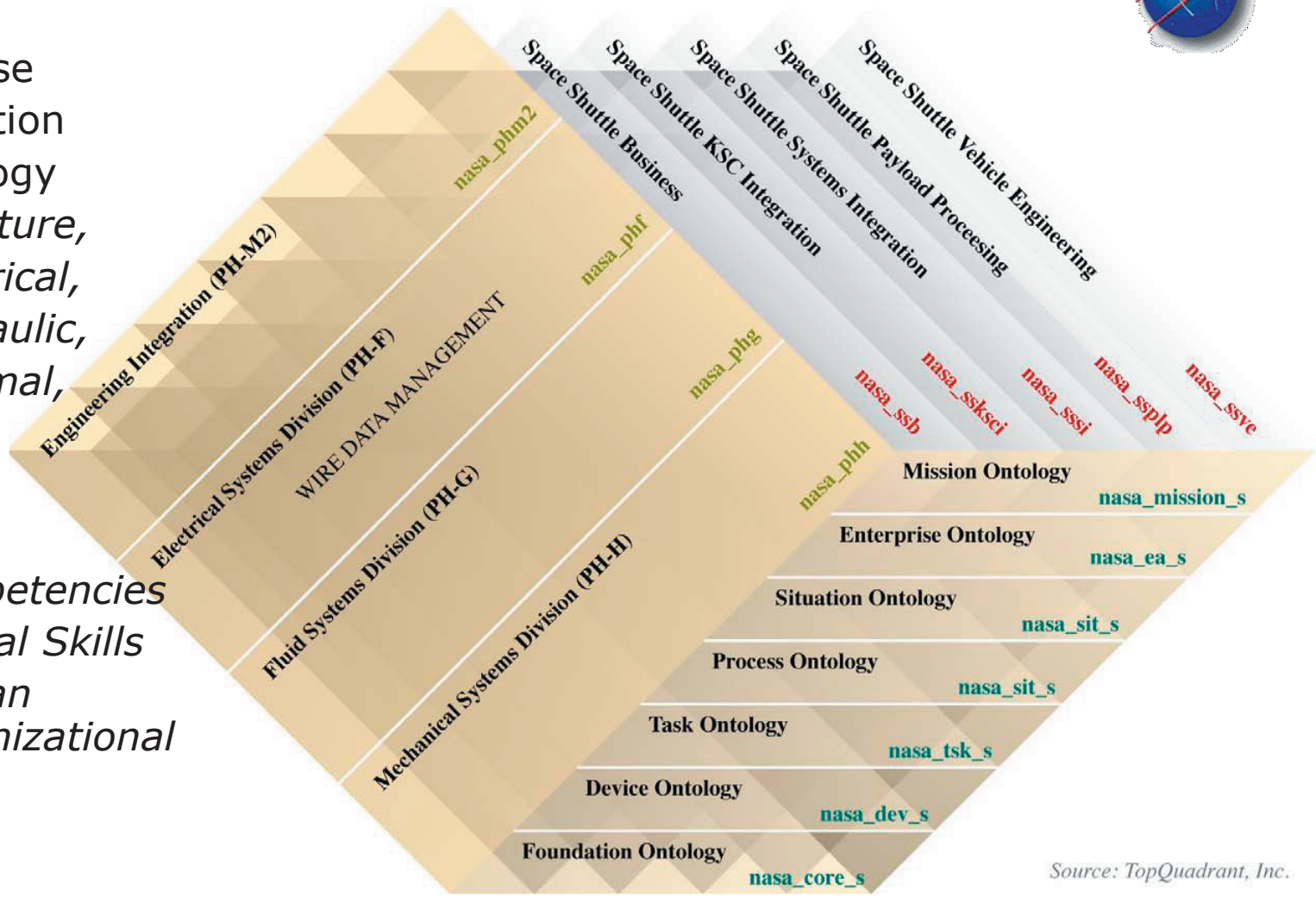
THIS IS AN ENTERPRISE ONTOLOGY…

Ontologies: Backplane of semantic enterprise

- Enterprise
- Information
- Technology
  - *Structure,*
  - *Electrical,*
  - *Hydraulic,*
  - *Thermal,*
  - *…*
- Lifecycle
- Social
  - *Competencies*
  - *Critical Skills*
  - *Human Organizational Risks*



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2. NEARLY 200 SEMANTIC TECHNOLOGY R&D, PRODUCT & SOLUTION PROVIDERS

Technology Providers Developing Semantic Solutions

Active Navigation
Adobe
Aduna
Agilense
AKT Triple Store
Amblit Technologies
Anteon
Apelon
APR Smartlogik
Arbortext
Ask Jeeves
AskMe
Aspasia
Astoria Software
AT&T
ATG
Attensity
Autonomy
Axontologic
BBN
BEA
BioWisdom
Black Pearl
Blue Oxide
BrandSoft
Broadvision
Business Objects
C24 Solutions
Capraro Technologies
Captiva
Celcorp
Cerebra
CheckMi
Cisco
ClearForest
CoeTruman Technologies
Cogito
CognIT
Cognos
Composite
Compoze Software
Computer Associates
Conformative Systems
Connecterra
Connotate
Content Analyst
Contextware
Contivo
Convera
Copernic
Correlate
Cougaar Software
Coveo Solutions
Crystal Semantics
Cycorp
Dassault Systems
DAY
Digital Harbor
Discovery Machine
Dynamic Digital Media
Dream Factory
EasyAsk
Ektron
EMC/Documentum
Empolis
Endeca
Engenium
Enigmatec
EnLeague Systems
Entopia
Entrieva
Epistemics Ltd.
Factiva
Fair Isaac
FAST
FileNet
Fujitsu
GeoReference Online
Global360
Gnowsis
Google
Grand Central
Groxis
H5 Technology
Hewlett Packard
Hummingbird
Hyperion
i2 Inc
IBM
iLog
Image Matters
Informatica
InforSense
Infosys
Innodata (ISOGEN)
Intellidimension
Intelliseek
Intellisophic
Interwoven
Inxight
ISX Software
ISYS Search Software
JARG
Jayna
Kalido
Kanisa Software
Knowledge Foundations
Knowledge Media Institute
Kofax
Kowari
L&C
Lockheed Martin
Logic Library
Mark Logic
McDonald Bradley
Metacarta
MetaIntegration
Metallect
Metamatrix
Metatomix
Microsoft
Mind Alliance
Miosoft
Modulant
Mondeca
NCR Teradata
NetMap Analytics
Neurok
Noetix
Northrop Grumman
nStein
NuTech
Ontologent
Ontology Works
Ontopia
Ontoprise
OpenText
Oracle
Profium
Radar Networks
Raytheon
Readware
RuleBurst
Reed Elsivier
SAIC
Sandpiper Software
SAP
SAS
SchemaLogic
Semagix
Semandex Networks
Semantic Light
Semantic Research
Semantic Sciences
Semansys
Semaview
Semtation GmbH
Serena
SiberLogic
Siderean
SilkRoad
Software AG
Sony
SRA International
SRI International
Stanford University
Stellent
Stratify
Sun Microsystems
Sybase
Synomos
SYS Technologies
Tacit
Taxonomywarehouse
TEMIS
The Brain
Thetus
Thomson
Triple Hop
Troux
Ultimus
Unicorn
Verity
Versatile Info Sys
VerticalNet
Vignette
Visual Knowledge
Vitria
Vivisimo
WiredReach
XSB

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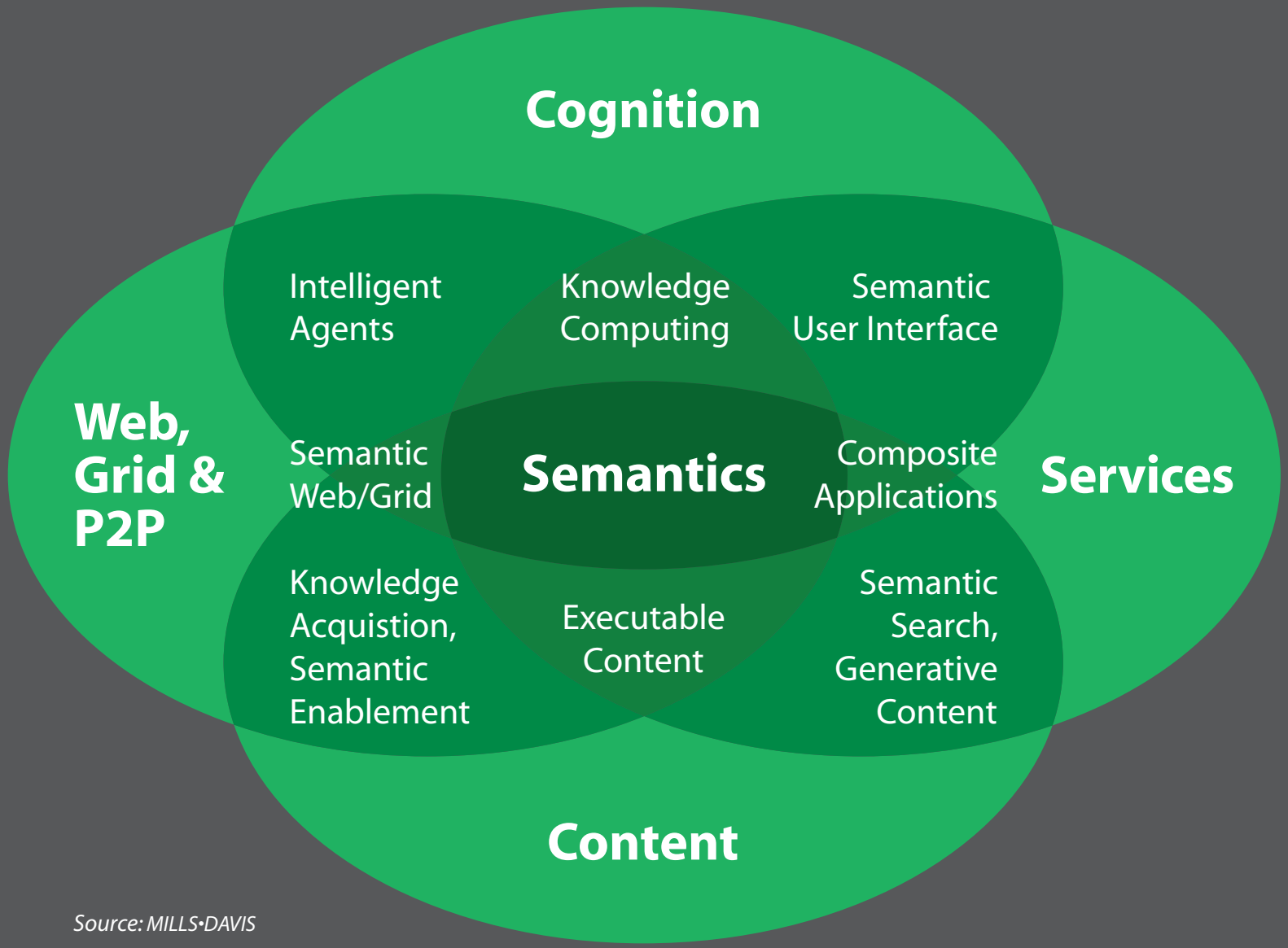
SEMANTIC TECHNOLOGY R&D THEMES



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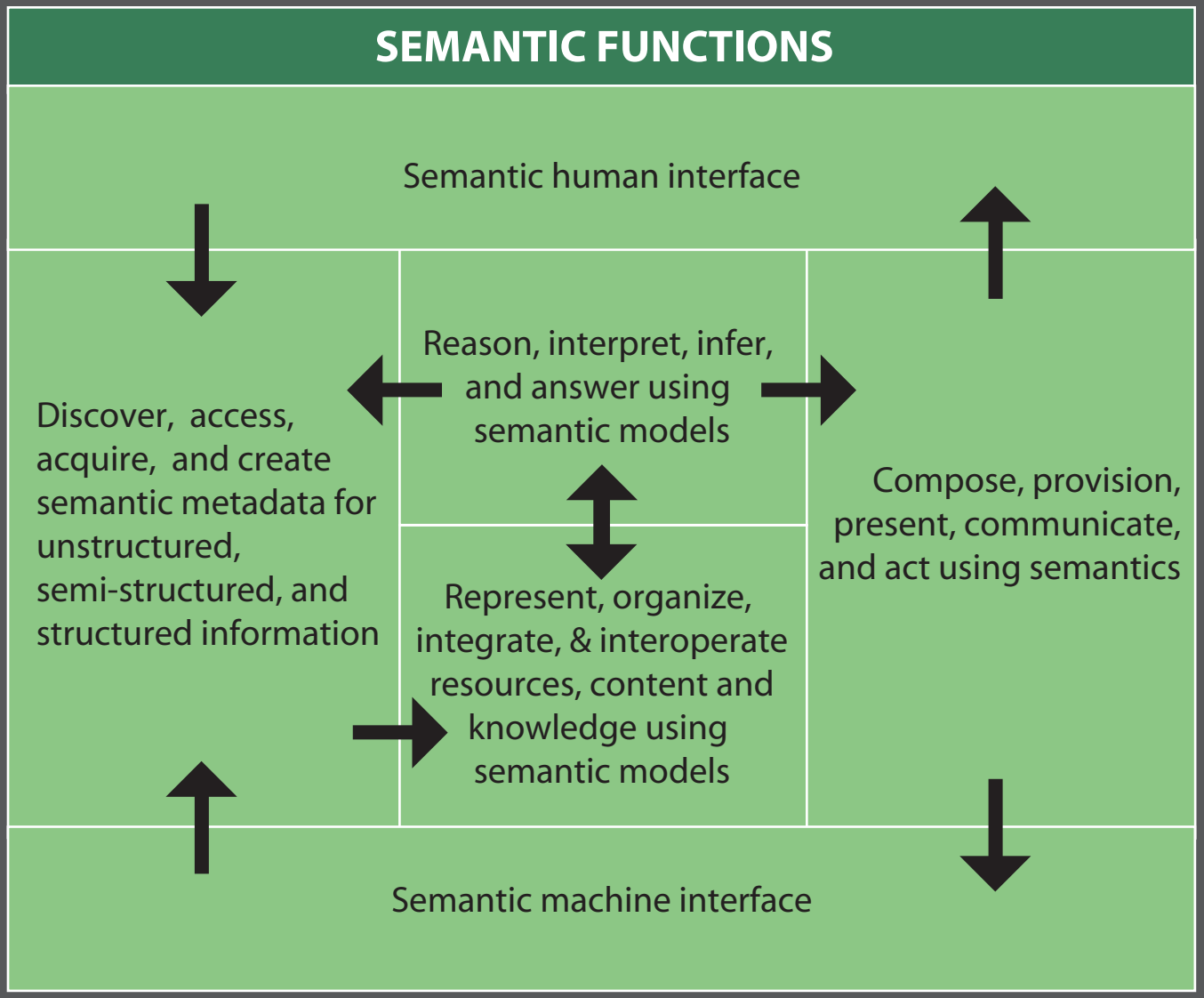
FUNCTIONS OF SEMANTIC TECHNOLOGIES



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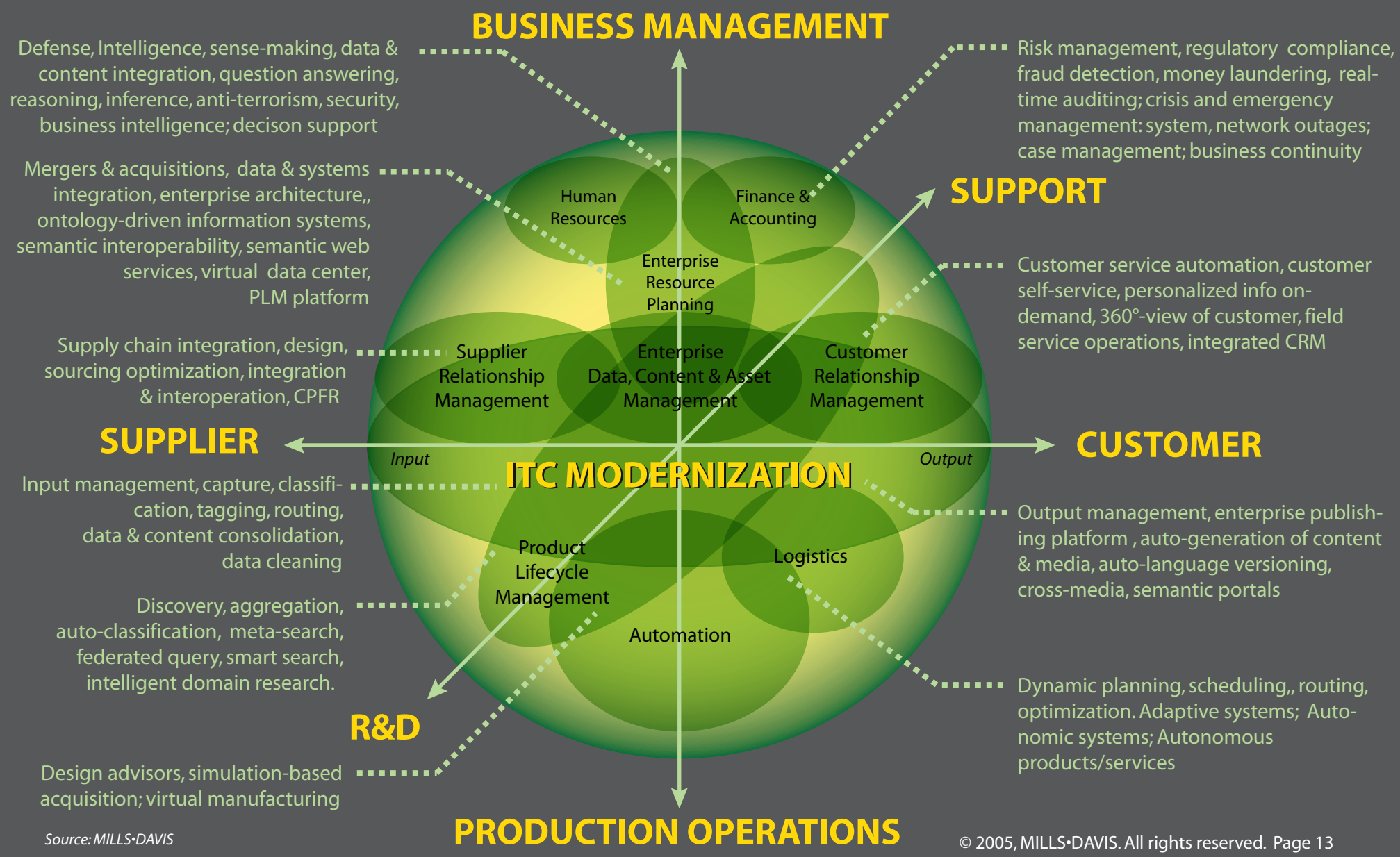
3. MORE THAN 100 SEMANTIC TECHNOLOGY EARLY ADOPTER BUSINESS CASES



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4. BUSINESS PERFORMANCE IMPROVES 2-10X

EFFICIENCY	EFFECTIVENESS	EDGE
Cost savings Doing the same job faster, cheaper, or with fewer resources than it was done before	*Return on assets* Doing a better job than the one you did before, making other resources more productive and increasing their return on assets and attainment of mission	*Return on investment* Changing some aspect of what the business does, resulting in growth, new value capture, mitigation of business risk, or other strategic advantage
IMPACT OF SEMANTIC TECHNOLOGIES		
20-80% less labor hours 20-90% less cycle time 30-60% less inventory levels 20-75% less operating cost 25-80% less set-up & development time 20-85% less development cost	50-500% quality gain 2-50X productivity gain 2-10X greater number or complexity of concurrent projects, product releases & units of work handled 2-25X increased return on assets.	2-30X revenue growth 20-80% reduction in total cost of ownership 3-12 month positive return on investment 2-300X positive ROI over 3-years

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VALUE AMPLIFIES ACROSS THE LIFECYCLE

Stage	Discovery	Solution Delivery	Operation & Support	Growth
Activities	Diagnose problem Envision solution Map ontology Make business case	Design semantic apps Build business ontology Connect resources Integrate & test Deploy	Use, operate solution Monitor, measure performance Maintain & support	Analyze new needs Add capabilities Upgrade solution Optimize performance
Benefits	Explicit business case Knowedge needs modeled Interrelated data, system sources Value of legacy preserved Make, buy, rent, share options Flexible, federated architecture Less time/cost to prototype	Business ontology speeds data, process integration Composite applications give total picture, unified UI Capital outlay reduced Less time/cost to solution Faster time-to-market Faster return on investment Reduced development risk	Faster, better decision-making Cycle time, productivity improved Higher service levels Improved quality & reliability Less training and support Simplified maintenance Reduced operating cost Reduced total cost of ownership	Faster time to enhance Greater agility, flexibility Less capital re-investment Real-time optimization Faster time to deploy Reduced development risk Enhanced ROI

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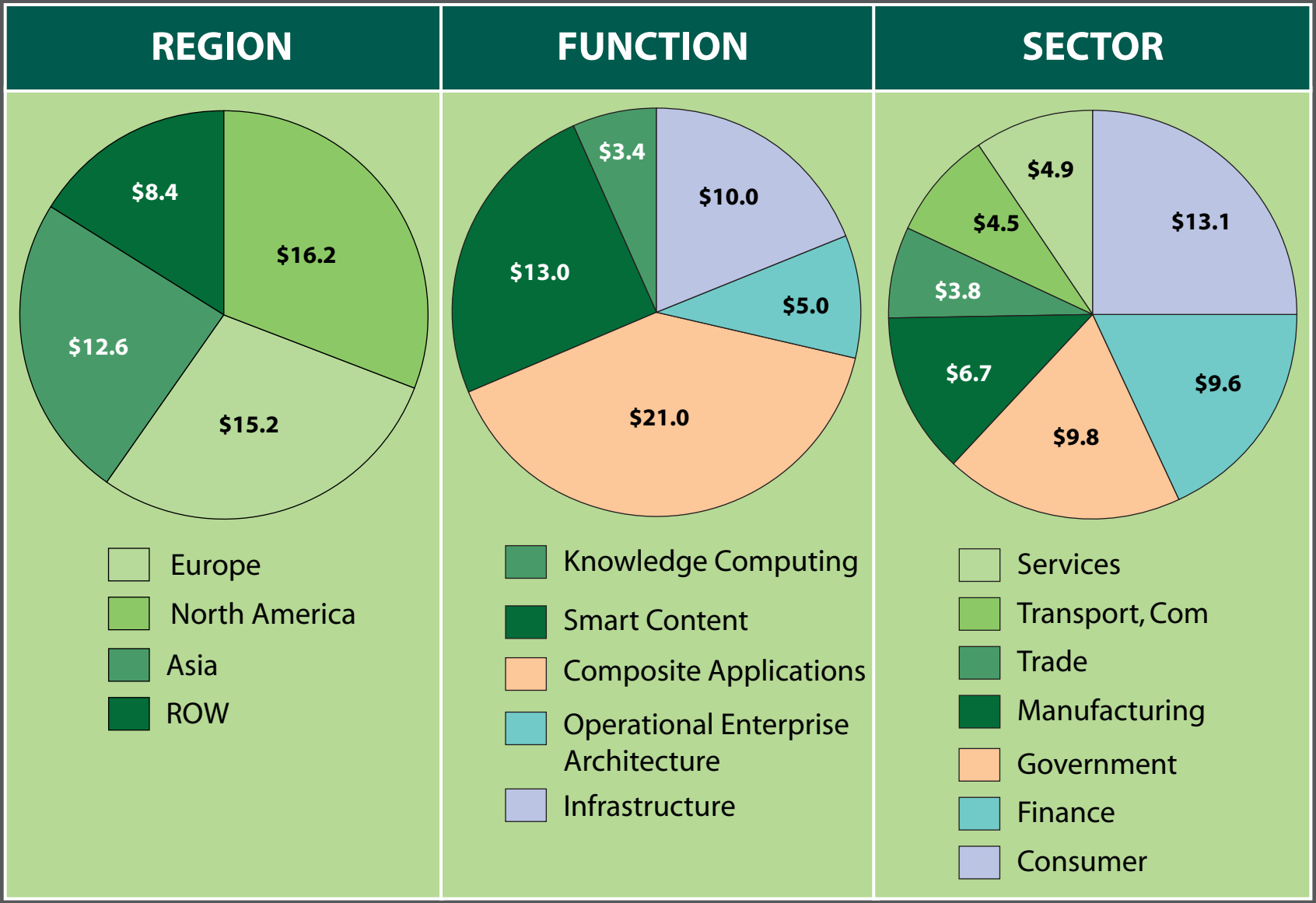
5. SEMANTIC EXECUTION WORLD-WIDE MARKET WILL EXCEED TO $50 BILLION BY 2010



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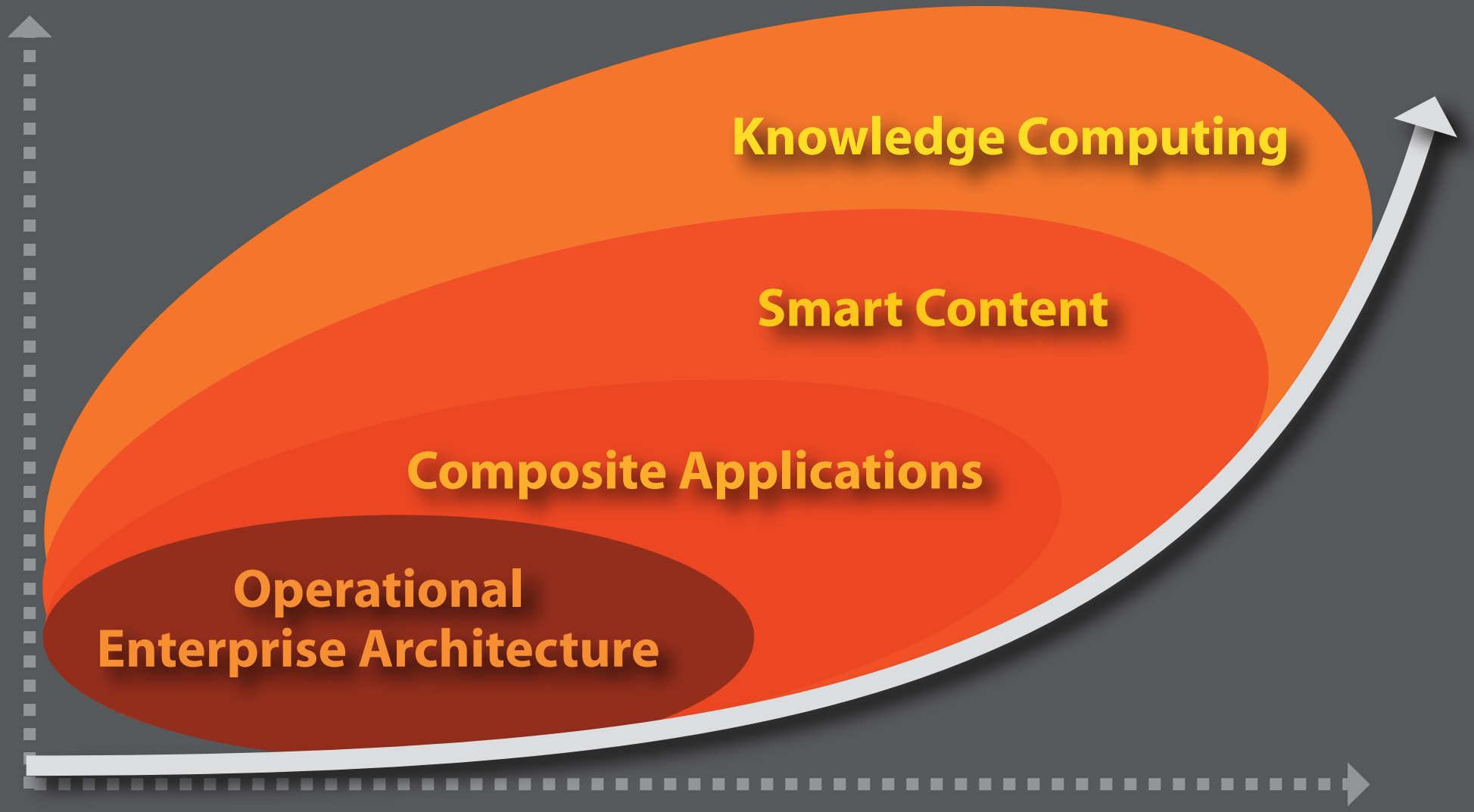
WHAT WE'RE LEARNING AT SICOP — PART-2

New semantic execution value paradigms!



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OPERATIONAL ENTERPRISE ARCHITECTURE

SEMANTIC OPPORTUNITY

- ***Opportunity*** — $5B
- ***R&D Themes*** — Executable enterprise architecture, enterprise integration, semantic interoperability
- ***Problem*** — Hundreds of millions spent to date to develop enterprise architecture as a basis for IT modernization; remains largely a manual compliance exercise, producing reference documentation, disconnected from operations and management systems.
- ***Semantic solution*** — Semantic enterprise architecture based on enterprise management metamodel, linked with FEA reference models, Agency FEA extensions, CPIC, and President's Management Agenda including E-Gov, Budget-Performance integration, Financial Services, and Human Resources.

BUSINESS VALUE

- ***Efficiency gain*** — Semantic auto-discovery of IT artifacts and documentation gives visibility, eliminates 1/5 to 1/3 of cost of as-is modeling, compliance auditing, and steady-state maintenance projects.
- ***Effectiveness gain*** — Enterprise knowledgebase enables line-of-sight analyses, analytics, and automating of alignment and compliance with OMB, saving labor.
- ***Mission edge*** —Integrated, semantic model-based operational capability for cross-agency investment planning and control, IT portfolio management, and compliance with OMB and PMA directives.

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PROBLEMS

Typical business architectural problems

Problem	Govt	Private Sector
Custodial role of architects	●	
Perception of valueless by business	●	●
Communication problems: abstract language	●	●
Political barriers to IT's business involvement	●	●
Lack of integration of EA activities to business planning	●	●
Lack of detailed business planning	●	●
Lack of enterprise-wide view by any organizational unit other than EA	●	●

Source: Forrester

FORRESTER®

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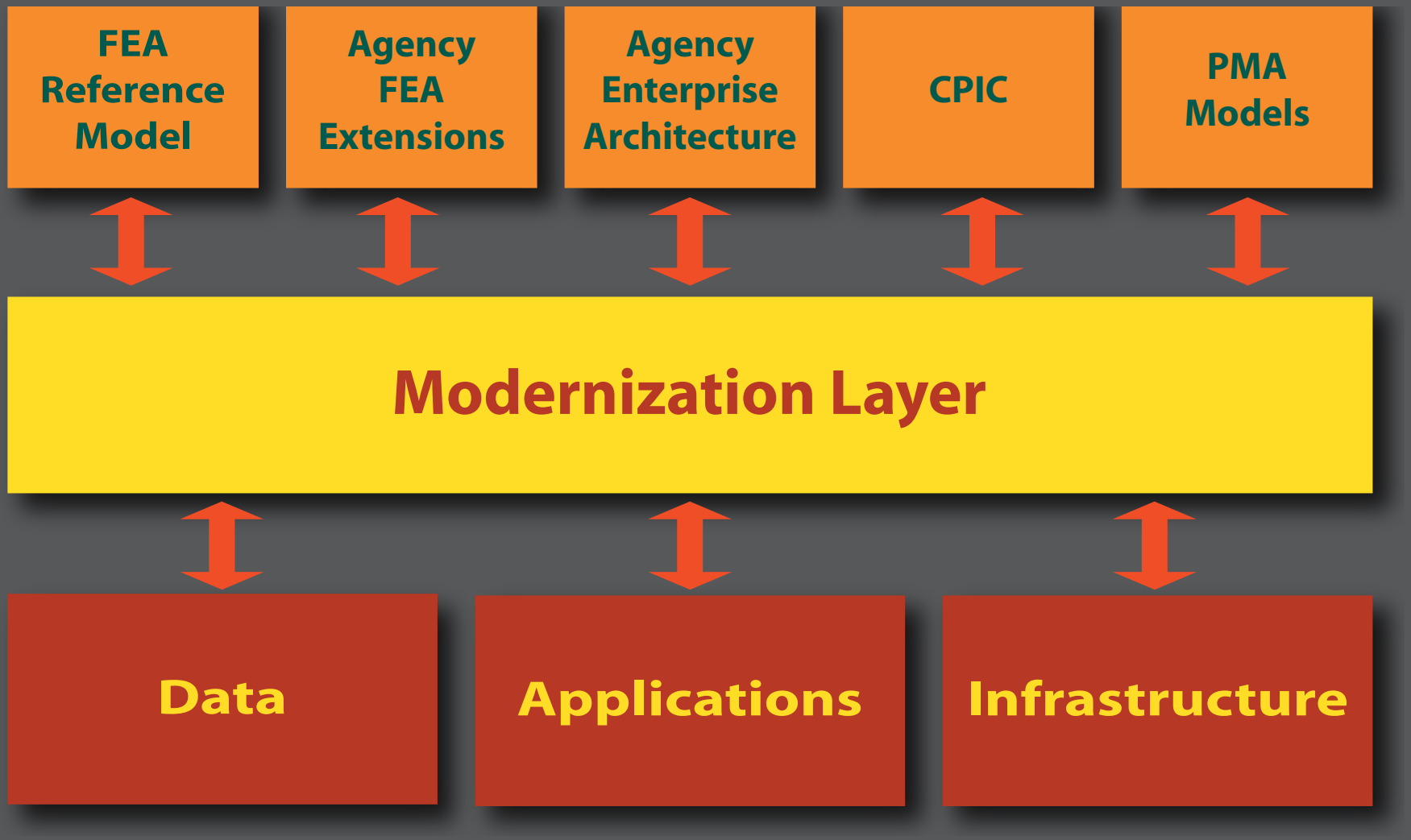
OPERATIONAL ENTERPRISE ARCHITECTURE: MODERNIZATION LAYER



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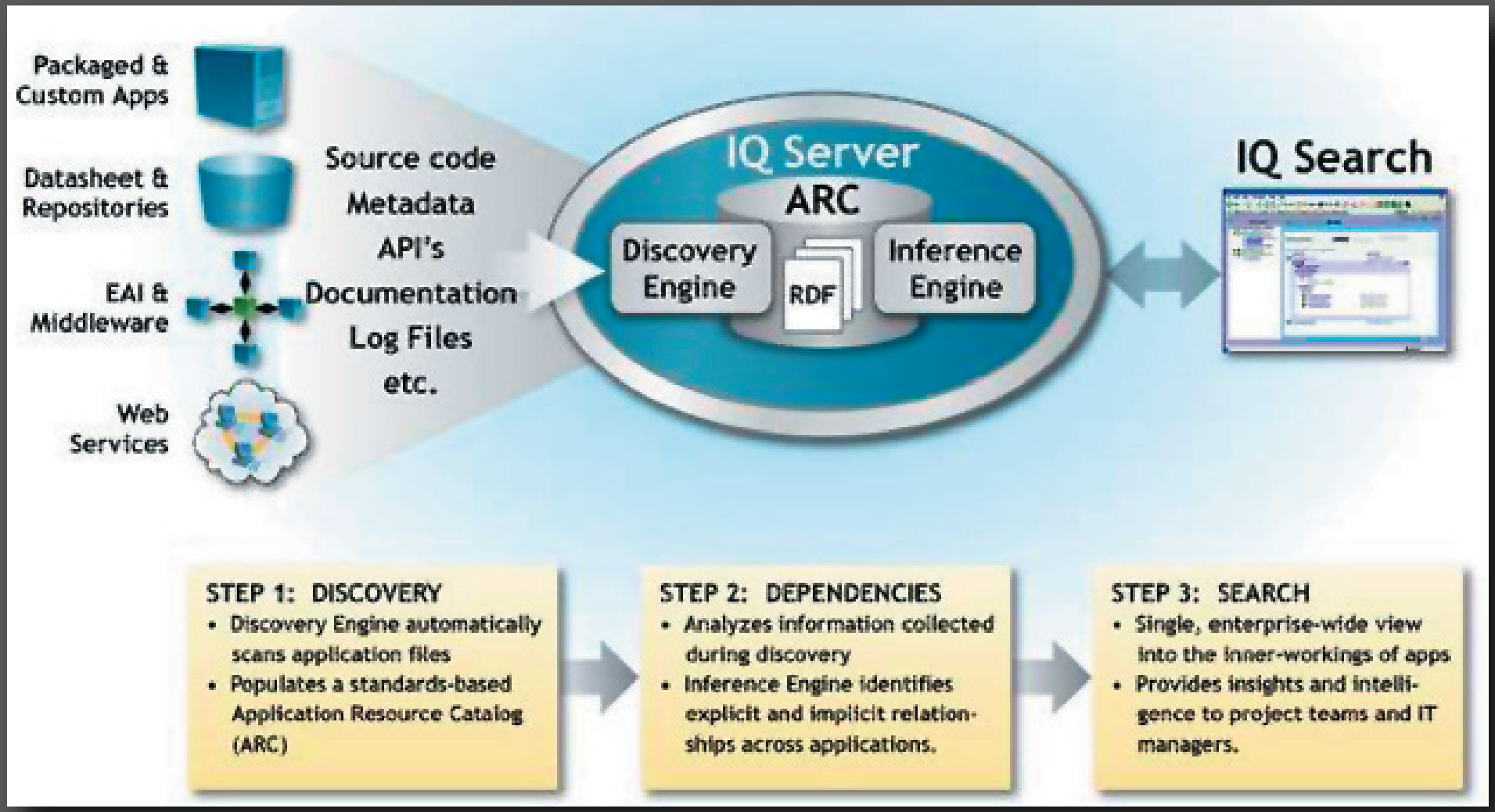
OPERATIONAL ENTERPRISE ARCHITECTURE: SEMANTIC DISCOVERY OF THE "AS-IS"

"Google" for IT + latent semantic analysis = ongoing visibility



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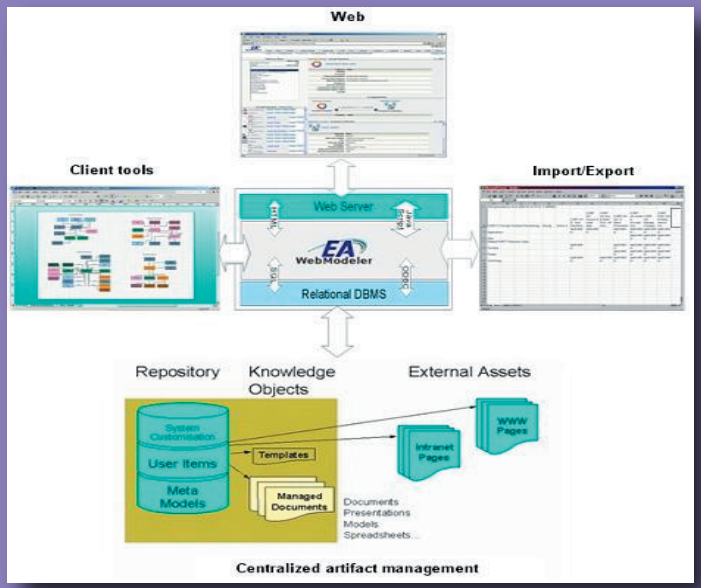
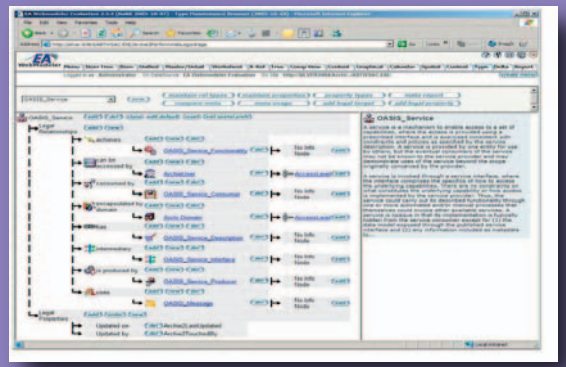
OPERATIONAL ENTERPRISE ARCHITECTURE: ONTOLOGY-DRIVEN MODELING

Agilense

EA WebModeler is an ontology-driven product designed to support producers and consumers of enterprise architecture

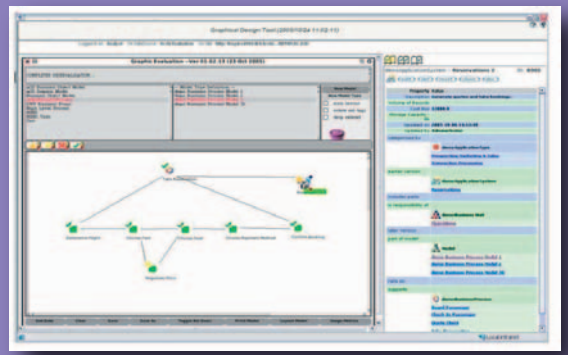


- EA WebModeler is a server based application.
- Resides behind a standard web server
- Stores information in a standard RDBMS
- Receives requests from clients using standard web browsers
- Satisfies requests using information in the repository stored in the relational database, linked knowledge assets stored on the host file system, or hyperlinks to external assets on the intranet or Internet.



Structured English Metamodeler UI:

- Hides complexity of OO/OWL "lingo"
- Expands ontology modeling to any (authorized) user using standard web browser



Visual Gap Analysis

- Uses EA/Gap metamodel
- Provides Gap analysis support for architects

Source: Agilense

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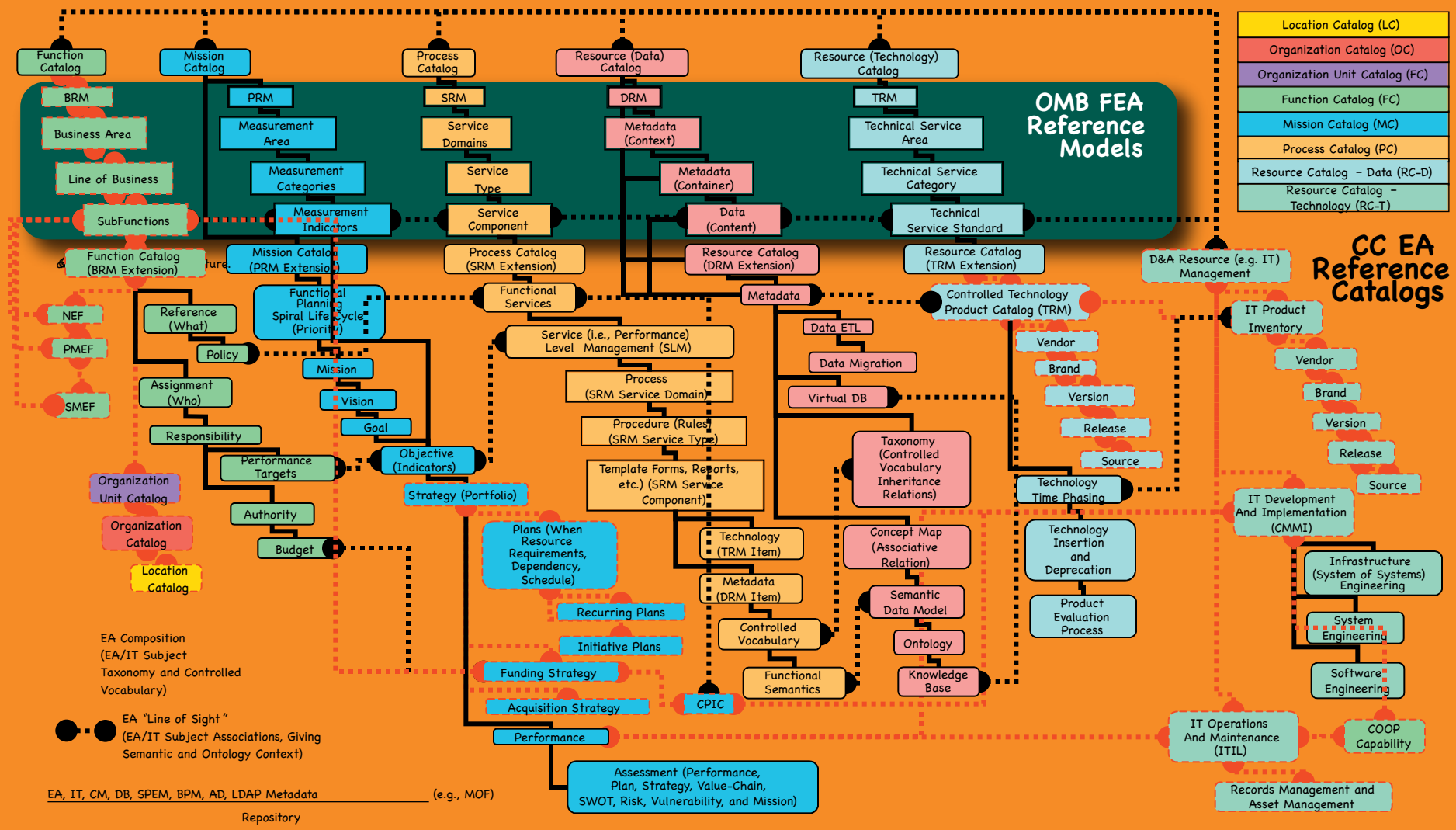
OPERATIONAL ENTERPRISE ARCHITECTURE: EXECUTABLE "TO-BE" SEMANTIC MODELS

Federal Enterprise Architecture for managing continuity of communications



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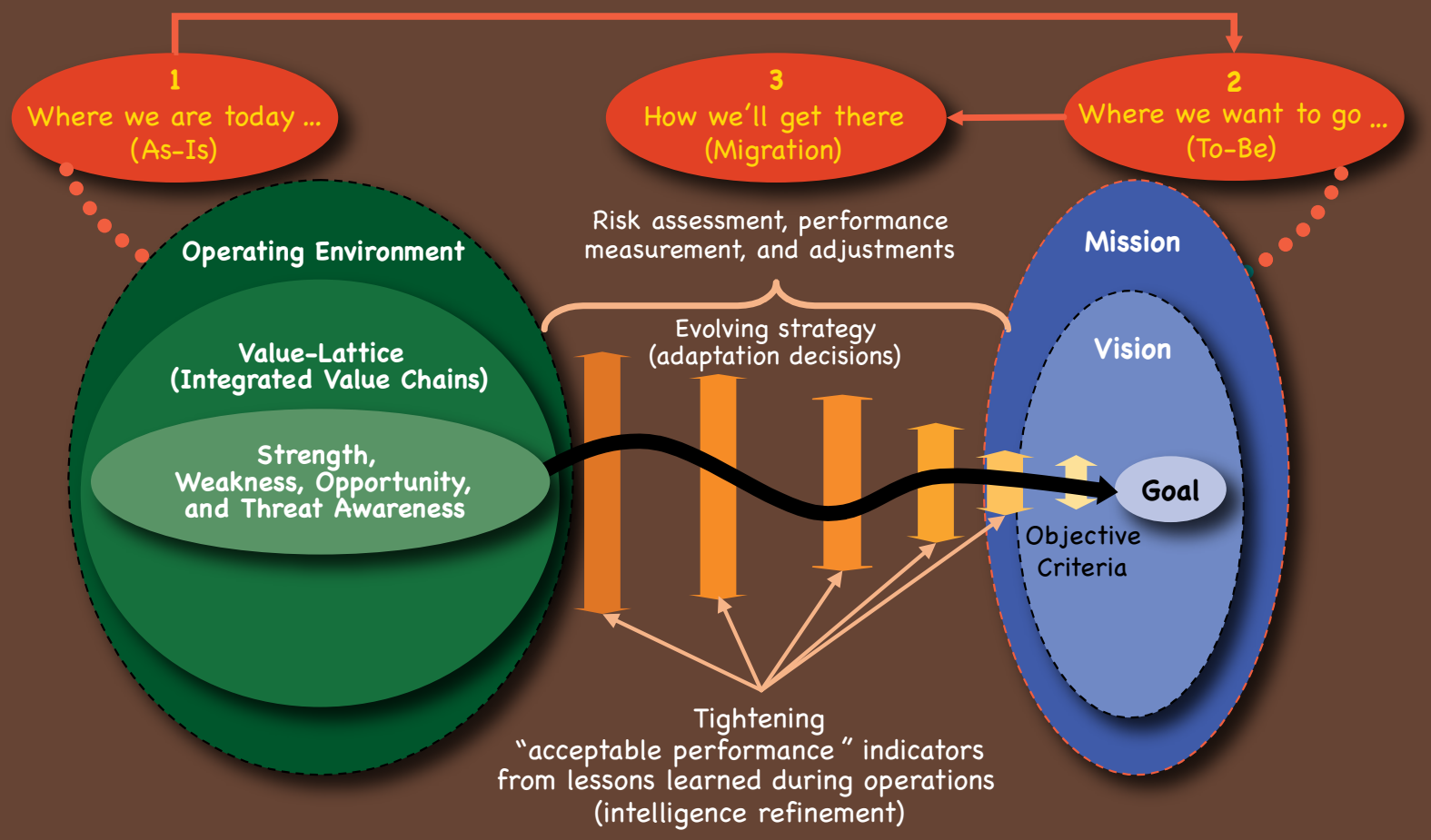
OPERATIONAL ENTERPRISE ARCHITECTURE: INSTRUMENTING EXECUTIVE MANAGEMENT

Executive Management Function—Migrating from As-Is to To-Be

Operational EA provides a procedure to move from problems to solutions.
Operational EA enables accomplishment of architecture goals and objectives.



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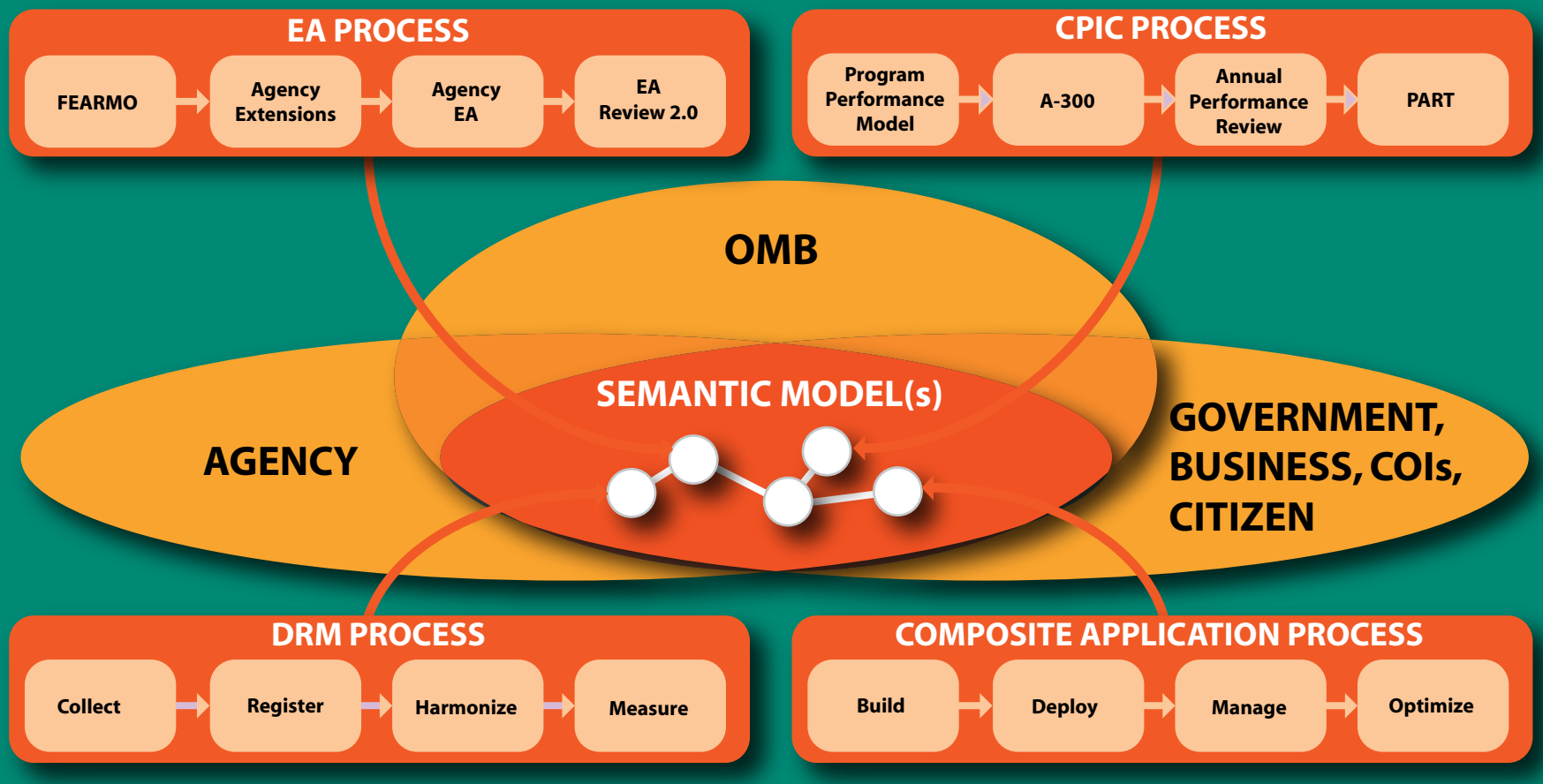
EXECUTABLE ENTERPRISE ARCHITECTURE PILOT

Executable Integration of FEA & CPIC for DRM-based Information Sharing using Composite Applications



Source: TopQuadrant

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COMPOSITE APPLICATIONS

SEMANTIC OPPORTUNITY

- ***Opportunity*** — $21B
- ***R& D Themes*** — Semantic user interface, business ontologies (that model entities, attributes, relationships, processes, events and rules), and semantic query across distributed data, applications and services.
- ***Problem*** — Business users don't care about enterprise architecture. They want capabilities, that demand information integration, system-of-system interoperability and power-to-the-edge, but cannot define all requirements in advance. Need a way to deliver benefits directly to end-users that is fast, affordable, incremental, and non-invasive.
- ***Semantic solution*** — Composite application as killer application for semantic web.

BUSINESS VALUE

- ***Efficiency gain*** — 5X faster development. Lean teams. Reduced project risk.
- ***Effectiveness gain*** — Tactical, non-invasive, iterative solution for strategic modernization empowers IT. Composite applications links information in context, empowering users.
- ***Mission edge*** — New categories of knowledge worker capabilities for: exception handling, emergency response, compliance, risk management, situation assessment, command and control.

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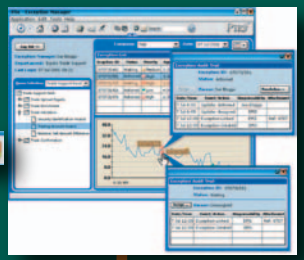
COMPOSITE APPLICATIONS: KNOWLEDGE WORKER REQUIREMENTS

Many knowledge applications have a similar lifecycle...

Lifecycle often begins with automated capture of events, followed by human monitoring and analysis of situation based on information from different sources in different formats (structured & unstructured). People need to keep the context, share the picture of the situation, and resolve it.

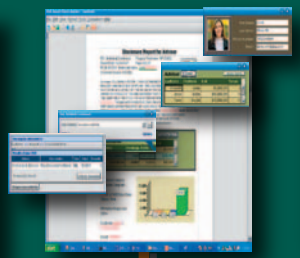
Event Capture

–Dashboards
–Rich Visualization
–Thresholds & Highlights
– In-context navigation
-Live updates
-Ad Hoc Discovery
-Multiple Ops Systems



Monitoring & Analysis

–Many types and sources of information
–Save as 'smartlets'
–Personalized view of common operating picture
–Optimized Data Access

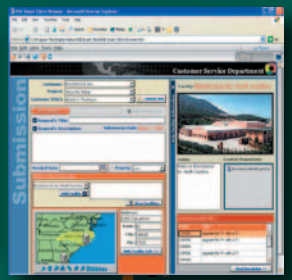


Case Management

–Assemble the pieces
–Show the relationships
–Link different kinds of information (data with documents with internet with media)
–Keep live data

Contextual Communication

–Reports with Context
–Live data in the report
–Reusable Smartlets
–Rapid Development
–Easy Distribution
–Common operating picture



Event Resolution

–Action Oriented
–Dynamic Workflows
–Process UI for end users
–Process Monitoring
–Transactional

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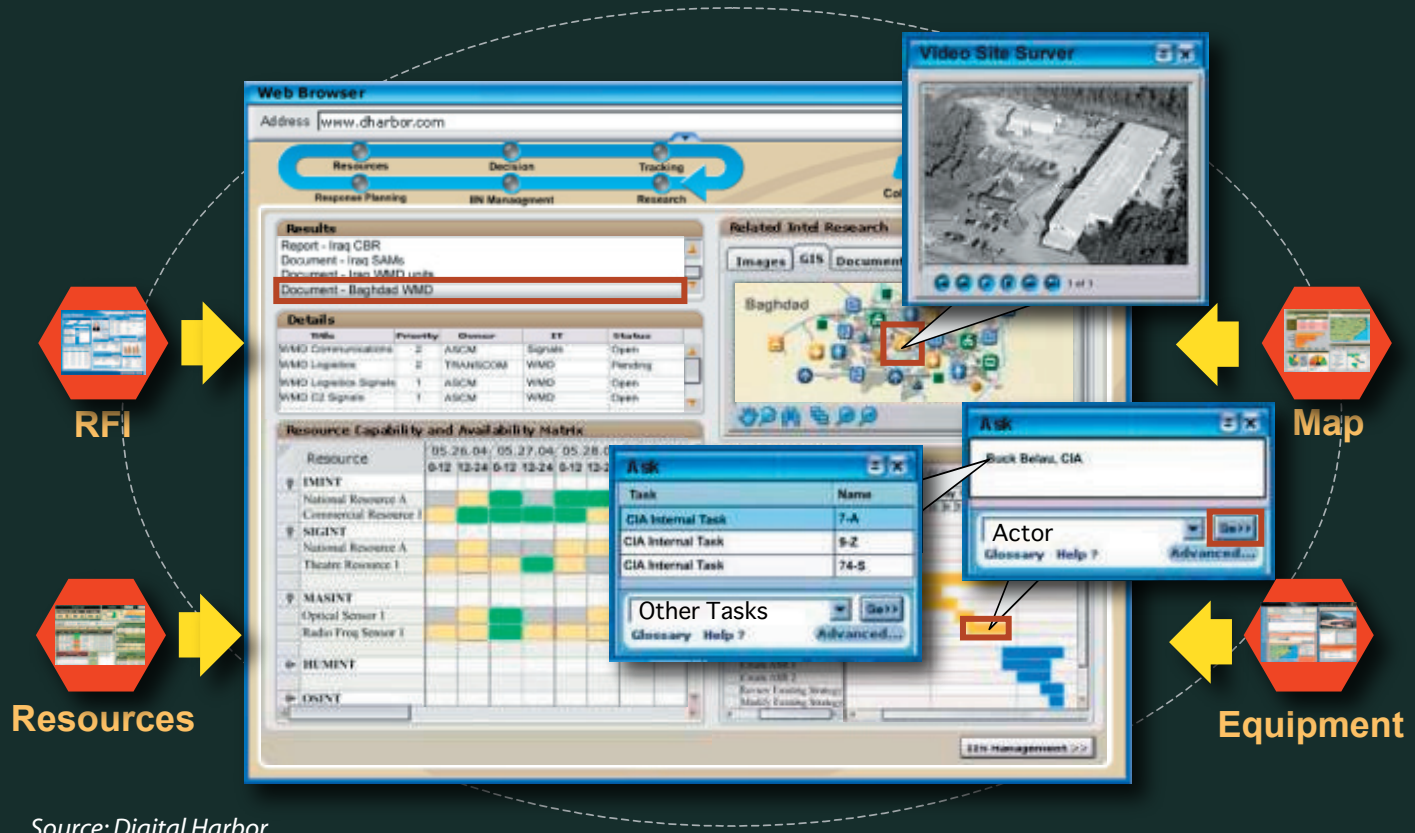
COMPOSITE APPLICATIONS: FUNCTIONAL CAPABILITIES

Composite Application

1. **Fuse** services from multiple applications
2. **Correlate** information in context
3. Drill down in **Real-Time**
4. **Ask** questions across databases
5. **Infer** links across systems



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COMPOSITE APPLICATIONS: ANATOMY OF A SOLUTION

Anatomy of a composite application — Semantic technologies at 3 levels:

(1) Composite User Interface

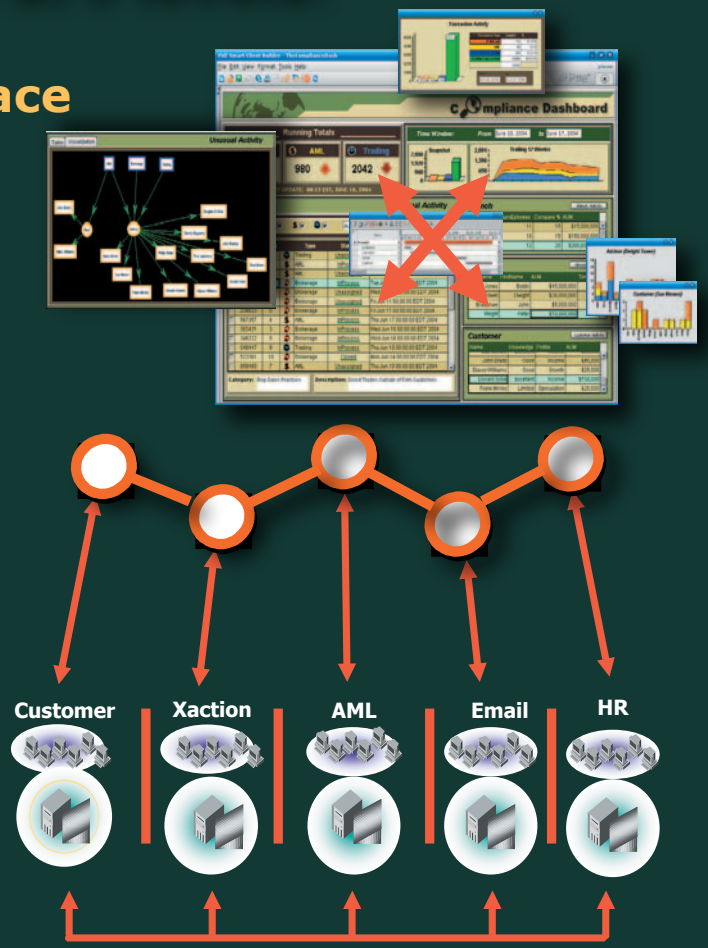
UI must persist and expose semantics such that users can interact with meaningful objects

(2) Composite schema (business ontology)

A business ontology describes the semantics of data relationships, workflow, events, and business rules

(3) Composite query (EII)

Logically map multiple databases, applications, and web services as if they came from a single source



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COMPOSITE APPLICATIONS: IMPLICATIONS FOR NET-CENTRIC DATA MANAGEMENT

- Tools that enable exchange, compositing and harmonization of distributed data and metadata sources in the context of the intended end-use application.
- Sharing semantic models for composite applications that include: entities, attributes, relationships, processes, events, and rules as well as security and provenance.

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SMART CONTENT

SEMANTIC OPPORTUNITY

- ***Opportunity*** — $13B
- ***R& D Themes*** — Semantic discovery and sense making; authoring driven by semantic models; semantic modeling of meanings and knowledge contained in text, tables, graphics and other media; semantic search, semantic Q&A, content and media generation from models, intelligent advisors, semantic UI for information in context.
- ***Problem*** — Content lifecycle costs surge as information volume explodes. Issues include search quality, how to leverage knowledge worker content use, authoring cost, content interoperability and integration, & coping with overload.
- ***Semantic solutions*** — Knowledge portals, collaboration, intelligence help desk, personal information management, ambient intelligence.

BUSINESS VALUE

- ***Efficiency gain*** — Up to 50% reduction in content authoring and support costs.
- ***Effectiveness gain*** — Knowledge-centered rather than document-based process can increase productivity by 5-10X, integrate executable content with composite applications and operational enterprise architecture.
- ***Mission edge*** — Enables new categories of knowledge and content-intensive applications such as intelligence Q&A, just-in-time knowledge, intelligent tutoring and simulation, simulation-based acquisition, virtual manufacturing, and policy-based computing.

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SMART CONTENT: A WORKING DEFINITION

- Content is anything written, depicted, filmed, recorded, animated and stored in some media.
- Digital content is any content whose physical properties can be substituted by computer-processable descriptions. (E.g. a digital recording on a CD is a binary description of the sound.)
- "Smart" content is digital content whose primary information (e.g. music, video, text, etc.) is enhanced by secondary information about the content. This secondary information is called *metadata*.

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METADATA — MAKING CONTENT "SMART"

1 *Knowledge extraction* creates metadata that enables concepts and relationships in content to be interpreted by computer.

2 *Domain knowledge* provides metadata for understanding the meaning of the content from different perspectives.

3 *Context of use* modeling provides metadata that enables software to organize content to task, interest, or preference.

4 *Media resource metadata* enables packaging content for presentation across different media.

5 *Behavioral knowledge* allows the computer to sequence communications, manage dialogs, and orchestrate action.

6 *Provenance and rights* metadata is key to establishing trust, maintaining security, and enabling commerce.

8 *Semantic models and metadata* enable content integration, interoperability across systems and repositories, and reasoning over content sources.

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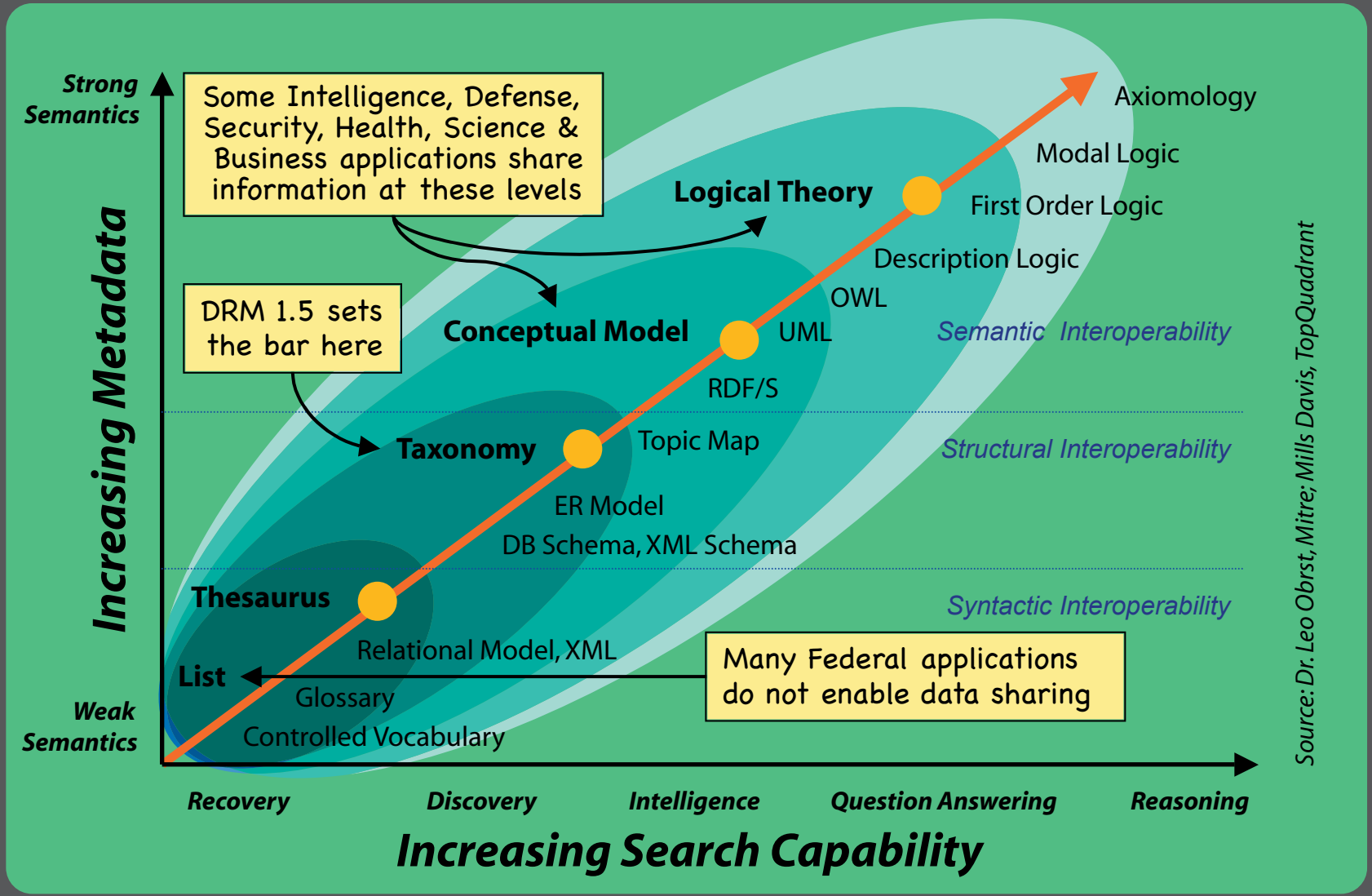
SMART CONTEXT CONTINUUM



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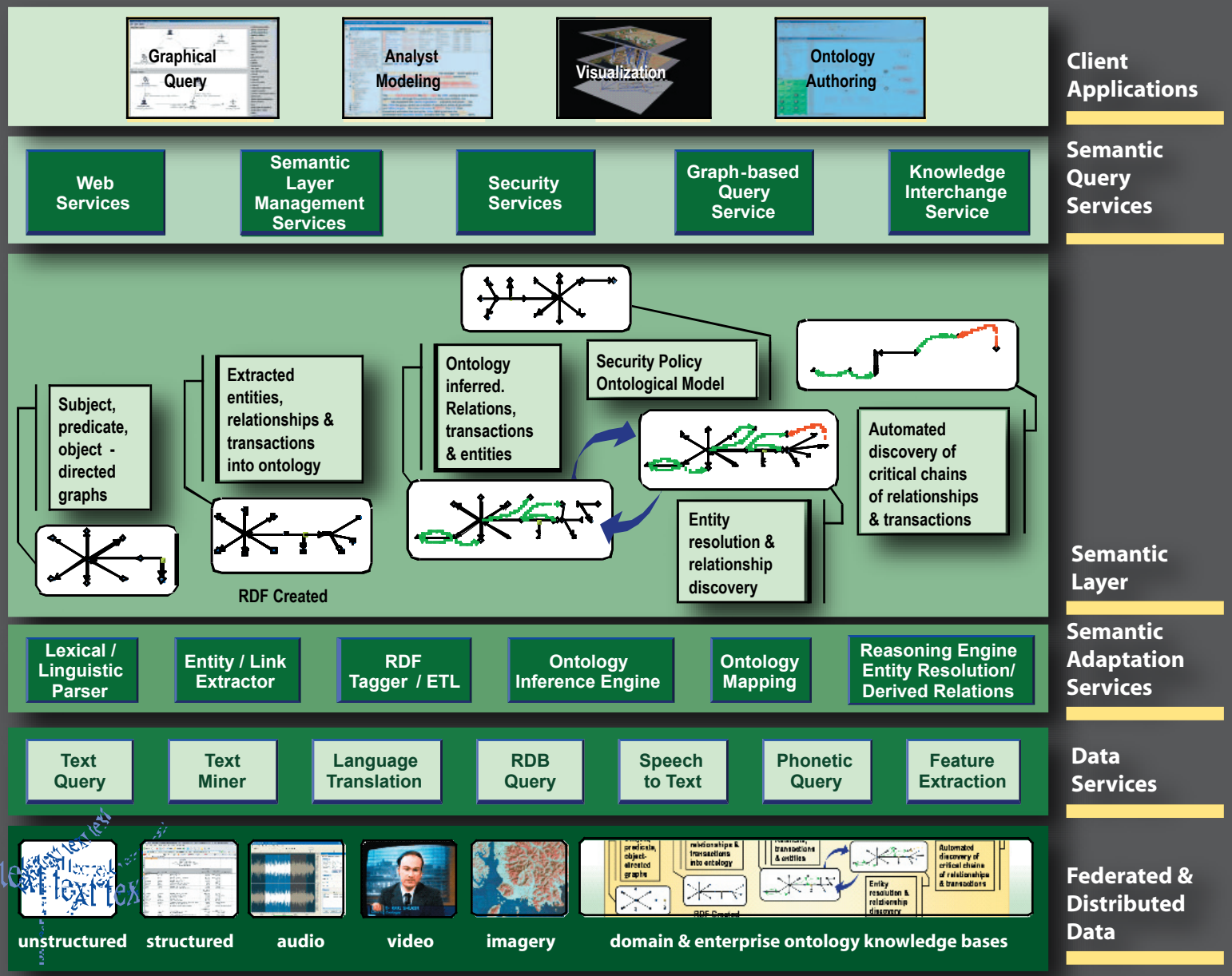
SMART CONTENT: INTELLIGENCE COMMUNITY STACK



Source: Joel A. Gladding, SAIC

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SMART CONTENT: IC DATA MATURITY MODEL

Data Maturity	Data Fidelity	Metadata Type	Data Instance	Data Organization	Metadata Content	Tools	Data Autonomy
4 Optimized Semantics	High Fidelity	Multi-layer Markup	Ontology and automated reasoning	Ontology	Inferred Relationships	Semantic Web Agent Technology	Smart Data
3 Managed Relationships		Entity & Relationship Markup	Taxonomies and Documents with horizontal integration of domain vocabularies	Ontology Taxonomy	Named Relationships	Data Independent	
2 Defined Content		Entity Markup	XML Documents using vertical domain vocabularies	Taxonomy	Content Mission	Filtering, Clustering. Categorization	
1 Repeatable Structure		Structure Markup	Schemas & DTDs	Document Models	Security Resource Format	Database Tools	
0 Chaotic	Low Fidelity	Unstructured	Text Documents & Database Records	Proprietary Application	Proprietary Properties	Search Tools	Dependent Data

Source: Joel A. Gladding, SAIC

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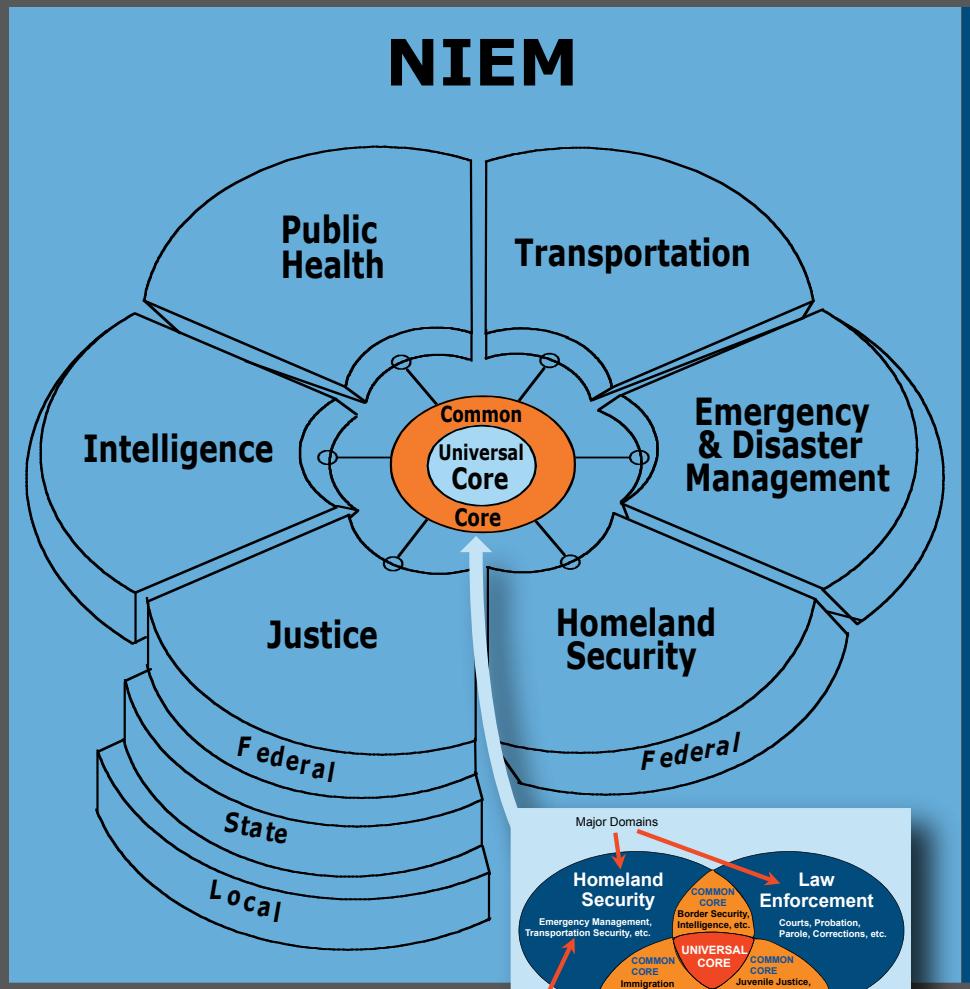
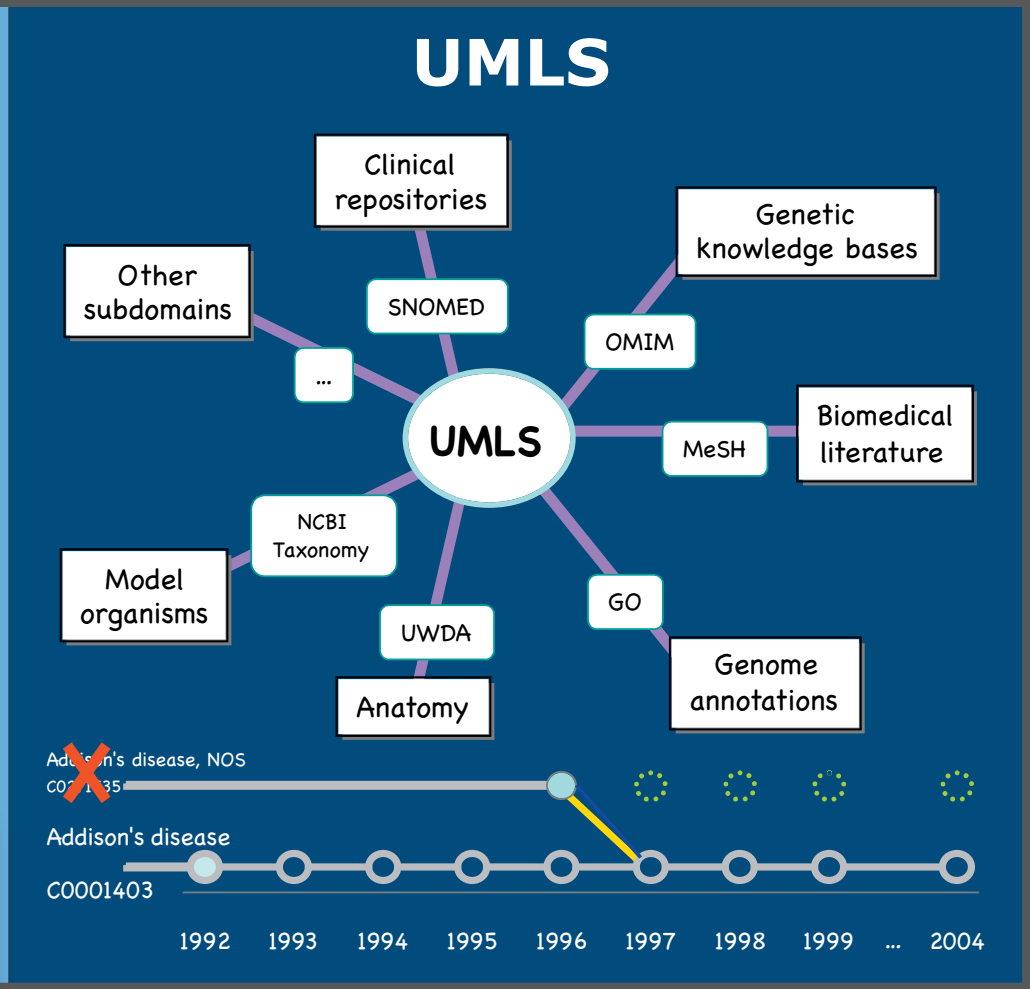
SEMANTIC METADATA MANAGEMENT: BEST PRACTICES FOR COMMUNITIES OF INTEREST

Department of Homeland Security



Source: Michael Daconta, DHS

National Library of Medicine



Source: Olivier Bodenreider, National Library of Medicine

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KNOWLEDGE COMPUTING

SEMANTIC OPPORTUNITY

- ***Opportunity*** — $3.4B
- ***R& D Themes*** — Modeling all forms of knowledge. Massive knowledgebases. Intelligent agents. Cognitive systems (al a DARPA). Adaptive, autonomic, and autonomous human and robotic systems with massively scalable knowledgebase and reasoning performance.
- ***Problem*** — Large-scale knowledgebases, complex forms of situation assessment, and value-based modes of reasoning essential in many domains exceed the capabilities and performance capacity of current standards-based approaches.
- ***Semantic solutions*** — Semantic operating systems and UI, intelligent systems.

BUSINESS VALUE

- ***Efficiency gain*** — Zero code, declarative application development. Tractable incremental costs of knowledge acquisition, life cycle management, and knowledge-commerce.
- ***Effectiveness gain*** — Capabilities for research, analysis, design, engineering, virtual manufacturing, logistics medicine, law, management, Advanced decision support.
- ***Mission edge*** — Systems that know, reason as humans do, and learn. Knowledge superiority, performance augmentation, labor transitions.

Source: MILLS•DAVIS

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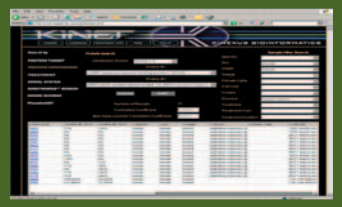
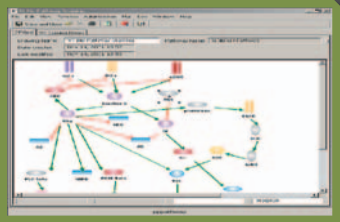
KNOWLEDGE COMPUTING: SEMANTIC APPLICATIONS

BioCAD

Helping scientists think together



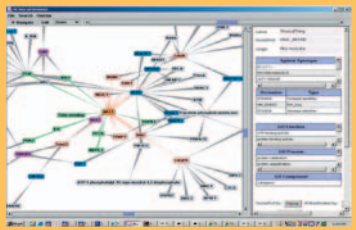
Genomic/Proteomics Experiments

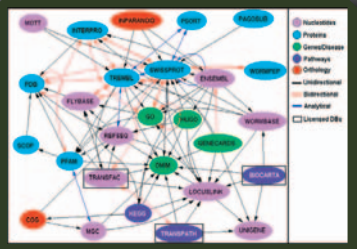


Pathway Modeler & Editor

Simulation & Test Services

Semantic Models





Public Databases

Private Research Servers

visualknowledge

Publication Server

Source: Visual Knowledge

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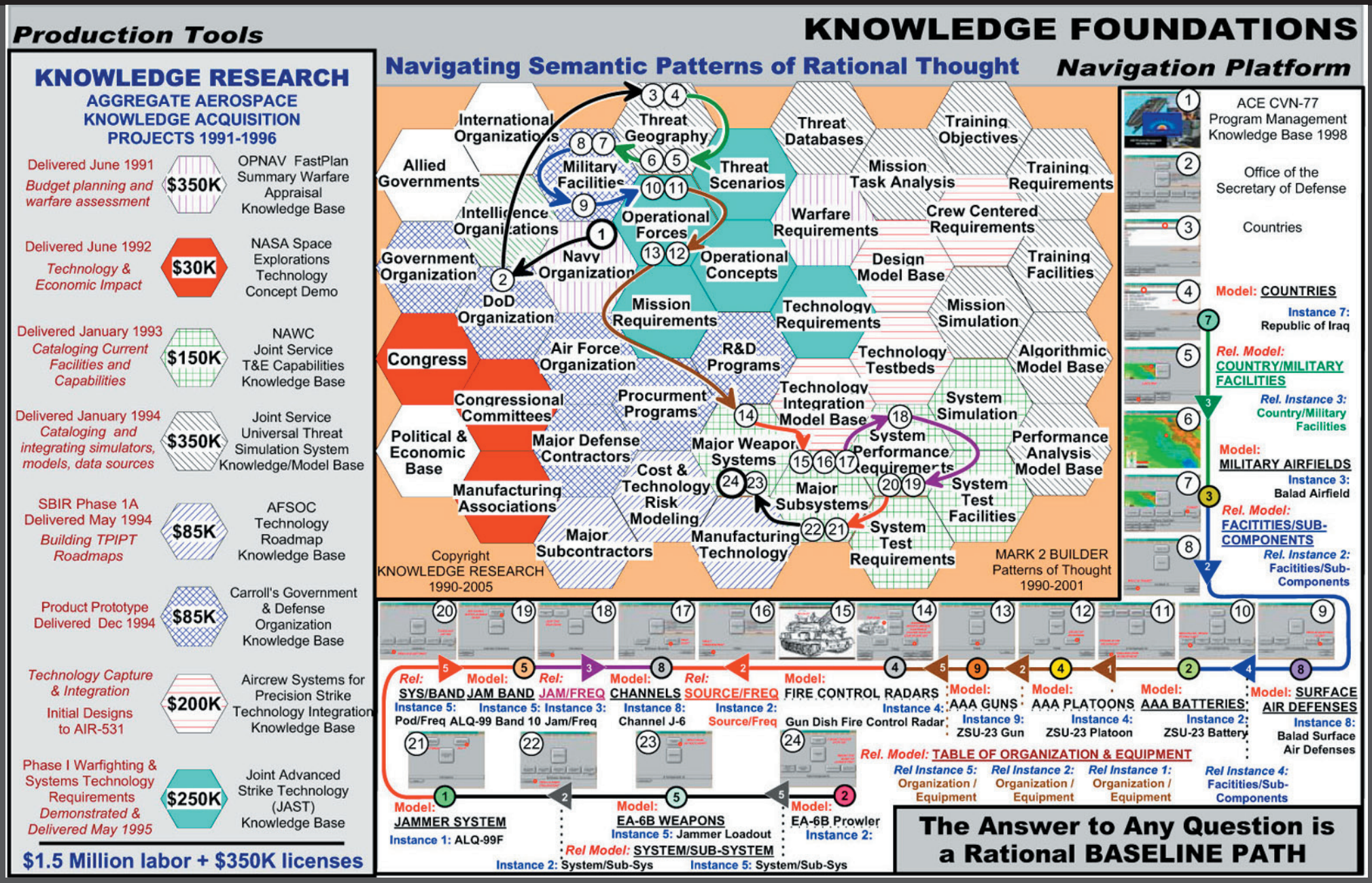
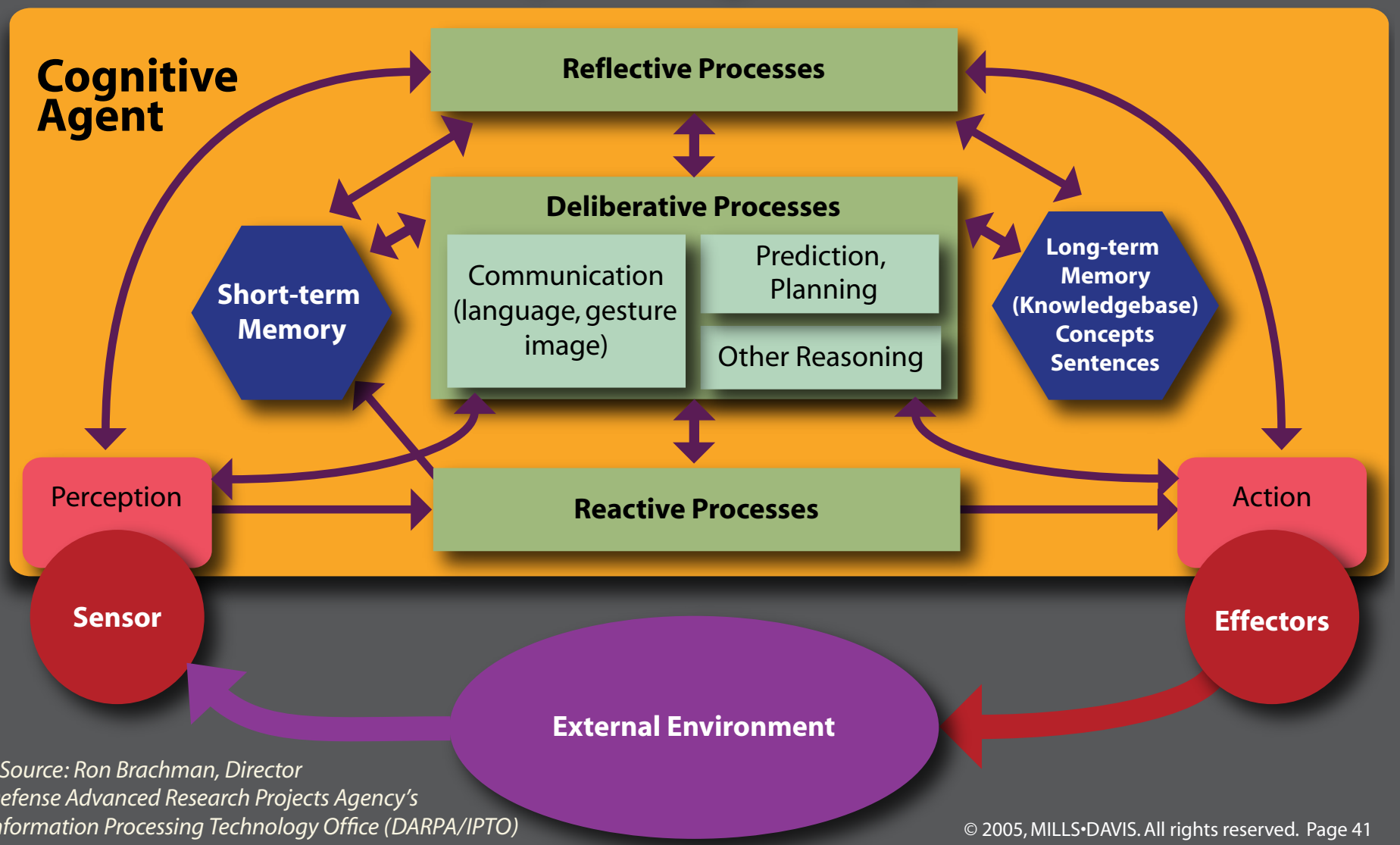
KNOWLEDGE COMPUTING: THEORY-BASED SEMANTIC WEBS



Source: Knowledge Foundations

SYSTEMS THAT KNOW WHAT THEY'RE DOING*

Anatomy of a Cognitive System



** Source: Ron Brachman, Director Defense Advanced Research Projects Agency's Information Processing Technology Office (DARPA/IPTO)*

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SYSTEMS THAT KNOW WHAT THEY'RE DOING*

A system that "knows what it's doing" can:

- Reason, using substantial amounts of appropriately represented knowledge
- Learn from its experience so that it performs better tomorrow than it did today
- Explain itself and be told what to do
- Be aware of its own capabilities and reflect on its own behavior
- Respond robustly to surprise

** Source: Ron Brachman, Director*
Defense Advanced Research Projects Agency's
Information Processing Technology Office (DARPA/IPTO)

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WHAT DOES THIS MEAN FOR NET-CENTRIC OPERATIONS?

Semantic scenarios:

- Agency makes data and services net-ready
- Community of Interest harmonizes data assets
- System-X finds, accesses, understands, & applies data and knowledge from multiple sources

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SCENARIO-1: AGENCY MAKES DATA AND SERVICES NET-READY

DAY	Action	Semantic Opportunity
Zero	Discover As-Is	Single data source Semantic auto-discovery of legacy data
	Describe Data	Manual/semi/auto tools to specify syntax, structure and semantics of data assets
	Describe Service	Tools to specify/expose net-centric services
	Prepare Data	Knowledge-extraction, auto-tagging, semantic enhancement of metadata with domain knowledge
One	Post	Tools to package and post discovery metadata, sharing data services, and data structure and semantics
Two	Review changes	Auto-detection of changes to data structure and semantics. Repeat Day-zero process and post upgrade or new version.

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SCENARIO-2: COMMUNITY OF INTEREST HARMONIZES DATA ASSETS

DAY	Action	Semantic Opportunity
Zero	Discover As-Is	Multiple information sources Semantic auto-discovery of legacy/ external data Net-centric services for discovery of data assets
	Describe Data	Manual/semi/auto tools to specify syntax, structure and semantics of data assets LCM tools to map and harmonize metadata and semantic models integrating multiple information sources
	Describe Services	Tools to specify/expose net-centric services
	Prepare Data	Knowledge-extraction, auto-tagging, semantic enhancement of metadata with domain and cross-domain knowledge
One	Post	Tools to package and post discovery metadata, sharing data services, and data structure and semantics
Two	Review changes	Auto-detection of changes to harmonized data structure(s) and semantics. Repeat Day-zero process and post upgrade or new version. Note Semantic models facilitate adding or modifying information elements, structures, & relationships

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SCENARIO-3: SYSTEM-X FINDS, ACCESSES, UNDERSTANDS & APPLIES DATA & KNOWLEDGE

DAY	Action	Semantic Opportunity
Zero	Discover As-Is	Multiple information sources, applications + end-use context Semantic auto-discovery of legacy/external data Net-centric services for discovery of data assets
	Describe Data	Manual/semi/auto tools to specify composite application business ontology (e.g., entities, attributes, relationships, processes, events and rules) LCM tools to map and harmonize metadata and semantic models linking multiple information sources and applications
	Describe Service	Tools to access net-centric services as well as legacy and external information and applications (via web services, application APIs, and federated RDB/file query)
	Prepare Data	Business ontology provides non-intrusive access to information sources within context of use
One	Post	Deploy composite application powered by semantic models Note—Composite application model is also sharable asset.
Two	Review changes	Note—Semantic models facilitate adding or modifying information elements, structures, and relationships as well as making incremental changes to System-X capabilities

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SICOP

- Federal CIO Council's Semantic Interoperability Community of Practice
- Leading the FEA Data Reference Model Implementation through Iteration and Testing
- Purpose is to establish the readiness of the DRM process for deployment across government:
  - Clear executable mandate to agencies and departments
  - Proven education, best practices, and support
  - Tested capabilities for context, sharing, description, and management
  - Appropriate tooling and vendor support
  - Business case for implementation at reasonable cost
- And, to demonstrate value of DRM for the public, COIs, agency business lines (programs), agency IT management, OMB (FEA & CPIC), President's Management Agenda, and for implementing legislative mandates.

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IECM

- AIIM's interoperable Enterprise Content Management working group. Participation open to enterprises in industry, government, and technology solutions communities.
- Mission is to develop a consensus-driven interoperability framework that enables cost-effective discovery, understanding, and sharing of information across system and organization boundaries.
- *Interoperability* is the ability of different information technology systems and software applications to communicate, exchange, and use information accurately, effectively, and consistently.
- iECM goal is to solve key interoperability challenges relating to: different content types and storage formats; distribution of information assets across multiple applications and repositories; and integration of diverse content sources within a context of end-use.
- iECM will be developed in stages starting with a core set of capabilities and a focus on evaluating existing open standards and best practices. Pilot tests will prove out and refine this work as it progresses, extending the framework to maximize value across the entire information value chain.

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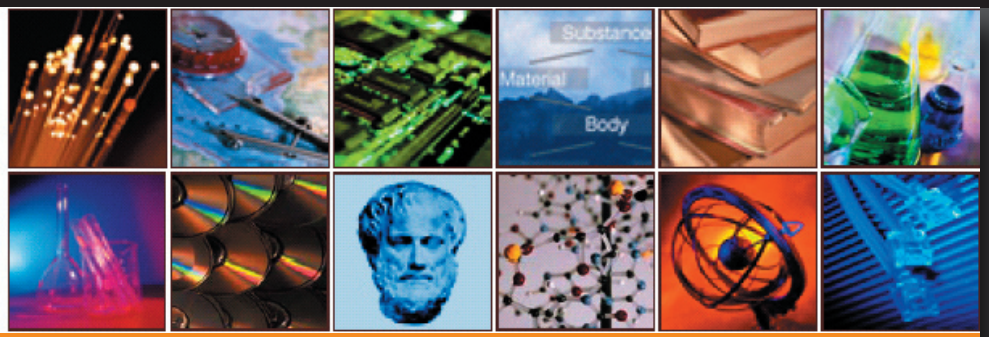
NCOR

national
center for
ontological
research

ncor



Founding Partners
Apelon, Inc.
Gene Ontology Consortium
Lawrence Berkeley Laboratories
Medical Ontology Research
National Library of Medicine
Mitre Corporation
Mouse Genome Informatics
National Center for
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National Institute of
Standards and Technology
Ontology Works
Open Biomedical Ontologies
Consortium
Sierra Nevada Corporation
Structural Informatics Group
University of Washington
Topquadrant, Inc.

International Partners
European Centre for
Ontological Research
Japanese Ontology Forum

Advance ontology as a discipline employing rigorous scientific methods

Develop objective, empirical measures of quality for ontologies in ways which will lead to the establishment of best practices

Sponsor and conduct challenges and pilot tests designed to advance the state-of-the-art in applied ontology

Provide coordination and support for investigators working on theoretical ontology and its applications

Engage in outreach endeavors designed to foster the goals of high quality ontology in both theory and practice

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SYSTEM-X DEMO: COMPOSITE APPLICATIONS POWERED BY SEMANTIC MODELS

About Digital Harbor:

- Next-Generation software platform for building and using composite applications
- Composite Application Solution: EII, SOA, and Portals
- 6 years and over $50M in investment R&D and over $100M in partner R&D
- Supports 22 industry standards including OWL
- Delivered 24 business templates over six domains
- Government customers include Navy, Air Force, NSA, DISA, DIA, NRO, NGA, CIFA, and DHS

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